

## SMART HIDROLİK SİSTEMLERİ

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Product Technical Manual

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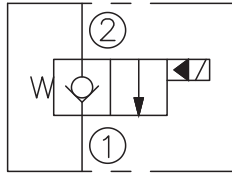
# Two Way Two Position(Normally Closed)



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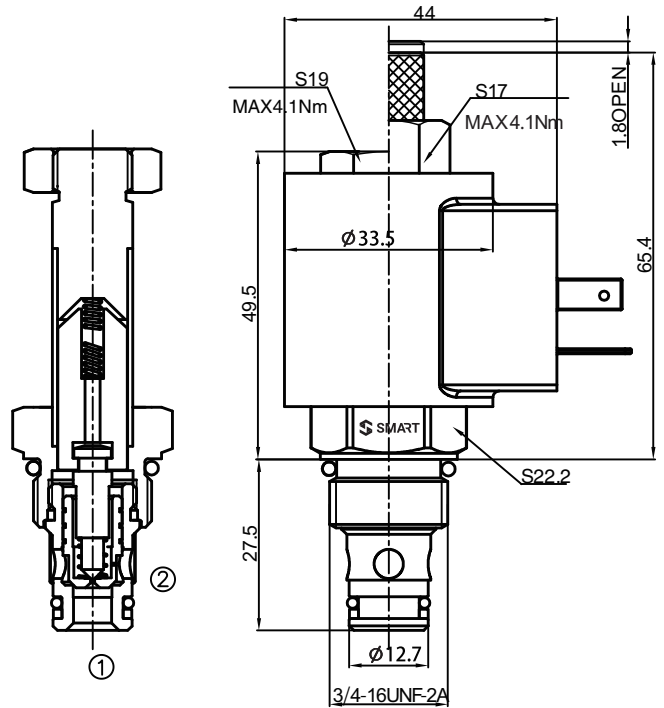
## ZSV08-20

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min.max.at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm

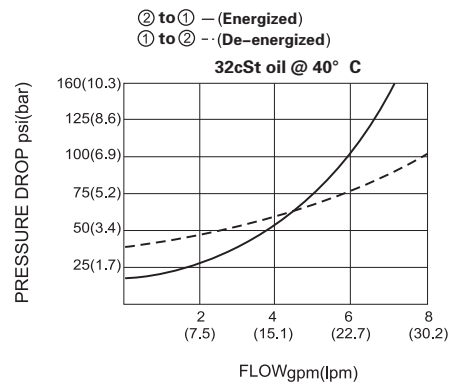


### OPERATION

When de-energized,the valve acts as a check valve,allowing flow from ①to②,while blocking flow from ②to①. When energized,the poppet lifts to open the ②to①,while ①to② is severly restricted.

To override,push button in ,twist counter-clockwise 180° and release,the valve will remain open;push button in,twist clockwise 180° and release, the valve will remain close.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV08 - 20 \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank = None  
M=Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

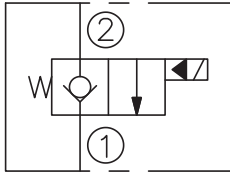
Voltage	
12=12	VDC
24=24	VDC
48=48	VDC
110=110	VAC
220=220	VAC
A12=12	VAC
A24=24	VAC

# Two Way Two Position(Normally Closed)



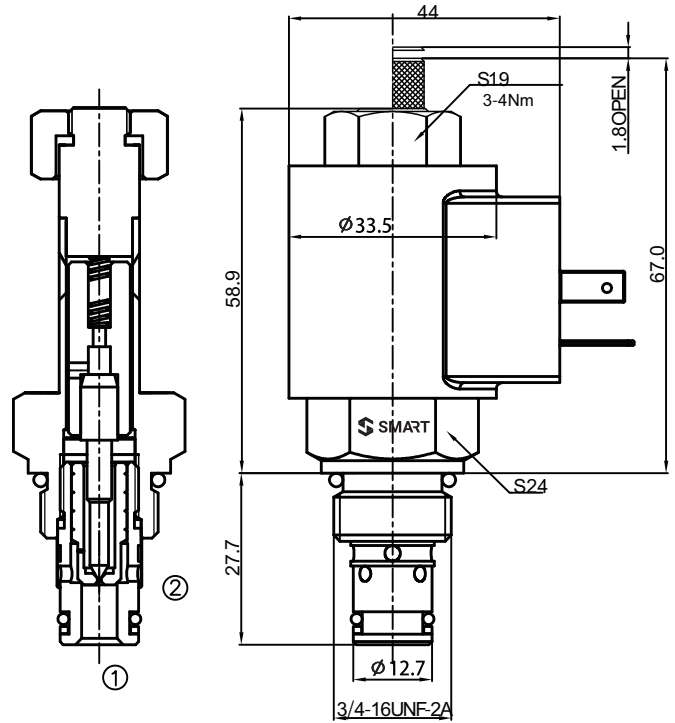
## ZSV08-B20

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min.max.at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



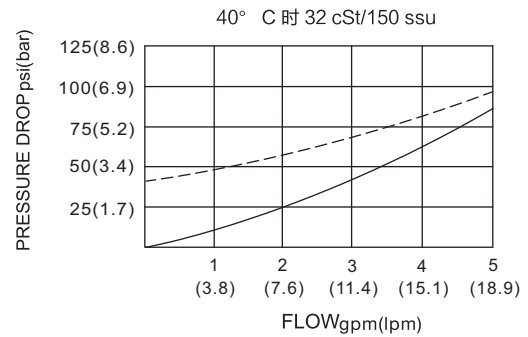
### OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①.

When energized, the poppet lifts to open the ② to ①, while ① to ② is severely restricted.

To override, twist counter-clockwise two turns, the valve will remain open; twist clockwise to the end, the valve will remain close.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV08 - B20 \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank = None  
M= Manual Override

Coil Connection

DL = Double Leads

ER = Deutsch Connector  
(Water-proof Coil)

Blank = Hirschmann

Voltage	
12=12	VDC
24=24	VDC
48=48	VDC
110=110	VAC
220=220	VAC
A12=12	VAC
A24=24	VAC

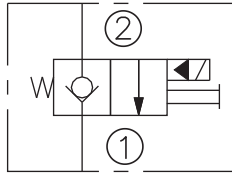
# Two Way Two Position(Normally Closed)



A

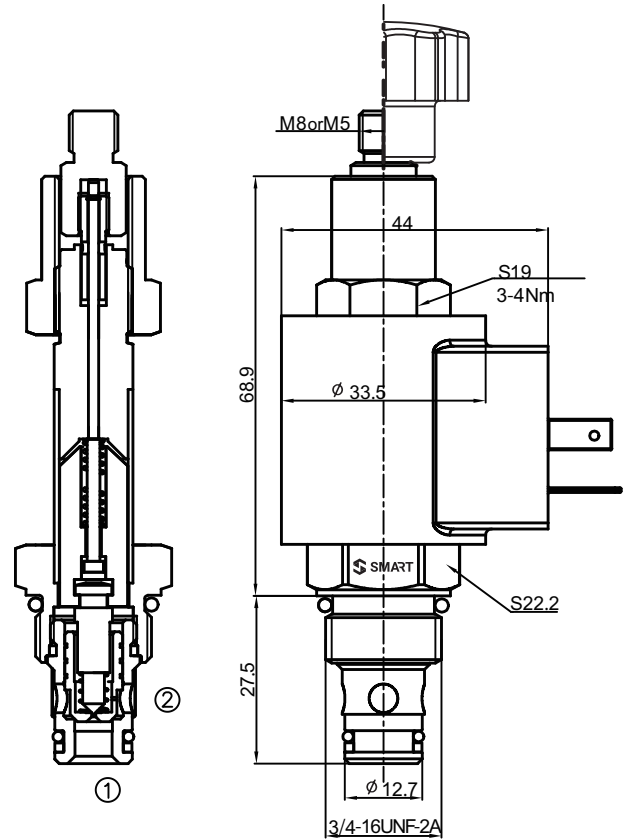
## ZSV08-20J

### SYMBOL



### SPECIFICATIONS

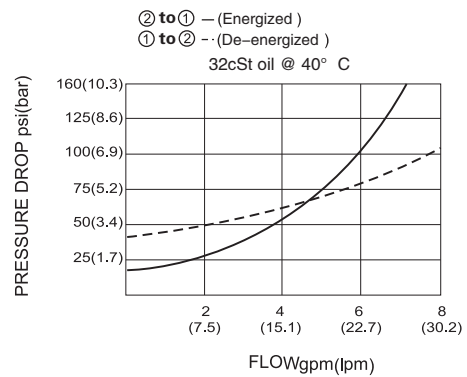
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min.max.at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



### OPERATION

When de-energized,the valve acts as a check valve, allowing flow from ①to②.while blocking flow from ②to①.  
When energized,the poppet lifts to open the ②to①, while ①to② is serverly restricted.  
To override,pull the connecting rod and maintain,the allowing flow from ②to①;Release the connection connecting rod,the blocking flow from ②to ①.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV08 - 20 J - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Suitable for cable adapter \_\_\_\_\_

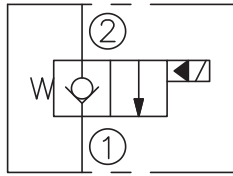
Coil Connection	12=12 VDC
DL = Double Leads	24=24 VDC
ER = Deutsch Connector (Water-proof Coil)	48=48 VDC
Blank = Hirschmann	110=110 VAC
	220=220 VAC
	A12=12 VAC
	A24=24 VAC

# Two Way Two Position(Normally Closed)



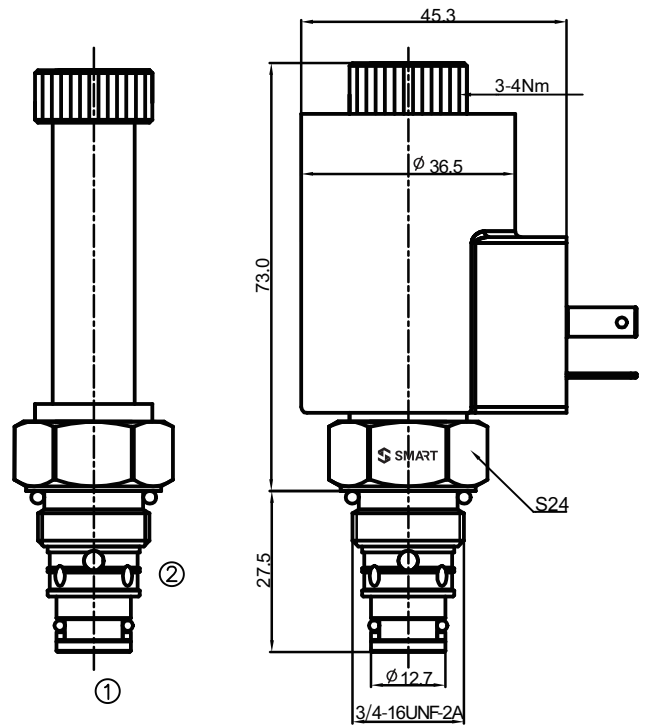
## ZSV08-S20

### SYMBOL



### SPECIFICATIONS

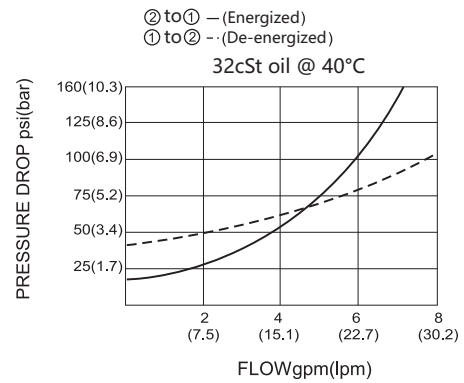
MAX.Operating Pressure:	280bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min.max.at 280bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



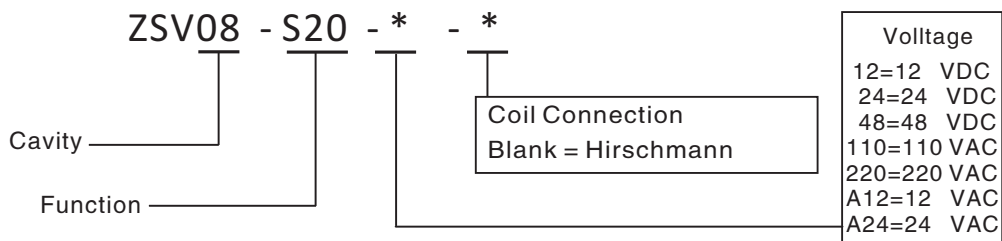
### OPERATION

When de-energized,the valve acts as a check valve, allowing flow from ①to②,while blocking flow from ②to①.  
When energized,the poppet lifts to open the ②to①, while ①to② is serverly restricted.

### PRESSURE DROP VS.FLOW



### TO ORDER



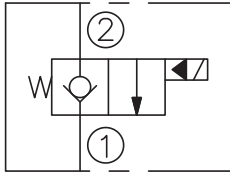
# Two Way Two Position(Normally Closed)



A

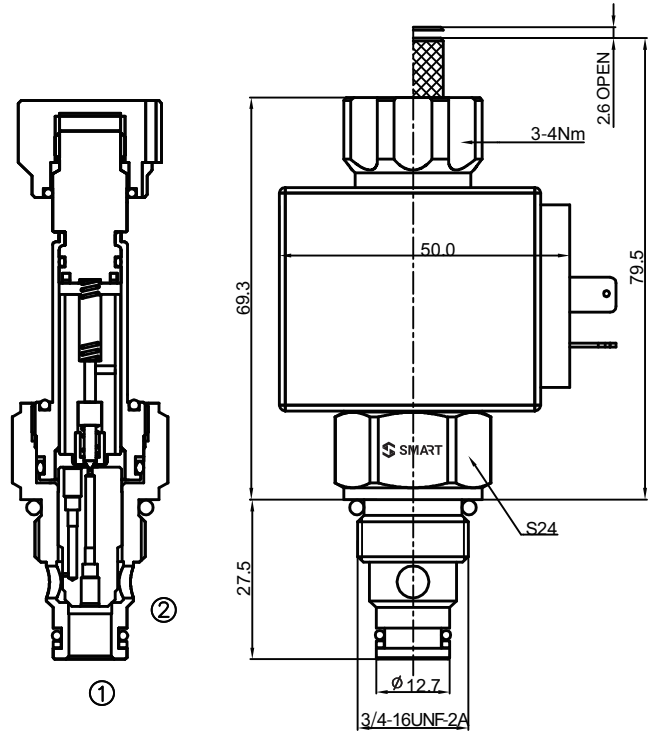
## ZSV6-08-2NCP

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	39-51Nm

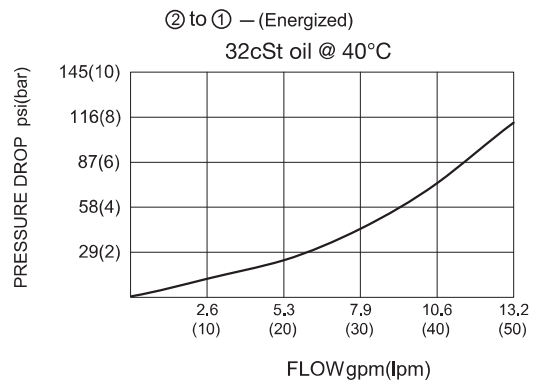


### OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①. When energized, the poppet lifts to open the ② to ①, while ① to ② is severely restricted.

To override, push button in, twist counter-clockwise 180° and release, the valve will remain open; push button in, twist clockwise 180° and release, the valve will remain close.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZSV6-08-2NCP \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank = None  
M=Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

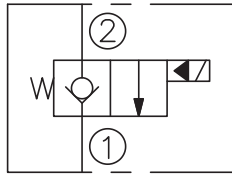
Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

# Two Way Two Position(Normally Closed)



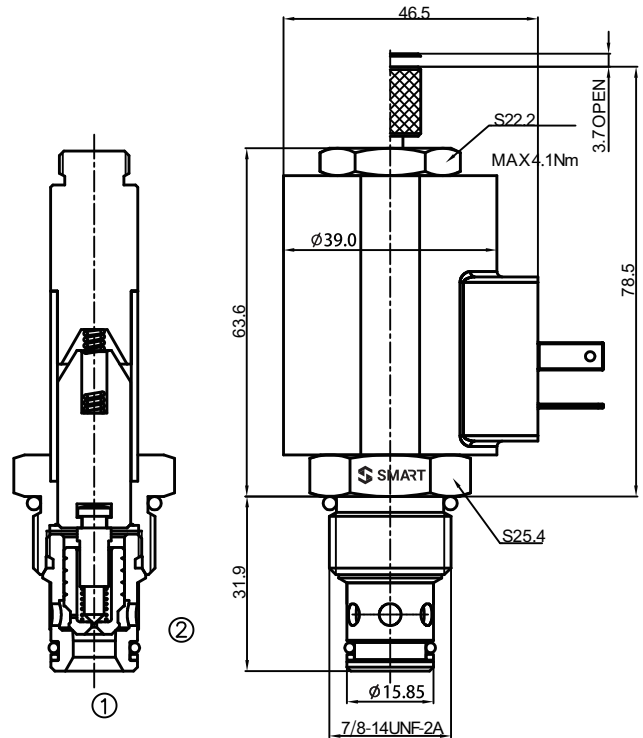
## ZSV10-20

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm

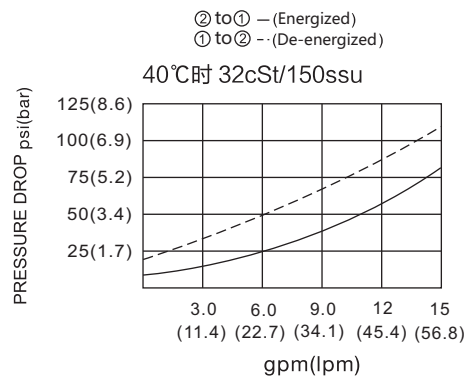


### OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①. When energized, the poppet lifts to open the ② to ①, while ① to ② is severely restricted.

To override, push button in, twist counter-clockwise 180° and release, the valve will remain open; push button in, twist clockwise 180° and release, the valve will remain close.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV10 - 20 \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank = None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

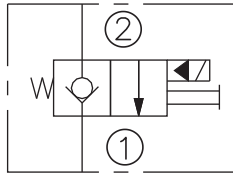
# Two Way Two Position(Normally Closed)



A

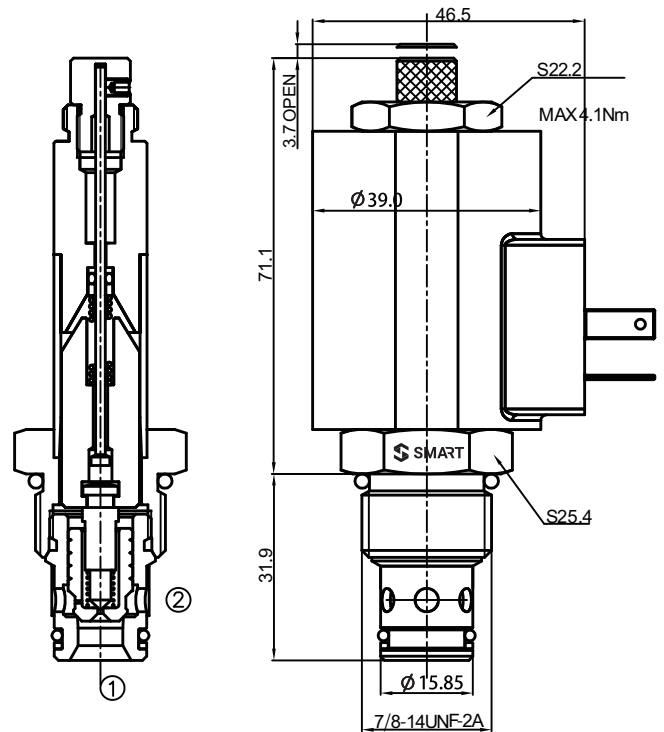
## ZSV10-B20M

### SYMBOL



### SPECIFICATIONS

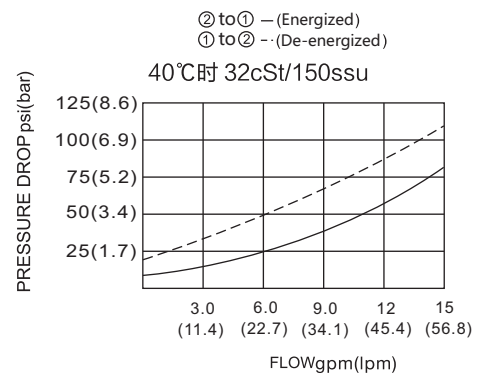
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



### OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①.  
 When energized, the poppet lifts to open the ② to ①, while ① to ② is severely restricted.  
 To override, twist counter-clockwise 3 turns, the valve will remain open; twist clockwise to the end, the valve will remain close.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV10 - B20M - \* - \*

Cavity \_\_\_\_\_  
 Function \_\_\_\_\_  
 Manual Override \_\_\_\_\_

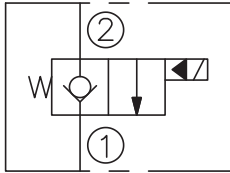
Coil Connection	12=12 VDC
DL = Double Leads	24=24 VDC
ER = Deutsch Connector (Water-proof Coil)	48=48 VDC
Blank = Hirschmann	110=110 VAC
	220=220 VAC
	A12=12 VAC
	A24=24 VAC

# Two Way Two Position(Normally Closed)



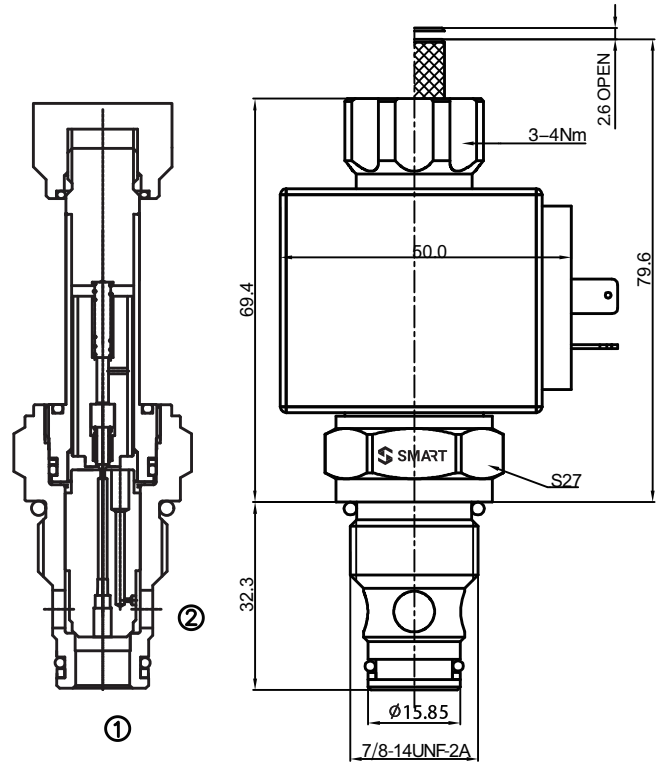
## ZSV6-10-2NCP

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	44-56Nm

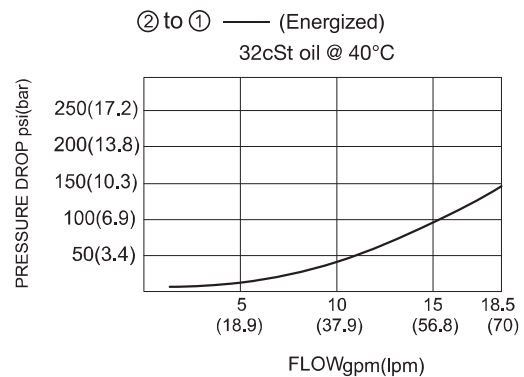


### OPERATION

When de-energized,the valve acts as a check valve,allowing flow from ①to②,while blocking flow from ②to①. When energized,the poppet lifts to open the ②to①flow path.

To override,push button in ,twist counter-clockwise 180° and release,the valve will remain open;push button in,twist clockwise 180° and release, the valve will remain close.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV6-10-2NCP \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank = None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage

12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

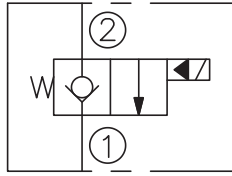
# Two Way Two Position(Normally Closed)



A

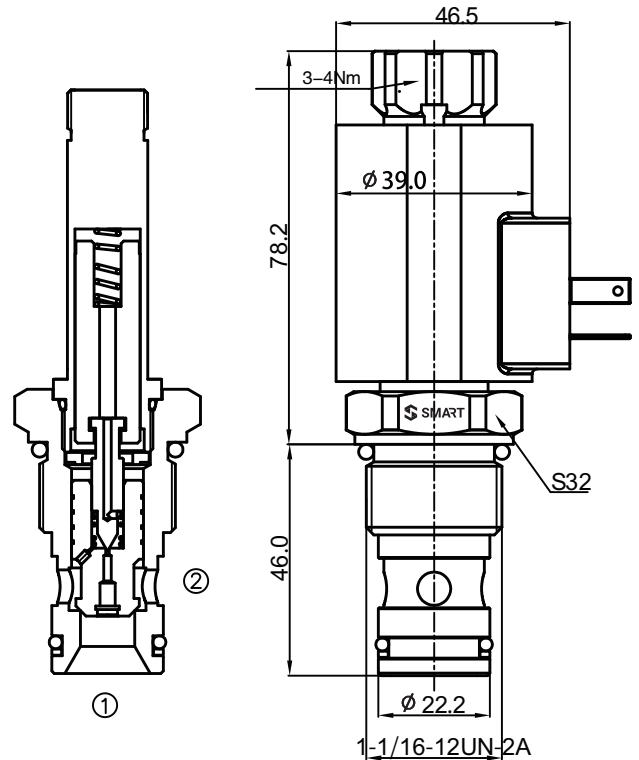
## ZSV12-20

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	12-2 See page G-3
Installation Torque:	45-50Nm



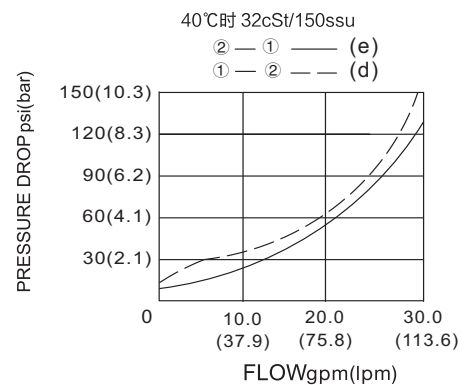
### OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①.

When energized, the poppet lifts to open the ② to ①, while ① to ② is severely restricted.

To override, twist counter-clockwise two turns, the valve will remain open; twist clockwise to the end, the valve will remain close.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV12 - 20 \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank = None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

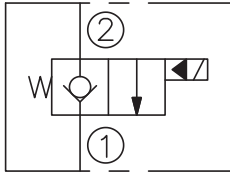
Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

# Two Way Two Position(Normally Closed)



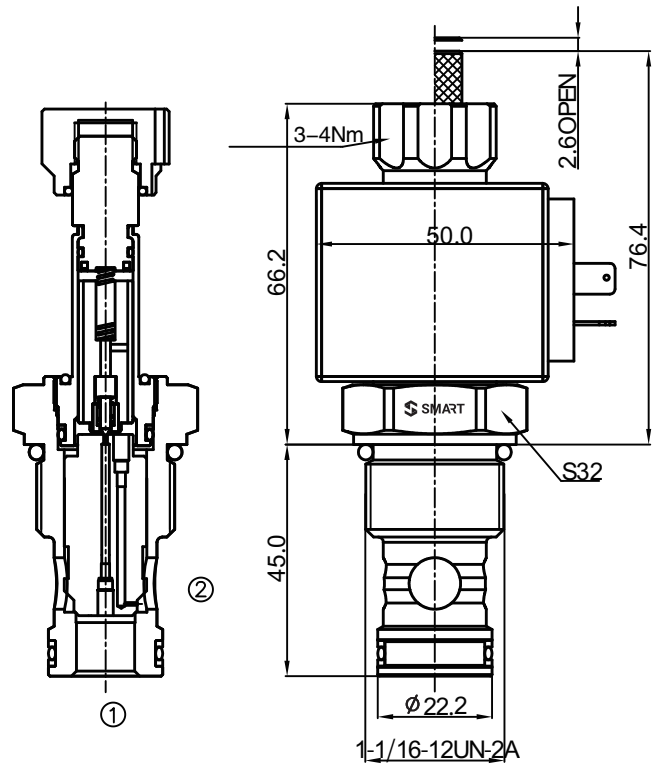
## ZSV6-12-2NCP

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	12-2 See page G-3
Installation Torque:	54-66Nm



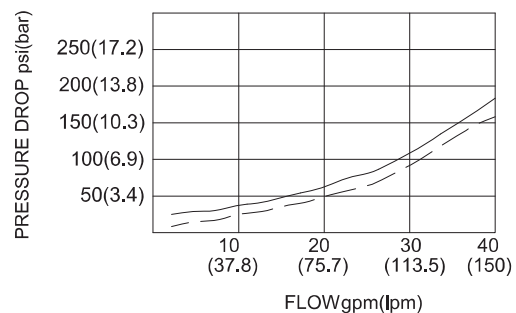
### OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①. When energized, the poppet lifts to open the ② to ① flow path.

To override, push button in, twist counter-clockwise 180° and release, the valve will remain open; push button in, twist clockwise 180° and release, the valve will remain close.

### PRESSURE DROP VS.FLOW

② to ① -- (Energized)  
① to ② -- (De-energized)  
32cSt oil @ 40°C



### TO ORDER

ZSV6-12-2NCP \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank = None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

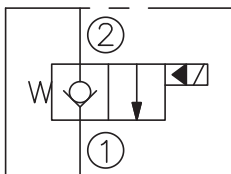
# Two Way Two Position(Normally Closed)



A

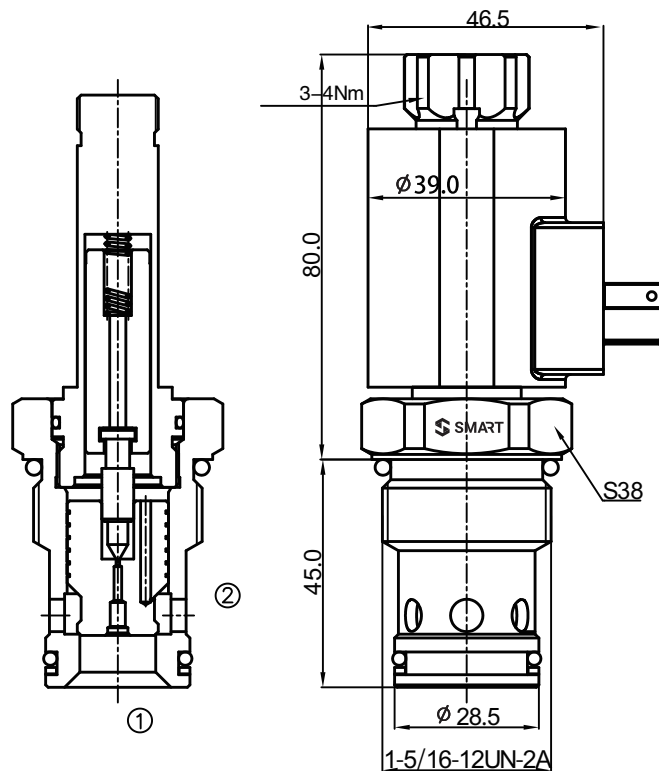
## ZSV16-20

### SYMBOL



### SPECIFICATIONS

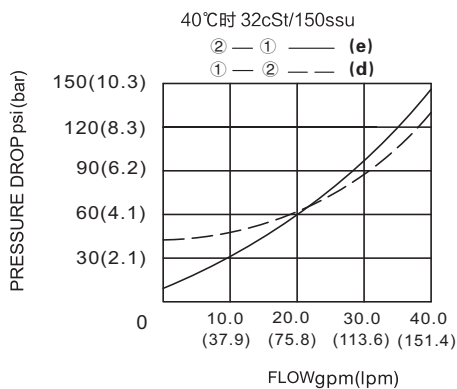
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	16-2 See page G-3
Installation Torque:	80-100Nm



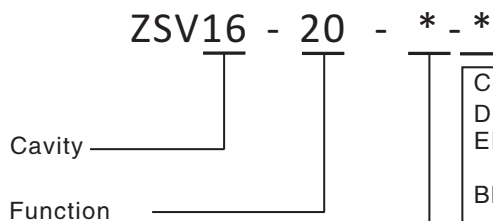
### OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①.  
When energized, the poppet lifts to open the ② to ①, while ① to ② is severely restricted.

### PRESSURE DROP VS.FLOW



### TO ORDER



Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

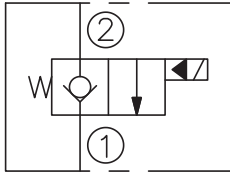
Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

# Two Way Two Position(Normally Closed)



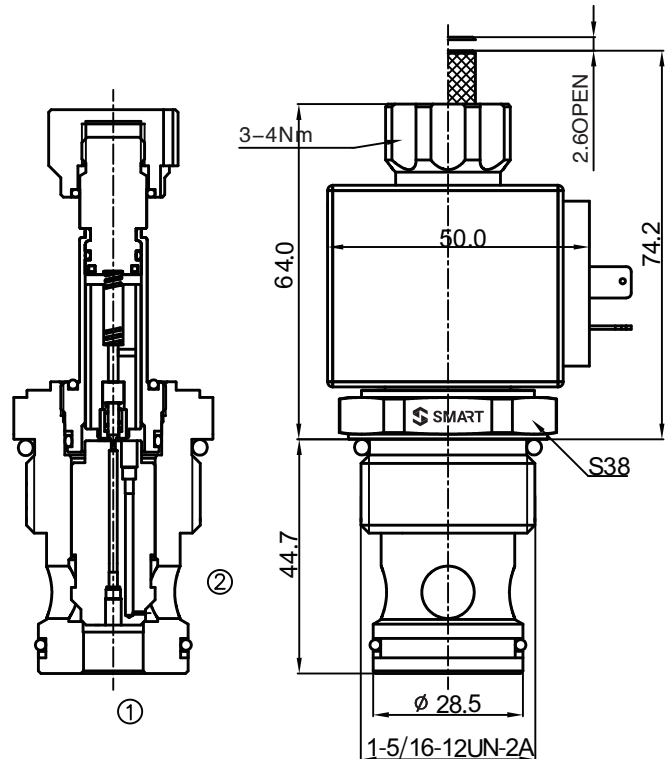
## ZSV6-16-2NCP

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	16-2 See page G-3
Installation Torque:	80-100Nm



### OPERATION

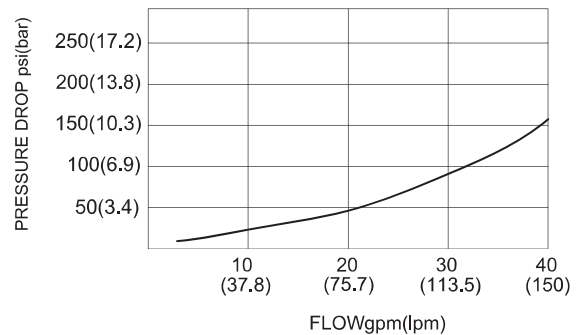
When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①. When energized, the poppet lifts to open the ② to ① flow path.

To override, push button in, twist counter-clockwise 180° and release, the valve will remain open; push button in, twist clockwise 180° and release, the valve will remain close.

### PRESSURE DROP VS.FLOW

② to ① — (Energized)

32cSt oil @ 40°C



### TO ORDER

ZSV6-16-2NCP \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank = None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

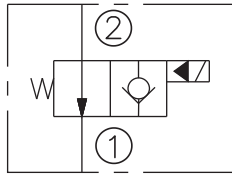
# Two Way Two Position(Normally Open)



A

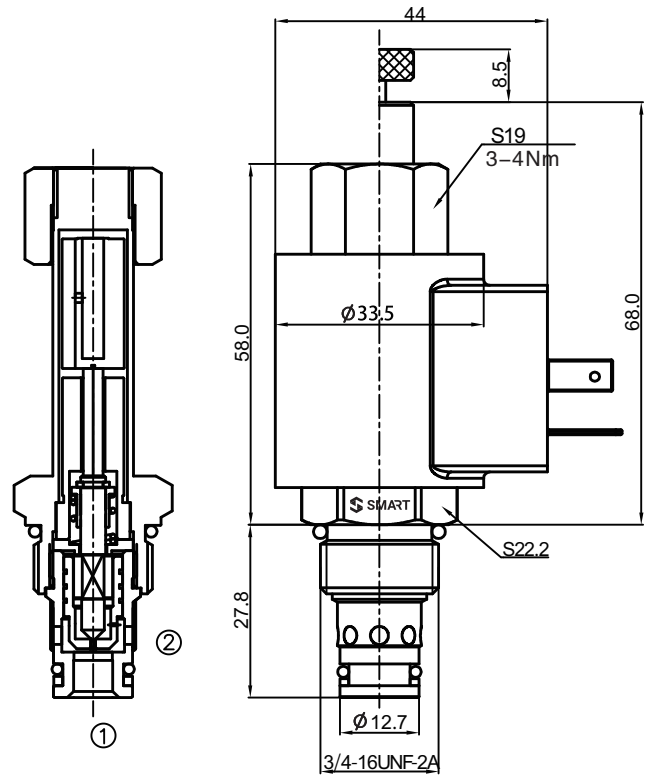
## ZSV08-21

### SYMBOL



### SPECIFICATIONS

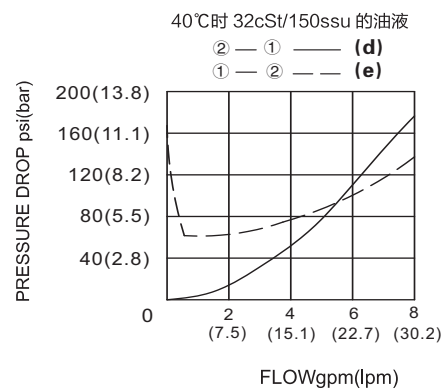
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



### OPERATION

When de-energized, the poppet lifts to open the ②to①, while ①to② is severly restricted;  
When energized, the valve acts as a check valve, allowing flow from ①to②. while blocking flow from ②to①.  
To override, twist counter-clockwise three turns, the valve will remain close ;twist clockwise to the end, the valve will remain open.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV08 - 21 \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank =None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

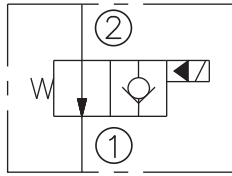
Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

# Two Way Two Position(Normally Open)



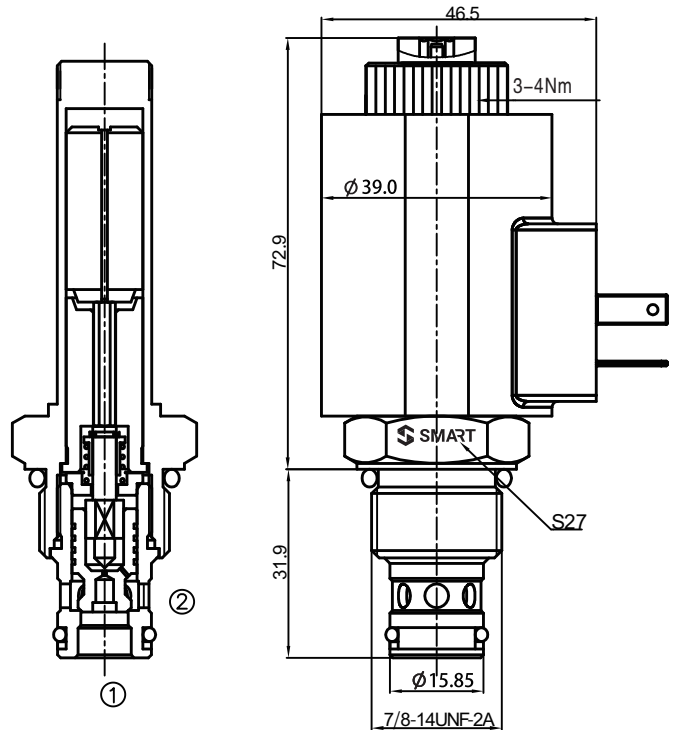
## ZSV10-21

### SYMBOL



### SPECIFICATIONS

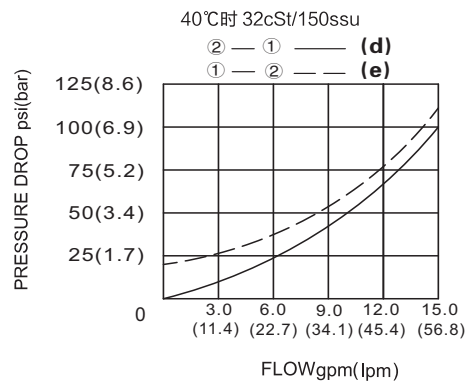
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



### OPERATION

When de-energized, the poppet lifts to open the ②to①, while ①to② is severly restricted;  
 When energized, the valve acts as a check valve, allowing flow from ①to②. while blocking flow from ②to①.  
 To override, push button in to activate.  
 To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV10 - 21 \* - \* - \*

Cavity \_\_\_\_\_  
 Function \_\_\_\_\_  
 Blank = None  
 M= Manual Override

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

Voltage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

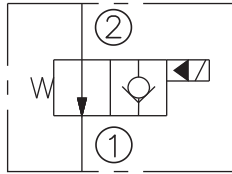
# Two Way Two Position(Normally Open)



A

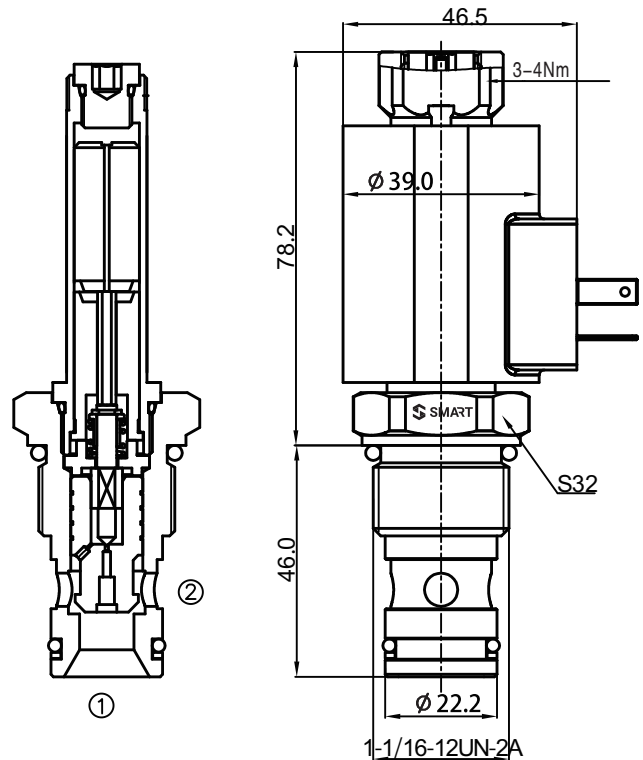
## ZSV12-21

### SYMBOL



### SPECIFICATIONS

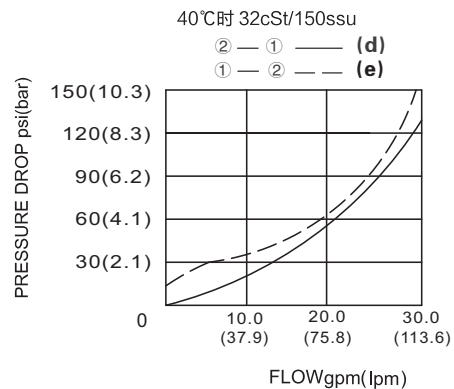
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	12-2 See page G-3
Installation Torque:	45-50Nm



### OPERATION

When de-energized, the poppet lifts to open the ②to①, while ①to② is severly restricted;  
 When energized, the valve acts as a check valve, allowing flow from ①to②, while blocking flow from ②to①.  
 To override, push button in to activate.  
 To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV12 - 21 \* - \* - \*

Cavity ————  
 Function ————  
 Blank =None  
 M= Manual Override

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

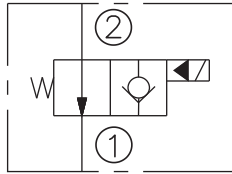
Voltage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

# Two Way Two Position(Normally Open)



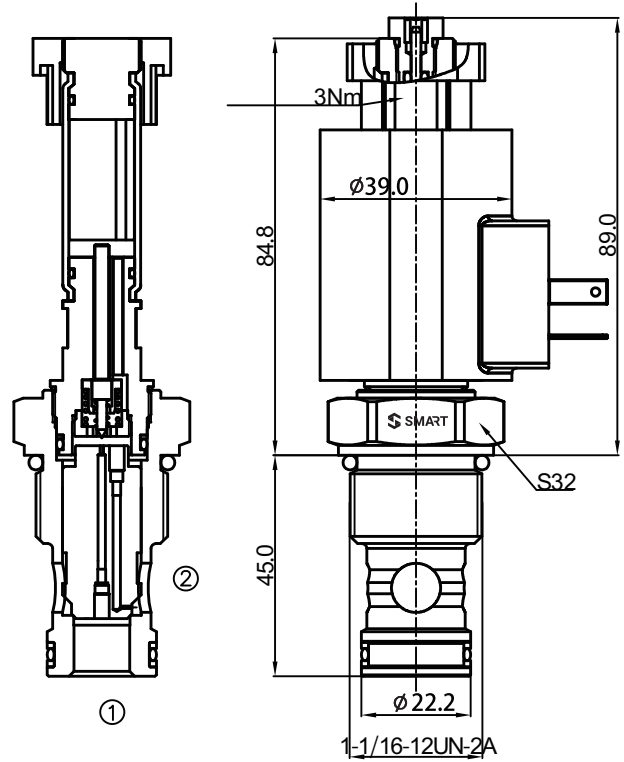
## ZSV6-12-2NOP

### SYMBOL



### SPECIFICATIONS

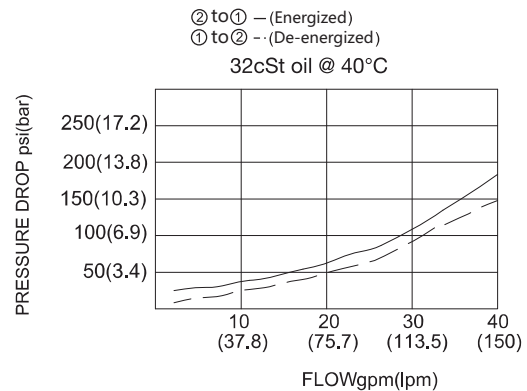
工作压力 MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	12-2 See page G-3
Installation Torque:	54-66Nm



### OPERATION

When de-energized, the poppet lifts to open the ② to ①, while ① to ② is severely restricted;  
 When energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①.  
 To override, push button in to activate.  
 To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV6-12-2NOP \* - \* - \*

Cavity \_\_\_\_\_  
 Function \_\_\_\_\_  
 Blank = None  
 M= Manual Override

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

Voltage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

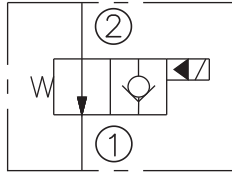
# Two Way Two Position(Normally Open)



A

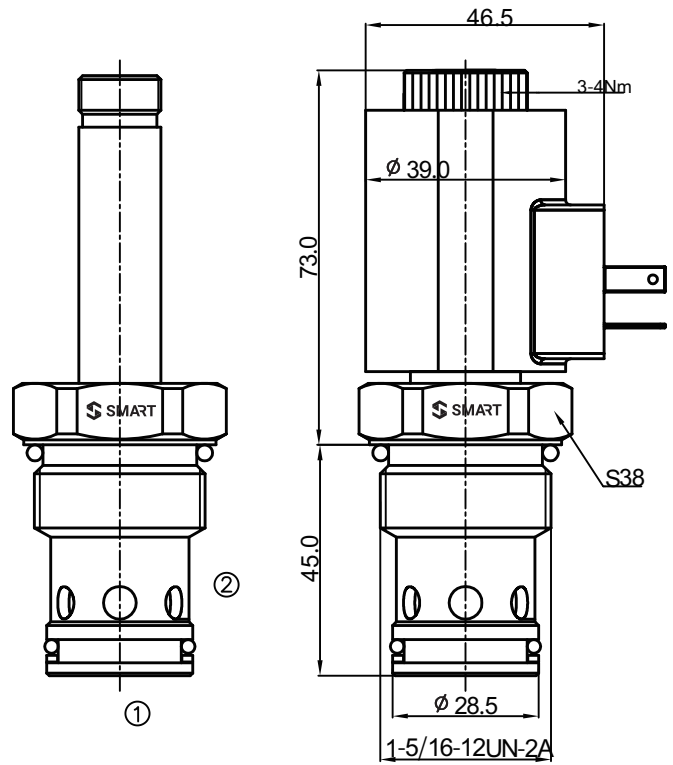
## ZSV16-21

### SYMBOL



### SPECIFICATIONS

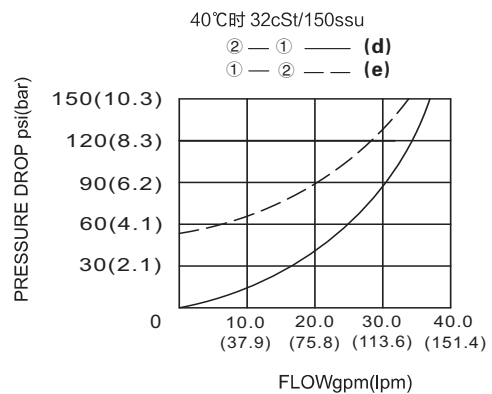
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	16-2 See page G-3
Installation Torque:	80-100Nm



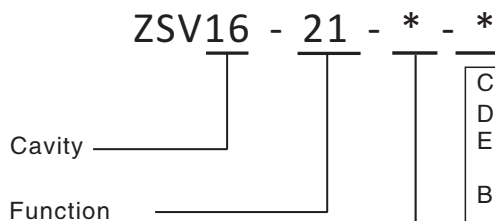
### OPERATION

When de-energized, the poppet lifts to open the ②to①, while ①to② is severly restricted;  
When energized, the valve acts as a check valve, allowing flow from ①to②. while blocking flow from ②to①.

### PRESSURE DROP VS.FLOW



### TO ORDER



Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

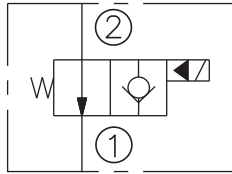
Voltage	
12=12	VDC
24=24	VDC
48=48	VDC
110=110	VAC
220=220	VAC
A12=12	VAC
A24=24	VAC

# Two Way Two Position(Normally Open)



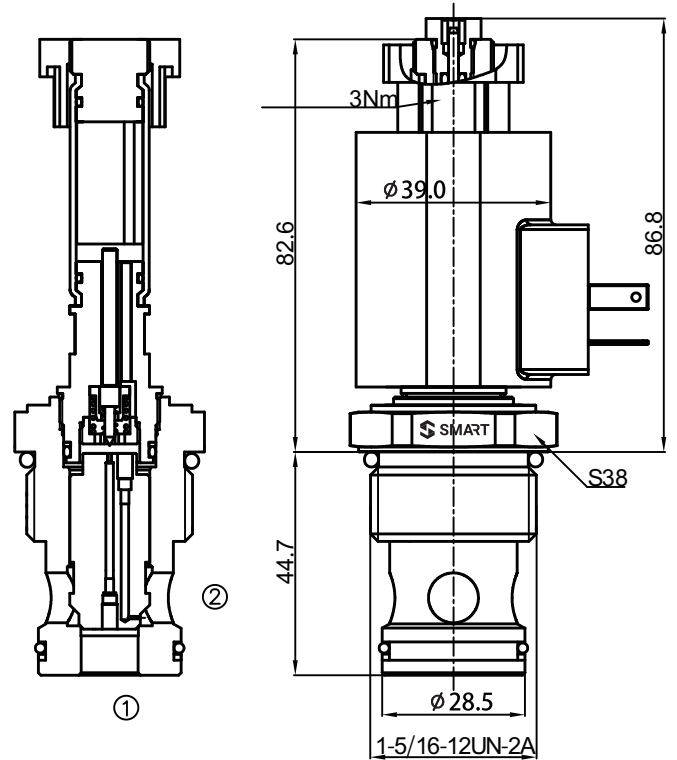
## ZSV6-16-2NOP

### SYMBOL



### SPECIFICATIONS

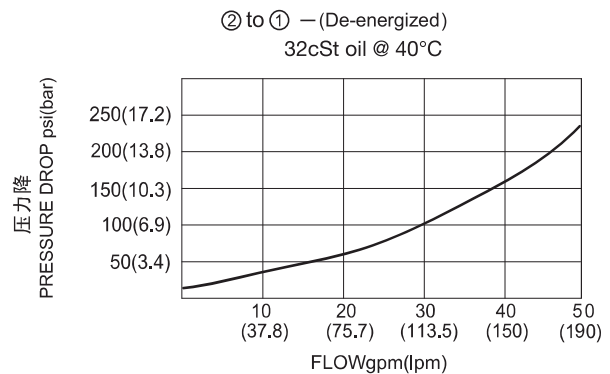
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	16-2 See page G-3
Installation Torque:	80-100Nm



### OPERATION

When de-energized, the poppet lifts to open the ② to ①, while ① to ② is severely restricted;  
 When energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①.  
 To override, push button in to activate.  
 To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV6-16-2NOP \* - \* - \*

Cavity \_\_\_\_\_  
 Function \_\_\_\_\_  
 Blank = None  
 M= Manual Override

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

Voltage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

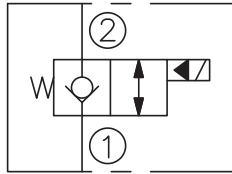
# Two Way Two Position(Normally Closed)



A

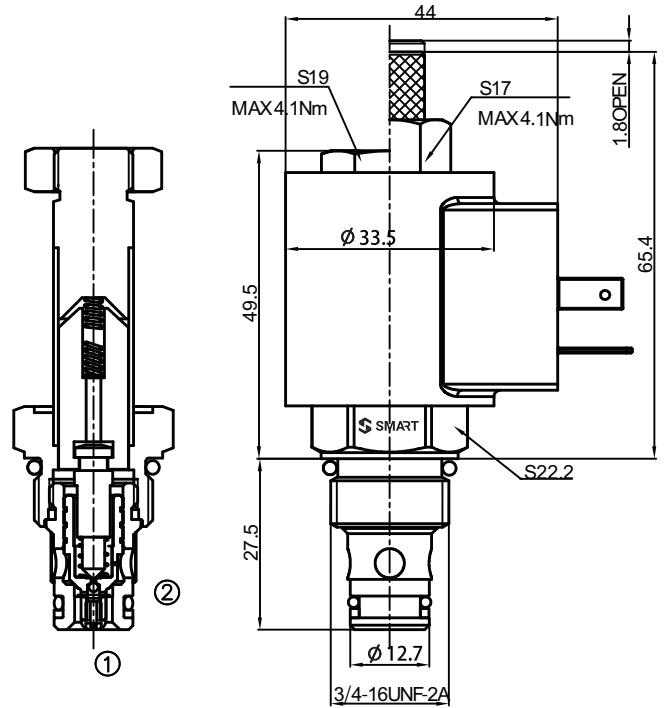
## ZSV08-22

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm

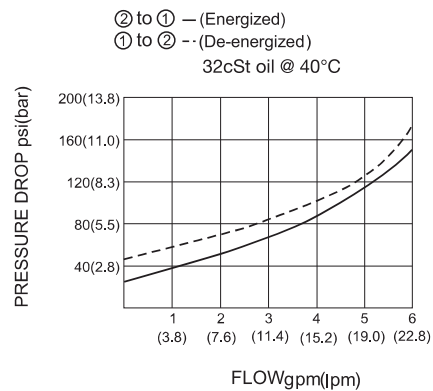


### OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①.  
When energized, allowing flow from ② to ① and ① to ②.

To override, push button in, twist counter-clockwise 180° and release, the valve will remain open; push button in, twist clockwise 180° and release, the valve will remain close.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZSV08 - 22 \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank = None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

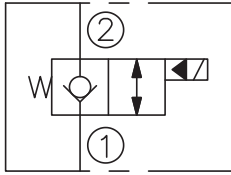
Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

# Two Way Two Position(Normally Closed)



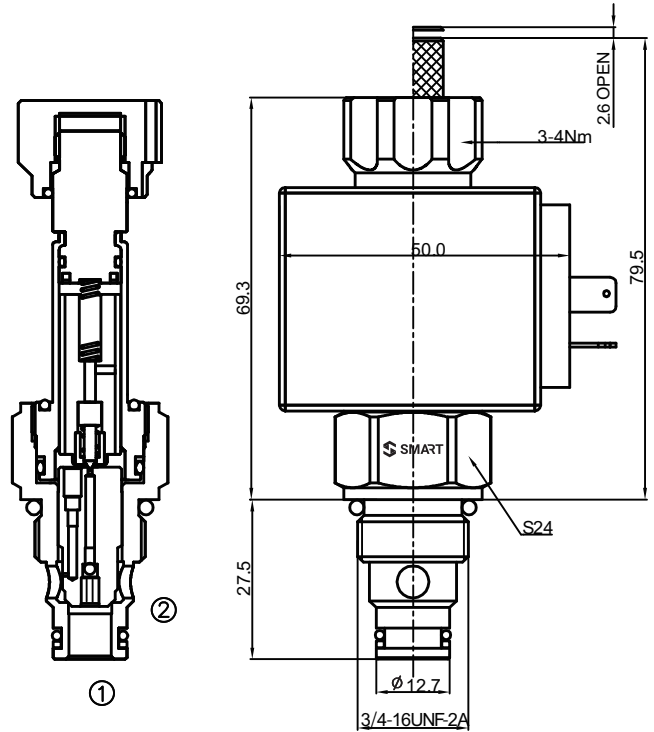
## ZSV6-08-2NCRP

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	39-51Nm



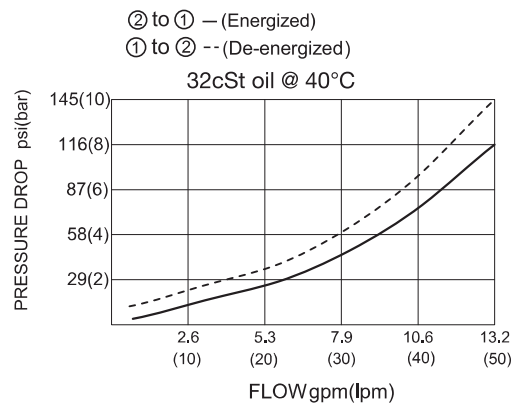
### OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①.

When energized, allowing flow from ② to ① and ① to ②.

To override, push button in, twist counter-clockwise 180° and release, the valve will remain open; push button in, twist clockwise 180° and release, the valve will remain close.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV6-08-2NCRP \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank = None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

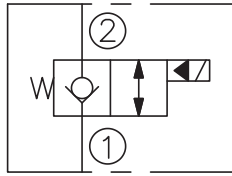
# Two Way Two Position(Normally Closed)



A

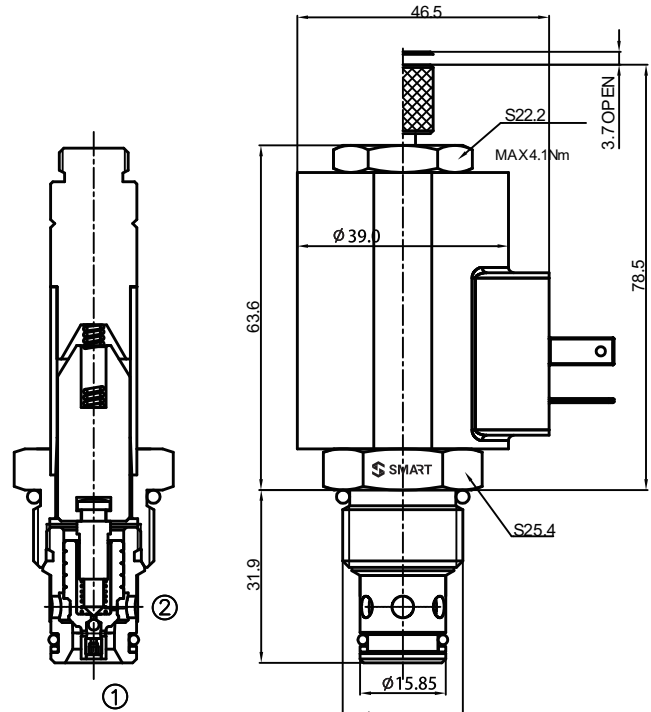
## ZSV10-22

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm

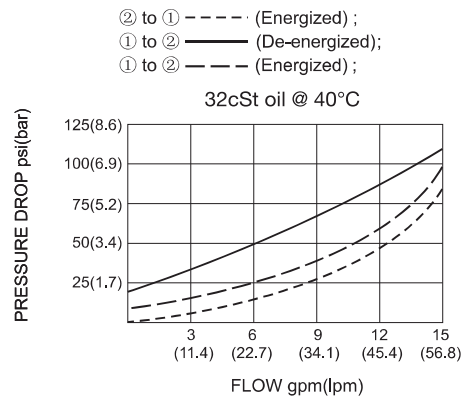


### OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①.  
When energized, allowing flow from ② to ① and ① to ②.

To override, push button in, twist counter-clockwise 180° and release, the valve will remain open; push button in, twist clockwise 180° and release, the valve will remain close.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZSV10 - 22 \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank = None  
M= Manual Override

Coil Connection  
DL = Double Leads(双线)  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

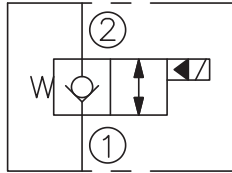
Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

# Two Way Two Position(Normally Closed)



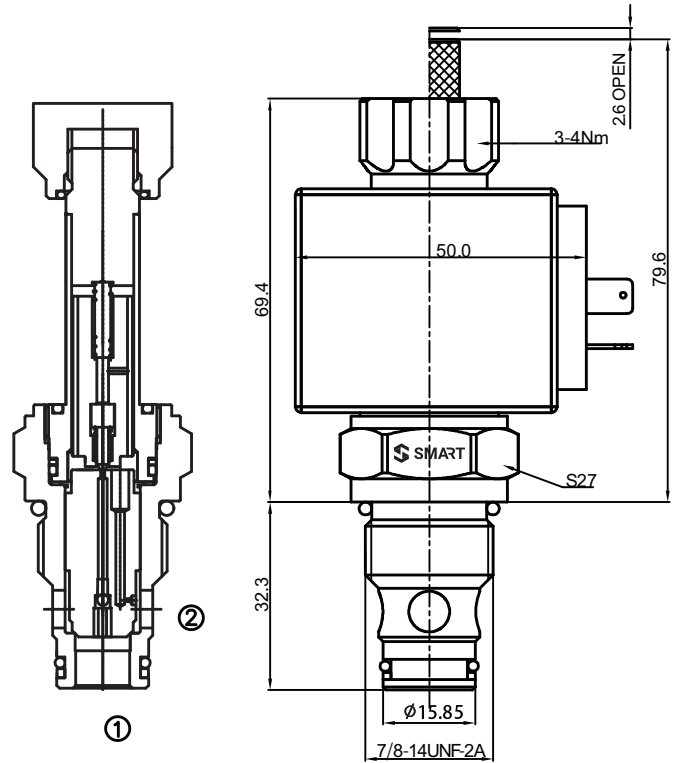
## ZSV6-10-2NCRP

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-2 See page G-1
Installation Torque:	44-56Nm

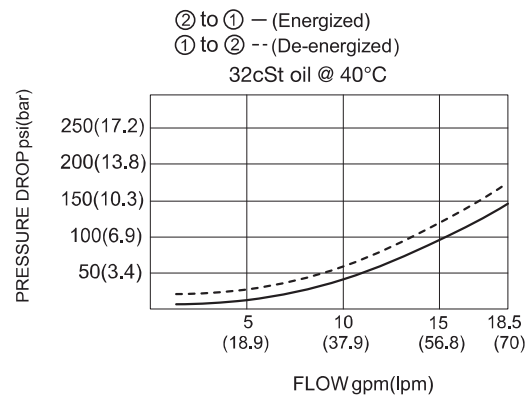


### OPERATION

When de-energized,the valve acts as a check valve,allowing flow from ①to②,while blocking flow from ②to①.  
When energized,allowing flow from ②to①and ①to②.

To override,push button in ,twist counter-clockwise 180° and release,the valve will remain open;push button in,twist clockwise 180° and release, the valve will remain close.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV6-10-2NCRP \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank = None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

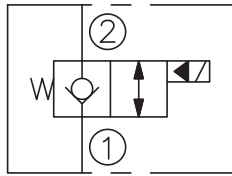
# Two Way Two Position(Normally Closed)



A

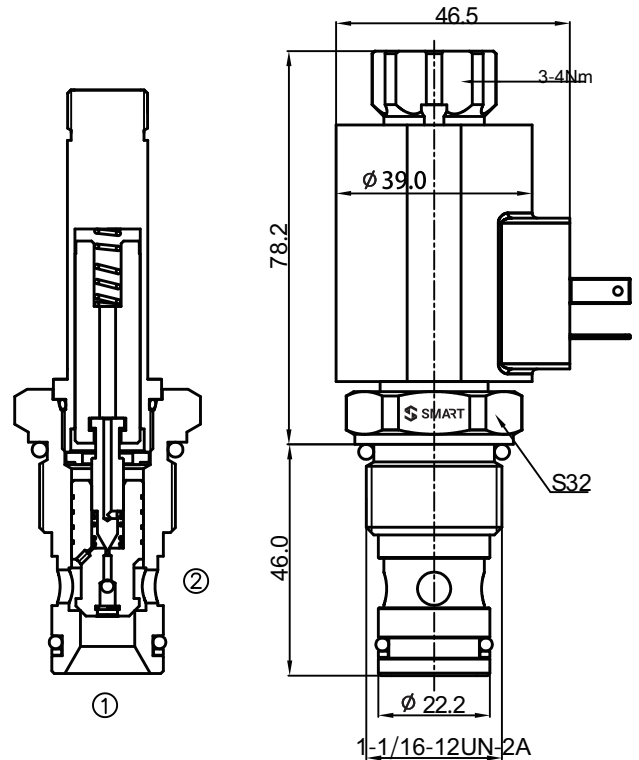
## ZSV12-22

### SYMBOL



### SPECIFICATIONS

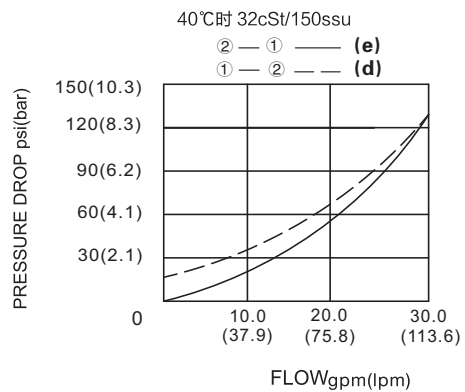
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	12-2 See page G-3
Installation Torque:	45-50Nm



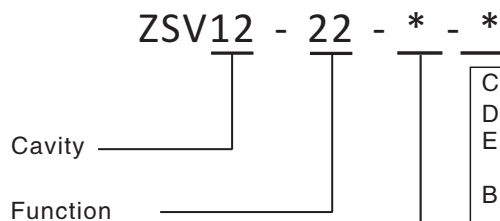
### OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①.  
When energized, allowing flow from ② to ① and ① to ②.

### PRESSURE DROP VS. FLOW



### TO ORDER



Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

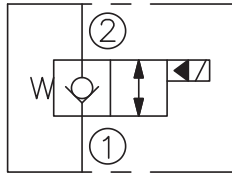
Voltage	
12=12	VDC
24=24	VDC
48=48	VDC
110=110	VAC
220=220	VAC
A12=12	VAC
A24=24	VAC

# Two Way Two Position(Normally Closed)



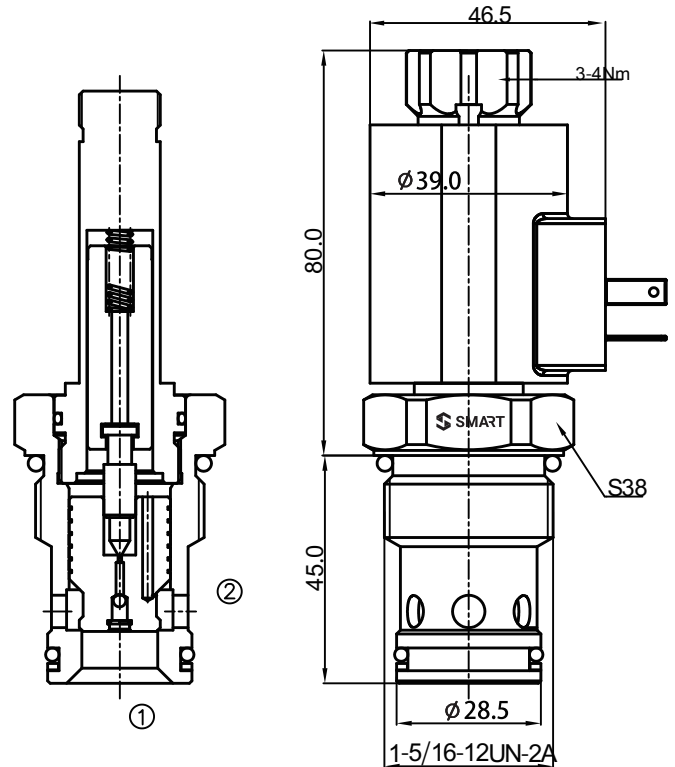
## ZSV16-22

### SYMBOL



### SPECIFICATIONS

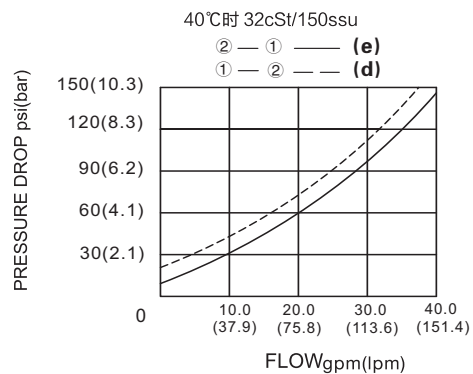
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	16-2 See page G-3
Installation Torque:	80-100Nm



### OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①.  
When energized, allowing flow from ② to ① and ① to ②.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV16 - 22 - \* - \*

Cavity \_\_\_\_\_  
 Function \_\_\_\_\_

Coil Connection	12=12 VDC
DL = Double Leads	24=24 VDC
ER = Deutsch Connector (Water-proof Coil)	48=48 VDC
Blank = Hirschmann	110=110 VAC
	220=220 VAC
	A12=12 VAC
	A24=24 VAC

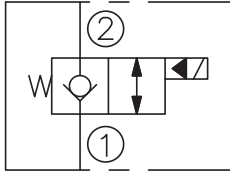
# Two Way Two Position(Normally Closed)



A

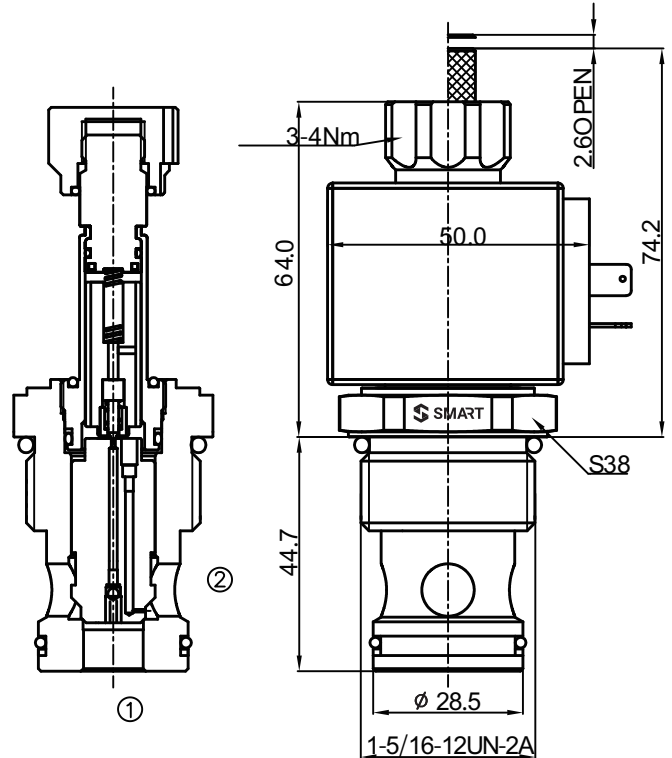
## ZSV6-16-2NCRP

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	16-2 See page G-3
Installation Torque:	80-100Nm

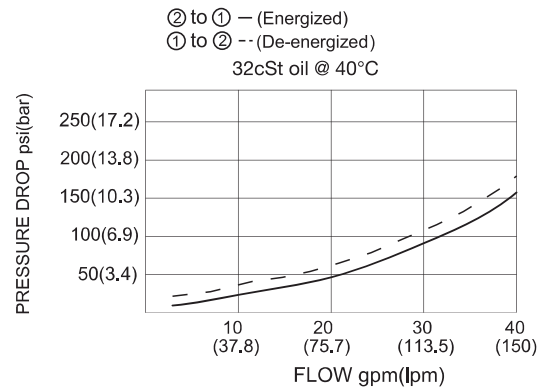


### OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①.  
When energized, allowing flow from ② to ① and ① to ②.

To override, push button in, twist counter-clockwise 180° and release, the valve will remain open; push button in, twist clockwise 180° and release, the valve will remain close.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV6-16-2NCRP \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank =None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

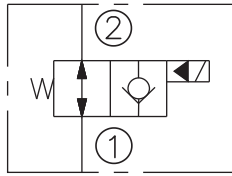
电压 Voltlage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

# Two Way Two Position(Normally Open)



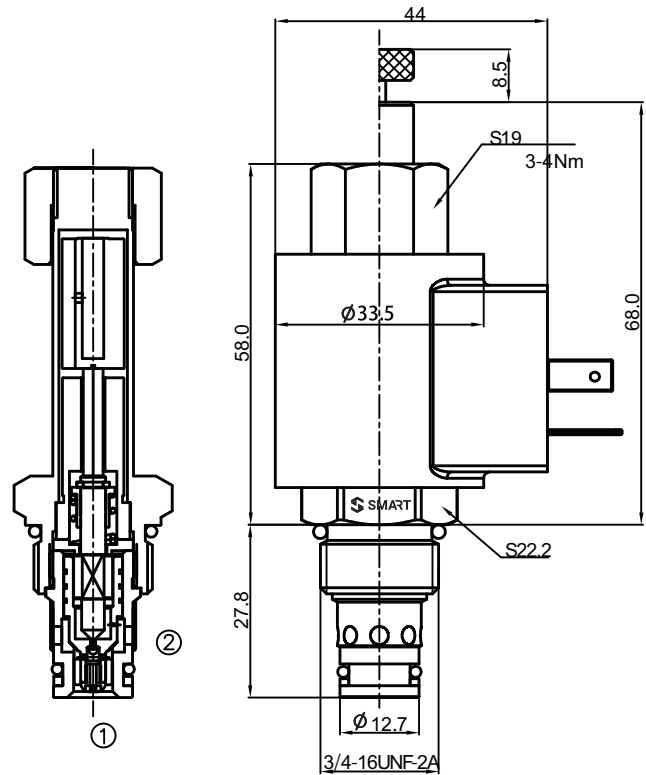
## ZSV08-23

### SYMBOL



### SPECIFICATIONS

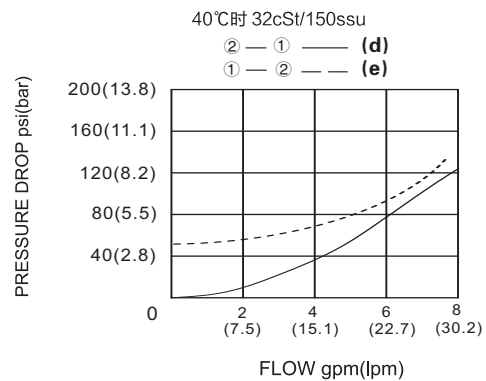
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



### OPERATION

When de-energized, allowing flow from ②to① and ①to②.;  
 When energized, the valve acts as a check valve, allowing flow from ①to②. while blocking flow from ②to①.  
 To override, twist counter-clockwise three turns, the valve will remain close; twist clockwise to the end, the valve will remain open.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV08 - 23 \* - \* - \*

Cavity \_\_\_\_\_  
 Function \_\_\_\_\_  
 Blank = None  
 M= Manual Override

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

电压 Voltlage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

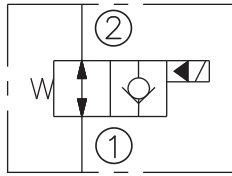
# Two Way Two Position(Normally Open)



A

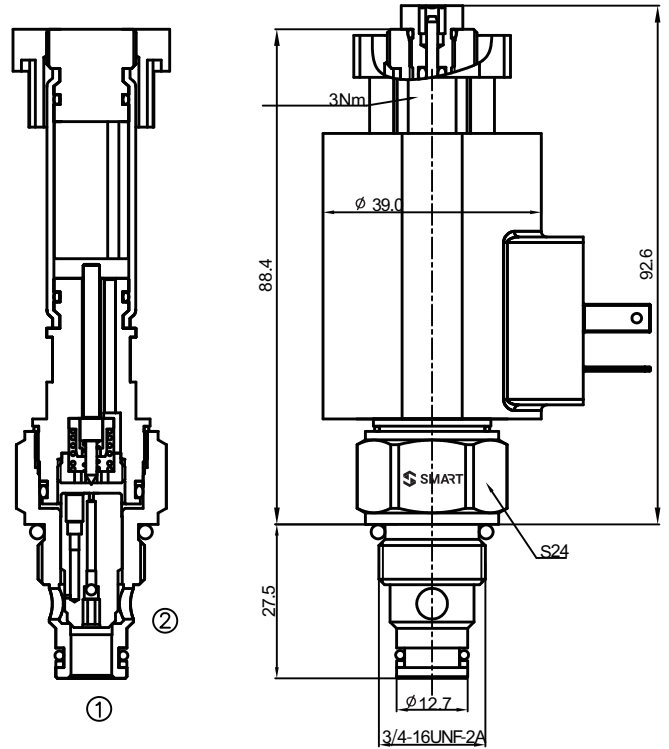
## ZSV6-08-2NORP

### SYMBOL



### SPECIFICATIONS

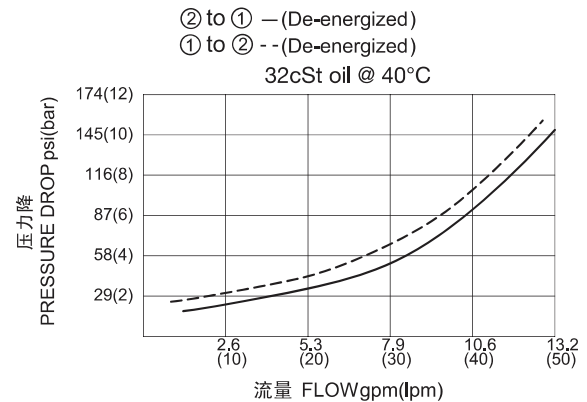
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	39-51Nm



### OPERATION

When de-energized, allowing flow from ② to ① and ① to ②.;  
 When energized, the valve acts as a check valve, allowing flow from ① to ②. while blocking flow from ② to ①.  
 To override, push button in to activate.  
 To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV6-08 -2NORP \* - \* - \*

Cavity \_\_\_\_\_  
 Function \_\_\_\_\_  
 Blank = None  
 M= Manual Override

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

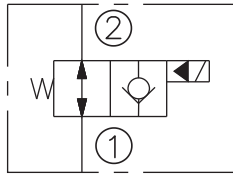
Voltage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

# Two Way Two Position(Normally Open)



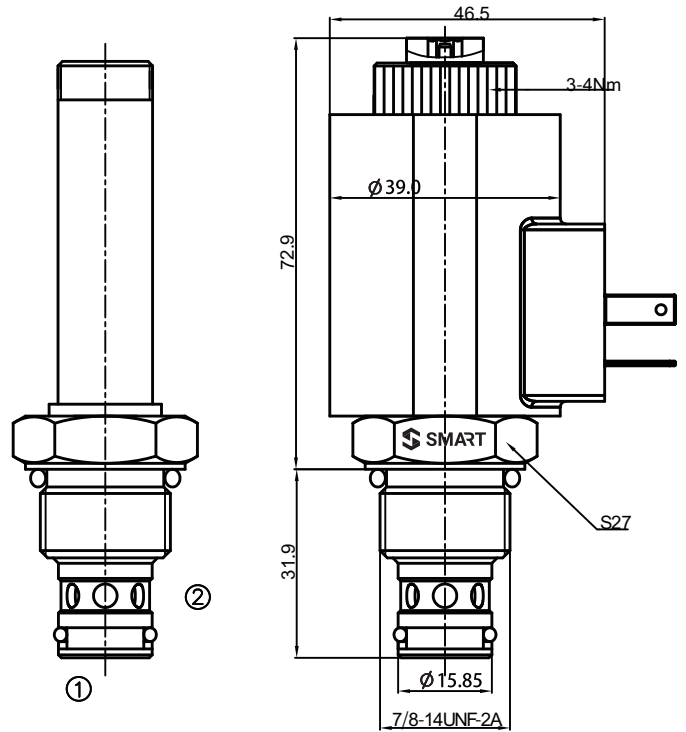
## ZSV2-10-23

### SYMBOL



### SPECIFICATIONS

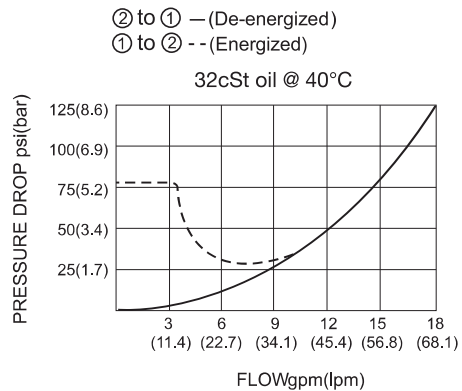
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



### OPERATION

When de-energized, allowing flow from ② to ① and ① to ②.;  
 When energized, the valve acts as a check valve, allowing flow from ① to ②. while blocking flow from ② to ①.  
 To override, push button in to activate.  
 To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV2-10 - 23 \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank = None  
 M= Manual Override

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

Voltage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

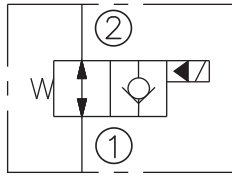
# Two Way Two Position(Normally Open)



A

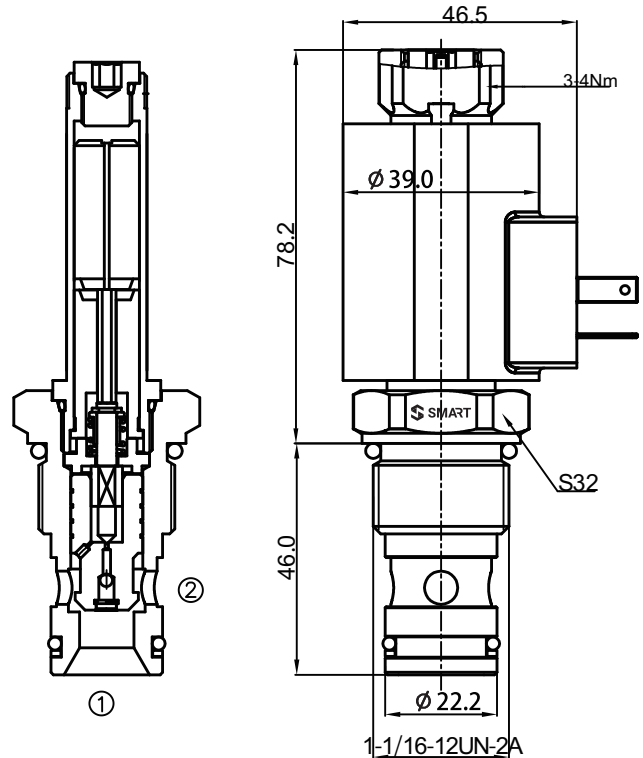
## ZSV12-23

### SYMBOL



### SPECIFICATIONS

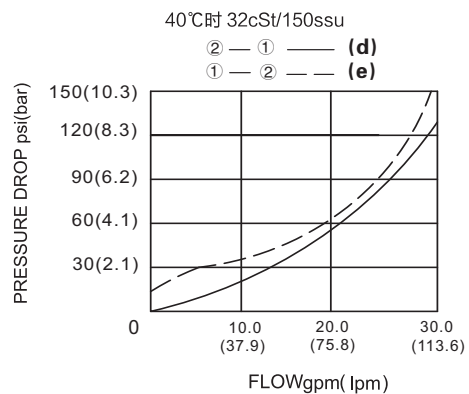
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	12-2 See page G-3
Installation Torque:	45-50Nm



### OPERATION

When de-energized, allowing flow from ② to ① and ① to ②.;  
 When energized, the valve acts as a check valve, allowing flow from ① to ②. while blocking flow from ② to ①.  
 To override, push button in to activate.  
 To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV12 - 23 \* - \* - \*

Cavity \_\_\_\_\_  
 Function \_\_\_\_\_  
 Blank = None  
 M=Manual Override

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

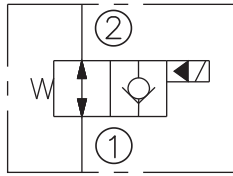
Voltage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

# Two Way Two Position(Normally Open)



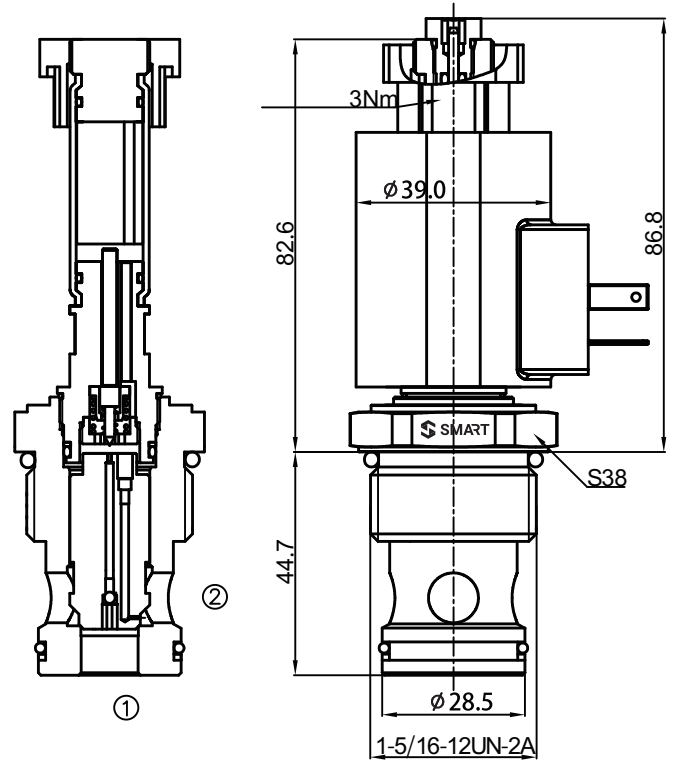
## ZSV6-16-2NORP

### SYMBOL



### SPECIFICATIONS

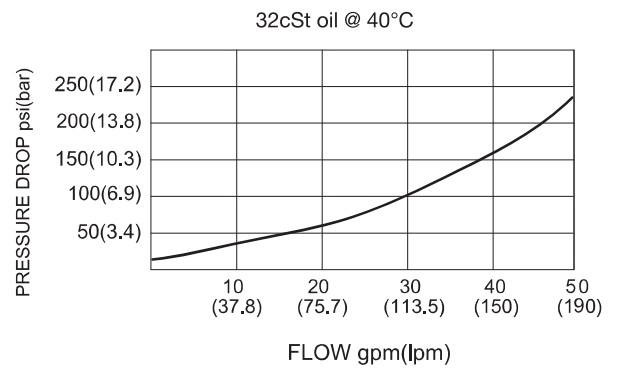
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	16-2 See page G-3
Installation Torque:	80-100Nm



### OPERATION

When de-energized, allowing flow from ② to ① and ① to ②.;  
 When energized, the valve acts as a check valve, allowing flow from ① to ②. while blocking flow from ② to ①.  
 To override, push button in to activate.  
 To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV6-16-2NORP \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank =None  
M=Manual Override

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

Voltage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

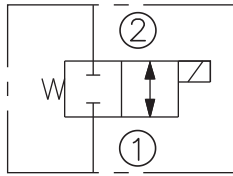
# Two Way Two Position(Spool-type)



A

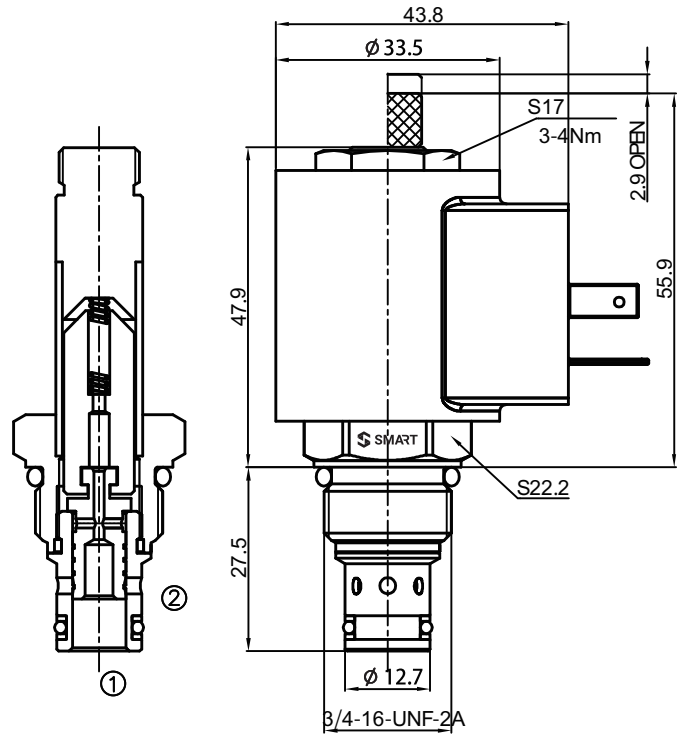
## ZSV08-24

### SYMBOL



### SPECIFICATIONS

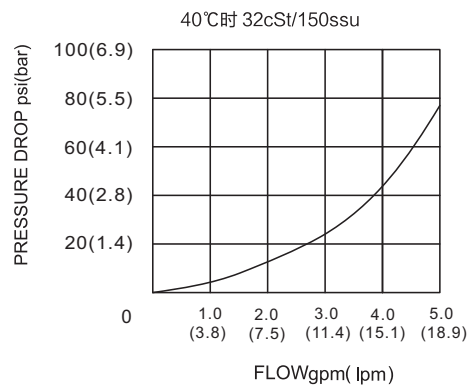
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<80ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



### OPERATION

When de-energized, the valve blocks flow in both directionals;  
 When energized, allowing flow from ① to ② and ② to ①.  
 To override, twist counter-clockwise 3 turns, the valve will remain open; twist clockwise to the end, the valve will remain close.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZSV08 - 24 \* - \* - \*

Cavity \_\_\_\_\_  
 Function \_\_\_\_\_  
 Blank =None  
 M= Manual Override

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

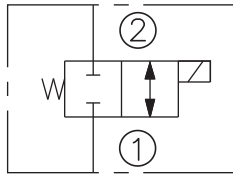
Voltage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

# Two Way Two Position(Spool-type)



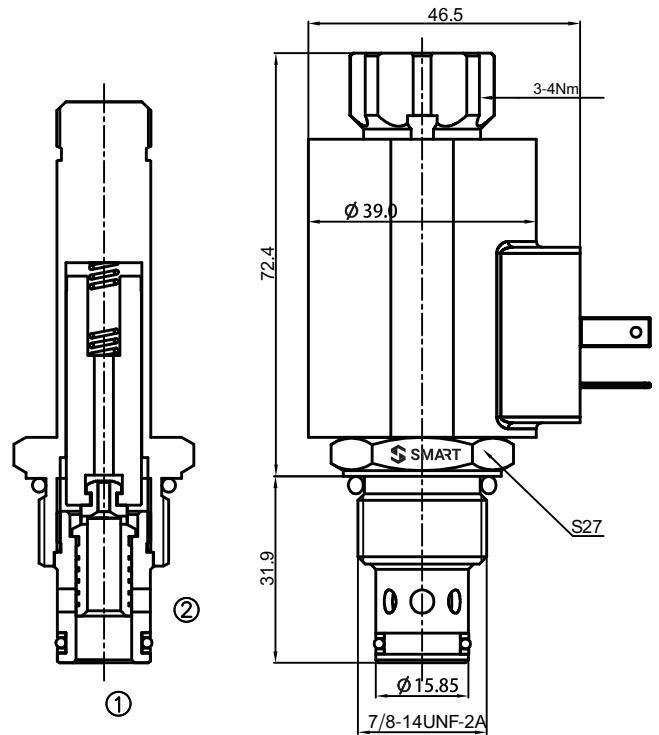
## ZSV10-24

### SYMBOL



### SPECIFICATIONS

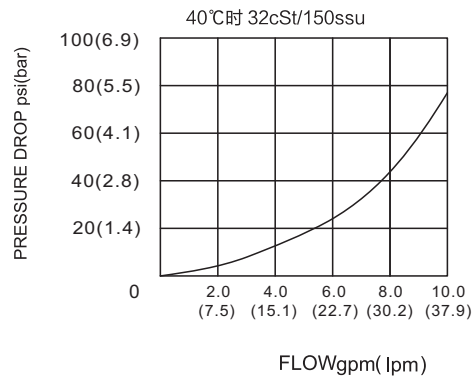
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<80ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



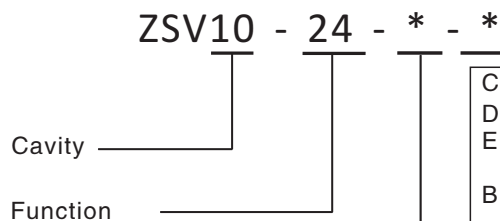
### OPERATION

When de-energized, the valve blocks flow in both directionals;  
When energized, allowing flow from ① to ② and ② to ①.

### PRESSURE DROP VS.FLOW



### TO ORDER



Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

#### Voltage

12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

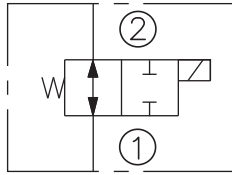
# Two Way Two Position(Spool-type)



A

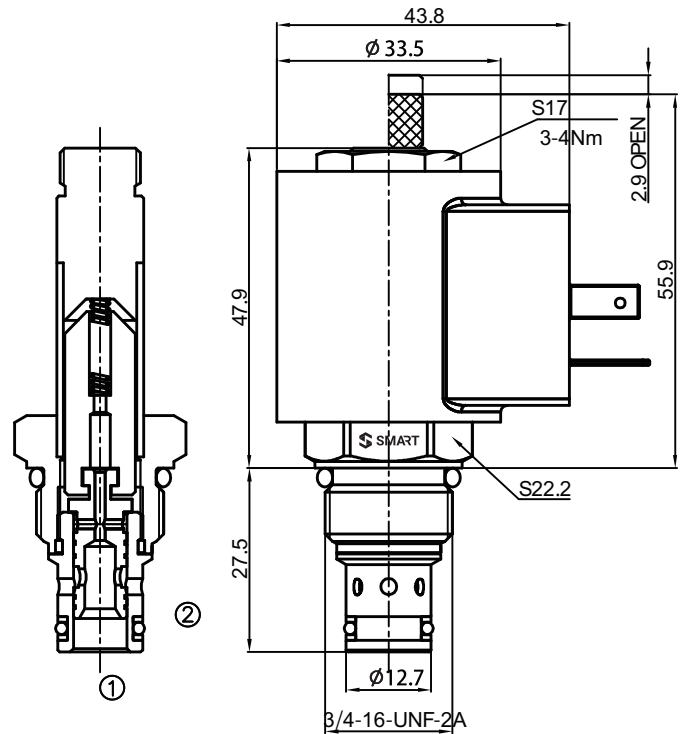
## ZSV08-25

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<80ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm

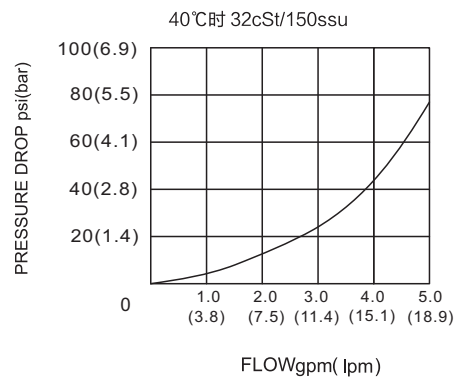


### OPERATION

When de-energized, allowing flow from ① to ② and ② to ①;  
When energized, the valve blocks flow in both directionals.

To override, twist counter-clockwise 3 turns ,the valve will remain open ;twist clockwise to the end, the valve will remain close.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV08 - 25 \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank = None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

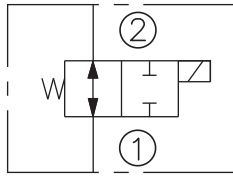
Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

# Two Way Two Position(Spool-type)



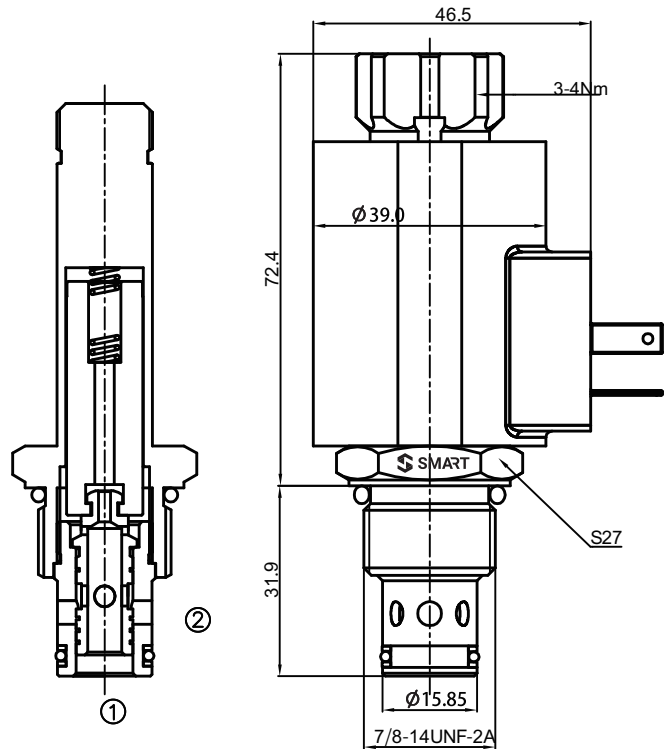
## ZSV10-25

### SYMBOL



### SPECIFICATIONS

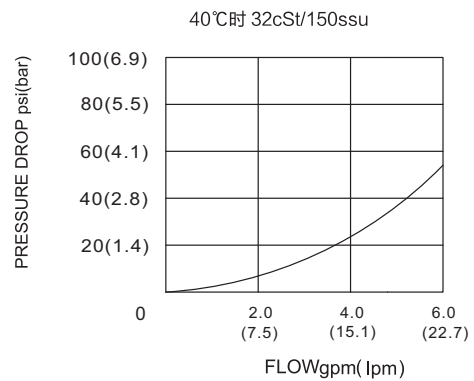
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<80ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



### OPERATION

When de-energized, allowing flow from ②to① and①to②;  
When energized, the valve blocks flow in both directionals.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV10 - 25 - \* - \*

Cavity		Coil Connection DL = Double Leads ER = Deutsch Connector (Water-proof Coil) Blank = Hirschmann	Voltlage 12=12 VDC 24=24 VDC 48=48 VDC 110=110 VAC 220=220 VAC A12=12 VAC A24=24 VAC
Function			

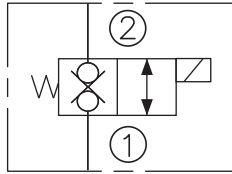
# Two Way Two Position(Bidirectional Normally Closed)



A

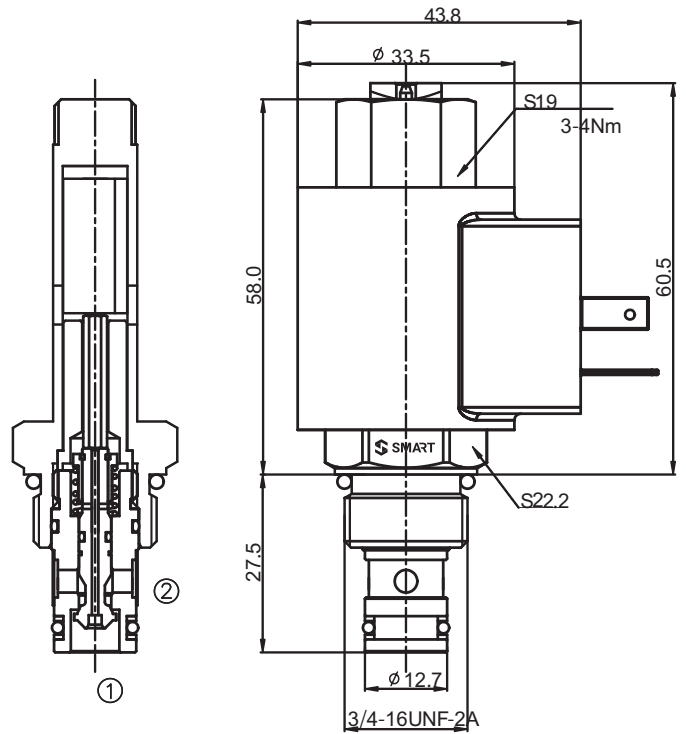
## ZSV08-C28

### SYMBOL



### SPECIFICATIONS

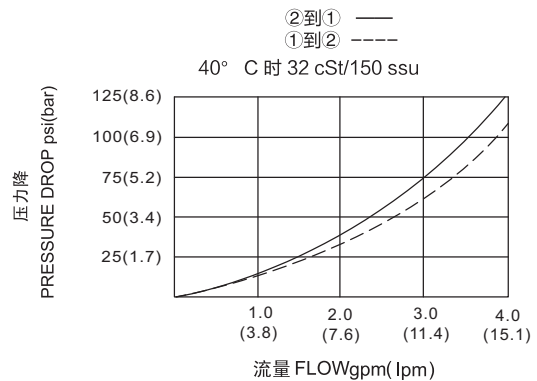
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	5 drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



### OPERATION

When de-energized, the valve blocks flow in both directionals;  
 When energized, allowing flow from ② to ① and ① to ②  
 To override, push button in to activate.  
 To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV08 - C28 \* - \* - \*

Cavity \_\_\_\_\_  
 Function \_\_\_\_\_  
 Blank = None  
 M= Manual Override

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

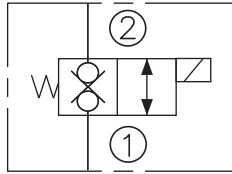
Voltage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

# Two Way Two Position(Bidirectional Normally Closed)



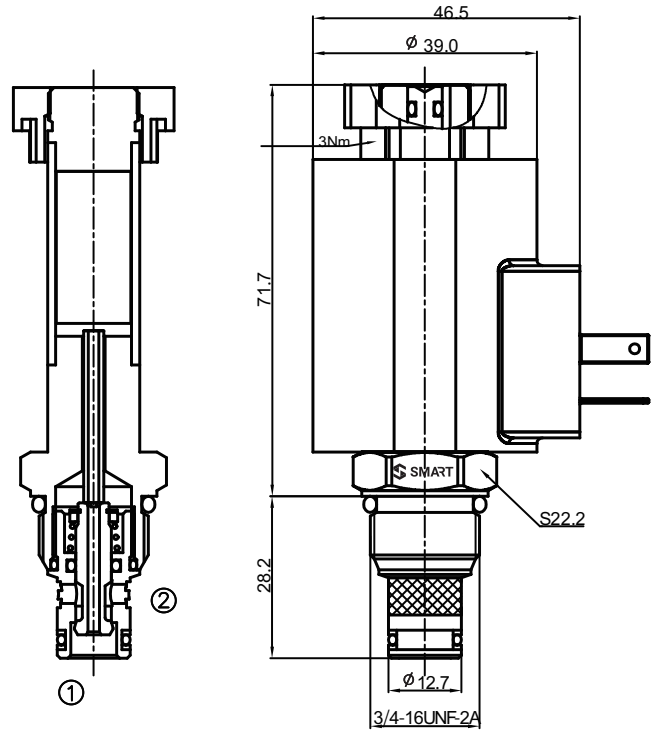
## ZSV08-2NCSP-L

### SYMBOL



### SPECIFICATIONS

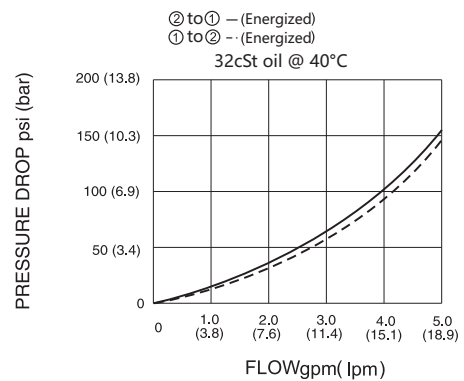
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	1 drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



### OPERATION

When de-energized, the valve blocks flow in both directionals;  
 When energized, allowing flow from ② to ① and ① to ②  
 To override, push button in to activate.  
 To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV08 - 2NCSP-L \* - \* - \*

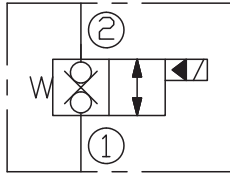
Cavity \_\_\_\_\_  
 Function \_\_\_\_\_  
 Blank = None  
 M=Manual Override

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

Voltage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

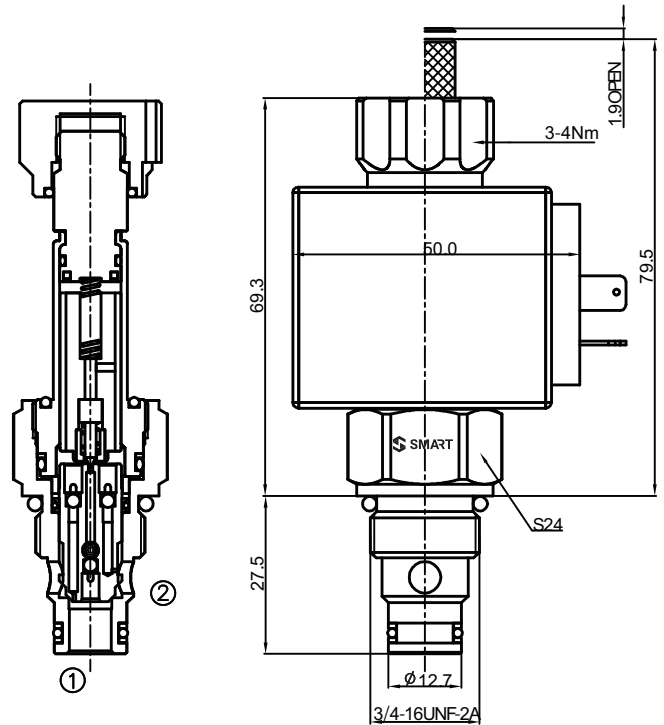
# ZSV6-08-2NCSP

## SYMBOL



## SPECIFICATIONS

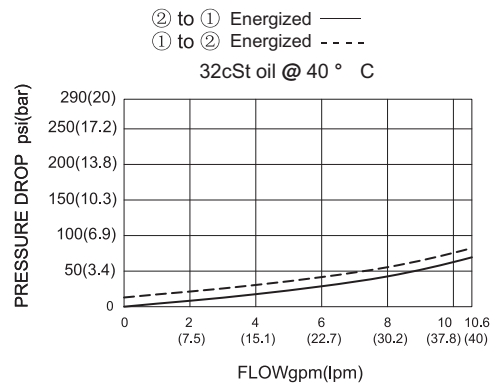
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	5 drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	39-51Nm



## OPERATION

When de-energized, the valve blocks flow in both directionals;  
 When energized, allowing flow from ② to ① and ① to ②.  
 To override, push button in, twist counter-clockwise 180° and release, the valve will remain open; push button in, twist clockwise 180° and release, the valve will remain close.

## PRESSURE DROP VS.FLOW



## TO ORDER

ZSV6-08 - 2NCSP \* - \* - \*

Cavity \_\_\_\_\_  
 Function \_\_\_\_\_  
 Blank =None  
 M= Manual Override

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

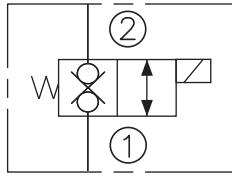
Voltage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

# Two Way Two Position(Bidirectional Normally Closed)



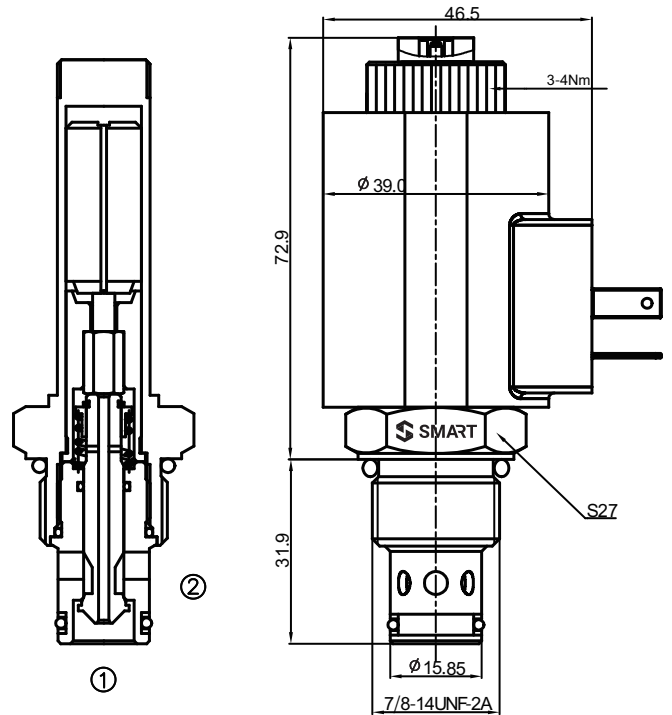
## ZSV10-2NCSP-L

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	5 drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm

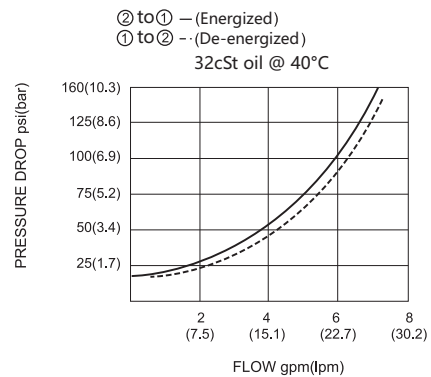


### OPERATION

When de-energized, the valve blocks flow in both directionals;  
When energized, allowing flow from ② to ① and ① to ②.

To override, push button in to activate.  
To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV10 - 2NCSP-L \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank =None  
M=Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

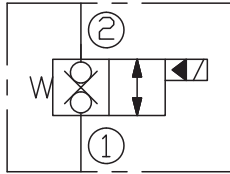
# Two Way Two Position(Bidirectional Normally Closed)



A

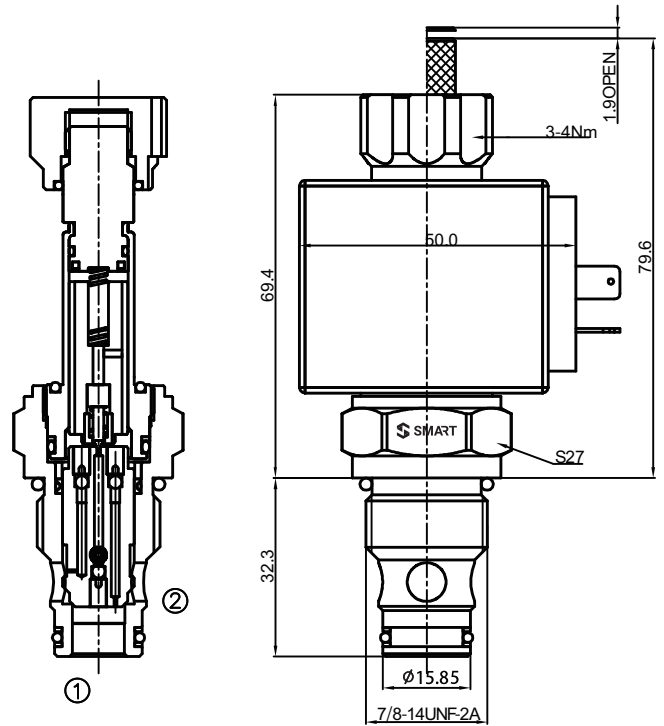
## ZSV6-10-2NCSP

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	5 drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	44-56Nm

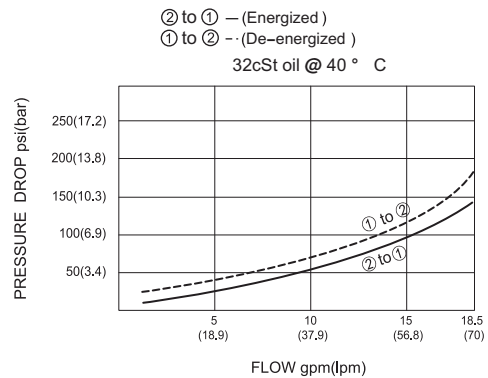


### OPERATION

When de-energized, the valve blocks flow in both directionals;  
When energized, allowing flow from ② to ① and ① to ②.

To override, push button in, twist counter-clockwise 180° and release, the valve will remain open; push button in, twist clockwise 180° and release, the valve will remain close.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV6-10-2NCSP \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

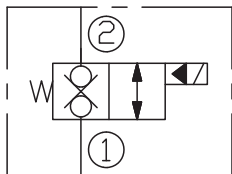
Blank = None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

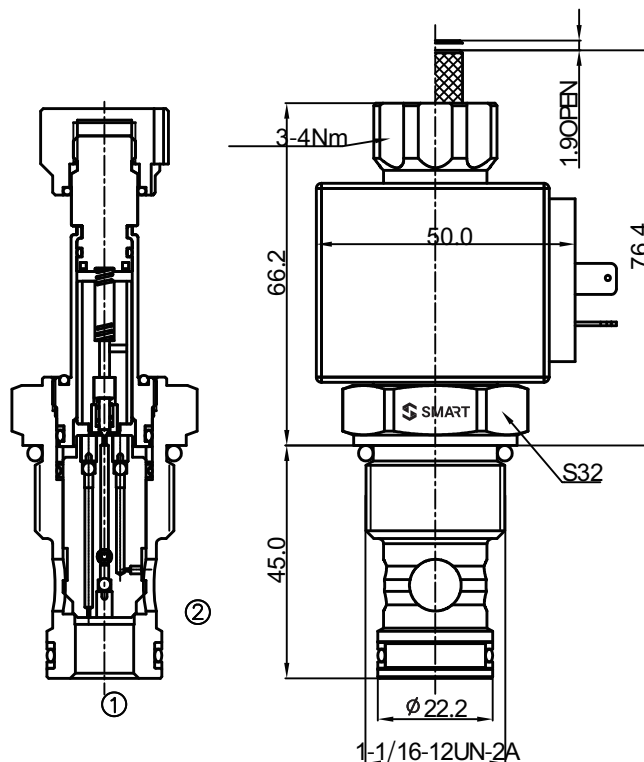
# ZSV6-12-2NCSP

## SYMBOL



## SPECIFICATIONS

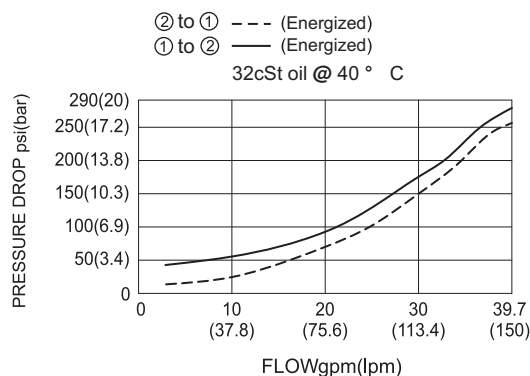
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	5drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	12-2 See page G-3
Installation Torque:	54-66Nm



## OPERATION

When de-energized, the valve blocks flow in both directionals;  
When energized, allowing flow from ② to ① and ① to ②.  
To override, push button in ,twist counter-clockwise 180° and release, the valve will remain open; push button in, twist clockwise 180° and release, the valve will remain close.

## PRESSURE DROP VS.FLOW



## TO ORDER

ZSV6-12-2NCSP \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

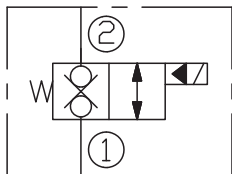
Blank = None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

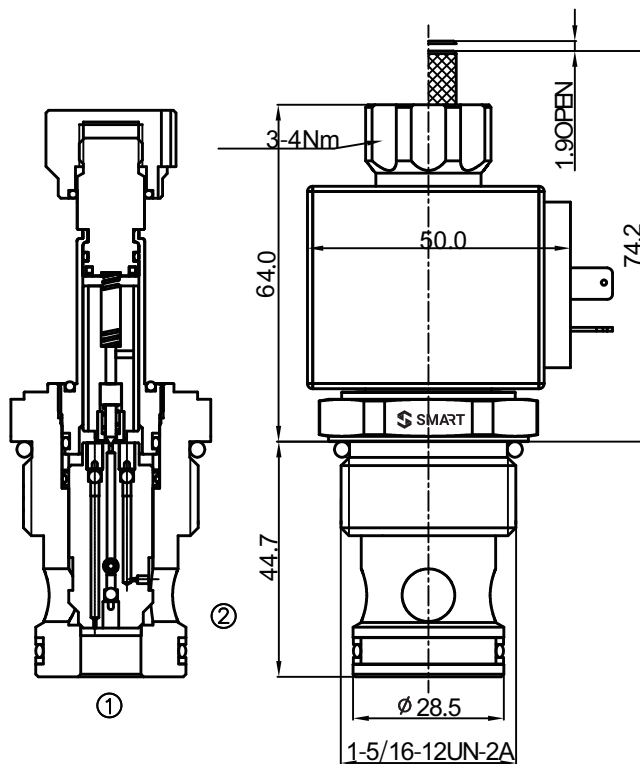
# ZSV6-16-2NCSP

## SYMBOL



## SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	5drops/min.max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	16-2 See page G-3
Installation Torque:	80-100Nm

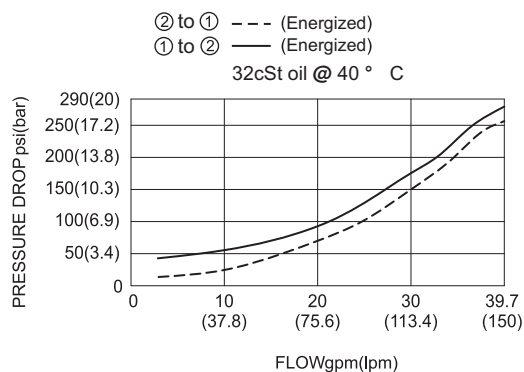


## OPERATION

When de-energized, the valve blocks flow in both directionals;  
When energized, allowing flow from ② to ① and ① to ②.

To override, push button in ,twist counter-clockwise 180° and release, the valve will remain open; push button in, twist clockwise 180° and release, the valve will remain close.

## PRESSURE DROP VS.FLOW



## TO ORDER

ZSV6-16-2NCSP \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank = None  
M=Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

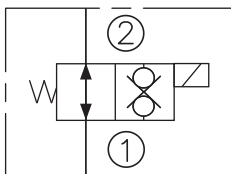
Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

# Two Way Two Position(Bidirectional Normally Open)



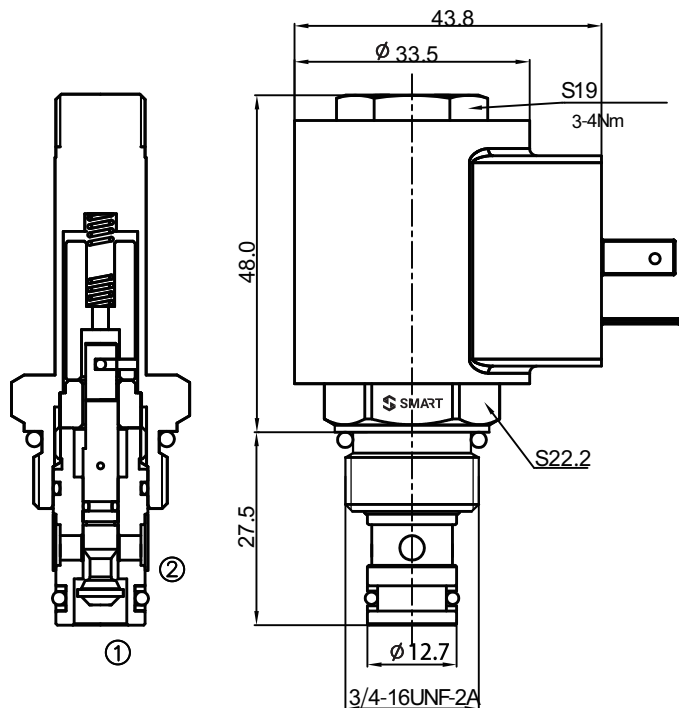
## ZSV08-29

### SYMBOL



### SPECIFICATIONS

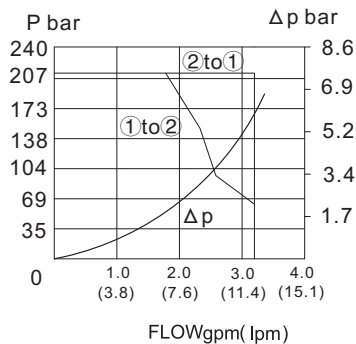
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	5drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



### OPERATION

When de-energized, allowing flow from ②to① and ①to②;  
When energized, the valve blocks flow in both directionals.

### PRESSURE DROP VS.FLOW



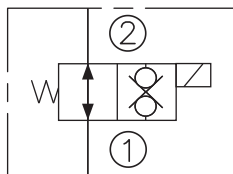
### TO ORDER

ZSV08 - 29 - \* - \*

Cavity		Coil Connection DL = Double Leads ER = Deutsch Connector (Water-proof Coil) Blank = Hirschmann	Voltage 12=12 VDC 24=24 VDC 48=48 VDC 110=110 VAC 220=220 VAC A12=12 VAC A24=24 VAC
Function			

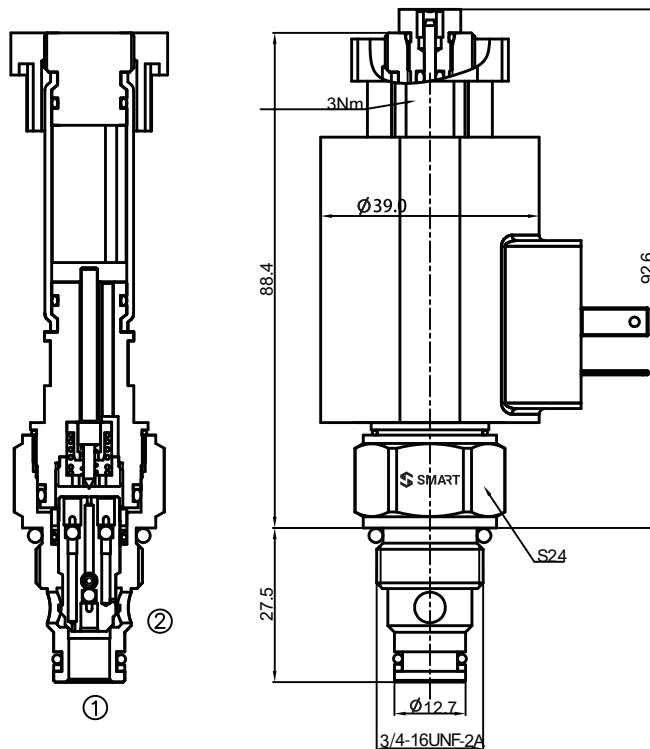
# ZSV6-08-2NOSP

## SYMBOL



## SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	5drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	39-51Nm

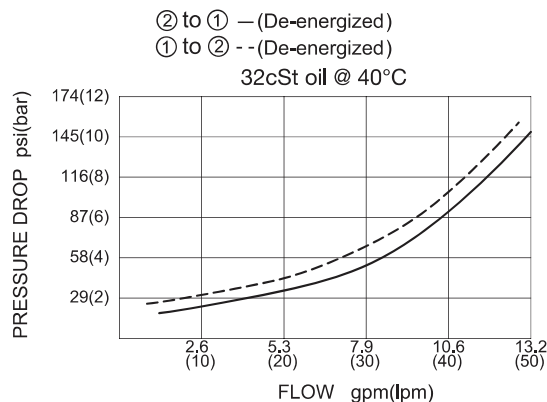


## OPERATION

When de-energized, allowing flow from ② to ① and ① to ②;  
When energized, the valve blocks flow in both directionals.

To override, push button in to activate.  
To return to normal valve function, release button.

## PRESSURE DROP VS.FLOW



## TO ORDER

ZSV6-08 -2NOSP \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank = None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage

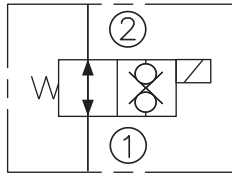
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

# Two Way Two Position(Bidirectional Normally Open)



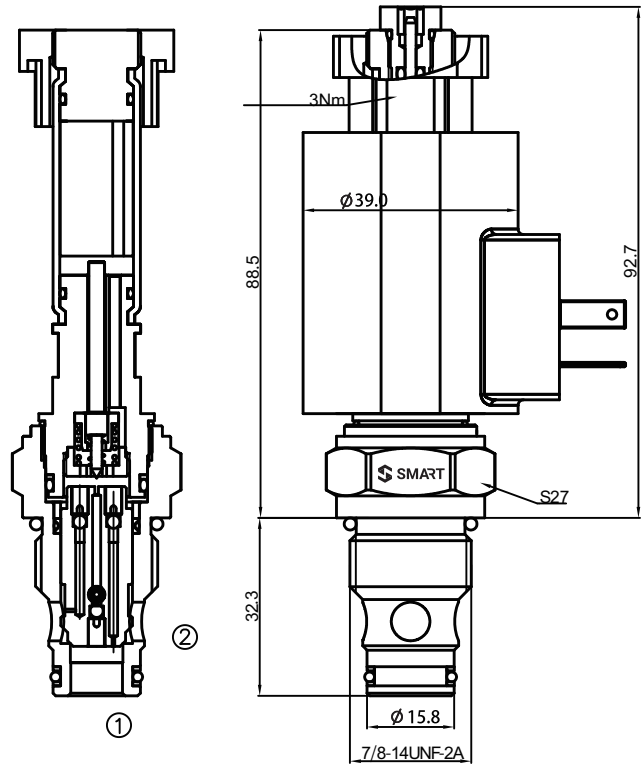
## ZSV6-10-2NOSP

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	5drops/min.max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	44-59Nm

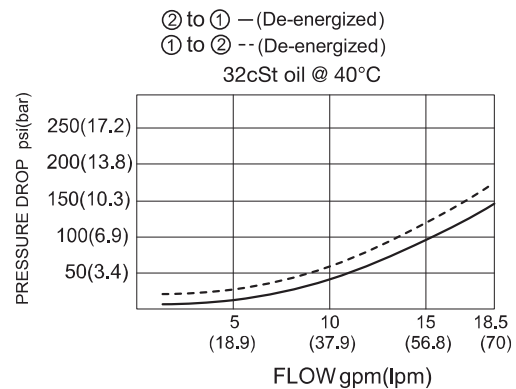


### OPERATION

When de-energized, allowing flow from ② to ① and ① to ②;  
When energized, the valve blocks flow in both directionals.

To override, push button in to activate.  
To return to normal valve function, release button.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZSV6-10-2NOSP \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank = None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

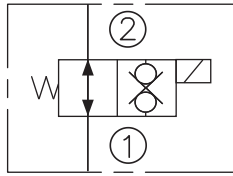
# Two Way Two Position(Bidirectional Normally Open)



A

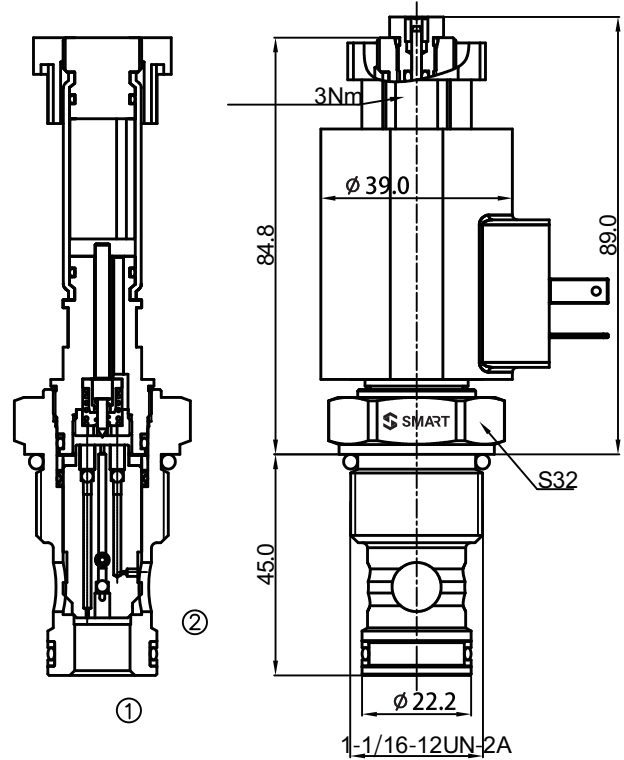
## ZSV6-12-2NOSP

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	5drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	12-2 See page G-3
Installation Torque:	54-66Nm

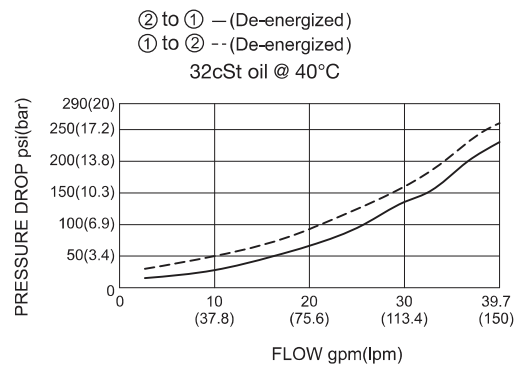


### OPERATION

When de-energized, allowing flow from ② to ① and ① to ②;  
When energized, the valve blocks flow in both directionals.

To override, push button in to activate.  
To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV6-12-2NOSP \* - \* - \*

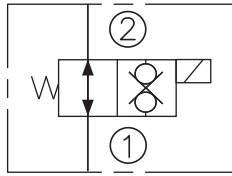
Cavity	_____	Coil Connection DL = Double Leads ER = Deutsch Connector (Water-proof Coil) Blank = Hirschmann	Voltage 12=12 VDC 24=24 VDC 48=48 VDC 110=110 VAC 220=220 VAC A12=12 VAC A24=24 VAC
Function	_____		
Blank = None M=Manual Override	_____		

# Two Way Two Position(Bidirectional Normally Open)



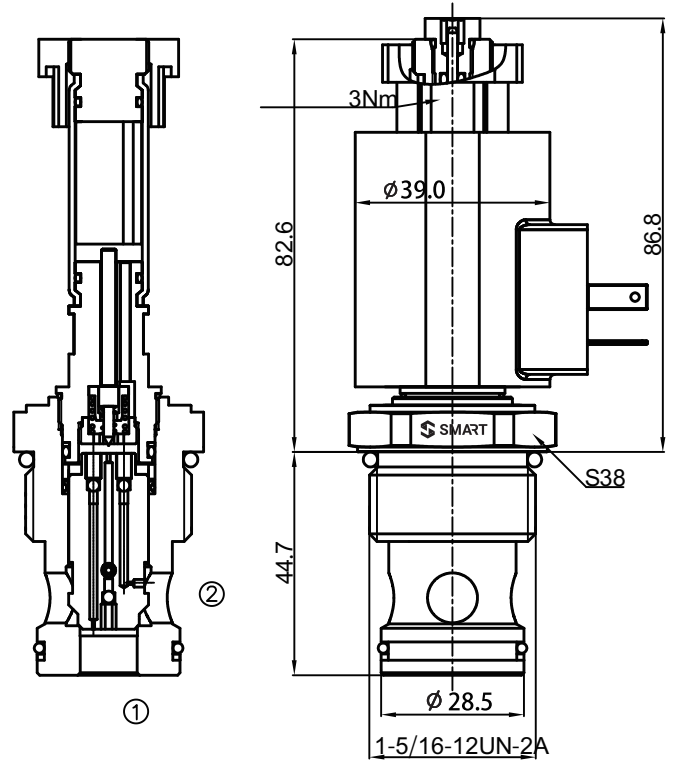
## ZSV6-16-2NOSP

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	5drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	16-2 See page G-3
Installation Torque:	80-100Nm

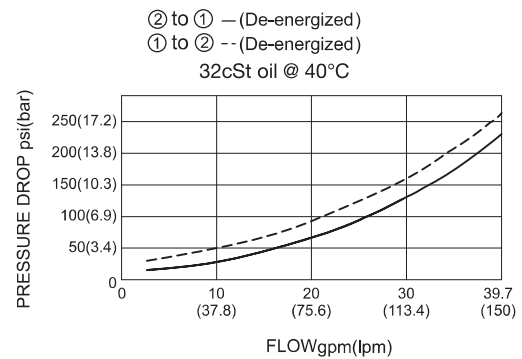


### OPERATION

When de-energized, allowing flow from ② to ① and ① to ②;  
When energized, the valve blocks flow in both directionals.

To override, push button in to activate.  
To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV6-16-2NOSP \* - \* - \*

Cavity		Coil Connection DL = Double Leads ER = Deutsch Connector (Water-proof Coil) Blank = Hirschmann	Voltage 12=12 VDC 24=24 VDC 48=48 VDC 110=110 VAC 220=220 VAC A12=12 VAC A24=24 VAC
Function			
Blank = None M=Manual Override			

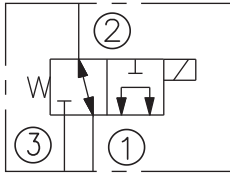
# Three Way Two Position(Spool-type)



A

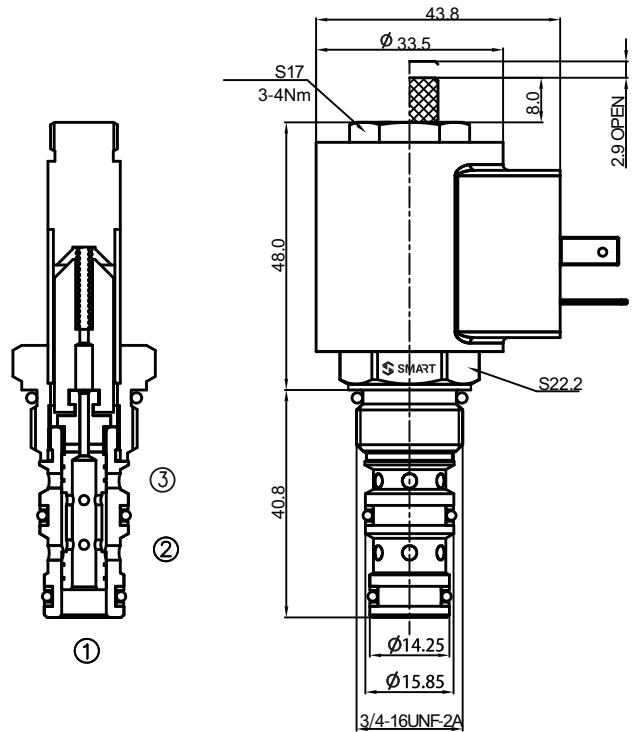
## ZSV08-31

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<80ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	24.5- 27.1Nm

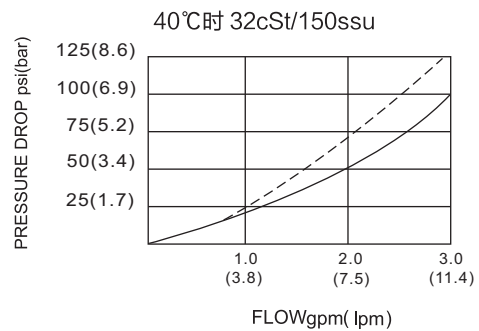


### OPERATION

When de-energized, allowing flow from ① to ② while blocking flow at ③;  
When energized, allowing flow from ① to ③ while blocking flow at ②.

To override, twist counter-clockwise 3 turns, allowing flow from ① to ③ while blocking flow at ②.; twist clockwise to the end, allowing flow from ① to ② while blocking flow at ③.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV08 - 31 \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank = None  
M=Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

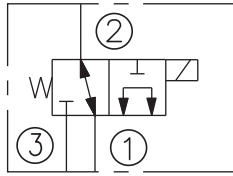
Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

# Three Way Two Position(Spool-type)



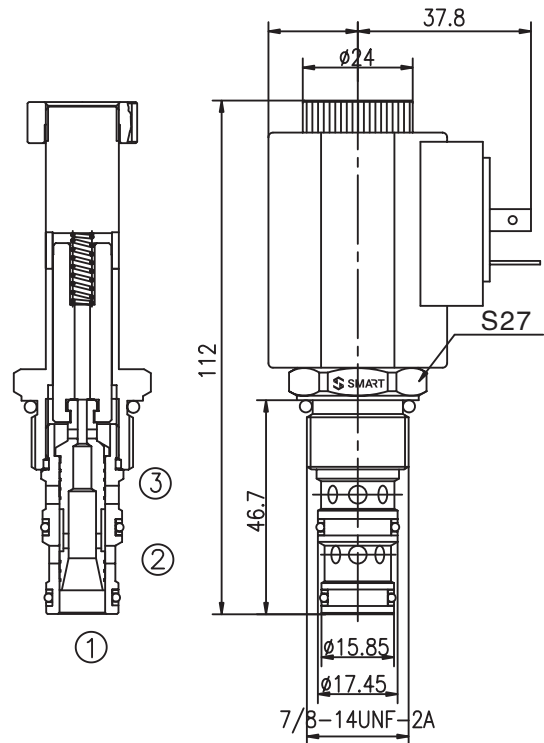
## ZSV10-31

### SYMBOL



### SPECIFICATIONS

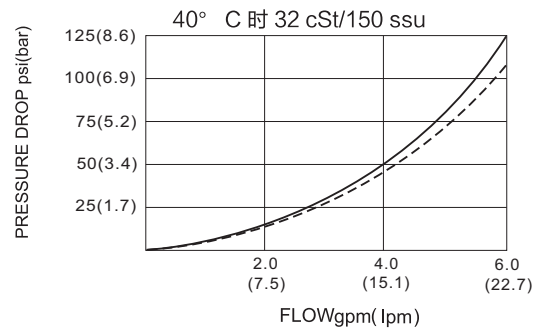
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<80ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	33.9-36.7Nm



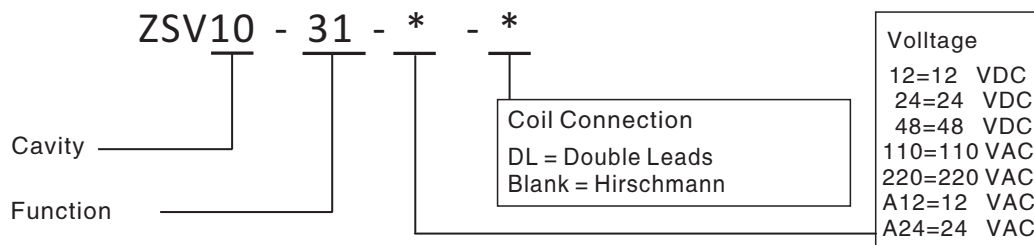
### OPERATION

When de-energized, allowing flow from ① to ② while blocking flow at ③;  
When energized, allowing flow from ① to ③ while blocking flow at ②.

### PRESSURE DROP VS.FLOW



### TO ORDER



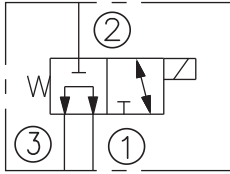
# Three Way Two Position(Spool-type)



A

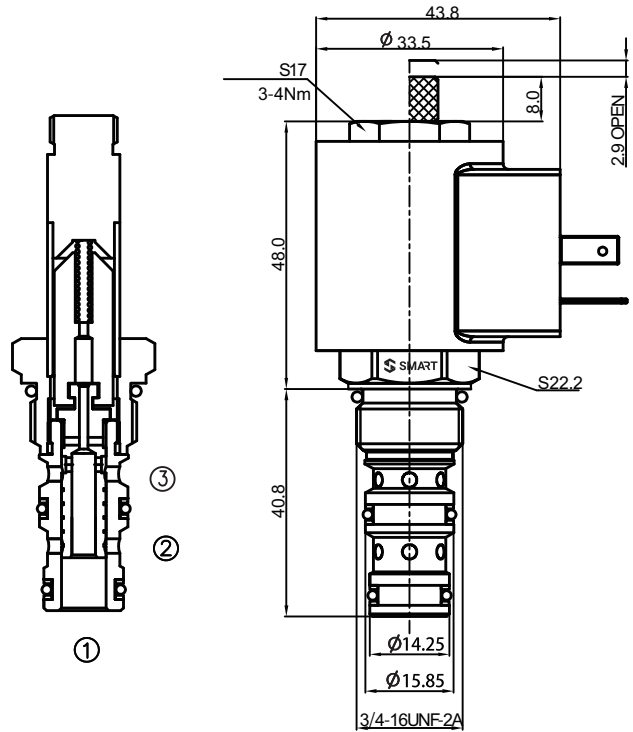
## ZSV08-33

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<80ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	24.5- 27.1Nm

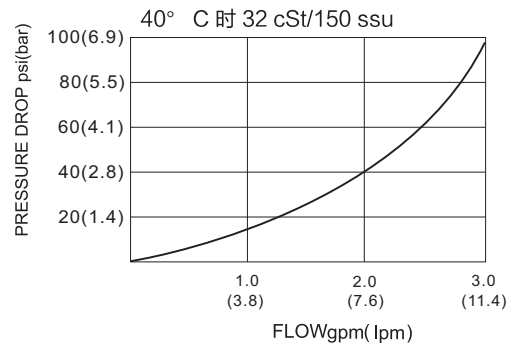


### OPERATION

When de-energized, allowing flow from ① to ③ while blocking flow at ②;  
When energized, allowing flow from ① to ② while blocking flow at ③.

To override, twist counter-clockwise 3 turns , allowing flow from ① to ② · while blocking flow at ③; twist clockwise to the end, allowing flow from ① to ③ · while blocking flow at ②.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV08 - 33 \* - \* - \*

Cavity ————

Function ————

Blank = None  
M=Manual Override

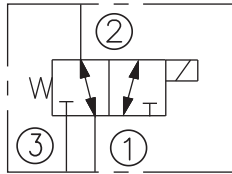
Coil Connection	12=12 VDC
DL = Double Leads	24=24 VDC
ER = Deutsch Connector (Water-proof Coil)	48=48 VDC
Blank = Hirschmann	110=110 VAC
	220=220 VAC
	A12=12 VAC
	A24=24 VAC

# Three Way Two Position(Spool-type)



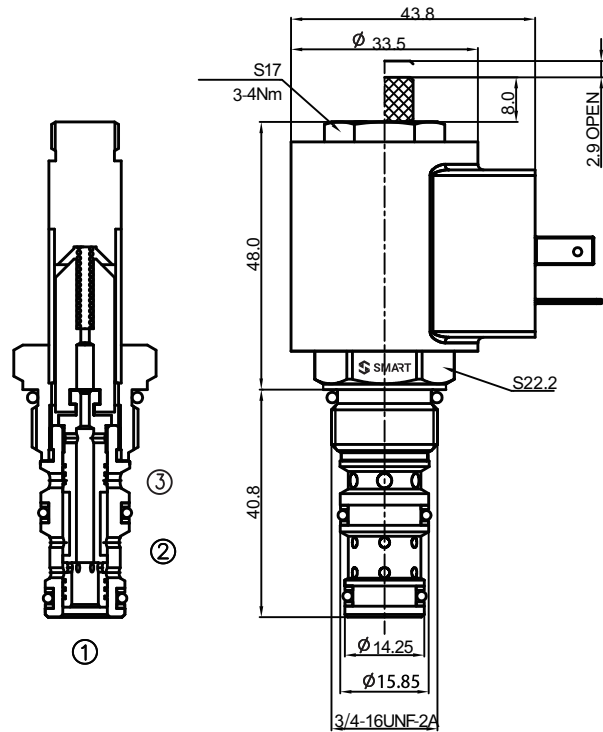
## ZSV08-34

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<80ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	24.5- 27.1Nm

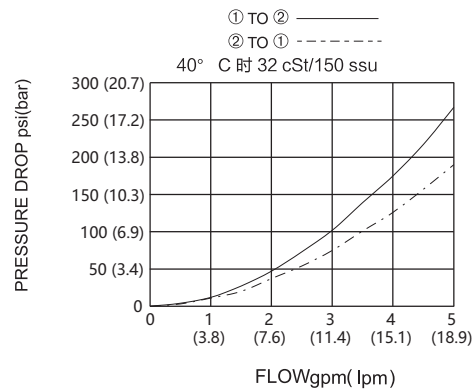


### OPERATION

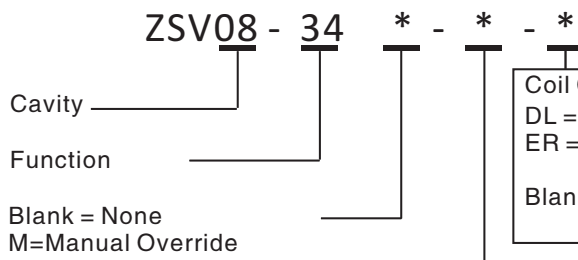
When de-energized, allowing flow from ① to ② while blocking flow at ③;  
When energized, allowing flow from ② to ③ while blocking flow at ① .

To override, twist counter-clockwise 3 turns ,allowing flow from ② to ③ , while blocking flow at ①; twist clockwise to the end, allowing flow from ① to ② , while blocking flow at ③.

### PRESSURE DROP VS.FLOW



### TO ORDER



Voltage	
12=12	VDC
24=24	VDC
48=48	VDC
110=110	VAC
220=220	VAC
A12=12	VAC
A24=24	VAC

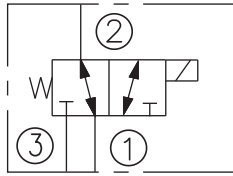
# Three Way Two Position(Spool-type)



A

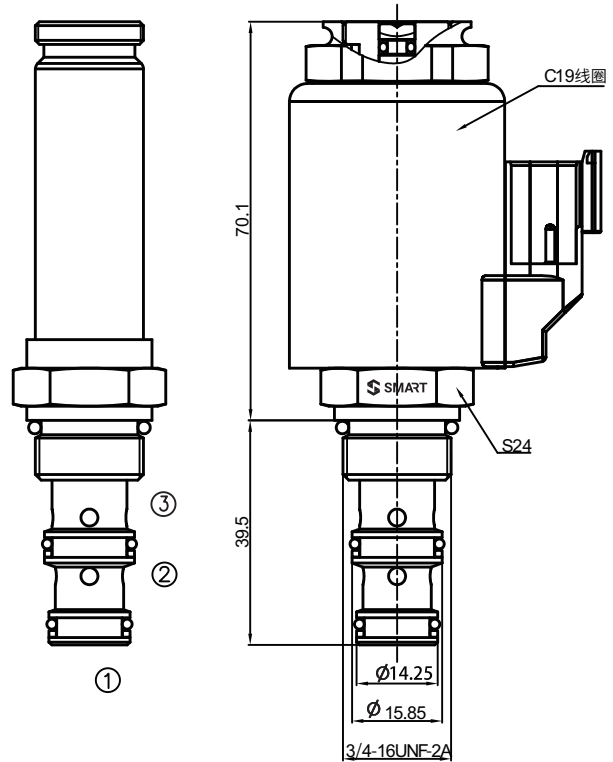
## ZSV3-08-34

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<80ml/min at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	47-54Nm



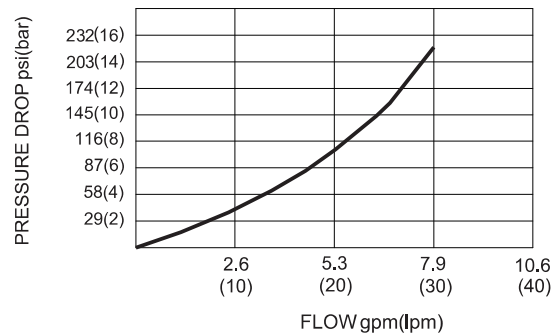
### OPERATION

When de-energized, allowing flow from ① to ② while blocking flow at ③;  
When energized, allowing flow from ② to ③ while blocking flow at ① .

To override, push button allowing flow from ② to ③ while blocking flow at ①.  
To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW

③ to ② - (Energized)  
32cSt oil @ 40°C



### TO ORDER

ZSV3-08 - 34 \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank = None  
M=Manual Override

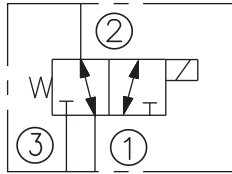
Coil Connection  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

### Three Way Two Position(Spool-type)

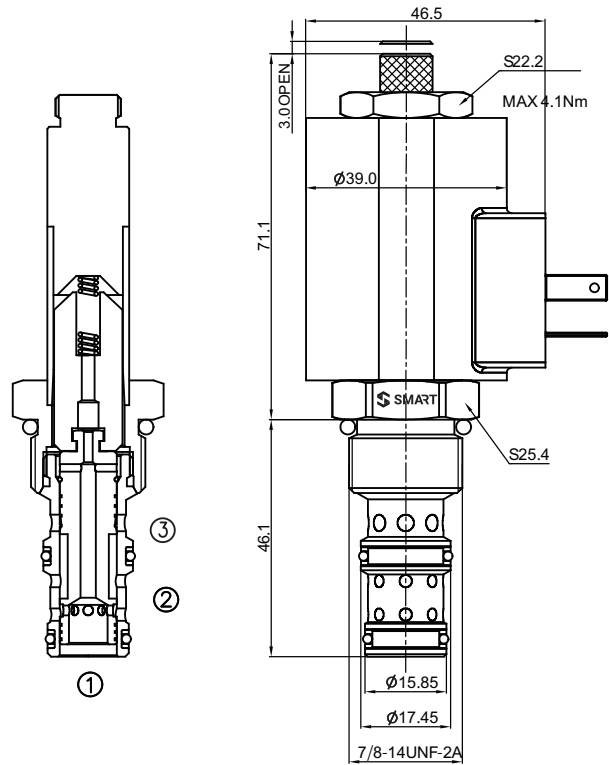
## ZSV10-34

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<80ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	33.9-36.7Nm

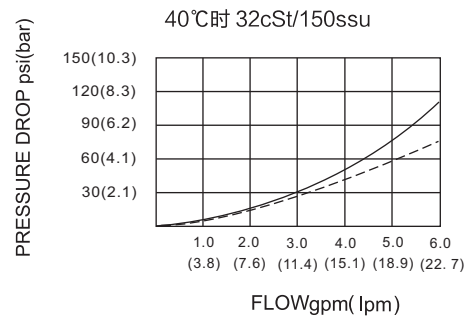


### OPERATION

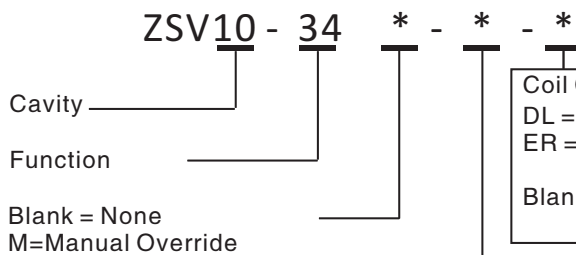
When de-energized, allowing flow from ① to ② while blocking flow at ③;  
When energized, allowing flow from ② to ③ while blocking flow at ① .

To override, twist counter-clockwise 3 turns , allowing flow from ② to ③ , while blocking flow at ①; twist clockwise to the end, allowing flow from ① to ② , while blocking flow at ③ .

### PRESSURE DROP VS.FLOW



### TO ORDER



Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

电压 Voltlage

12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

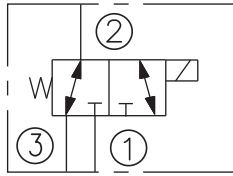
# Three Way Two Position(Spool-type)



A

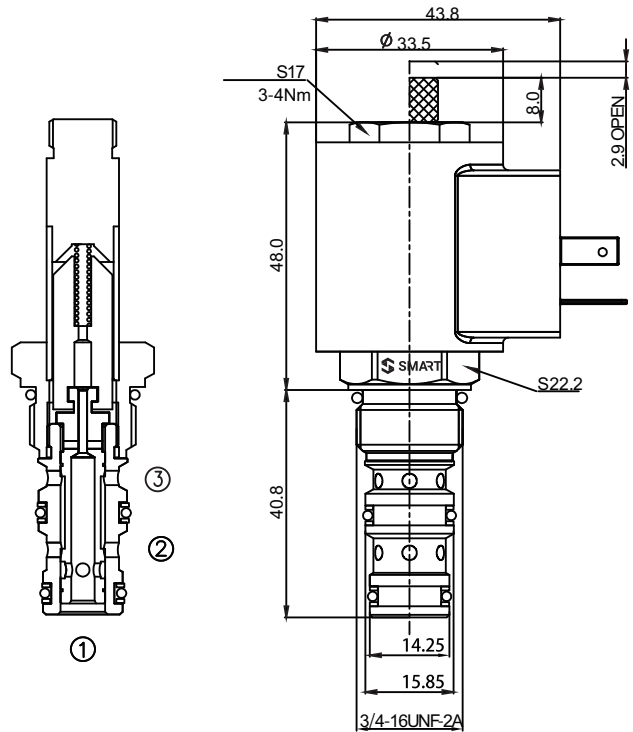
## ZSV08-35

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<80ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	24.5- 27.1Nm

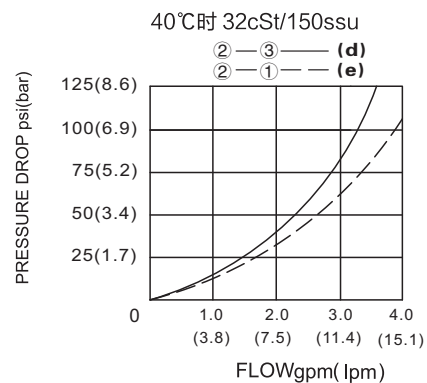


### OPERATION

When de-energized, allowing flow from ② to ③ while blocking flow at ①;  
When energized, allowing flow from ① to ② while blocking flow at ③.

To override, twist counter-clockwise 3 turns, allowing flow from ① to ② while blocking flow at ③; twist clockwise to the end, allowing flow from ② to ③ while blocking flow at ①.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZSV08 - 35 \* - \* - \*

Cavity ————

Function ————

Blank = None  
M=Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage

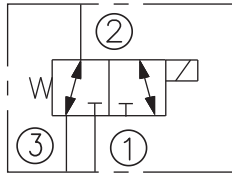
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

# Three Way Two Position(Spool-type)



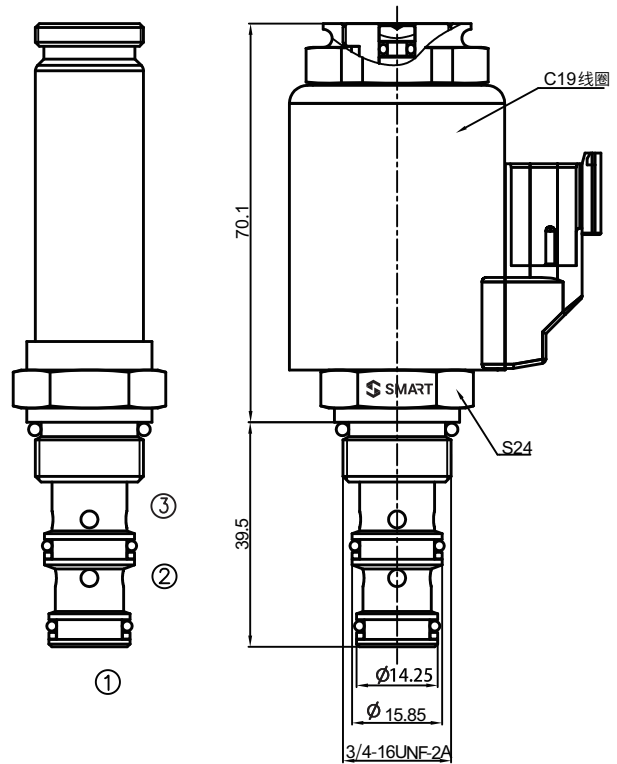
## ZSV3-08-35

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<80ml/min at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	47-54Nm

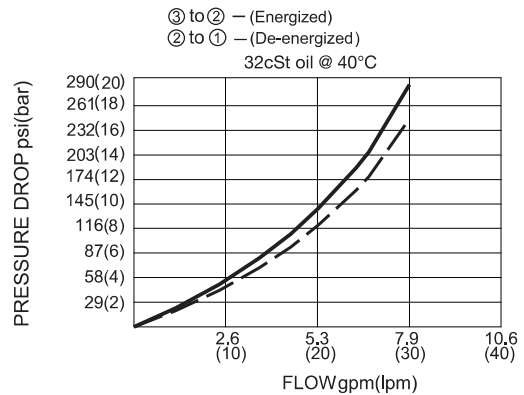


### OPERATION

When de-energized, allowing flow from ② to ③ while blocking flow at ①;  
When energized, allowing flow from ① to ② while blocking flow at ③.

To override, push button allowing flow from ② to ①, while blocking flow at ③.  
To return to normal valve function, release button.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV3-08 - 35 \* - \* - \*

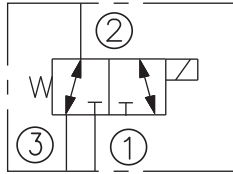
Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank =None  
M=Manual Override

Coil Connection  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage	
12=12	VDC
24=24	VDC
48=48	VDC
110=110	VAC
220=220	VAC
A12=12	VAC
A24=24	VAC

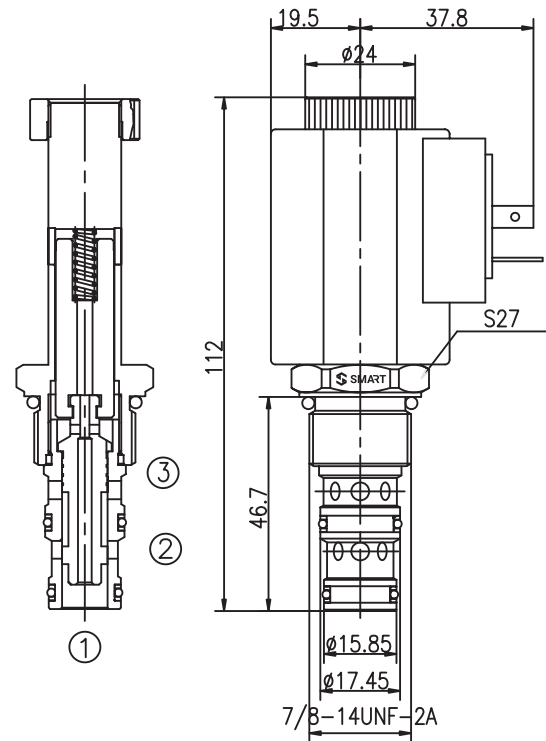
# ZSV10-35

## SYMBOL



## SPECIFICATIONS

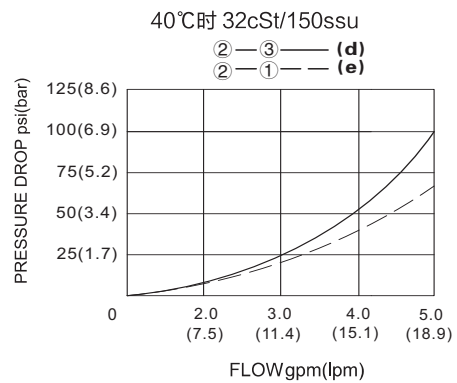
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<80ml/minat 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	33.9-36.7Nm



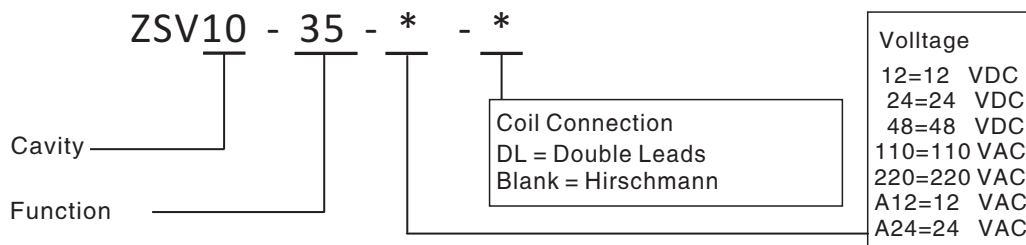
## OPERATION

When de-energized, allowing flow from ② to ③ while blocking flow at ①;  
When energized, allowing flow from ① to ② while blocking flow at ③.

## PRESSURE DROP VS. FLOW



## TO ORDER

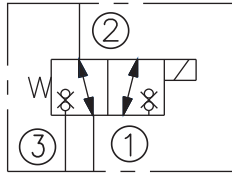


# Three Way Two Position(Poppet-type)



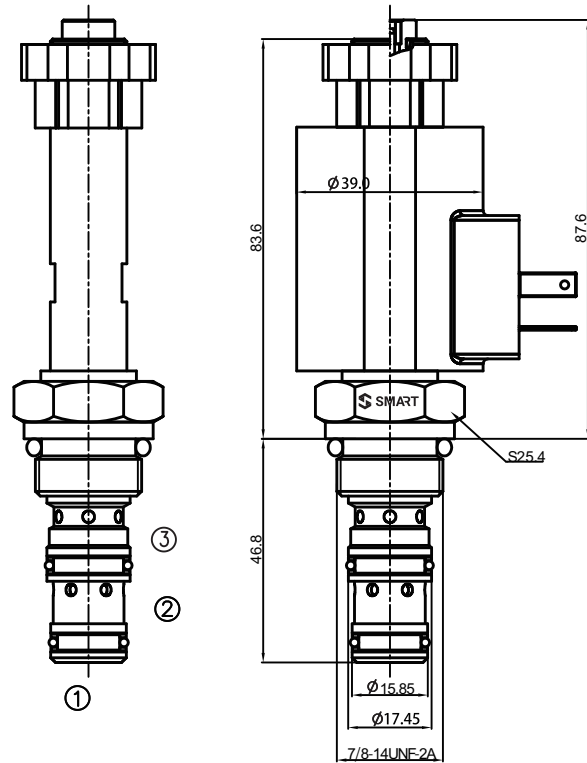
## ZSV10-38

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	1drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	36-41Nm

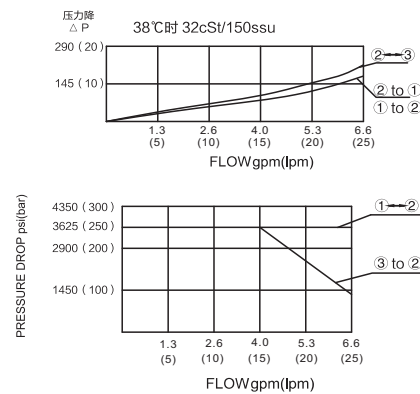


### OPERATION

When de-energized, allowing flow from ① to ②, while blocking flow at ③;  
When energized, allowing flow from ② to ③, while blocking flow at ①.

To override, push button in to activate.  
To return to normal valve function, release button.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZSV10 - 38 \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank =None  
M=Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

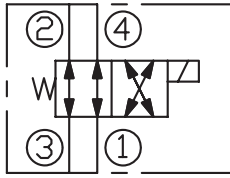
# Four Way Two Position(Spool-type)



A

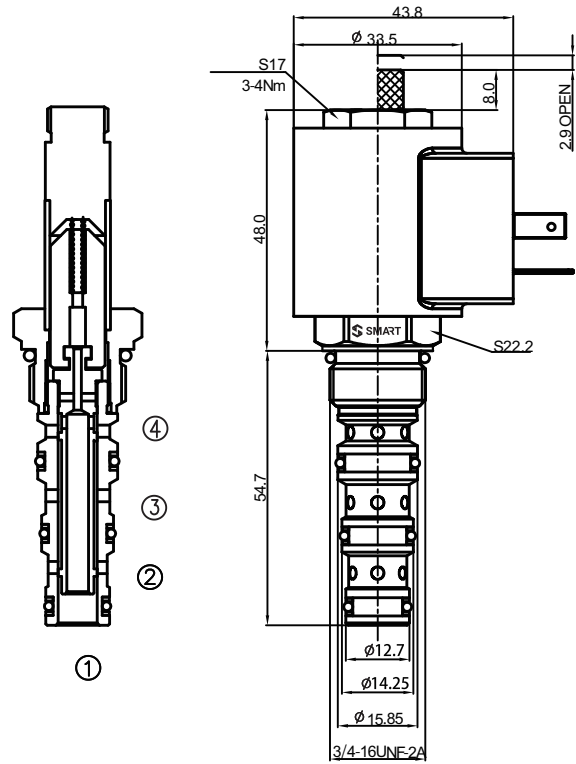
## ZSV08-40

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<82ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-4 See page G-1
Installation Torque:	24.5- 27.1Nm

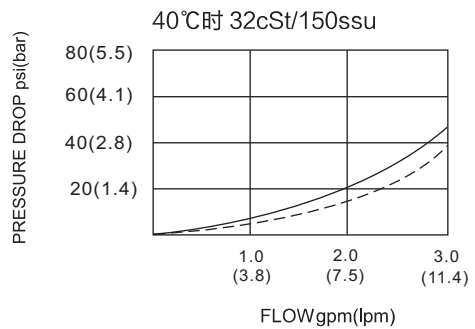


### OPERATION

When de-energized, allowing flow from ③to② and from ④to①;  
When energized, the cartridge' s spool shifts to allow flow from ③to④ and from ②to①.

To override, twist counter-clockwise 3 turns ,the cartridge' s spool shifts to allow flow from ③to④ and from ②to①;twist clockwise to the end, allowing flow from ③to② and from ④to①.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV08 - 40 \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank = None  
M=Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

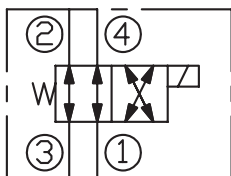
Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

# Four Way Two Position(Spool-type)



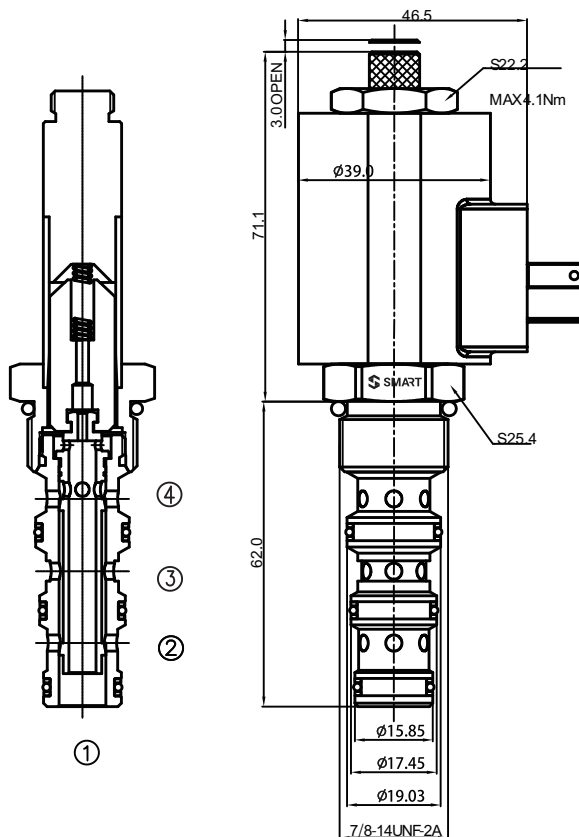
## ZSV10-40

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	<82ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-4 See page G-2
Installation Torque:	33.9-36.7Nm

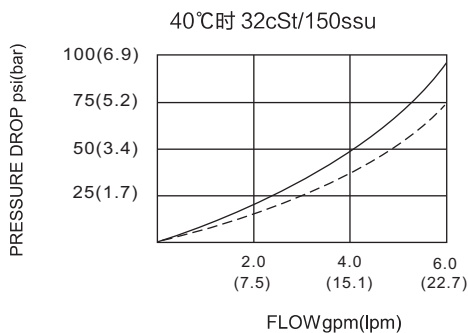


### OPERATION

When de-energized, allowing flow from ③ to ② and from ④ to ①;  
When energized, the cartridge's spool shifts to allow flow from ③ to ④ and from ② to ①.

To override, twist counter-clockwise 3 turns, the cartridge's spool shifts to allow flow from ③ to ④ and from ② to ①; twist clockwise to the end, allowing flow from ③ to ② and from ④ to ①.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZSV10 - 40 \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank = None  
M=Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

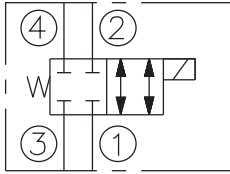
# Four Way Two Position(Spool-type)



A

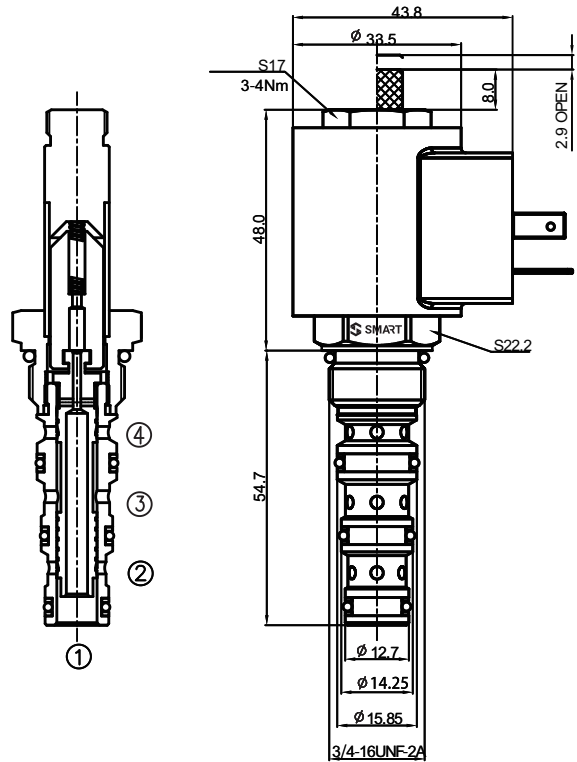
## ZSV08-41

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<82ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-4 See page G-1
Installation Torque:	24.5- 27.1Nm

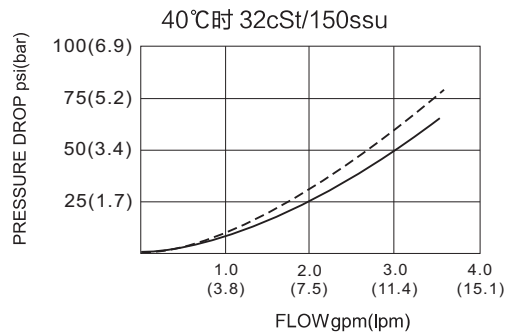


### OPERATION

When de-energized, the valve blocks flow to all ports;  
When energized, the cartridge's spool shifts to allow flow from ③to④ and from ②to①.

To override, twist counter-clockwise 3 turns ,the cartridge's spool shifts allow flow from ③to④ and from ②to①;twist clockwise to the end,the valve blocks flow to all ports.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV08 - 41 \* - \* - \*

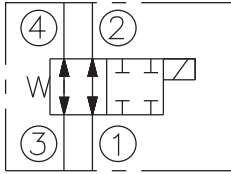
Cavity ————  
Function ————  
Blank = None  
M=Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

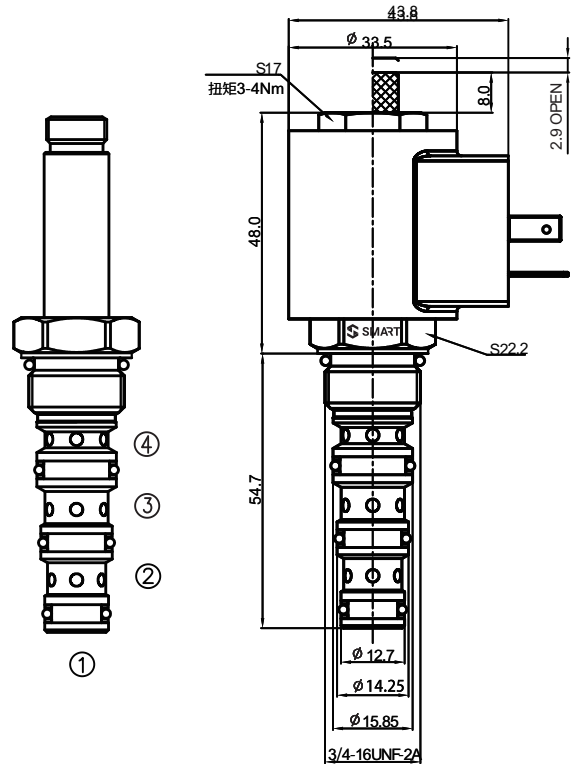
# ZSV08-42

## SYMBOL



## SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<82ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-4 See page G-1
Installation Torque:	24.5- 27.1Nm

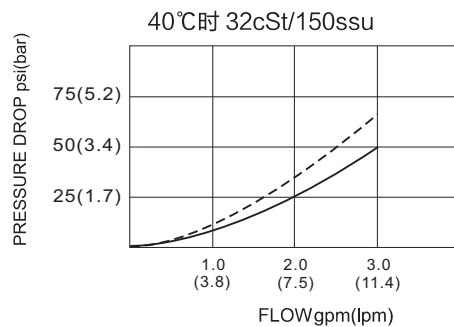


## OPERATION

When de-energized, the cartridge's spool shifts to allow flow from ③to④ and from ②to①;  
When energized,the valve blocks flow to all ports.

To override,twist counter-clockwise 3 turns ,the valve blocks flow to all ports;twist clockwise to the end,the cartridge's spool shifts to allow flow from ③to④ and from ②to①.

## PRESSURE DROP VS.FLOW



## TO ORDER

ZSV08 - 42 \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank = None  
M=Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage  
12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

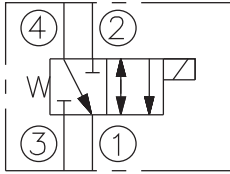
# Four Way Two Position(Spool-type)



A

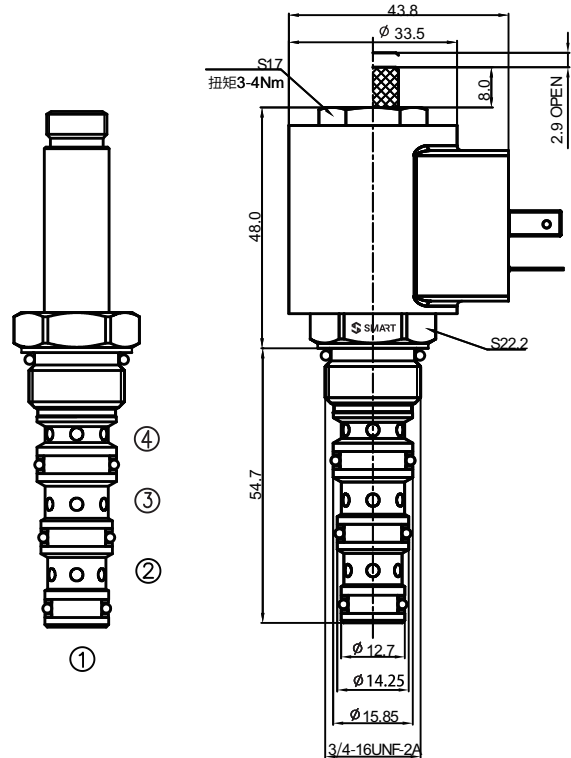
## ZSV08-43

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<82ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-4 See page G-1
Installation Torque:	24.5- 27.1Nm

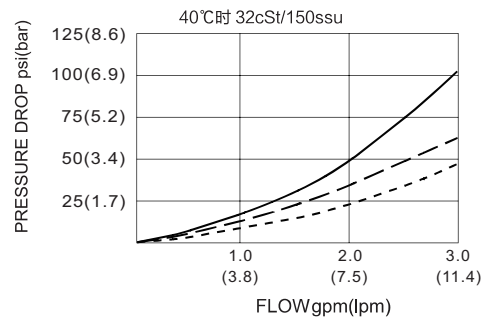


### OPERATION

When de-energized, the cartridge' s spool shifts to allowing flow from ①to④ while blocking ②and③;When energized,the cartridge' s spool shifts to allow flow from ②to ①and from ④ to ③or from ③to④ .

To override,twist counter-clockwise 3 turns ,the cartridge' s spool shifts to allow flow from ②to ①and from ④ to ③or from ③to④ ;twist clockwise to the end,the cartridge' s spool shifts to allow flow from ① to④ while blocking ②and③.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV08 - 43 \* - \* - \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_  
Blank =None  
M=Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

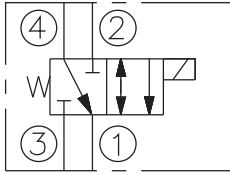
Voltage	
12=12	VDC
24=24	VDC
48=48	VDC
110=110	VAC
220=220	VAC
A12=12	VAC
A24=24	VAC

# Four Way Two Position(Spool-type)



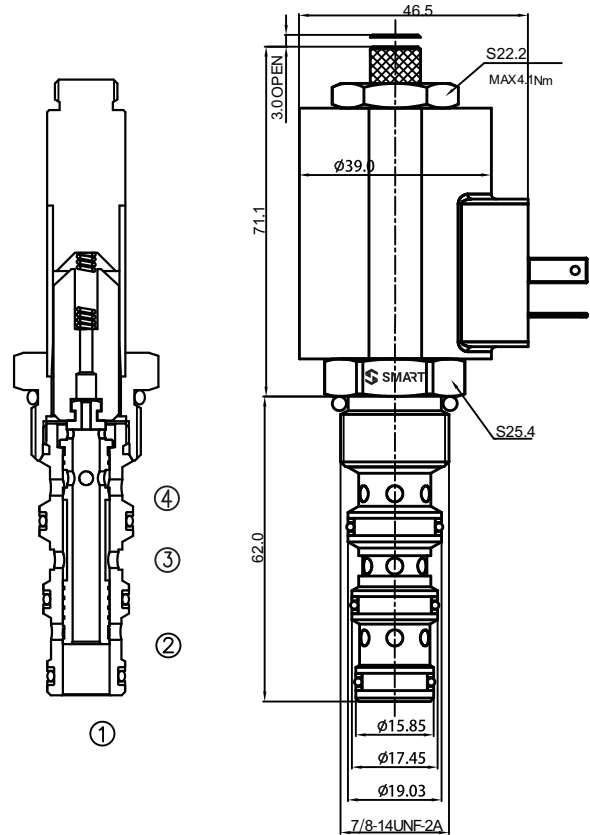
## ZSV10-43

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<82ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-4 See page G-2
Installation Torque:	33.9-36.7Nm

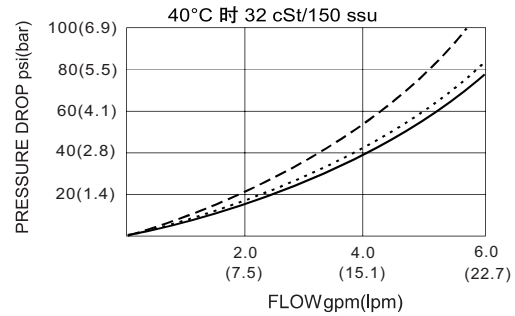


### OPERATION

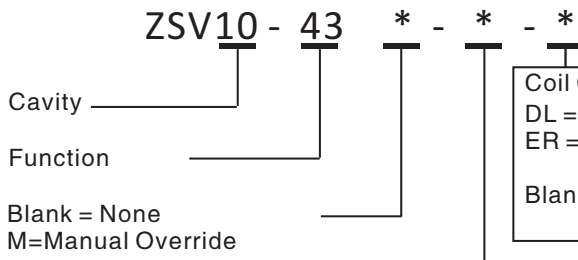
When de-energized, the cartridge' s spool shifts to allowing flow from ①to④ while blocking ②and③;When energized,the cartridge' s spool shifts to allow flow from ②to ①and from ④ to ③or from ③to④ .

To override,twist counter-clockwise 3 turns ,the cartridge' s spool shifts to allow flow from ②to ①and from ④ to ③or from ③to④ ;twist clockwise to the end,the cartridge' s spool shifts to allow flow from ① to④ while blocking ②and③.

### PRESSURE DROP VS.FLOW



### TO ORDER



Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage	
12=12	VDC
24=24	VDC
48=48	VDC
110=110	VAC
220=220	VAC
A12=12	VAC
A24=24	VAC

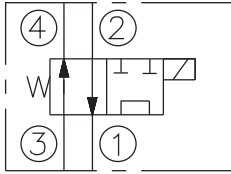
# Four Way Two Position(Spool-type)



A

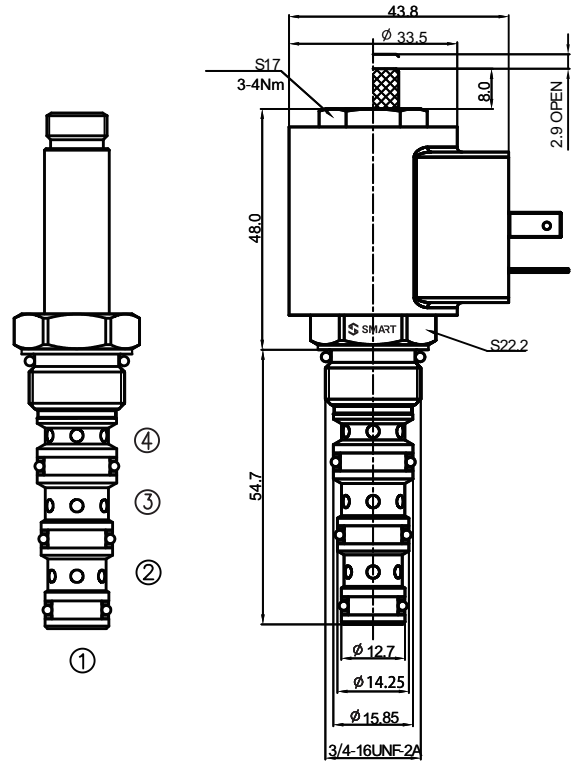
## ZSV08-44

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<82ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-4 See page G-1
Installation Torque:	24.5- 27.1Nm

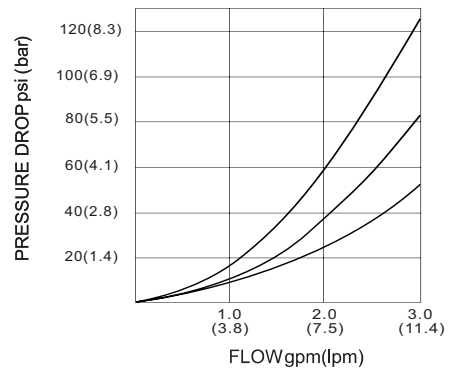


### OPERATION

When de-energized, the cartridge's spool shifts to allow flow from ② to ① and from ③ to ④ ;  
When energized, the cartridge's spool shifts to allow flow from ③ to ① · while blocking ② and ④.

To override, twist counter-clockwise 3 turns ,the cartridge's spool shifts to allow flow from ③ to ① · while blocking ② and ④ ;twist clockwise to the end, the cartridge's spool shifts to allow flow from ② to ① and from ③ to ④.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZSV08 - 44 \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank = None  
M=Manual Override

Coil Connection

DL = Double Leads

ER = Deutsch Connector  
(Water-proof Coil)

Blank = Hirschmann

Voltage

12=12 VDC

24=24 VDC

48=48 VDC

110=110 VAC

220=220 VAC

A12=12 VAC

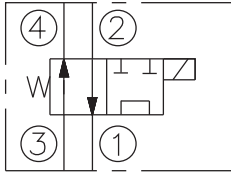
A24=24 VAC

# Four Way Two Position(Spool-type)



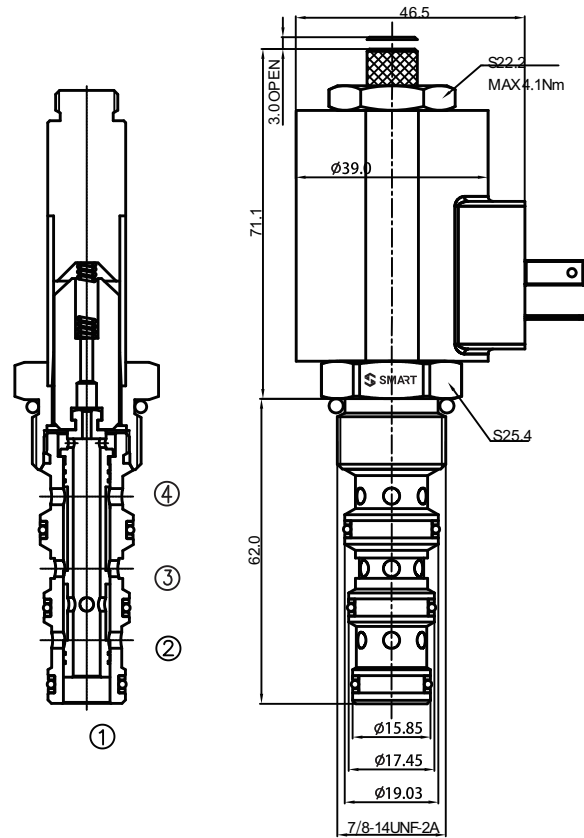
## ZSV10-44

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<82ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-4 See page G-2
Installation Torque:	33.9-36.7Nm

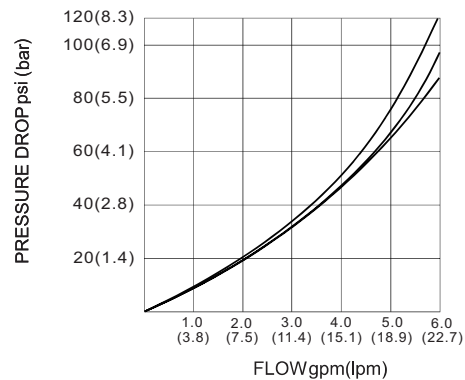


### OPERATION

When de-energized, the cartridge's spool shifts to allow flow from ② to ① and from ③ to ④;  
When energized, the cartridge's spool shifts to allow flow from ③ to ①, while blocking ② and ④.

To override, twist counter-clockwise 3 turns, the cartridge's spool shifts to allow flow from ③ to ①, while blocking ② and ④; twist clockwise to the end, the cartridge's spool shifts to allow flow from ② to ① and from ③ to ④.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZSV10 - 44 \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank =None  
M=Manual Override

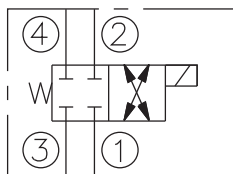
Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

Voltage

12=12 VDC  
24=24 VDC  
48=48 VDC  
110=110 VAC  
220=220 VAC  
A12=12 VAC  
A24=24 VAC

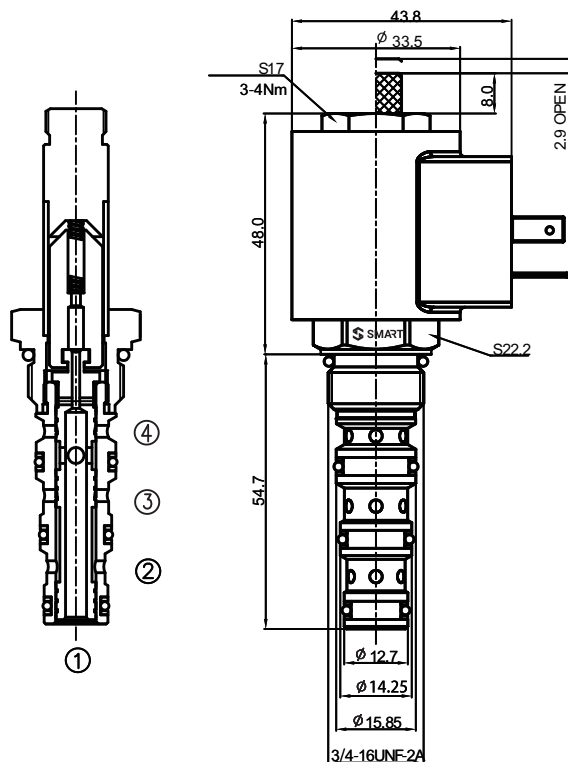
# ZSV08-45

## SYMBOL



## SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<82ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-4 See page G-1
Installation Torque:	24.5-27.1Nm

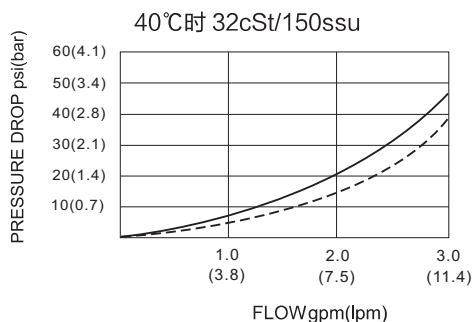


## OPERATION

When de-energized, the valve blocks flow to all ports;  
When energized, the cartridge's spool shifts to allow  
flow from ③to② and from ④to①.

To override, twist counter-clockwise 3 turns ,the  
cartridge's spool shifts to allow flow from ③to② and  
from ④to①;twist clockwise to the end,the valve blocks  
flow to all ports.

## PRESSURE DROP VS.FLOW



## TO ORDER

ZSV08 - 45 \* - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Blank =None  
M= Manual Override

Coil Connection  
DL = Double Leads  
ER = Deutsch Connector  
(Water-proof Coil)  
Blank = Hirschmann

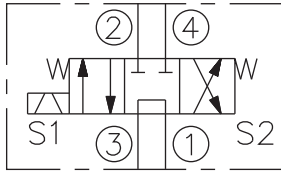
Voltage	
12=12	VDC
24=24	VDC
48=48	VDC
110=110	VAC
220=220	VAC
A12=12	VAC
A24=24	VAC

# Four Way Three Position(Spool-type)



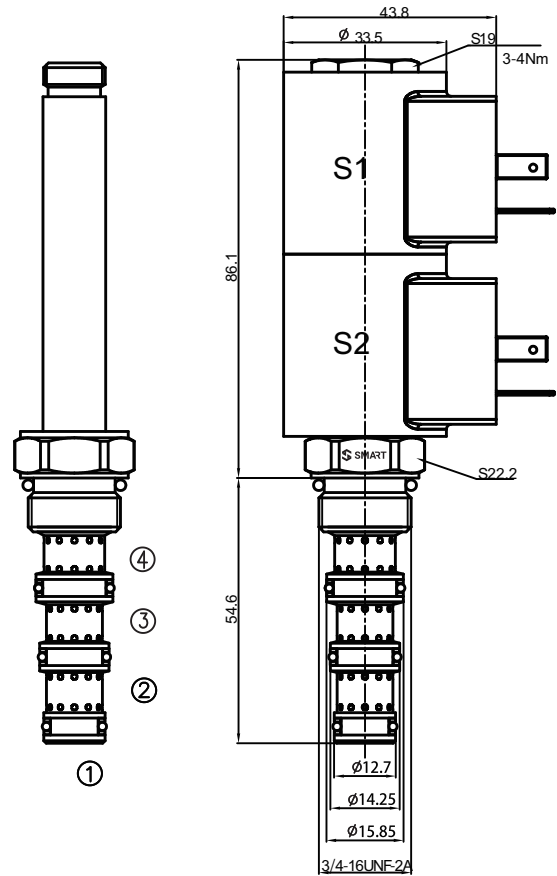
## ZSV2-08-47A

### SYMBOL



### SPECIFICATIONS

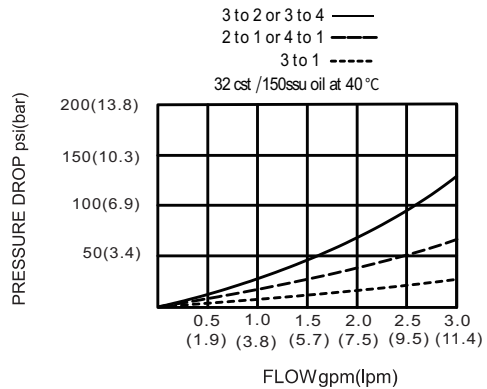
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<278ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-4 See page G-1
Installation Torque:	24.5- 27.1Nm



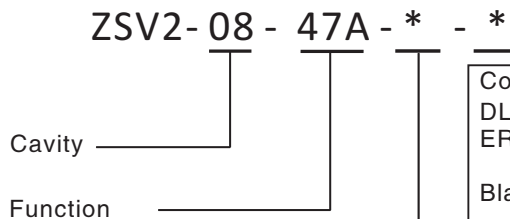
### OPERATION

When de-energized, the valve blocks flow ② to ④, while allows flow from ③ to ①;  
 When S1 is energized, the valve allows flow between ③ to ② as well as ④ to ①;  
 When S2 is energized, the valve allows flow between ③ to ④ as well as ② to ①.

### PRESSURE DROP VS.FLOW



### TO ORDER



Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

Voltage	12=12 VDC
	24=24 VDC
	48=48 VDC
	110=110 VAC
	220=220 VAC
	A12=12 VAC
	A24=24 VAC

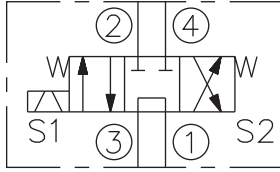
# Four Way Three Position(Spool-type)



A

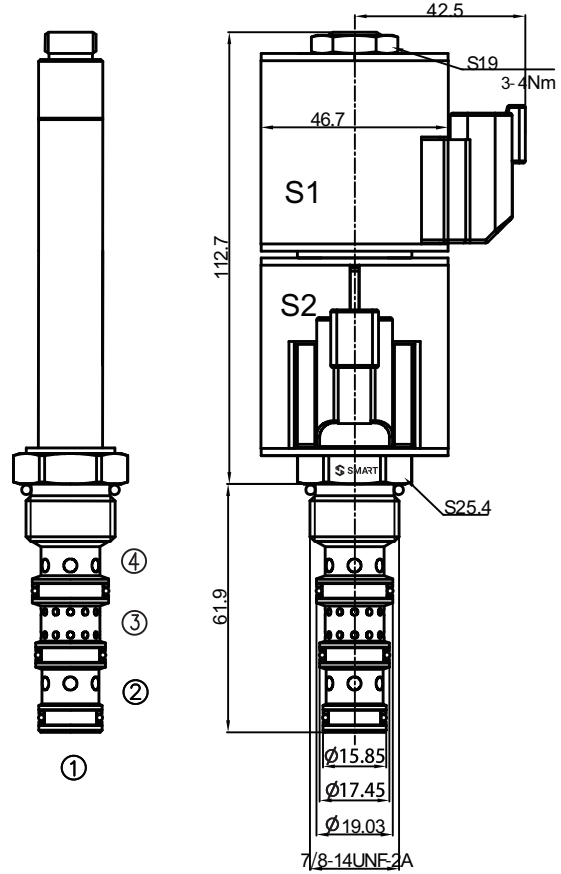
## ZSV2-10-47A

### SYMBOL



### SPECIFICATIONS

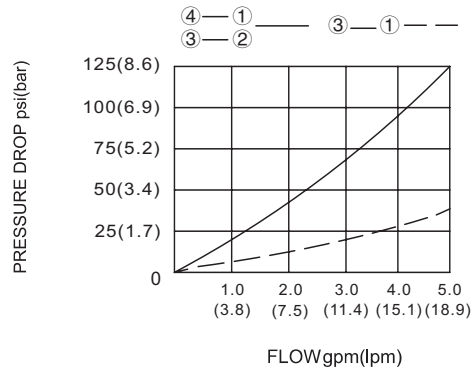
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<328ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-4 See page G-2
Installation Torque:	33.9-36.7Nm



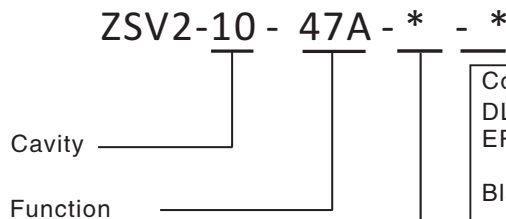
### OPERATION

When de-energized, the valve blocks flow ② to ④, while allows flow from ③ to ①;  
 When S1 is energized, the valve allows flow between ③ to ② as well as ④ to ①;  
 When S2 is energized, the valve allows flow between ③ to ④ as well as ② to ①.

### PRESSURE DROP VS. FLOW



### TO ORDER



Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

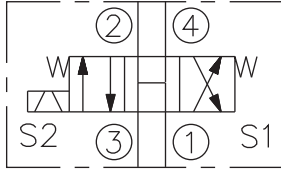
Volltage	
12=12	VDC
24=24	VDC
48=48	VDC
110=110	VAC
220=220	VAC
A12=12	VAC
A24=24	VAC

# Four Way Three Position(Spool-type)



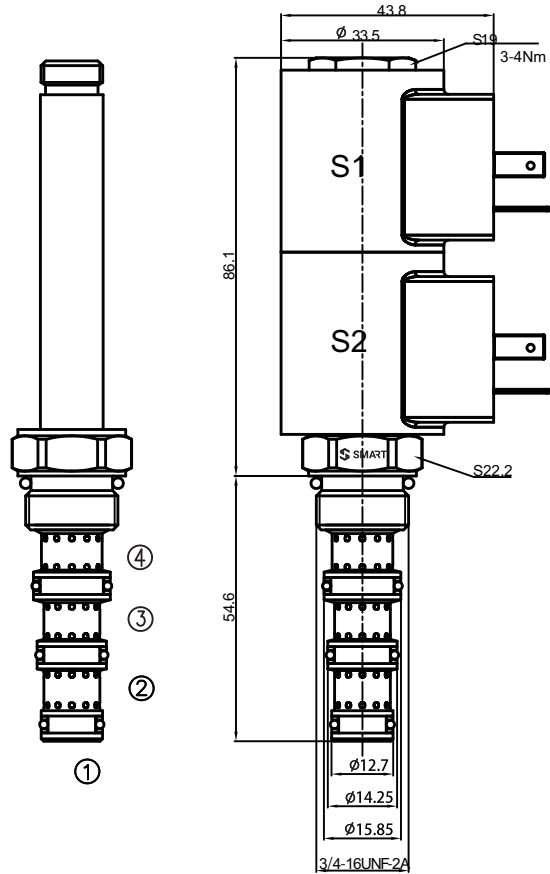
## ZSV2-08-47B

### SYMBOL



### SPECIFICATIONS

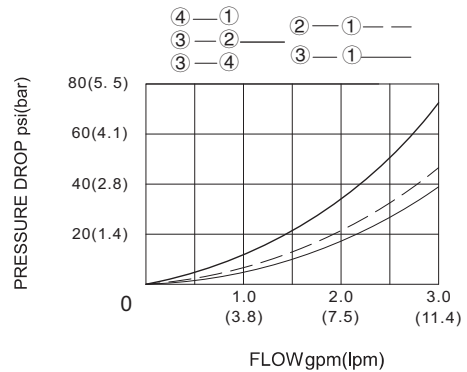
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<328ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-4 See page G-1
Installation Torque:	24.5- 27.1Nm



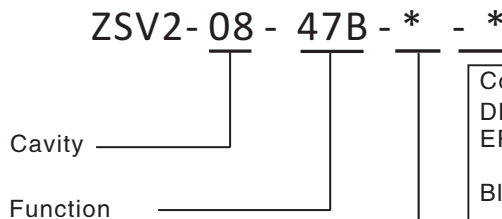
### OPERATION

When de-energized, the valve allows flow to all ports;  
 When S1 is energized, the valve allows flow between ③to④ as well as ②to①;  
 When S2 is energized, the valve allows flow between ③to② as well as ④to①.

### PRESSURE DROP VS.FLOW



### TO ORDER

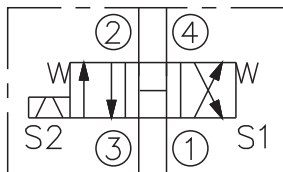


Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

Voltage	
12=12	VDC
24=24	VDC
48=48	VDC
110=110	VAC
220=220	VAC
A12=12	VAC
A24=24	VAC

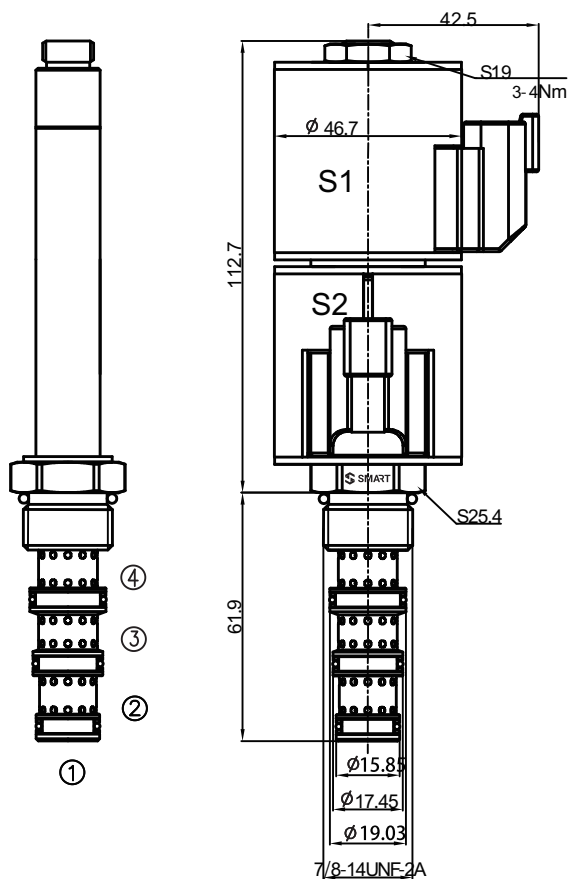
# ZSV2-10-47B

## SYMBOL



## SPECIFICATIONS

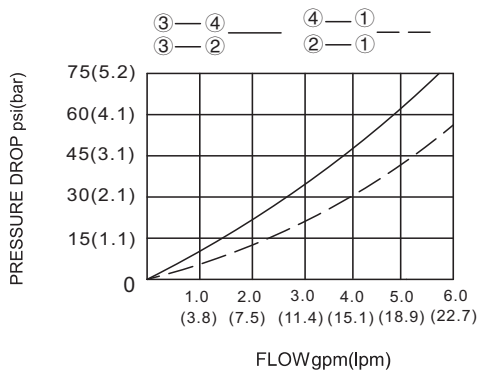
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<328ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-4 See page G-2
Installation Torque:	33.9-36.7Nm



## OPERATION

When de-energized, the valve allows flow to all ports;  
 When S1 is energized, the valve allows flow between ③to④ as well as ②to①;  
 When S1 is energized, the valve allows flow between ③to② as well as ④to①.

## PRESSURE DROP VS.FLOW



## TO ORDER

ZSV2- 10 - 47B - \* - \*

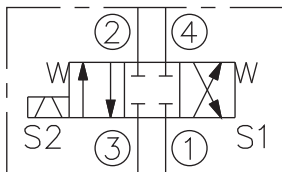
Cavity \_\_\_\_\_

Function \_\_\_\_\_

Coil Connection	12=12 VDC
DL = Double Leads	24=24 VDC
ER = Deutsch Connector (Water-proof Coil)	48=48 VDC
Blank = Hirschmann	110=110 VAC
	220=220 VAC
	A12=12 VAC
	A24=24 VAC

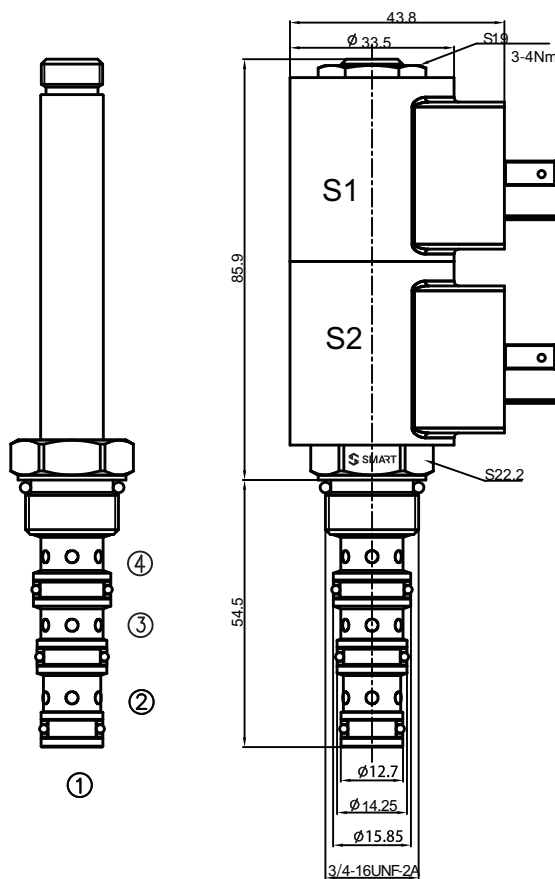
# ZSV2-08-47C

## SYMBOL



## SPECIFICATIONS

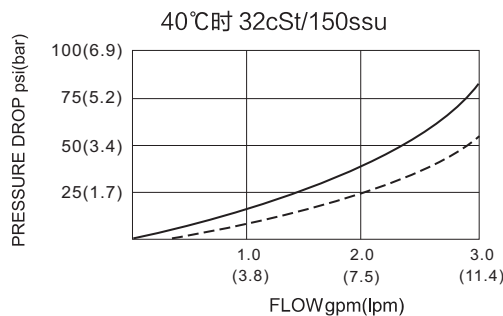
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<164ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-4 See page G-1
Installation Torque:	24.5- 27.1Nm



## OPERATION

When de-energized, the valve blocks flow to all ports;  
 When S1 is energized, the valve allows flow between ③to④ as well as ②to①;  
 When S2 is energized, the valve allows flow between ③to② as well as ④to①.

## PRESSURE DROP VS.FLOW



## TO ORDER

ZSV2-08-47C-\*-\*

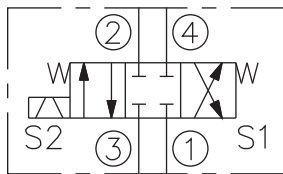
Cavity \_\_\_\_\_  
 Function \_\_\_\_\_

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

Voltage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

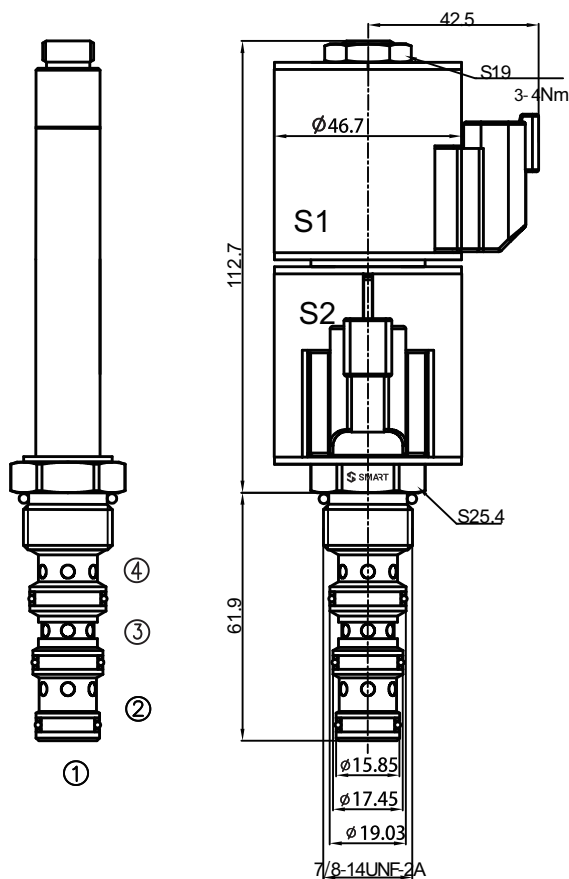
# ZSV2-10-47C

## SYMBOL



## SPECIFICATIONS

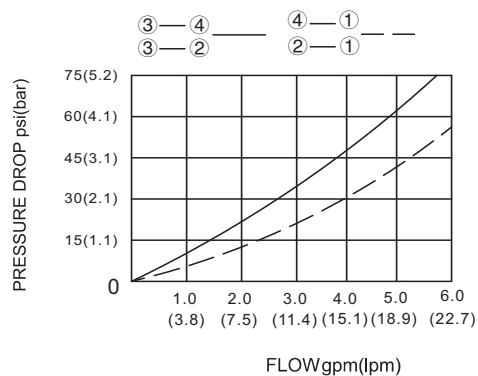
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<328ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-4 See page G-2
Installation Torque:	33.9-36.7Nm



## OPERATION

When de-energized, the valve blocks flow to all ports;  
 When S1 is energized, the valve allows flow between ③ to ④ as well as ② to ①;  
 When S2 is energized, the valve allows flow between ③ to ② as well as ④ to ①.

## PRESSURE DROP VS.FLOW



## TO ORDER

ZSV2- 10 - 47C - \* - \*

Cavity \_\_\_\_\_

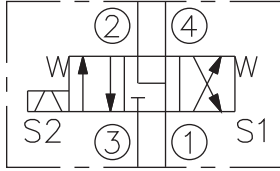
Function \_\_\_\_\_

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

Voltage  
 12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

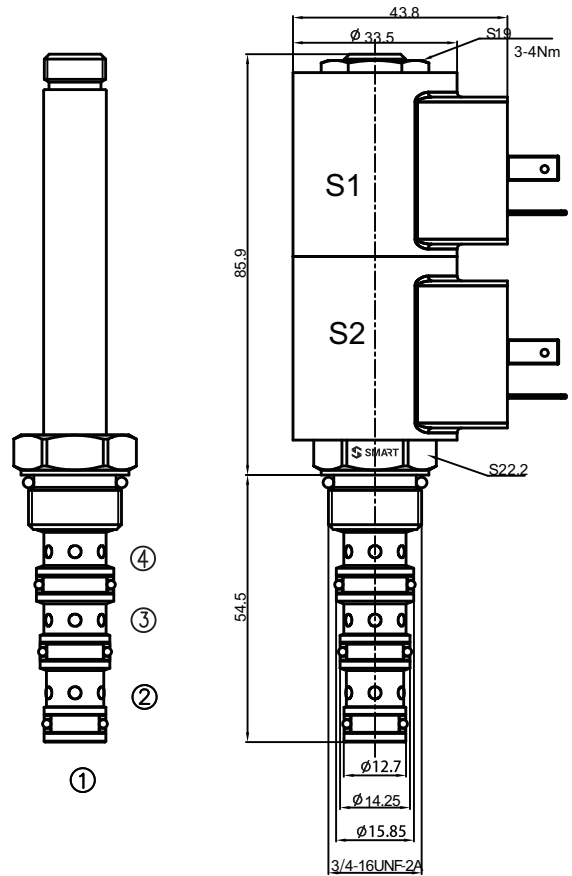
# ZSV2-08-47D

## SYMBOL



## SPECIFICATIONS

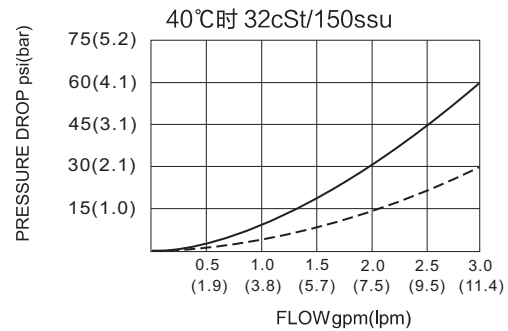
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<164ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-4 See page G-1
Installation Torque:	24.5- 27.1Nm



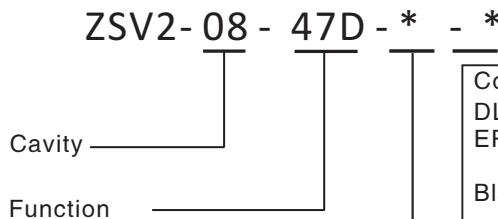
## OPERATION

When de-energized, the valve blocks flow to ③ while allows flow from ②to①and④to①;  
 When S1 is energized,the valve allows flow between ③to④ as well as ②to①;  
 When S2 is energized,the valve allows flow between ③to② as well as ④to①.

## PRESSURE DROP VS.FLOW



## TO ORDER

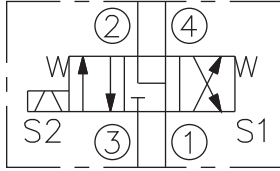


Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

Voltage	
12=12	VDC
24=24	VDC
48=48	VDC
110=110	VAC
220=220	VAC
A12=12	VAC
A24=24	VAC

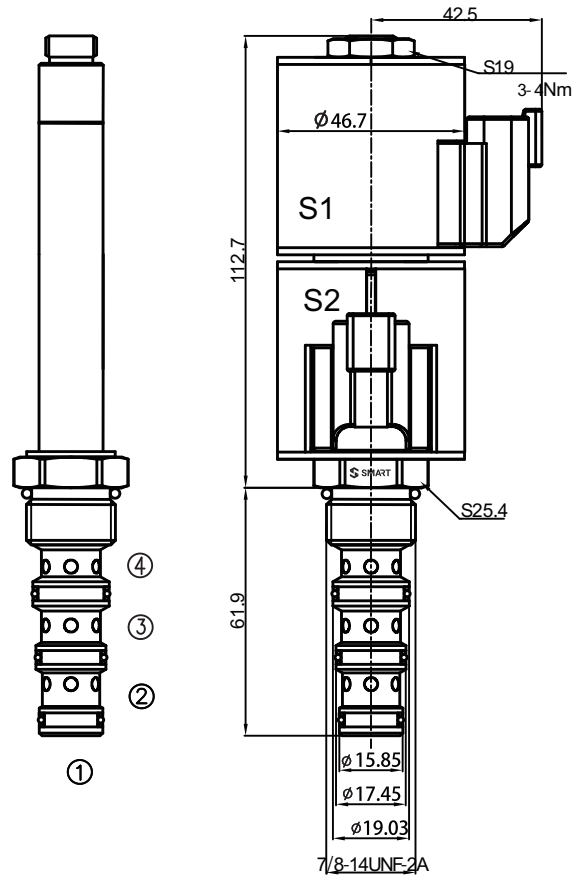
# ZSV2-10-47D

## SYMBOL



## SPECIFICATIONS

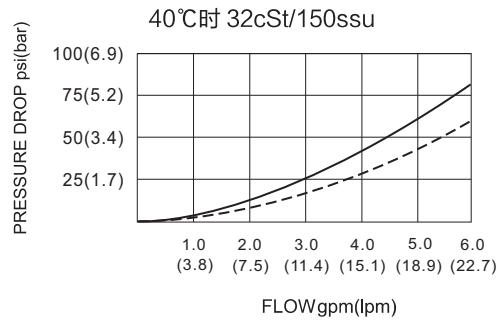
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	<164ml/min at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	10-4 See page G-2
Installation Torque:	33.9-36.7Nm



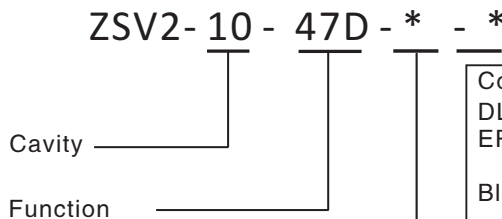
## OPERATION

When de-energized, the valve blocks flow to ③ while allows flow from ②to①and④to①;  
 When S1 is energized,the valve allows flow between ③to④ as well as ②to①;  
 When S1 is energized,the valve allows flow between ③to② as well as ④to①.

## PRESSURE DROP VS.FLOW



## TO ORDER



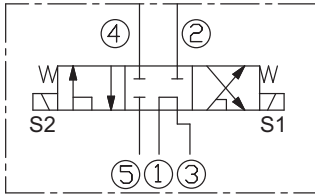
Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

Voltage	
12=12	VDC
24=24	VDC
48=48	VDC
110=110	VAC
220=220	VAC
A12=12	VAC
A24=24	VAC

# Five Way Three Position(Spool-type)

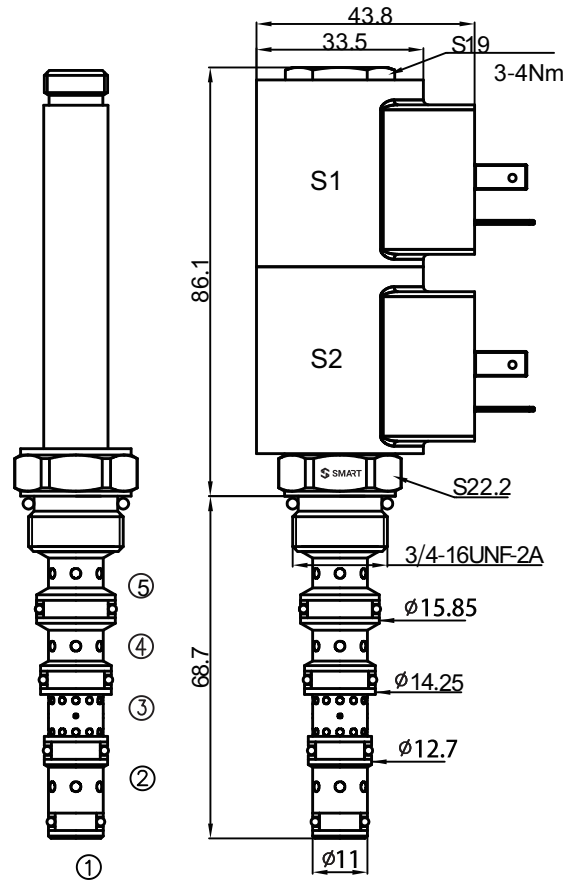
## ZSV08-58C

### SYMBOL



### SPECIFICATIONS

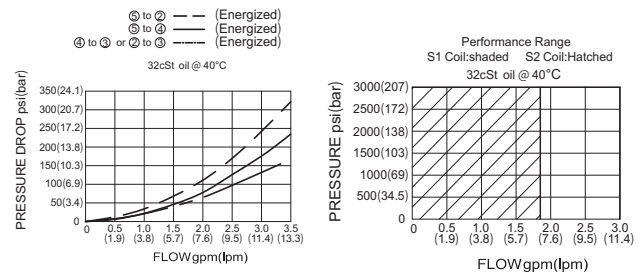
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	197ml/min . max.at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Coil Duty Rating:	Continuous from 85% to 115% of nominal voltage
Filtration:	See page Z-1
Cavity:	08-5 See page:G-16
Installation Torque:	26-28.5Nm



### OPERATION

When de-energized, flow between work ports are blocked and load sense at port ① is vented to port ③.  
 When coil S1 is energized, flow is allowed from port ⑤ to port ② and from port ④ to port ③  
 When coil S2 is energized, flow is allowed from port ⑤ to port ④ and from port ② to port ③. Load sense at port ① is connected to port ⑤ when spool is in shifted positions.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZSV08 - 58C - \* - \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

Coil Connection  
 DL = Double Leads  
 ER = Deutsch Connector  
 (Water-proof Coil)  
 Blank = Hirschmann

Voltage

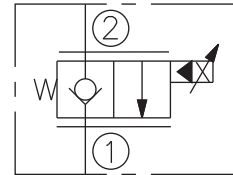
12=12 VDC  
 24=24 VDC  
 48=48 VDC  
 110=110 VAC  
 220=220 VAC  
 A12=12 VAC  
 A24=24 VAC

# ZSP08-20

## DESCRIPTION

A proportional solenoid-operated, 2-way, poppet-type, normally closed, screw-in hydraulic cartridge valve

## SYMBOL



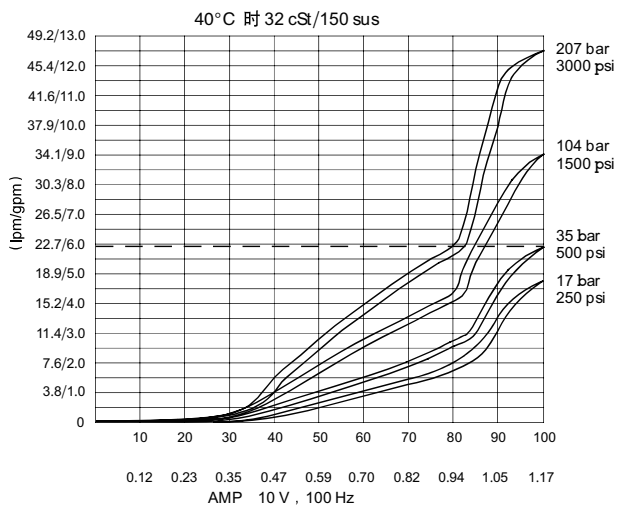
## OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①. When energized, the ②to① flow path opens, Flow is proportional to current applied to the coil. Flow varies with manual override.

## SPECIFICATIONS

MAX. Operating Pressure:	250bar
Flow:	Without Manual Override: 22 lpm at 34.5 bar (500 psi)
Internal Leakage:	5drops/min. max.at 250bar
Temperature:	-30℃~+100℃
Filtration:	See page Z-1
Cavity:	08-2 See page G-1

## PERFORMANCE

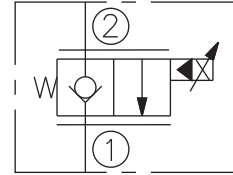


## ZSP10-20

### DESCRIPTION

A proportional solenoid-operated, 2-way, poppet-type, normally closed, screw-in hydraulic cartridge valve

### SYMBOL



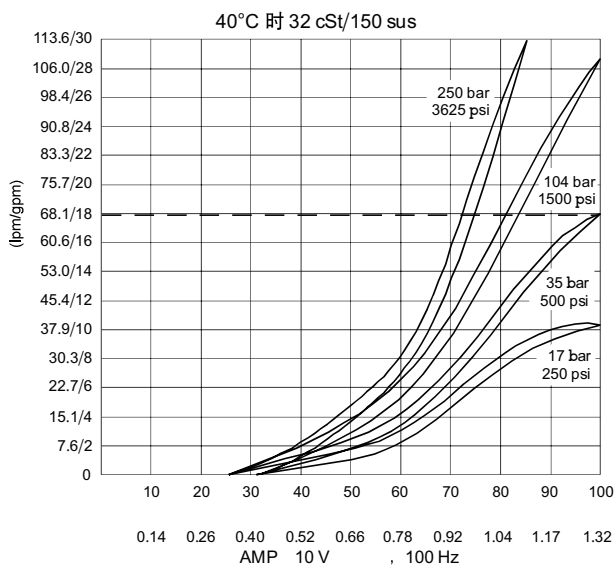
### OPERATION

When de-energized, the valve acts as a check valve, allowing flow from ① to ②, while blocking flow from ② to ①. When energized, the ② to ① flow path opens, Flow is proportional to current applied to the coil. Flow varies with manual override.

### SPECIFICATIONS

MAX. Operating Pressure:	250bar
Flow:	Without Manual Override: 68 lpm at 34.5 bar (500 psi)
Internal Leakage:	5drops/min. max.at 250bar
Temperature:	-30°C~+100°C
Filtration:	See page Z-1
Cavity:	10-2 See page G-2

### PERFORMANCE

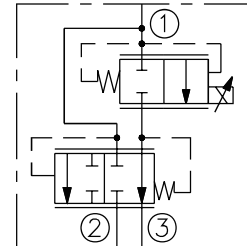


# ZPV70-30

## DESCRIPTION

A solenoid-operated, three-port, pressure-compensated, spool-type, normally closed when de-energized, proportional flow control regulator.

## SYMBOL



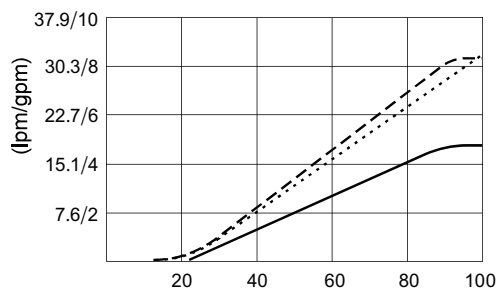
## OPERATION

With inlet flow at port 1, the valve will regulate priority flow out of port 3 regardless of system working pressure, with flow rate proportional to current applied to the solenoid. Excess flow will bypass out of port 2. The bypass flow can be used for auxiliary function control.

## SPECIFICATIONS

MAX. Operating Pressure:	port ① 240bar; ② and ③ 207bar
Flow Rating:	Bypass cutoff: range A 26lpm; range B 17lpm, Bypass open: range A, range B
Maximum Input :	Bypass open, range A 50lpm; range B 26lpm
Internal Leakage:	250bar, 197cc/min
Temperature:	-30°C~+100°C
Filtration:	See page Z-1
Cavity:	10-3 See page G-2

## PERFORMANCE

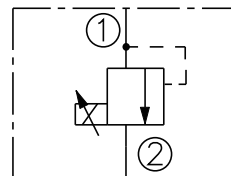


# ZTS38-20

## DESCRIPTION

A screw-in, cartridge-style, direct acting, single stage, poppet-type, electro-proportional relief valve.

## SYMBOL



## OPERATION

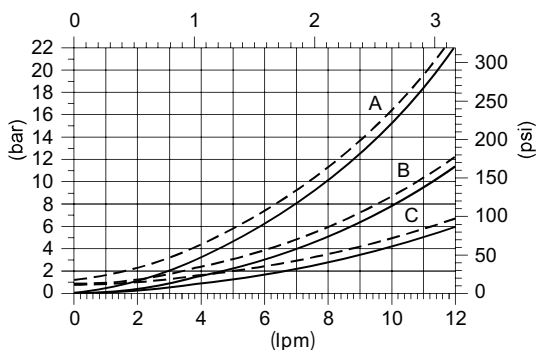
The valve blocks flow from 1 to 2 until sufficient pressure is present at 1 to offset the electrically induced solenoid force. With no current applied to the solenoid, the valve will free flow from 1 to 2.

Note: Tank pressure is additive to the pressure setting at a 1:1 ratio.

## SPECIFICATIONS

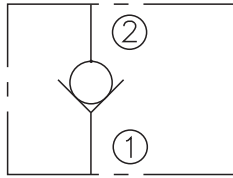
MAX. Operating Pressure:	241bar
Flow Rating:	A: 11.4lpm at 20bar pressure drop; B: 11.4lpm at 10bar pressure drop; C: 11.4lpm at 5.5bar pressure drop
Internal Leakage:	MAX. 1ml/min at 207bar
Temperature:	-30°C~+100°C
Filtration:	See page Z-1
Cavity:	08-2 See page G-2

## PERFORMANCE



# ZICV2000-G18

## SYMBOL

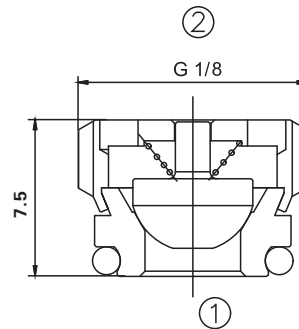
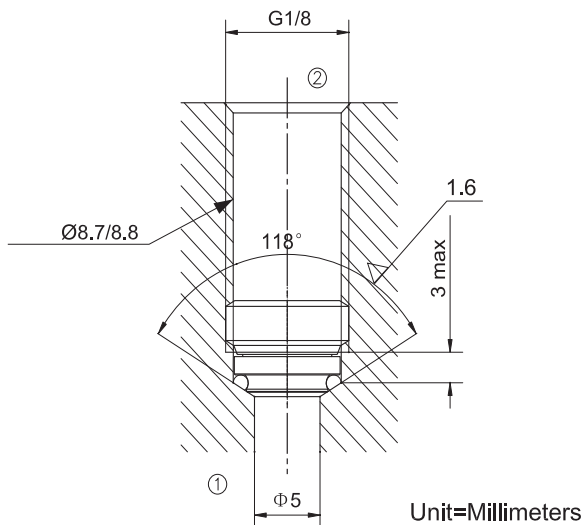


## SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cracking pressure:	< 0.5bar

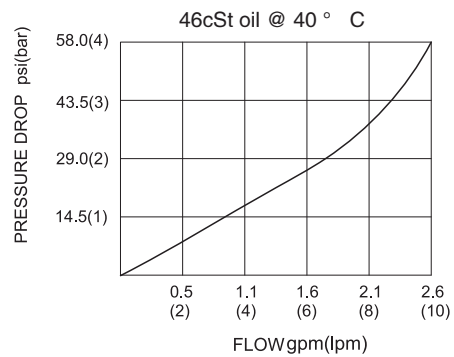
## OPERATION

When pressure at ① rises above the spring bias pressure, the poppet is lifted and flow allowed from ① to ②;  
The valve is closed from ② to ①.

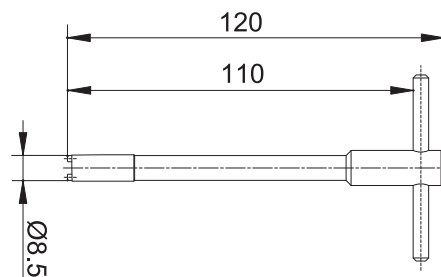


安全扭矩：5Nm MAX.

## PRESSURE DROP VS.FLOW

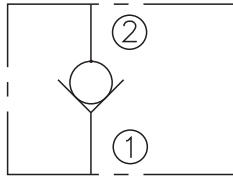


## ZICV2000-G18 TOOL



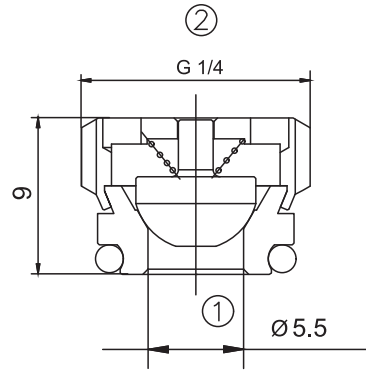
# ZICV2000-G14

## SYMBOL



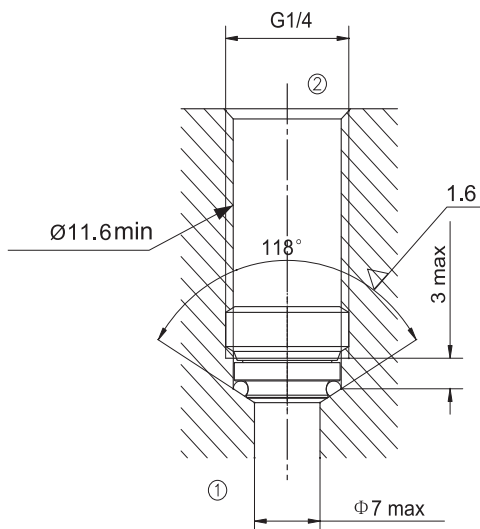
## SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min.max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cracking pressure:	<0.5bar

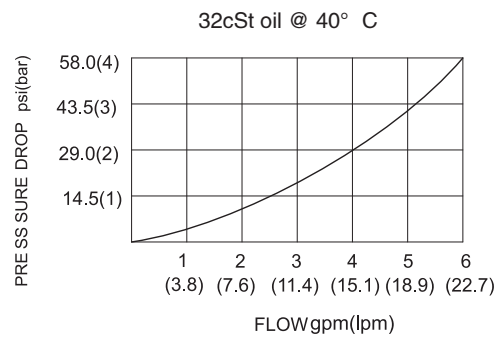


## OPERATION

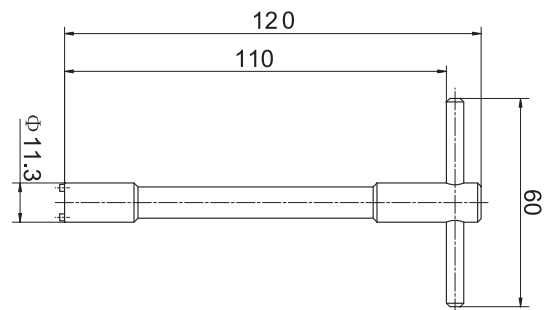
When pressure at ① rises above the spring bias pressure, the poppet is lifted and flow allowed from ① to ②;  
The valve is closed from ② to ①.



## PRESSURE DROP VS.FLOW

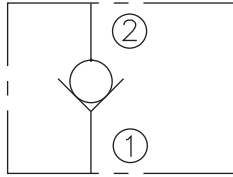


## ZICV2000-G14 TOOL



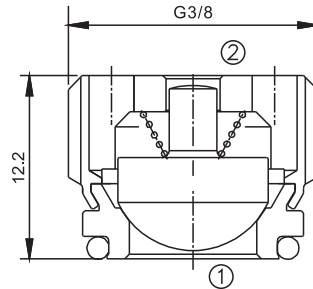
# ZICV2000-G38

## SYMBOL



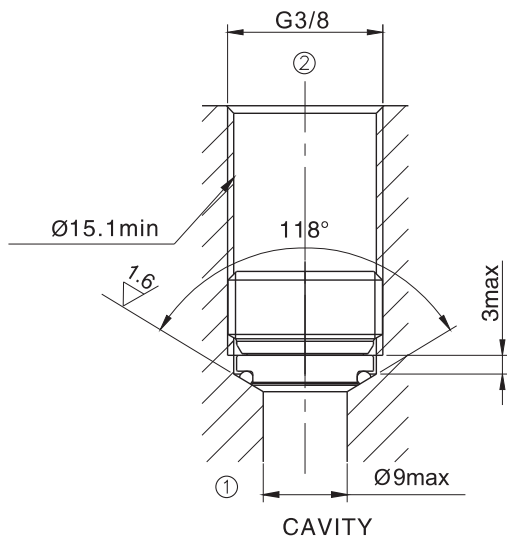
## SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cracking pressure:	<0.5bar

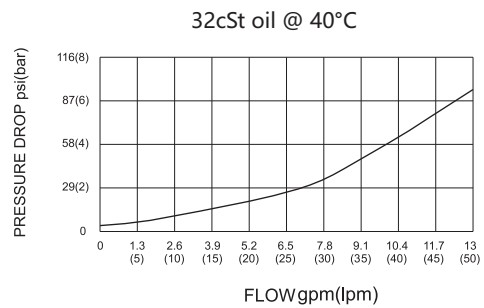


## OPERATION

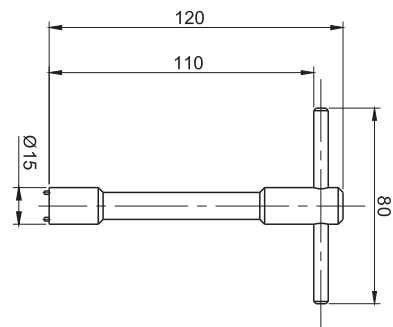
When pressure at ① rises above the spring bias pressure, the poppet is lifted and flow allowed from ① to ②;  
The valve is closed from ② to ①.



## PRESSURE DROP VS.FLOW

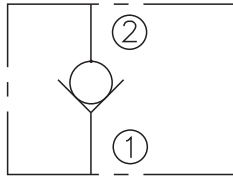


## ZICV2000-G38 TOOL



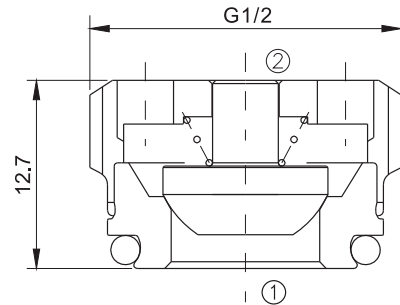
# ZICV2000-G12

## SYMBOL



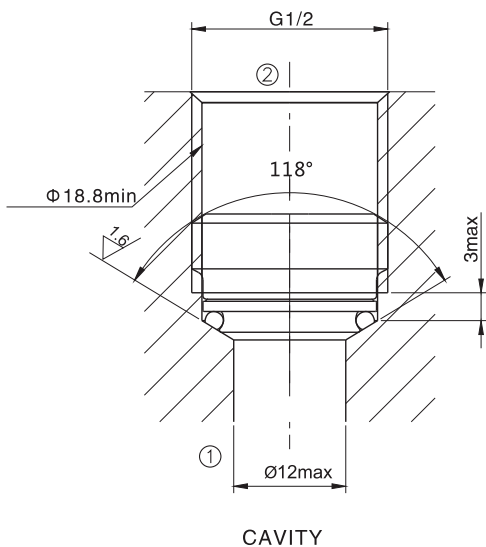
## SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cracking pressure:	<0.5bar

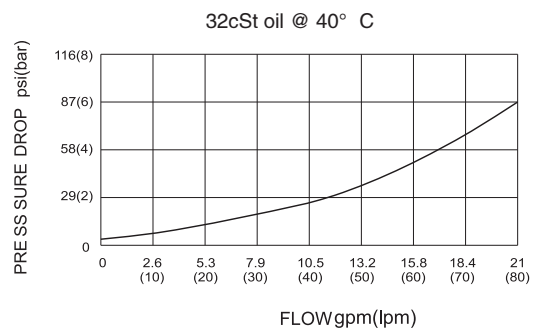


## OPERATION

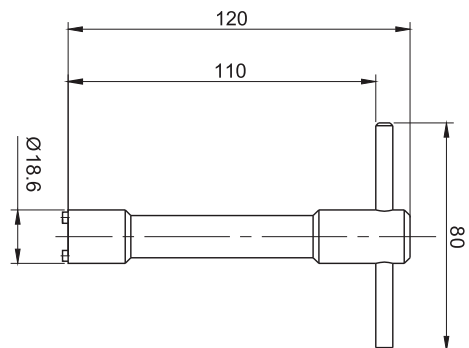
When pressure at ① rises above the spring bias pressure, the poppet is lifted and flow allowed from ① to ②;  
The valve is closed from ② to ①.



## PRESSURE DROP VS.FLOW

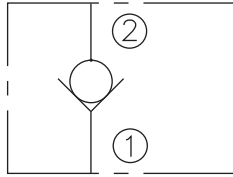


## ZICV2000-G12 TOOL



# ZICV2000-G34

## SYMBOL

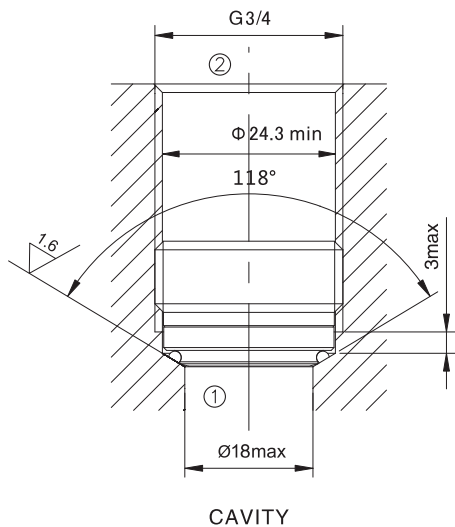


## SPECIFICATIONS

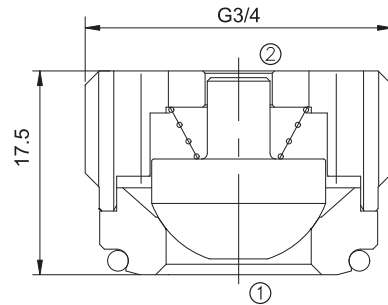
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cracking pressure:	<0.5bar

## OPERATION

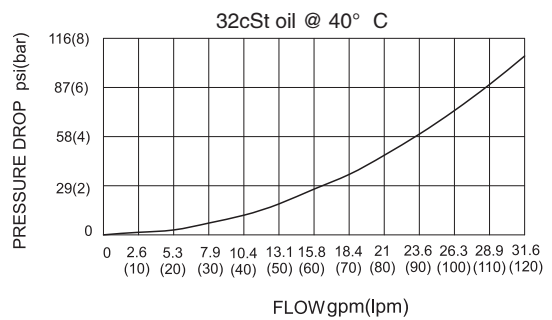
When pressure at ① rises above the spring bias pressure, the poppet is lifted and flow allowed from ① to ②;  
The valve is closed from ② to ①.



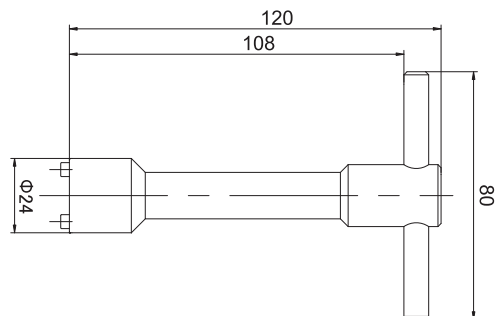
**B**



## PRESSURE DROP VS.FLOW

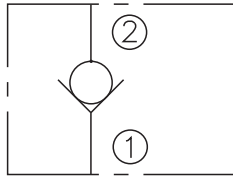


## ZICV2000-G34 TOOL



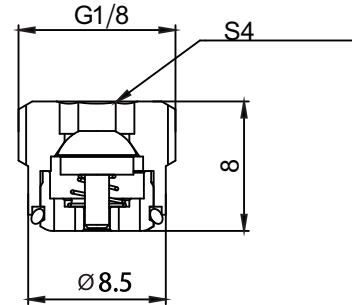
# ZICVR2000-G18

## SYMBOL



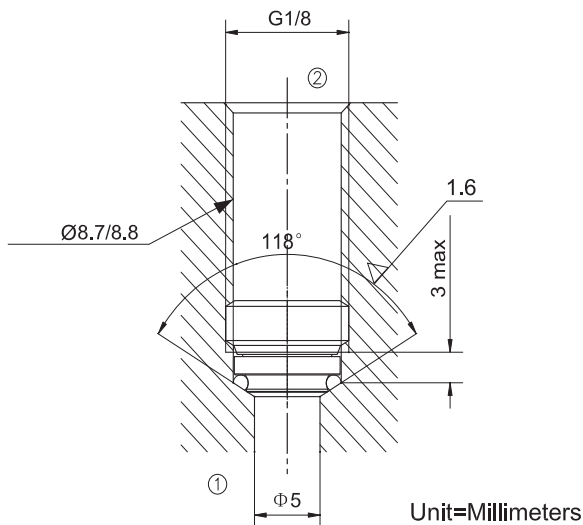
## SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	2drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cracking pressure:	<0.5bar

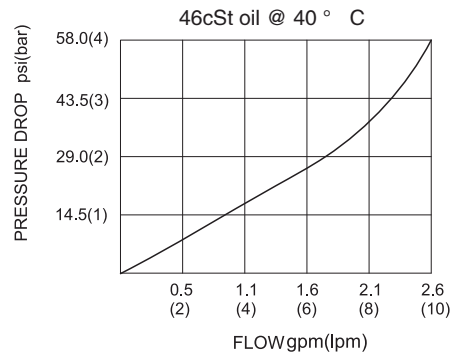


## OPERATION

When pressure at ① rises above the spring bias pressure, the poppet is lifted and flow allowed from ① to ②;  
The valve is closed from ② to ①.

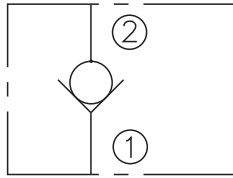


## PRESSURE DROP VS.FLOW



# ZICVR2000-G14

## SYMBOL

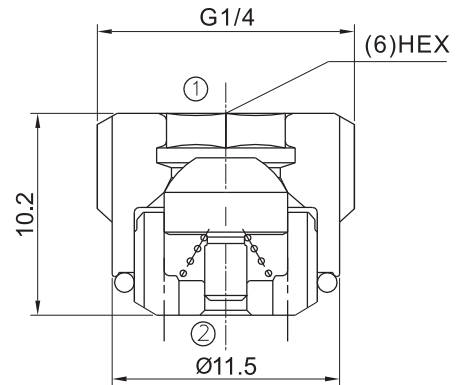
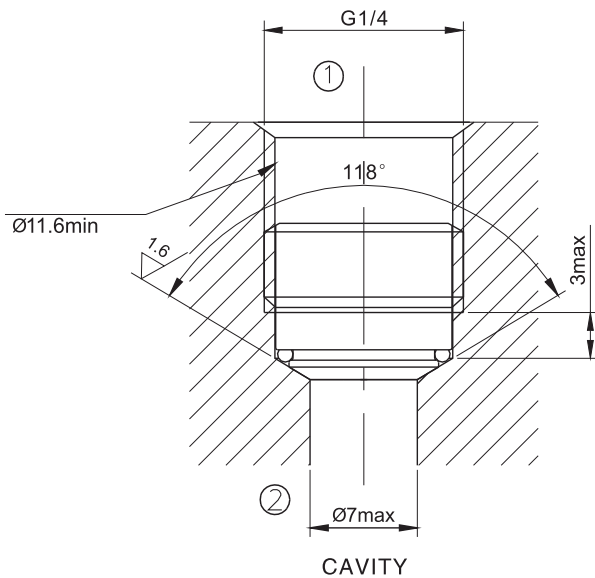


## SPECIFICATIONS

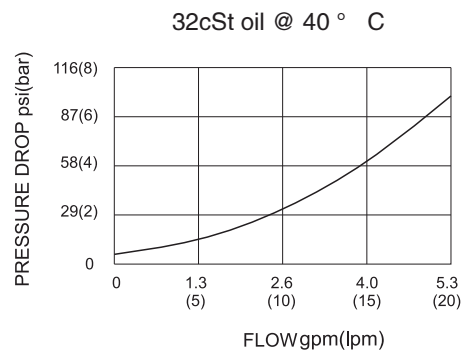
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	2drops/min. max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cracking pressure:	<0.5bar

## OPERATION

When pressure at ① rises above the spring bias pressure, the poppet is lifted and flow allowed from ① to ②;  
The valve is closed from ② to ①.

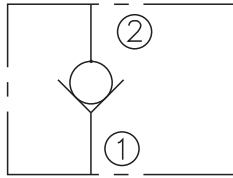


## PRESSURE DROP VS.FLOW



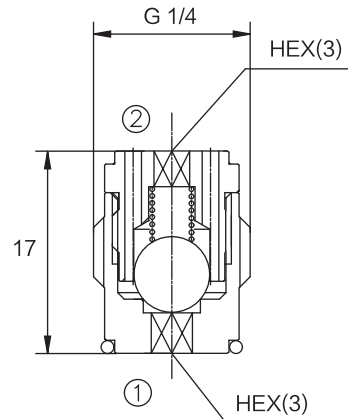
# ZICV3000-G14

## SYMBOL



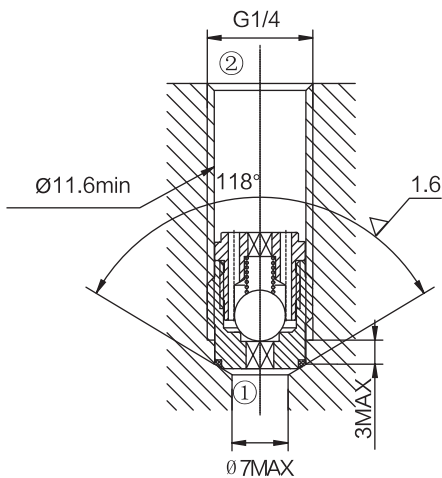
## SPECIFICATIONS

MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	3drops/min. max. at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cracking pressure:	3.0bar

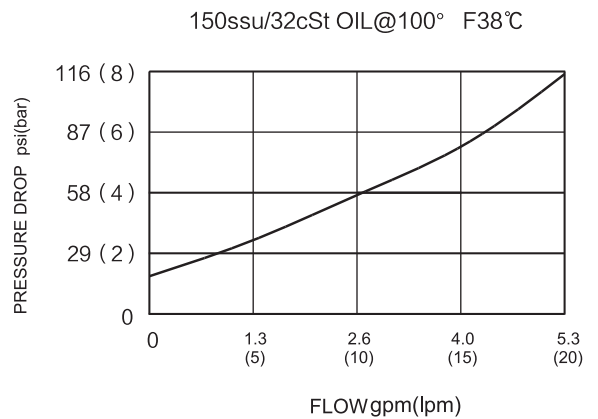


## OPERATION

When pressure at ① rises above the spring bias pressure, the ball is lifted and flow allowed from ① to ②;  
The valve is closed from ② to ①.

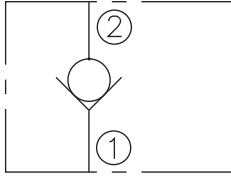


## PRESSURE DROP VS. FLOW



# ZCV04-18

## SYMBOL

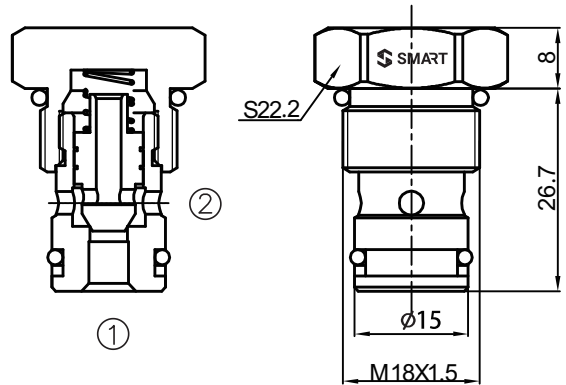


## SPECIFICATIONS

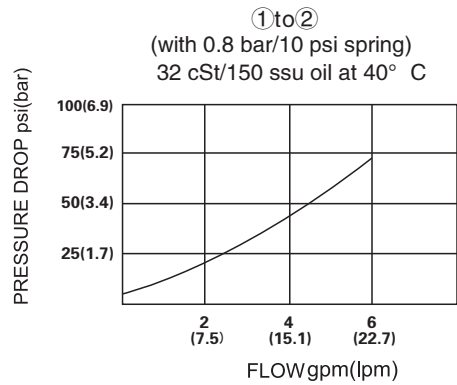
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min. max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T04-2See page G-9
Installation Torque:	24.5-27.2Nm

## OPERATION

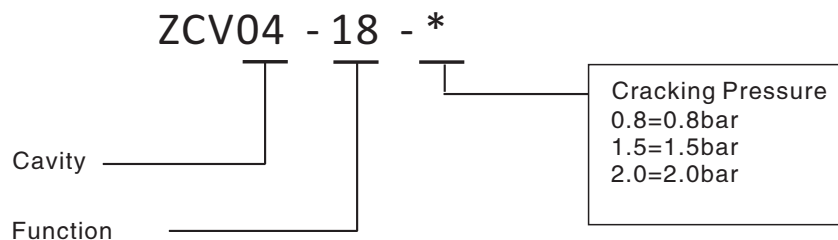
Pressure at ① overcomes the spring-bias poppet and allows free flow ①to②;  
 Flow in the opposite direction from ②to① is blocked by the poppet.



## PRESSURE DROP VS.FLOW

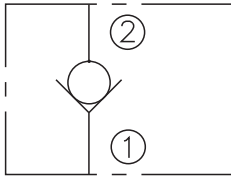


## TO ORDER



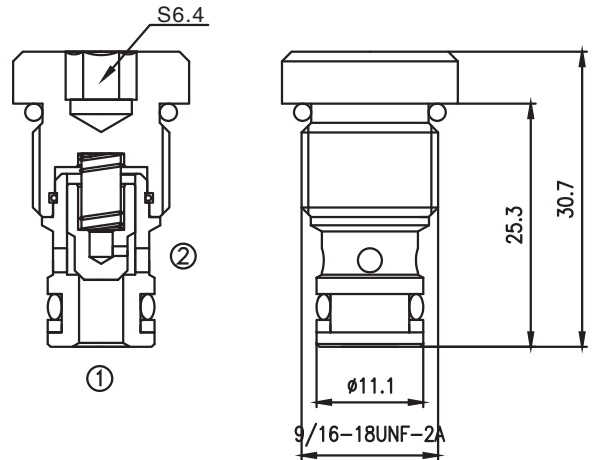
# ZHCV06-20

## SYMBOL



## SPECIFICATIONS

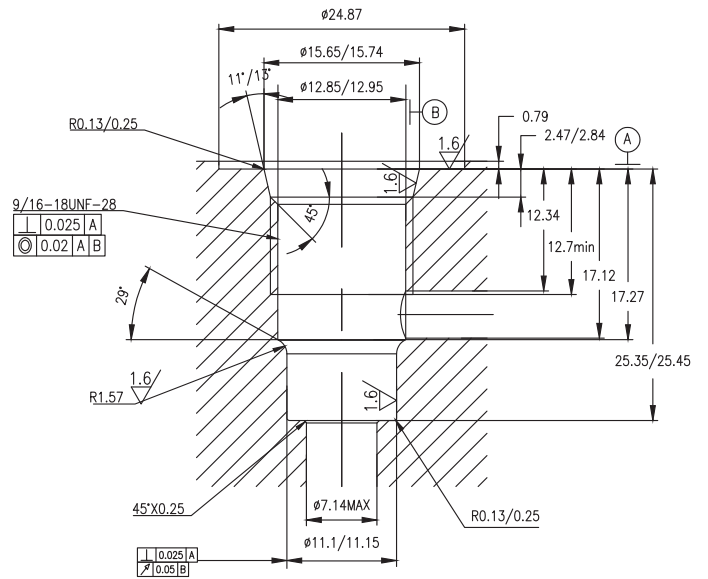
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	2drops/min. max. at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cracking pressure:	0.35bar



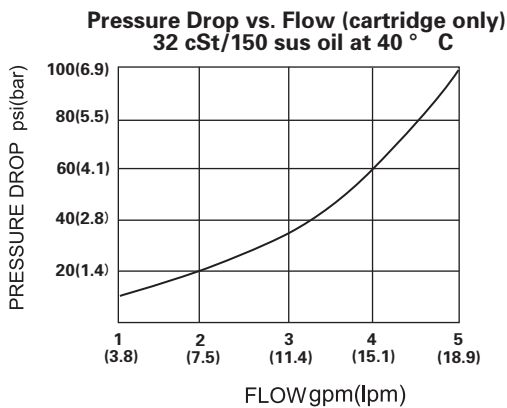
## OPERATION

When pressure at ① rises above the spring bias pressure, the poppet is lifted and flow allowed from ① to ②;  
The valve is closed from ② to ①.

## CAVITY



## PRESSURE DROP VS. FLOW

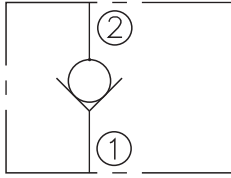


HVC06-2

**ZCV-06-B**

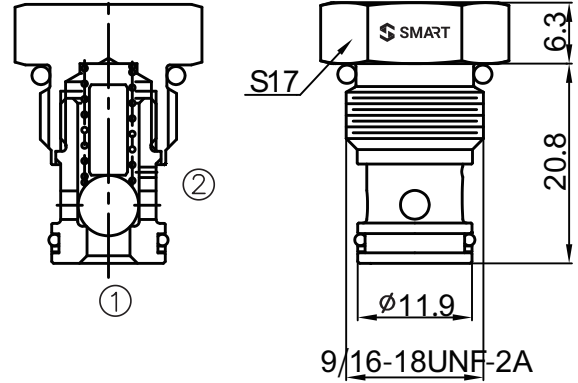
**B**

**SYMBOL**



**SPECIFICATIONS**

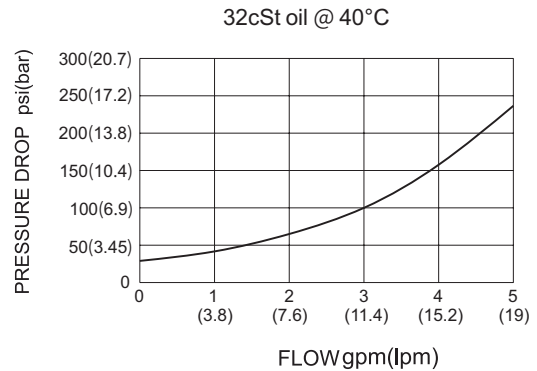
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	2drops/min. max. at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	HYDAC FC06-2, See page G-14
Installation Torque:	20Nm



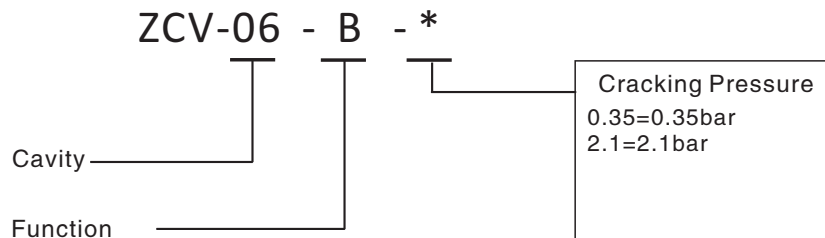
**OPERATION**

Pressure at ① overcomes the spring-bias ball and allows free flow ① to ②;  
Flow in the opposite direction from ② to ① is blocked by the ball.

**PRESSURE DROP VS. FLOW**

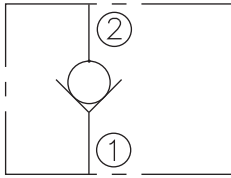


**TO ORDER**



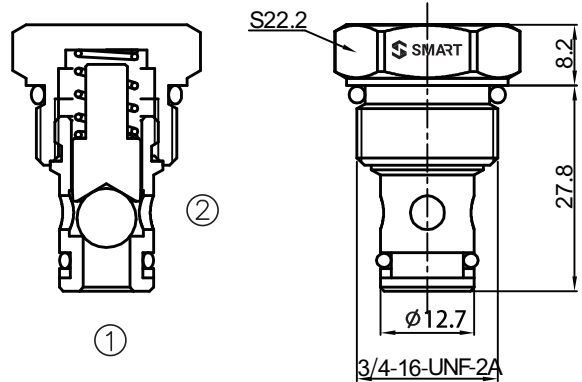
# ZCV08-20

## SYMBOL



## SPECIFICATIONS

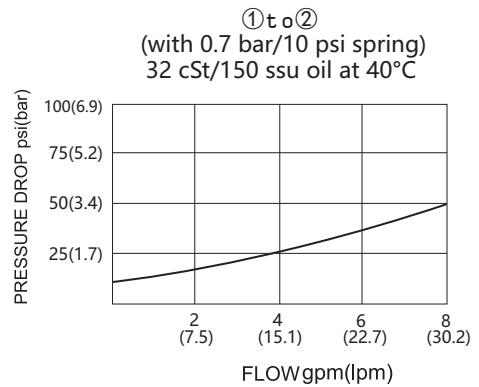
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	3drops/min. max. at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5-27.2Nm



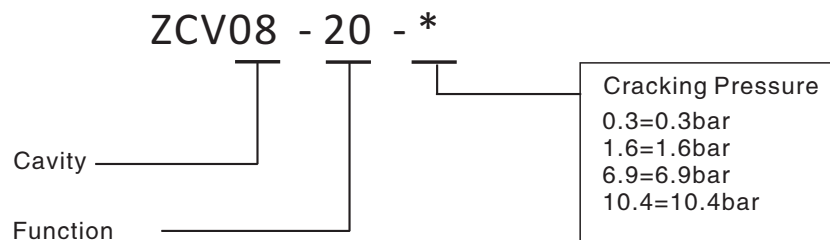
## OPERATION

Pressure at ① overcomes the spring-bias ball and allows free flow ①to②;  
 Flow in the opposite direction from ②to① is blocked by the ball.

## PRESSURE DROP VS. FLOW



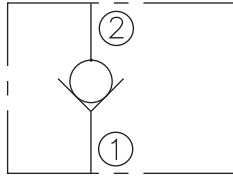
## TO ORDER



# ZCV08-20B

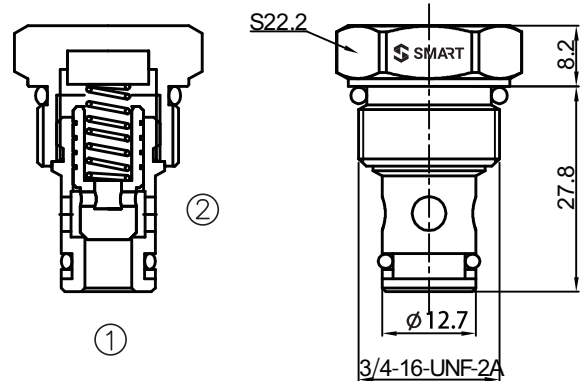
B

**SYMBOL**



**SPECIFICATIONS**

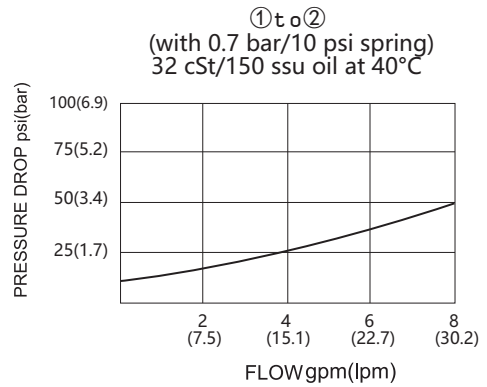
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	3drops/min. max. at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5-27.2Nm



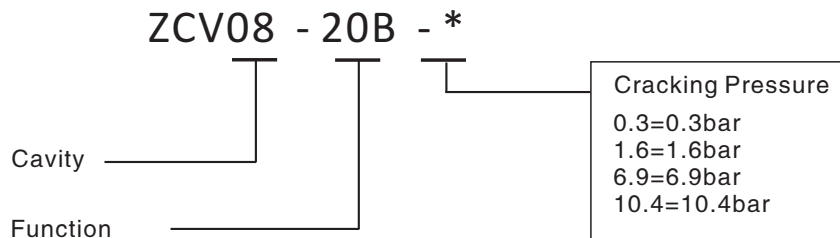
**OPERATION**

Pressure at ① overcomes the spring-bias poppet and allows free flow ①to②;  
 Flow in the opposite direction from ②to① is blocked by the poppet.

**PRESSURE DROP VS. FLOW**

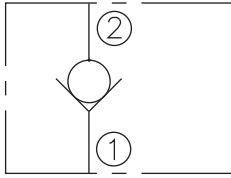


**TO ORDER**



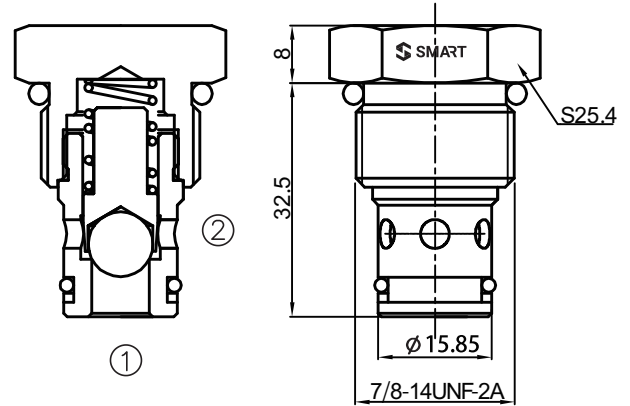
# ZCV10-20

## SYMBOL



## SPECIFICATIONS

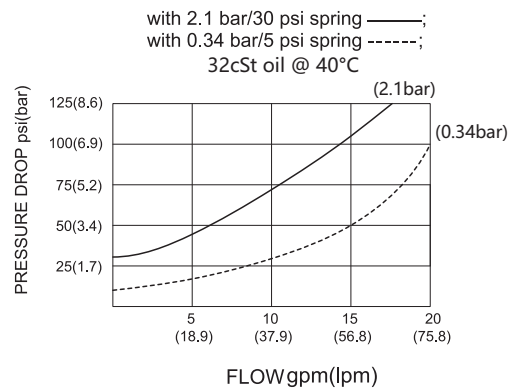
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	3drops/min. max. at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



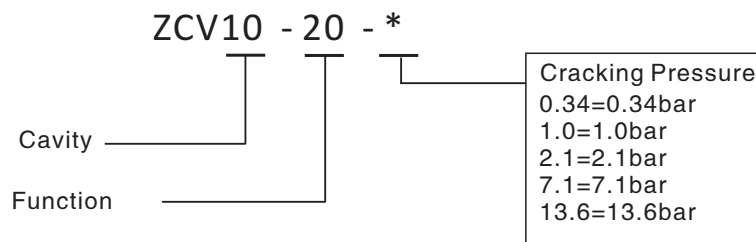
## OPERATION

Pressure at ① overcomes the spring-bias ball and allows free flow ①to②;  
 Flow in the opposite direction from ②to① is blocked by the ball.

## PRESSURE DROP VS. FLOW

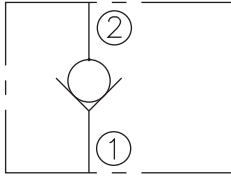


## TO ORDER



# ZCV10-20B

## SYMBOL

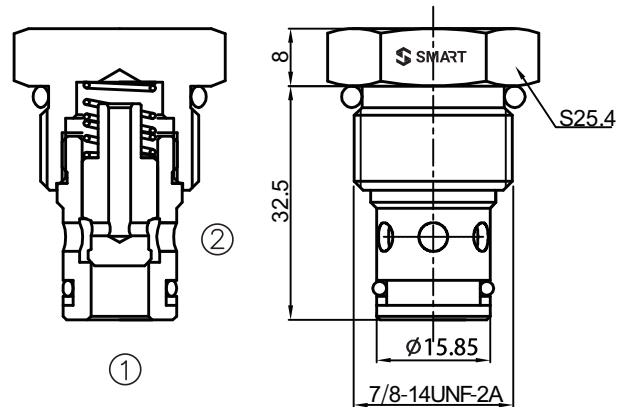


## SPECIFICATIONS

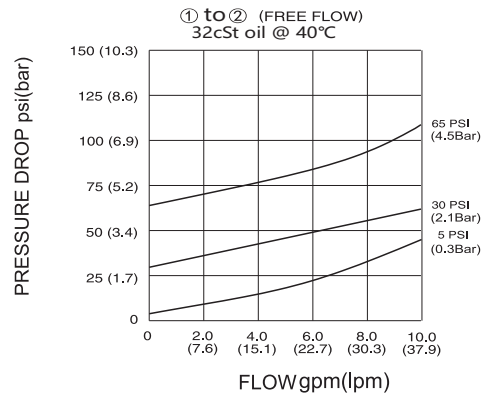
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	3drops/min. max. at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm

## OPERATION

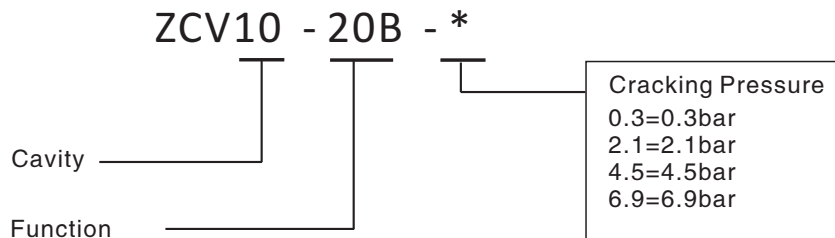
Pressure at ① overcomes the spring-bias poppet and allows free flow ①to②;  
 Flow in the opposite direction from ②to① is blocked by the poppet.



## PRESSURE DROP VS. FLOW

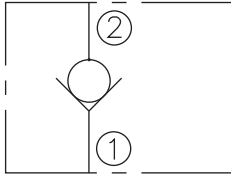


## TO ORDER



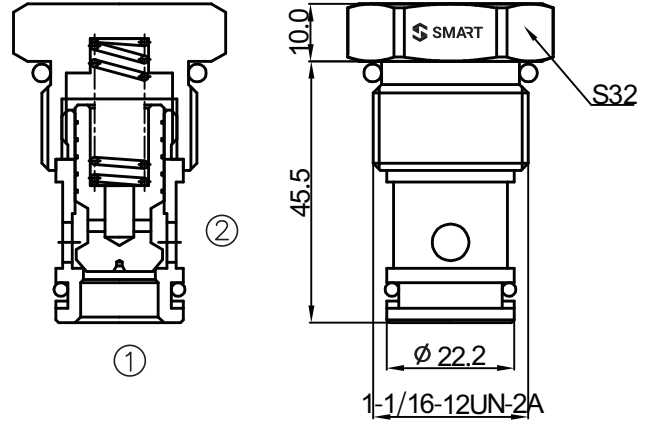
# ZCV12-20

## SYMBOL



## SPECIFICATIONS

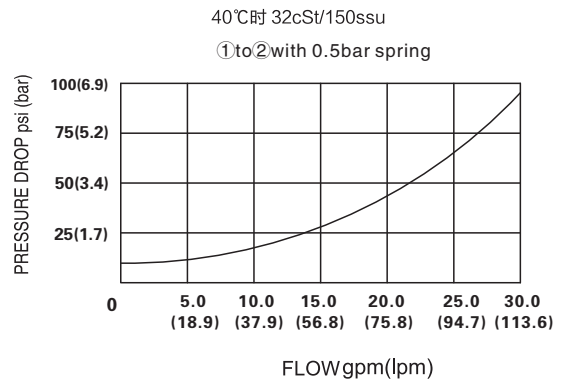
MAX.Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	5drops/min.max.at 240bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	12-2 See page G-3
Installation Torque:	44.9-50.3Nm



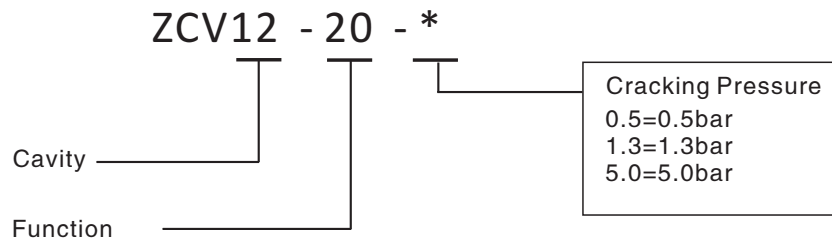
## OPERATION

Pressure at ① overcomes the spring-bias poppet and allows free flow ①to②;  
Flow in the opposite direction from ②to① is blocked by the poppet.

## PRESSURE DROP VS.FLOW

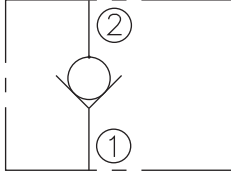


## TO ORDER



# ZCV16-20

## SYMBOL

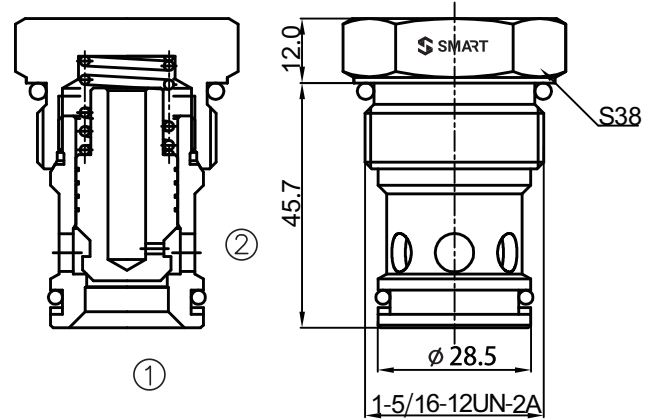


## SPECIFICATIONS

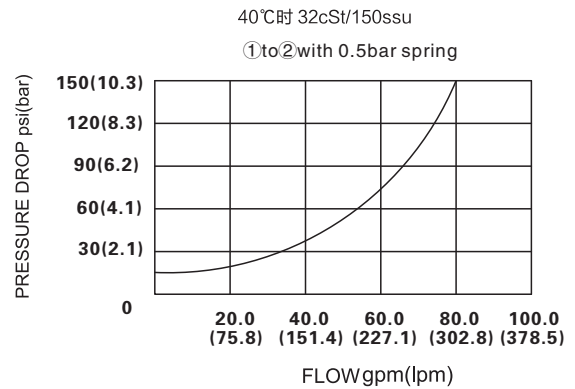
MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at 240bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	16-2 See page G-3
Installation Torque:	62.6-73.4Nm

## OPERATION

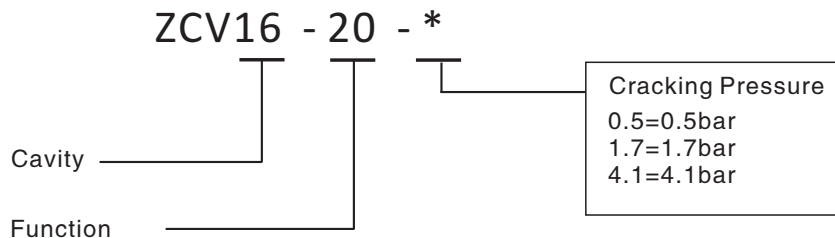
Pressure at ① overcomes the spring-bias poppet and allows free flow ①to②;  
Flow in the opposite direction from ②to① is blocked by the poppet.



## PRESSURE DROP VS. FLOW

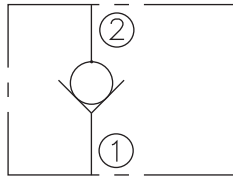


## TO ORDER



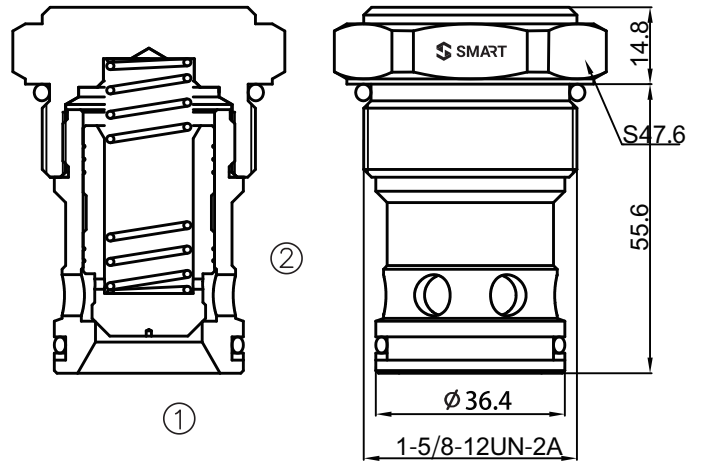
# ZCV-20P

## SYMBOL



## SPECIFICATIONS

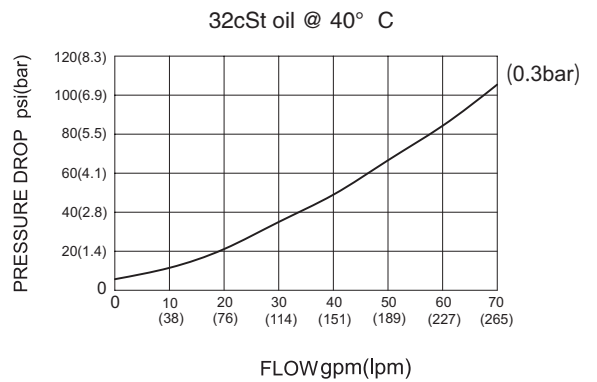
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min.max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	20-2 See page G-15
Installation Torque:	130Nm



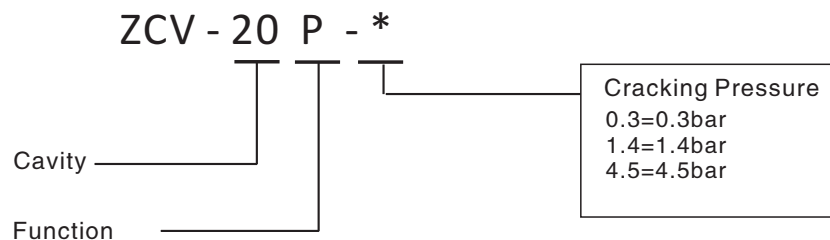
## OPERATION

Pressure at ① overcomes the spring-bias poppet and allows free flow ① to ②;  
 Flow in the opposite direction from ② to ① is blocked by the poppet.

## PRESSURE DROP VS. FLOW

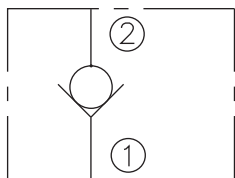


## TO ORDER



# ZCXDA

## SYMBOL

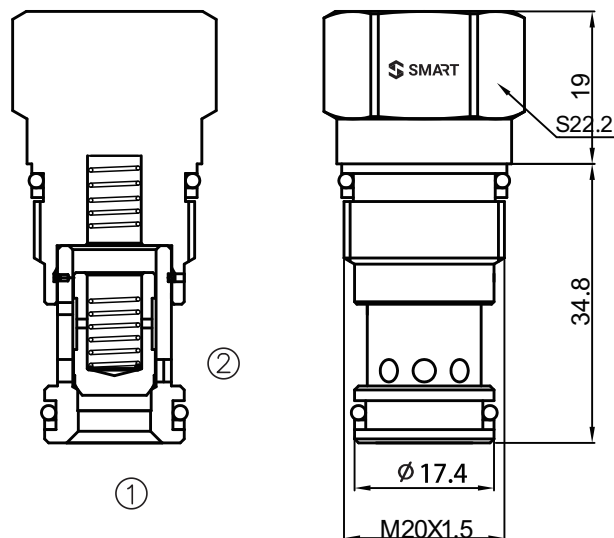


## SPECIFICATIONS

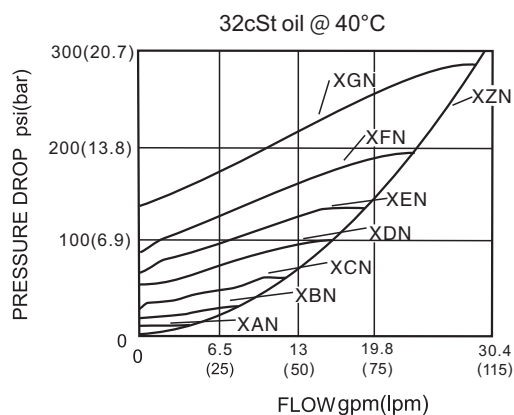
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	1drops/min.max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-13A See pageG-23
Installation Torque:	41-47Nm

## OPERATION

Pressure at ① overcomes the spring-bias poppet and allows free ① to ②.Flow in the opposite direction, from ② to ①,is blocked by the poppet.



## PRESSURE DROP VS.FLOW



## TO ORDER

ZCXDA - X \* \*

Flow  
D=80L/min

CONTROL  
X=Not Adjustable

Cracking Pressure	A=0.3bar(4psi)
	B=1.0bar(15psi)
	C=2.0bar(30psi)
	D=3.5bar(50psi)
	E=5.0bar(75psi)
	F=7.0bar(100psi)
	G=10.5bar(150psi)
	Z=0.07bar(1psi)

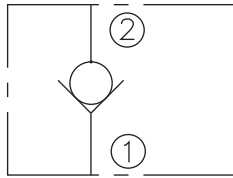
Seal Kits	N= Buna N
	V= Viton

# Check Valves (Poppet-type)



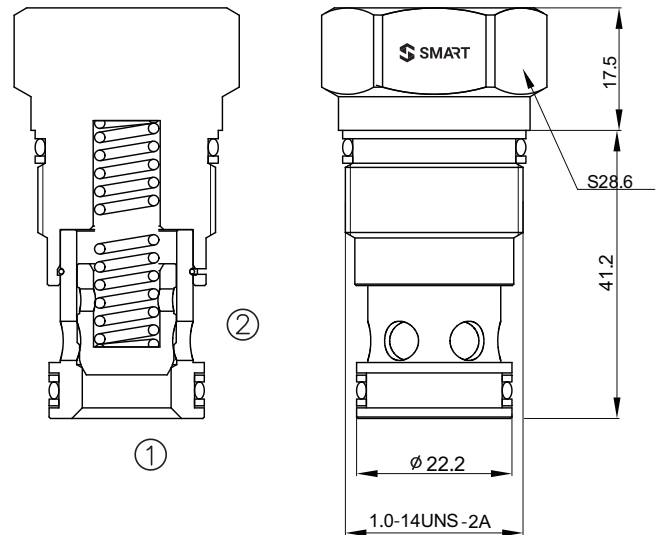
## ZCXFA

### SYMBOL



### SPECIFICATIONS

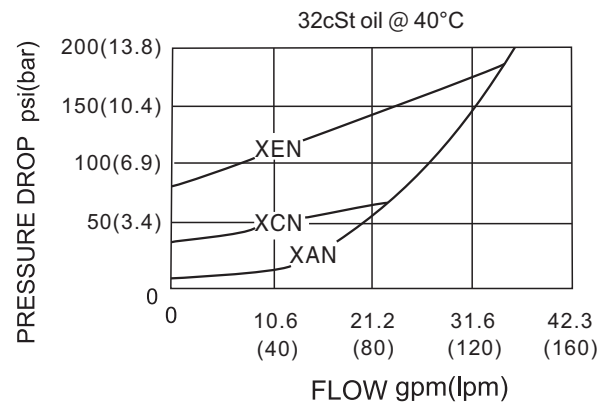
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	1drops/min.max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-5A See pageG-23
Installation Torque:	61-68Nm



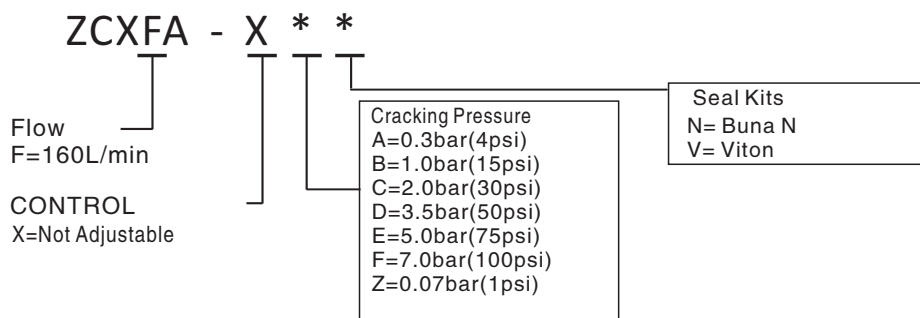
### OPERATION

Pressure at ① overcomes the spring-bias poppet and allows free ① to ②. Flow in the opposite direction, from ② to ①, is blocked by the poppet.

### PRESSURE DROP VS. FLOW

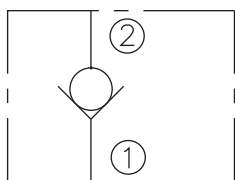


### TO ORDER



## ZCXHA

### SYMBOL

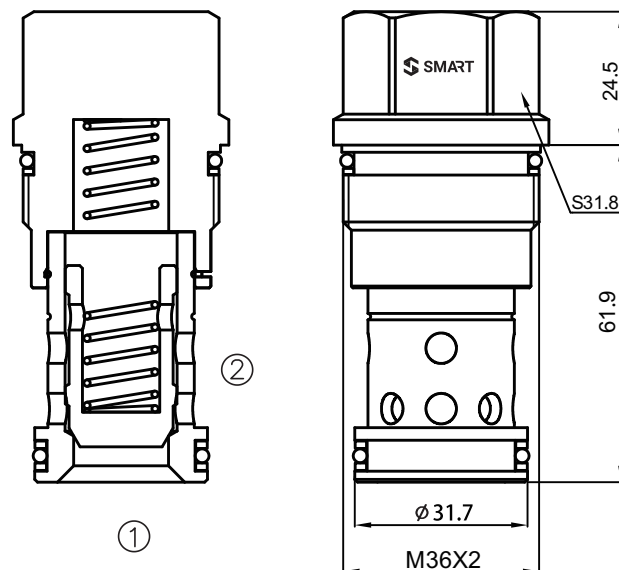


### SPECIFICATIONS

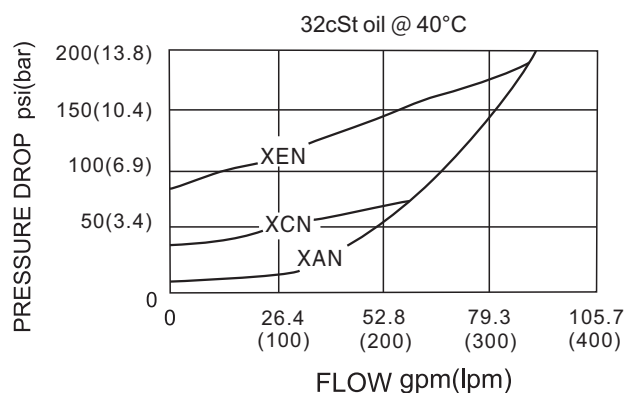
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	1drops/min.max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-16A See pageG-21
Installation Torque:	203-217Nm

### OPERATION

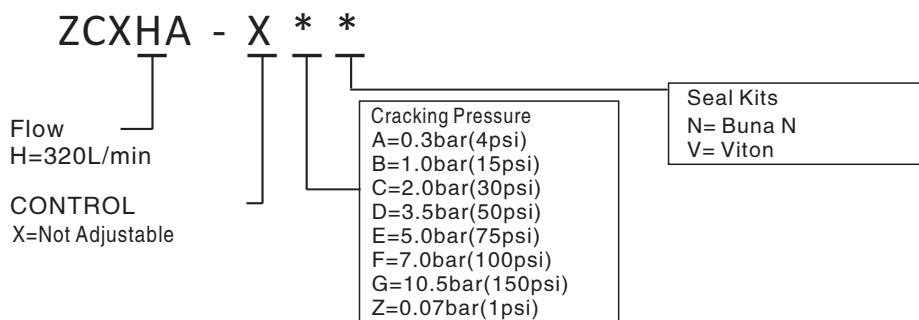
Pressure at ① overcomes the spring-bias poppet and allows free ① to ②.Flow in the opposite direction, from ② to ①,is blocked by the poppet.



### PRESSURE DROP VS.FLOW

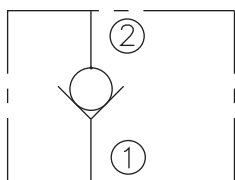


### TO ORDER



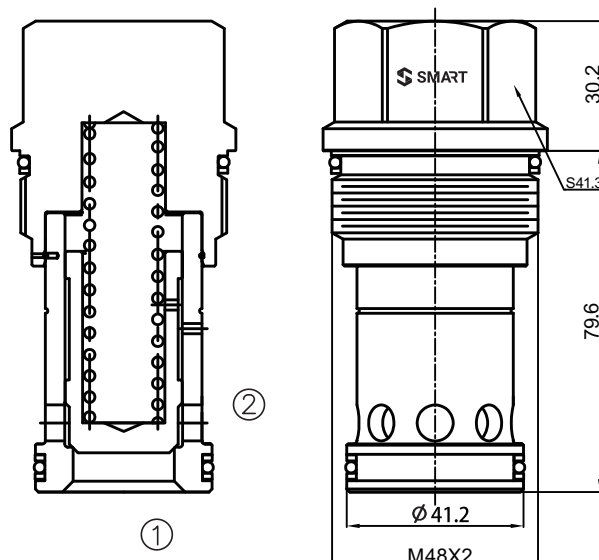
## ZCXJA

### SYMBOL



### SPECIFICATIONS

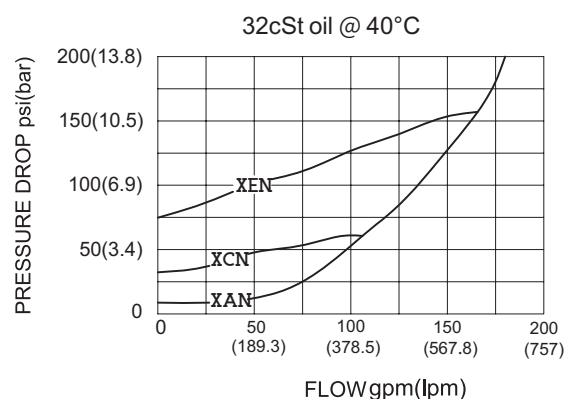
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	1drops/min.max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-18A See pageG-21
Installation Torque:	474-508Nm



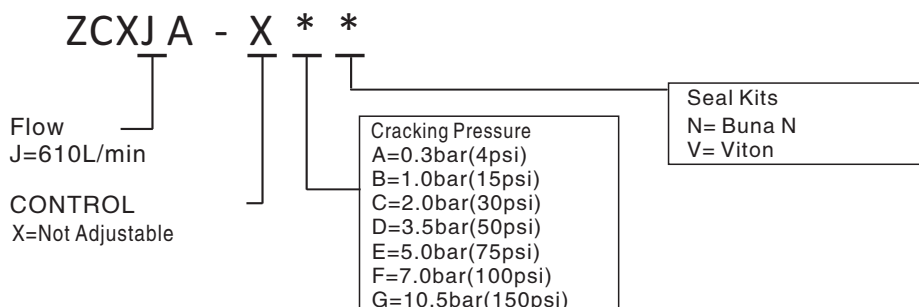
### OPERATION

Pressure at ① overcomes the spring-bias poppet and allows free ① to ②. Flow in the opposite direction, from ② to ①, is blocked by the poppet.

### PRESSURE DROP VS.FLOW

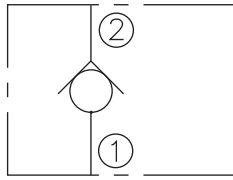


### TO ORDER



# ZCV08-21

## SYMBOL

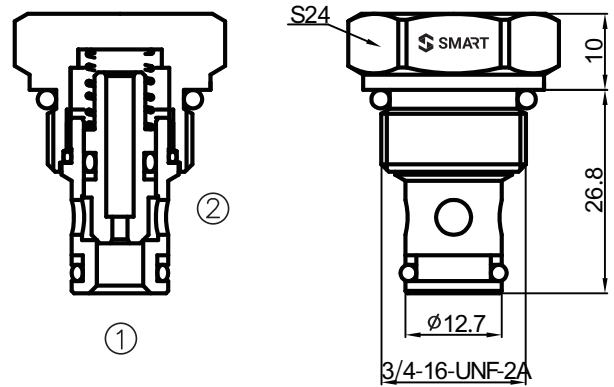


## SPECIFICATIONS

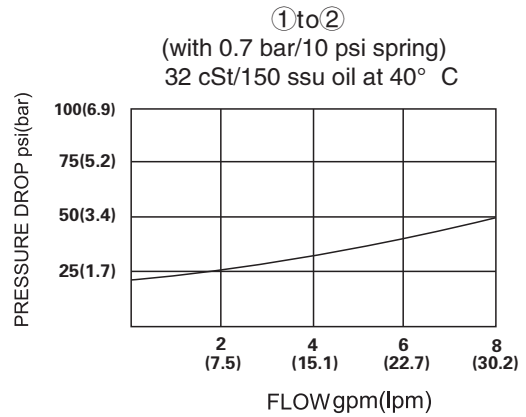
MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at 240bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5-27.2Nm

## OPERATION

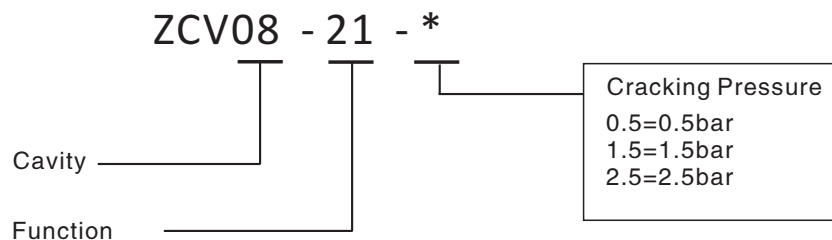
Pressure at ② overcomes the spring-bias poppet and allows free flow ②to①;  
Flow in the opposite direction from ①to② is blocked by the poppet.



## PRESSURE DROP VS. FLOW

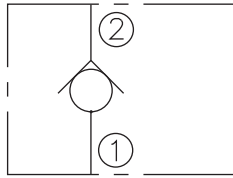


## TO ORDER



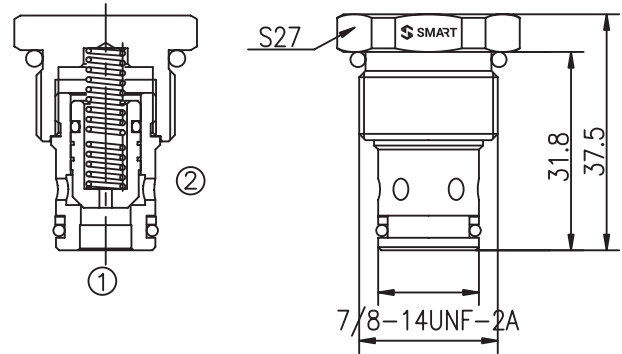
## ZCV10-21

### SYMBOL



### SPECIFICATIONS

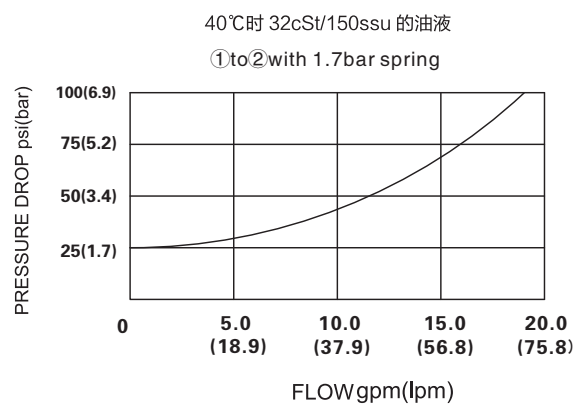
MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at 240bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



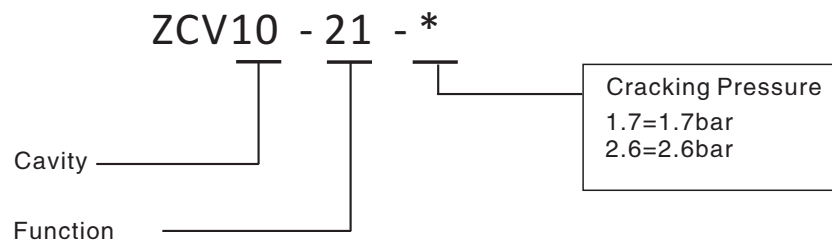
### OPERATION

Pressure at ② overcomes the spring-bias poppet and allows free flow ②to①;  
Flow in the opposite direction from ①to② is blocked by the poppet.

### PRESSURE DROP VS. FLOW



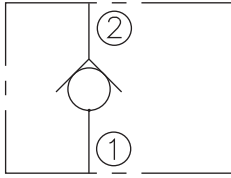
### TO ORDER



# ZCV08-24

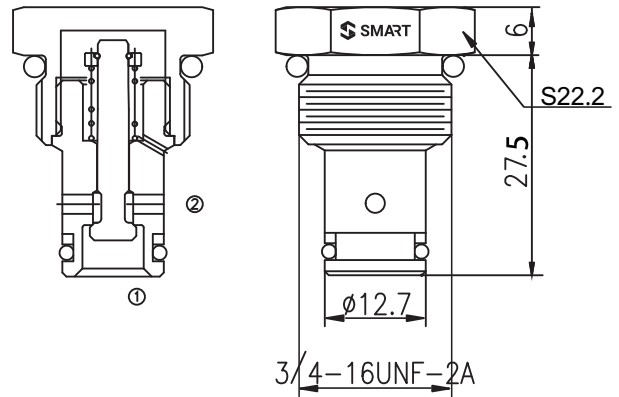
**B**

**SYMBOL**



**SPECIFICATIONS**

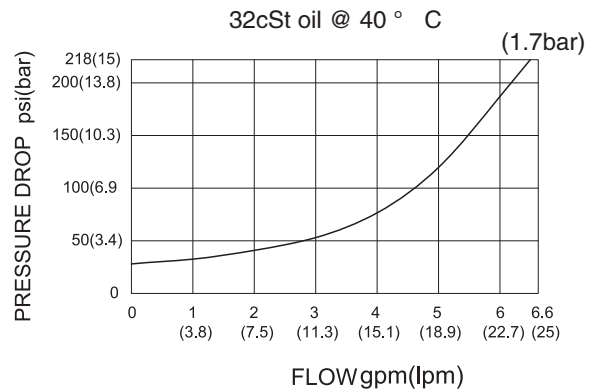
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	2drops/min. max. at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	35-40Nm



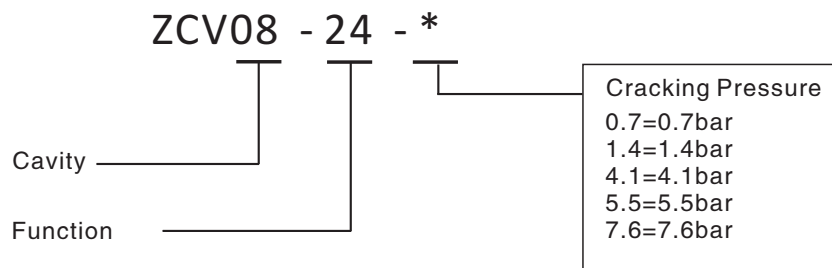
**OPERATION**

Pressure at ② overcomes the spring-bias poppet and allows free flow ②to①;  
Flow in the opposite direction from ①to② is blocked by the poppet.

**PRESSURE DROP VS. FLOW**

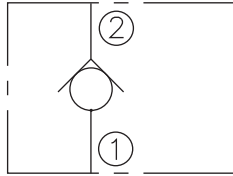


**TO ORDER**



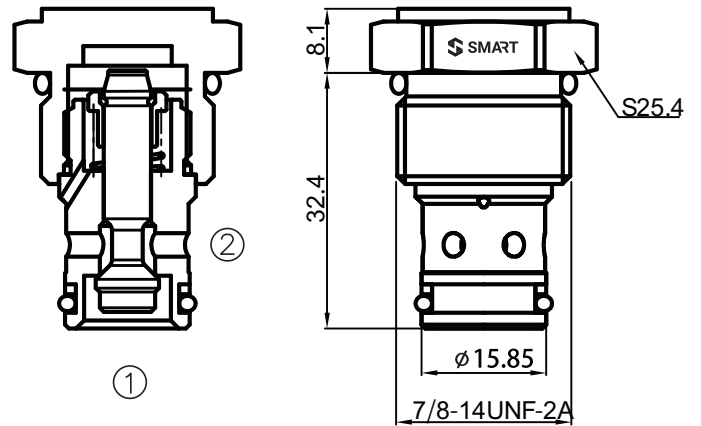
# ZCV10-24

## SYMBOL



## SPECIFICATIONS

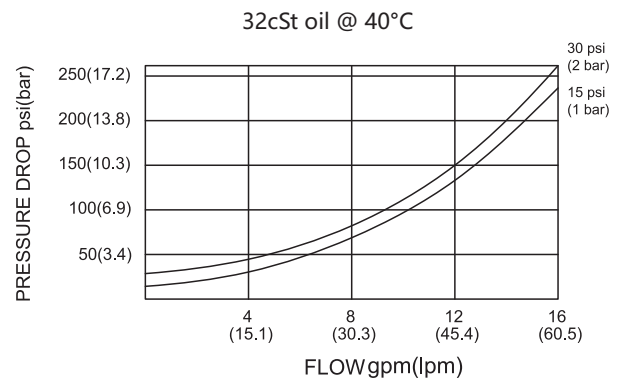
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	3drops/min. max. at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



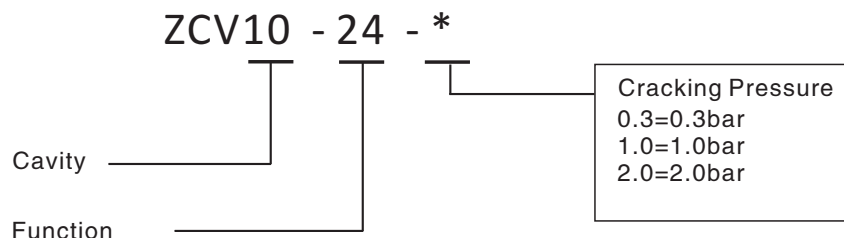
## OPERATION

Pressure at ② overcomes the spring-bias poppet and allows free flow ②to①;  
Flow in the opposite direction from ①to② is blocked by the poppet.

## PRESSURE DROP VS. FLOW

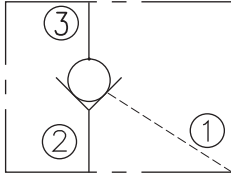


## TO ORDER



# ZPC08-30

## SYMBOL

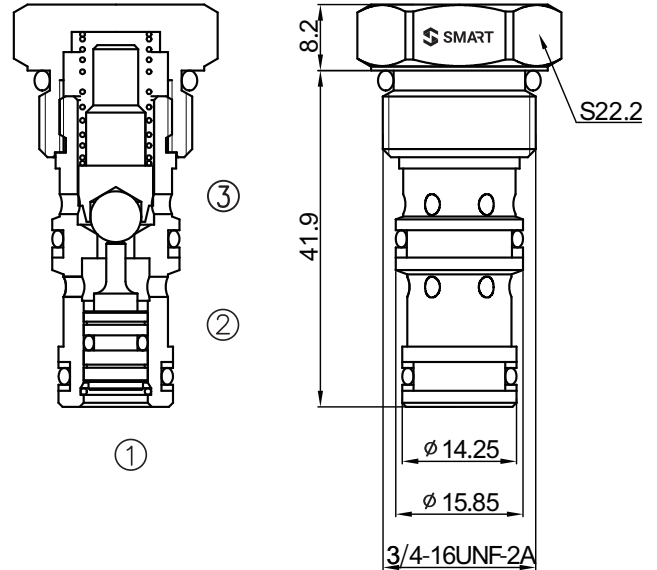


## SPECIFICATIONS

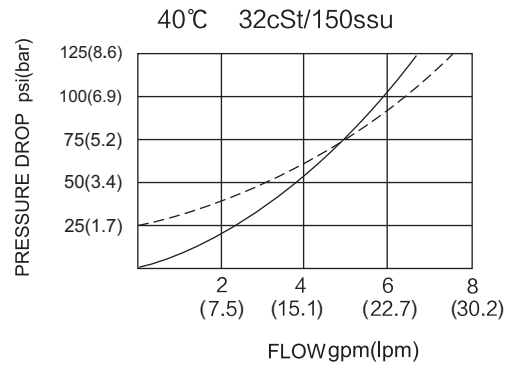
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min.max.at 250bar
Pilot Ratio:	3:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	24.5-27.1Nm

## OPERATION

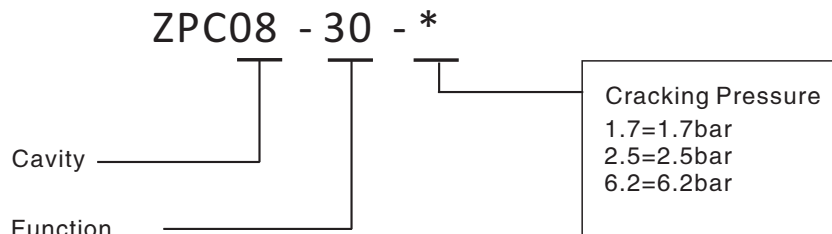
Pressure at ② overcomes the spring-bias poppet and allows free flow ②to③;  
 Flow in the opposite direction from ③to② is blocked by the poppet.  
 The cartridge has a 3:1 pilot ratio, meaning that at least one-third of the load pressure held at ③ is required at ① to open the valve.



## PRESSURE DROP VS.FLOW

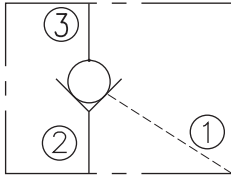


## TO ORDER



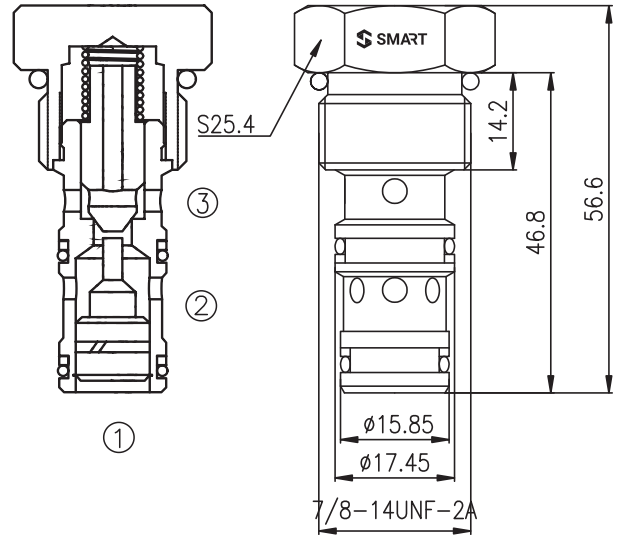
# ZPC10-30

## SYMBOL



## SPECIFICATIONS

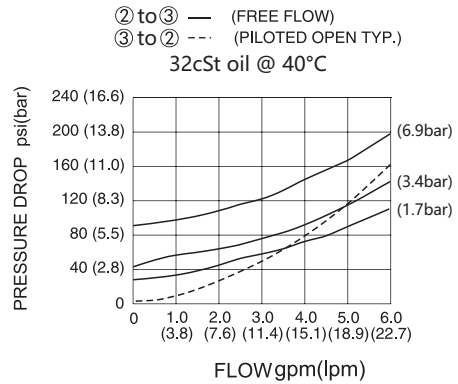
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min.max.at 250bar
Pilot Ratio:	3.5:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	33.9-36.7Nm



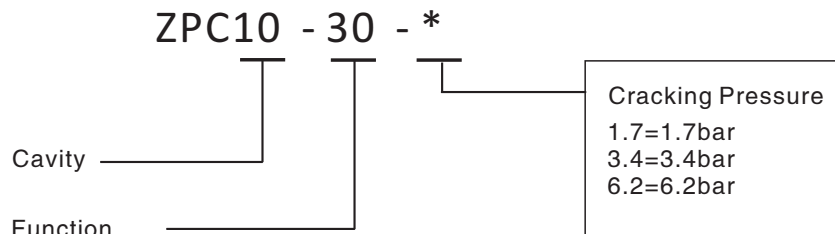
## OPERATION

Pressure at ② overcomes the spring-bias poppet and allows free flow ②to③;  
 Flow in the opposite direction from ③to② is blocked by the poppet.  
 The cartridge has a 3.5:1 pilot ratio, meaning that at least one-third of the load pressure held at ③ is required at ① to open the valve.

## PRESSURE DROP VS.FLOW

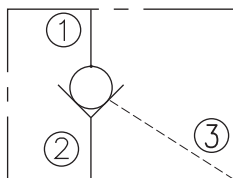


## TO ORDER



# ZPCI-08M

## SYMBOL

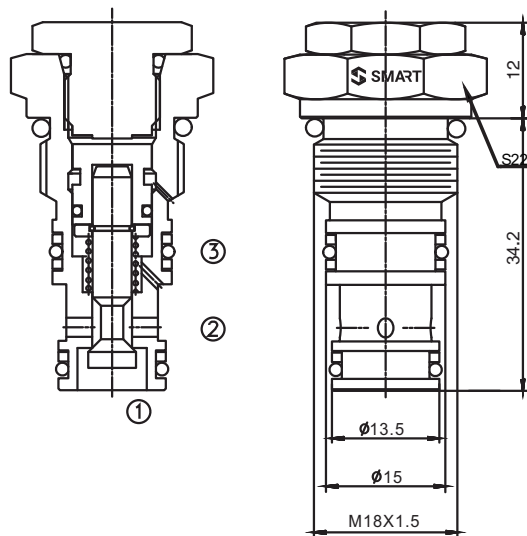


## SPECIFICATIONS

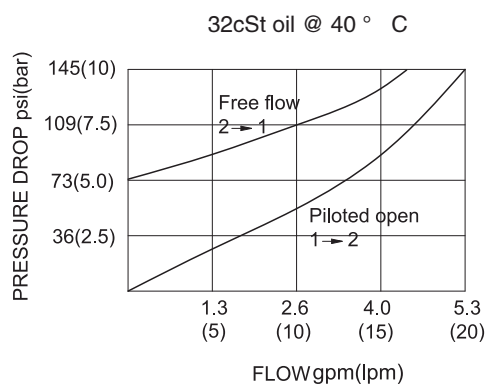
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	2drops/min. max. at 350bar
Pilot Ratio:	4:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08M-3 See page G-12
Installation Torque:	35-40Nm

## OPERATION

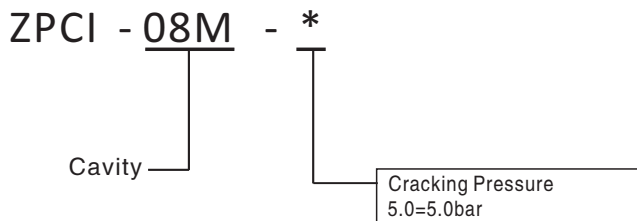
Pressure at ② overcomes the spring-bias poppet and allows free flow ②to①; Flow in the opposite direction from ①to② is blocked by the poppet. The cartridge has a 4:1 pilot ratio, meaning that is required at pilot ③ to open the valve.



## PRESSURE DROP VS. FLOW

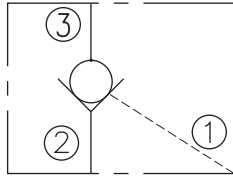


## TO ORDER



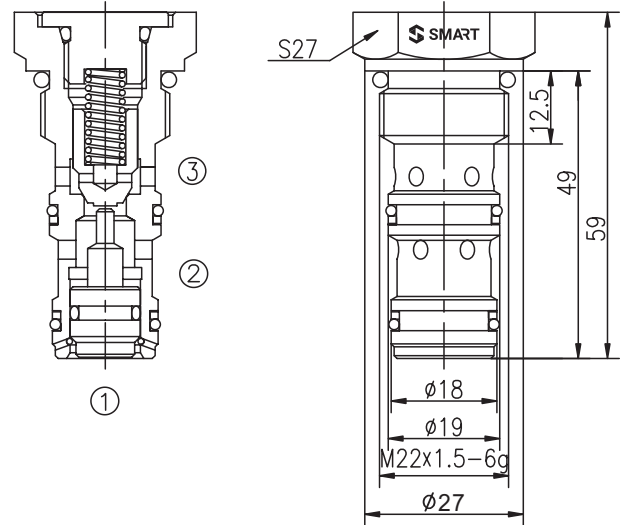
# ZPC-M2215

## SYMBOL



## SPECIFICATIONS

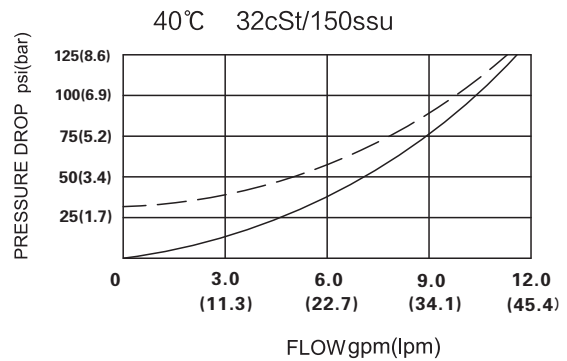
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min.max.at 250bar
Pilot Ratio:	2.8:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T5-S2 See page G-10
Installation Torque:	33.9-36.7Nm



## OPERATION

Pressure at ② overcomes the spring-bias poppet and allows free flow ②to③;  
 Flow in the opposite direction from ③to② is blocked by the poppet.  
 The cartridge has a 2.8:1 pilot ratio, meaning that at least one-third of the load pressure held at ③ is required at ① to open the valve.

## PRESSURE DROP VS.FLOW



## TO ORDER

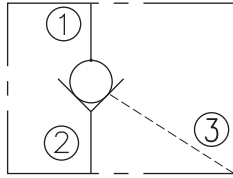
ZPC -M2215 - \*

Cavity \_\_\_\_\_

Cracking Pressure  
 2.0=2.0bar  
 6.2=6.2bar

**ZCKBB**

**SYMBOL**

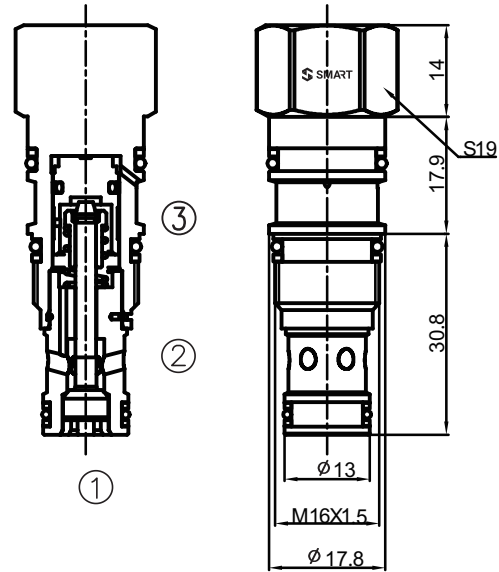


**SPECIFICATIONS**

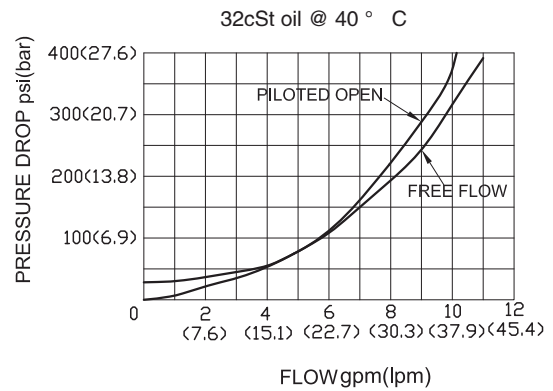
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	1 drops/min. max. at 350bar
Pilot Ratio:	3:1
Temperature:	-30°C~+100°C ( Standard buna seals )
Filtration:	See page Z-1
Cavity:	SUN T-163A See page G-7
Installation Torque:	27-34Nm

**OPERATION**

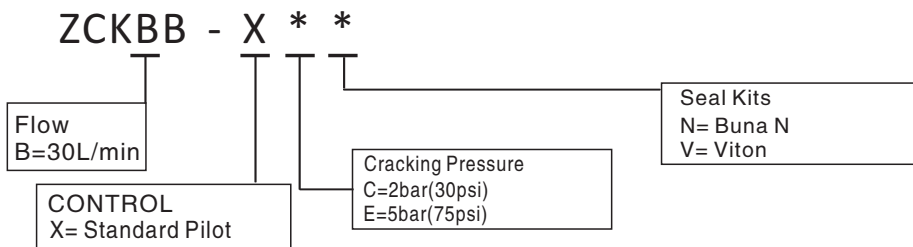
The valve has a non-sealed pilot. Pressure at ② overcomes the spring-bias poppet and allows free flow ② to ①; Flow in the opposite direction from ① to ② is blocked by the poppet. The cartridge has a 3:1 pilot ratio, meaning that is required at pilot ③ to open the valve.



**PRESSURE DROP VS. FLOW**

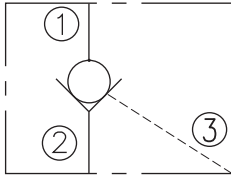


**TO ORDER**



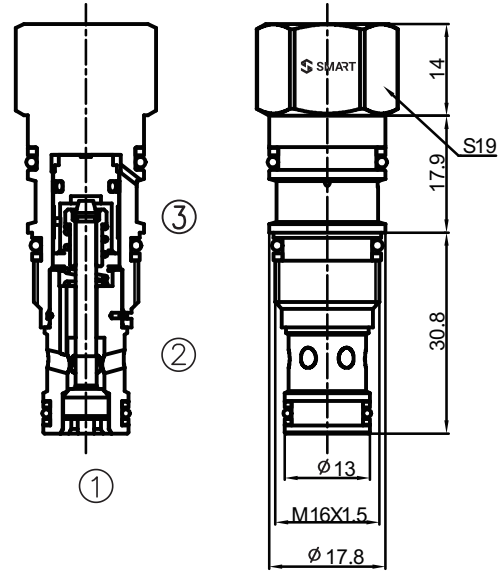
## ZCKBD

### SYMBOL



### SPECIFICATIONS

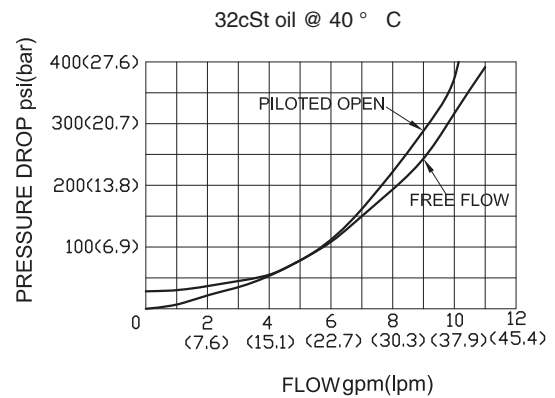
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	1 drops/min. max. at 350bar
Pilot Ratio:	3:1
Temperature:	-30°C~+100°C ( Standard buna seals )
Filtration:	See page Z-1
Cavity:	SUN T-163A See page G-7
Installation Torque:	27-34Nm



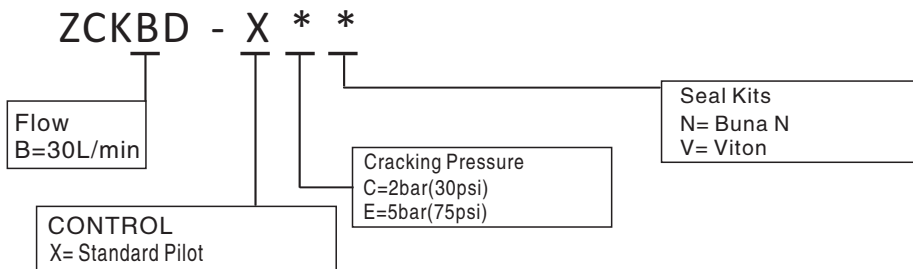
### OPERATION

The valve has a sealed pilot. Pressure at ② overcomes the spring-bias poppet and allows free flow ② to ①; Flow in the opposite direction from ① to ② is blocked by the poppet. The cartridge has a 3:1 pilot ratio, meaning that is required at pilot ③ to open the valve.

### PRESSURE DROP VS. FLOW

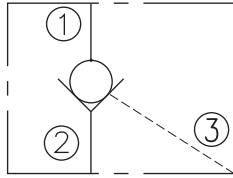


### TO ORDER



**ZCKCB**

**SYMBOL**

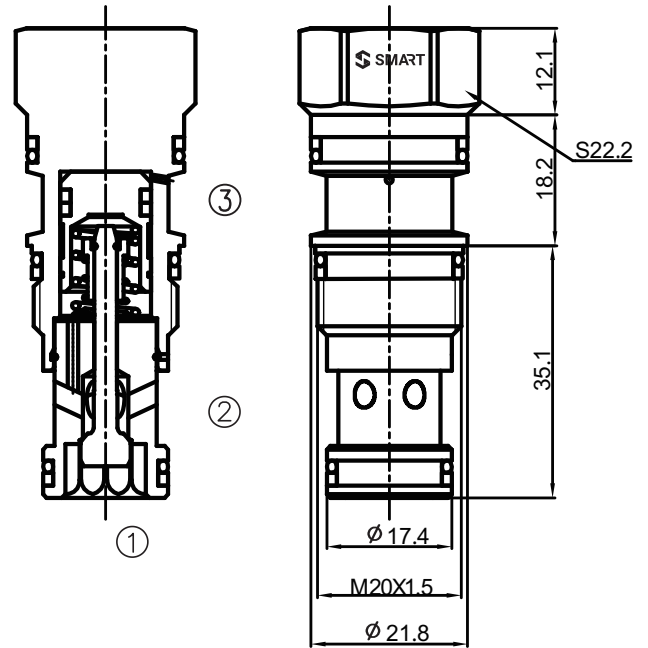


**SPECIFICATIONS**

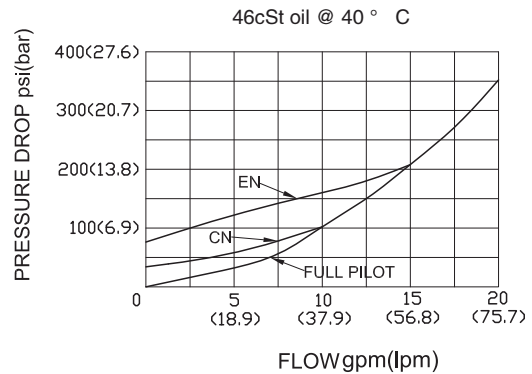
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	1drops/min.max.at 350bar
Pilot Ratio:	3:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	45-50Nm

**OPERATION**

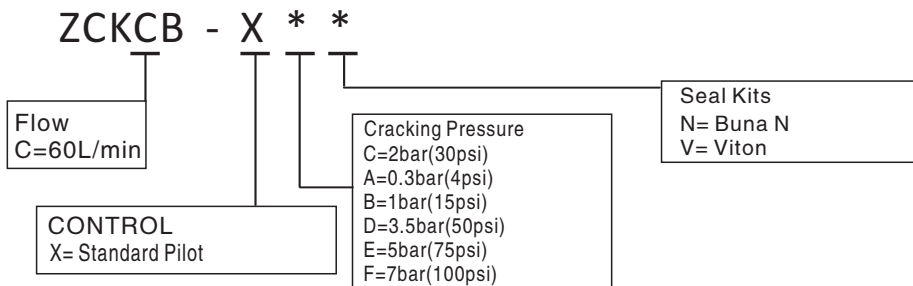
The valve has a non-sealed pilot. Pressure at ② overcomes the spring-bias poppet and allows free flow ②to①; Flow in the opposite direction from ①to② is blocked by the poppet. The cartridge has a 3:1 pilot ratio, meaning that is required at pilot ③ to open the valve.



**PRESSURE DROP VS. FLOW**

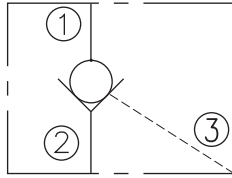


**TO ORDER**



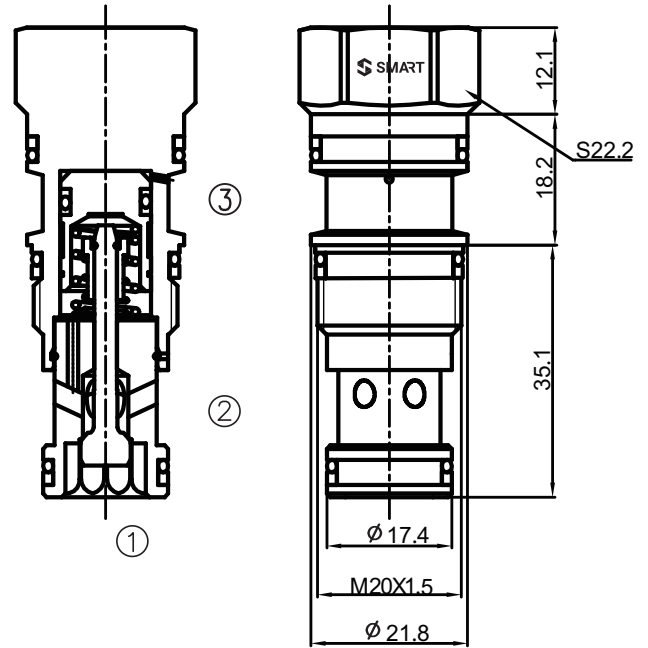
# ZCKCD

## SYMBOL



## SPECIFICATIONS

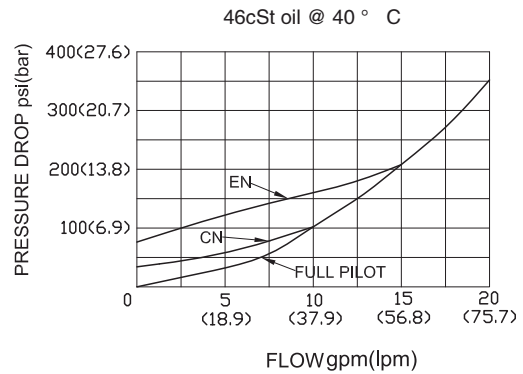
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	1 drops/min. max. at 350bar
Pilot Ratio:	3:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	45-50Nm



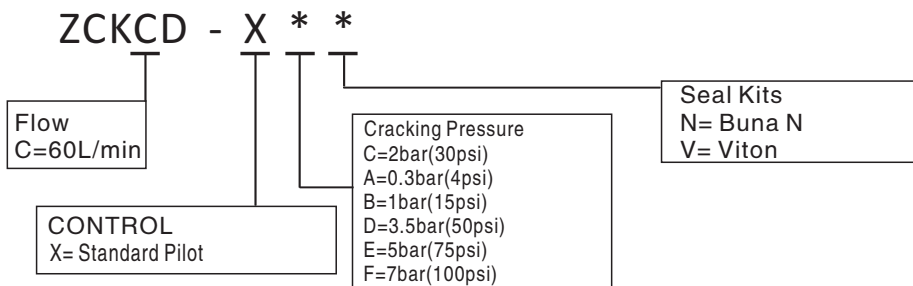
## OPERATION

The valve has a sealed pilot. Pressure at ② overcomes the spring-bias poppet and allows free flow ② to ①; Flow in the opposite direction from ① to ② is blocked by the poppet. The cartridge has a 3:1 pilot ratio, meaning that is required at pilot ③ to open the valve.

## PRESSURE DROP VS. FLOW

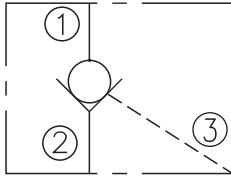


## TO ORDER



**ZCKEB**

**SYMBOL**

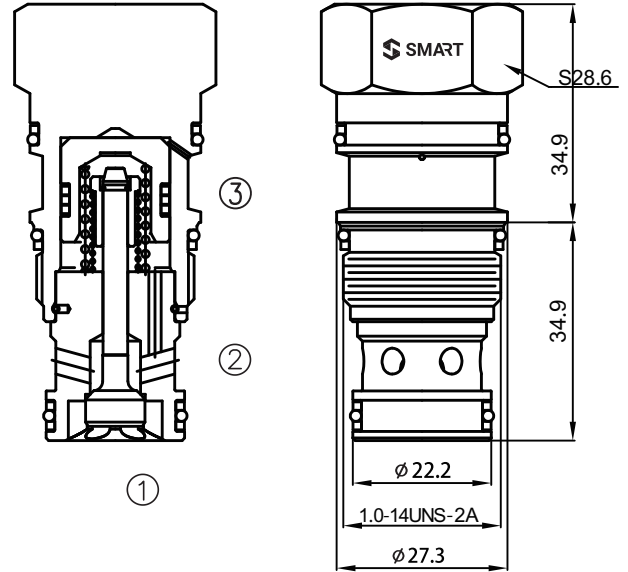


**SPECIFICATIONS**

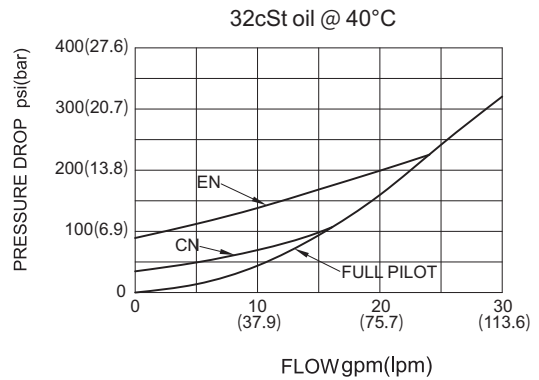
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	1 drops/min. max. at 350bar
Pilot Ratio:	3:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUNT-2A, See page G-4
Installation Torque:	61-68Nm

**OPERATION**

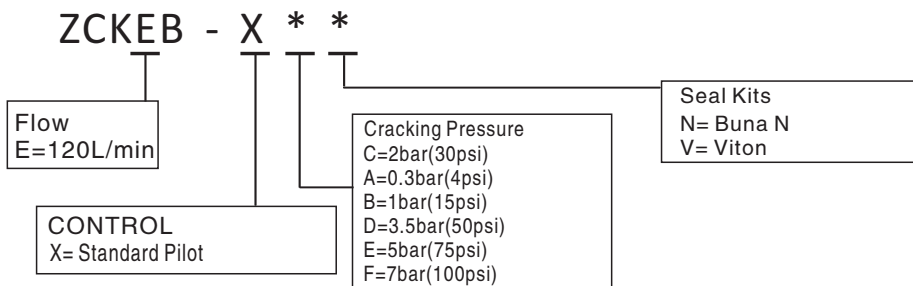
The valve has a non-sealed pilot. It allowed free flow from port ② to port ① and blocks flow from port ① to port ②. Flow will be allowed from port ① to port ② when sufficient pressure is applied at pilot ③. This pilot operated check valve has a 3:1 pilot ratio, meaning that at least one-third of the load pressure held at ① is required at pilot ③ to open the valve. Pressure at port ② directly opposes pilot pressure.



**PRESSURE DROP VS. FLOW**

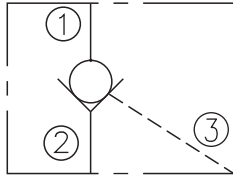


**TO ORDER**



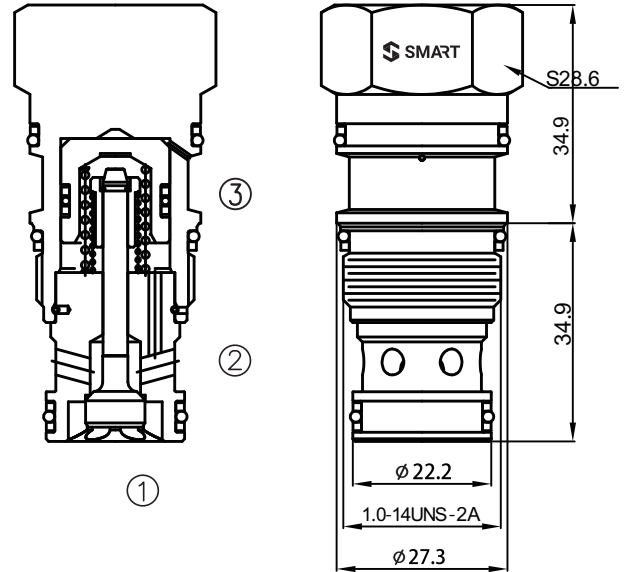
## ZCKED

### SYMBOL



### SPECIFICATIONS

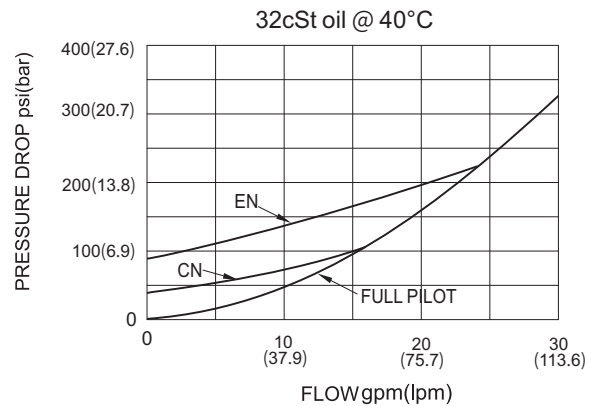
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	0.07cc/min.
Pilot Ratio:	3:1
Temperature:	-30°C~+100°C ( Standard buna seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A, See page G-4
Installation Torque:	61-68Nm



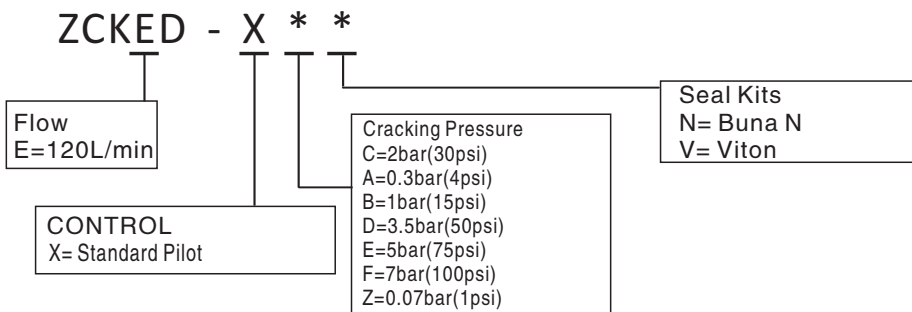
### OPERATION

The valve has a sealed pilot. It allowed free flow from port ② to port ① and blocks flow from port ① port to ②. Flow will be allowed from port ① to port ② when sufficient pressure is applied at pilot ③. This pilot operated check valve has a 3:1 pilot ratio, meaning that at least one-third of the load pressure held at ① is required at pilot ③ to open the valve. Pressure at port ② directly opposes pilot pressure.

### PRESSURE DROP VS. FLOW

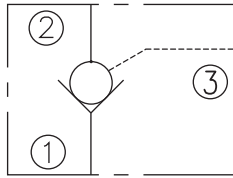


### TO ORDER



# ZPC2-08

## SYMBOL

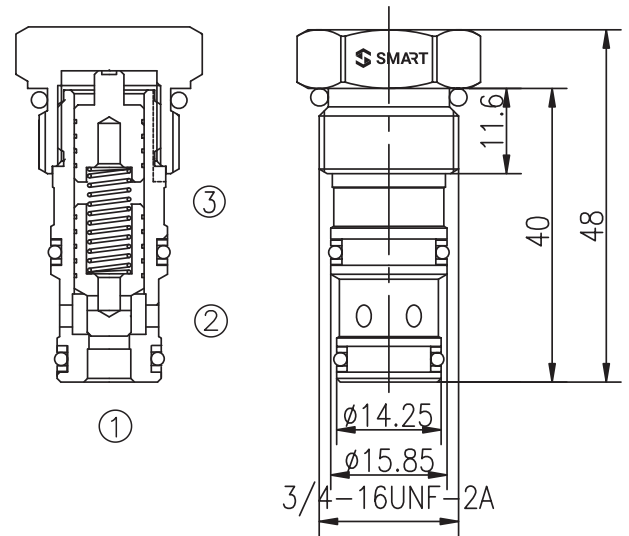


## SPECIFICATIONS

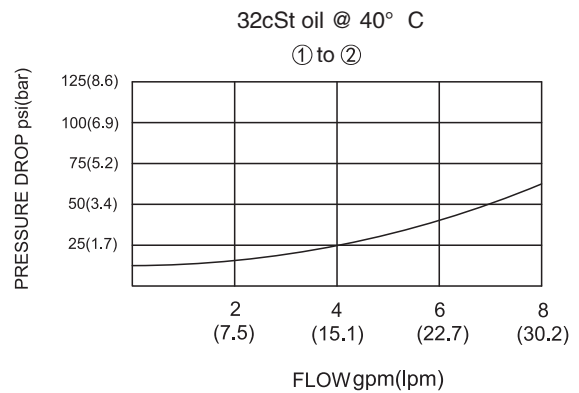
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min.max.at 250bar
Pilot Ratio:	3:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	24.5-27.2Nm

## OPERATION

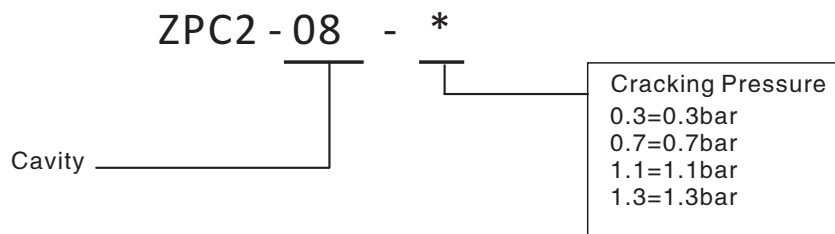
Pressure at ① overcomes the spring-bias poppet and allows free flow ②. Flow in the opposite direction, from ② to ①, is blocked by the poppet. When the required pilot pressure is achieved at ③, the poppet is held closed to block flow between ① and ②. The pilot piston area to poppet seat area ratio is 3 to 1.



## PRESSURE DROP VS. FLOW

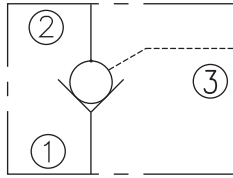


## TO ORDER



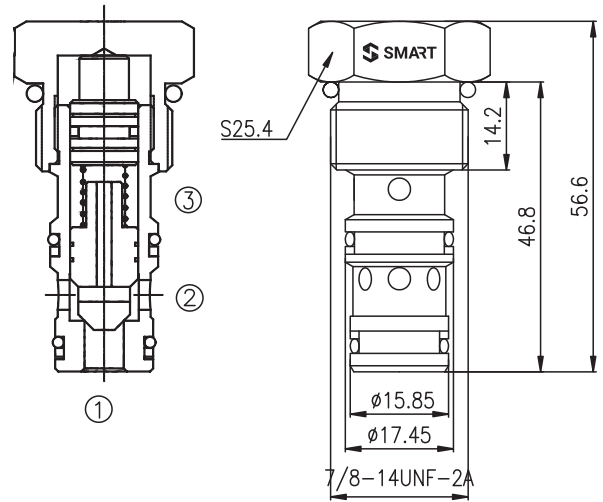
# ZPC2-10

## SYMBOL



## SPECIFICATIONS

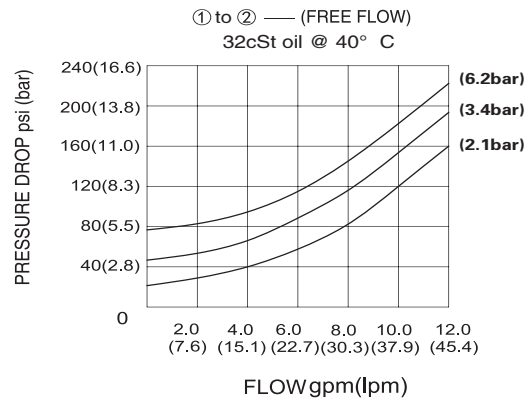
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min.max.at 250bar
Pilot Ratio:	3:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	33.9-36.7Nm



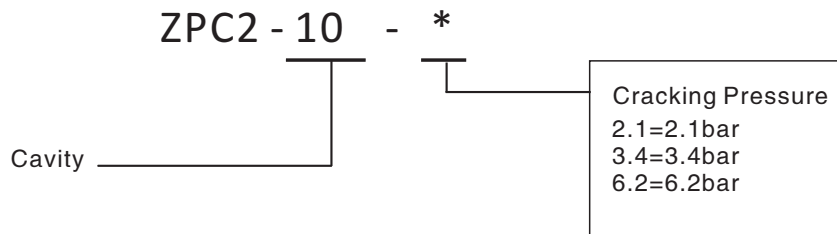
## OPERATION

Pressure at ① overcomes the spring-bias poppet and allows free flow ②. Flow in the opposite direction, from ② to ①, is blocked by the poppet. When the required pilot pressure is achieved at ③, the poppet is held closed to block flow between ① and ②. The pilot piston area to poppet seat area ratio is 3 to 1.

## PRESSURE DROP VS. FLOW

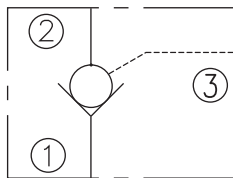


## TO ORDER



## ZCODA

### SYMBOL

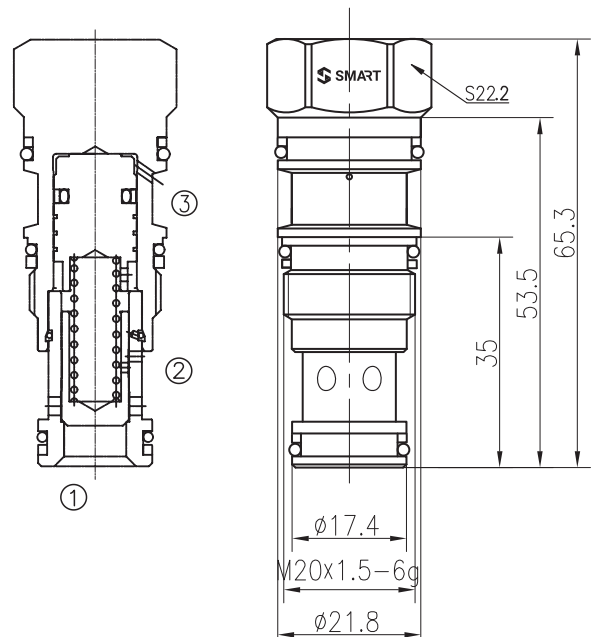


### SPECIFICATIONS

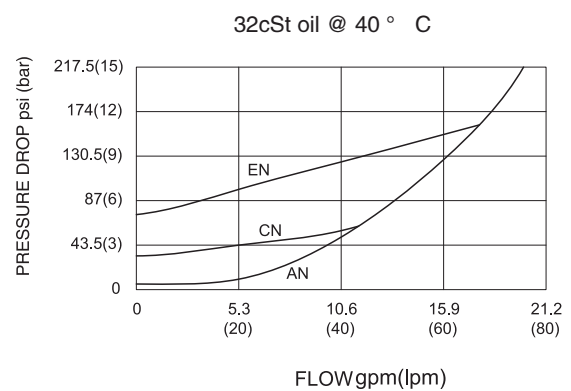
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	2drops/min.max.at 350bar
Pilot Ratio:	1.8:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUNT-11A See page G-4
Installation Torque:	45-50Nm

### OPERATION

Pressure at ① overcomes the spring-bias poppet and allows free flow ②. Flow in the opposite direction, from ② to ①, is blocked by the poppet. When the required pilot pressure is achieved at ③, the poppet is held closed to block flow between ① and ②. The pilot piston area to poppet seat area ratio is 1.8 to 1.



### PRESSURE DROP VS. FLOW



### TO ORDER

ZC O D A - X \* \*

Flow  
D=80L/min

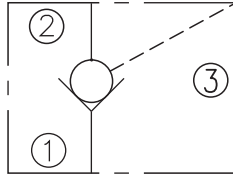
CONTROL  
X= Standard Pilot

Cracking Pressure  
A=0.3bar  
B=1.0bar  
C=2.0bar  
D=3.5bar  
E=5.0bar  
F=7.0bar

Seal Kits  
N= Buna N  
V= Viton

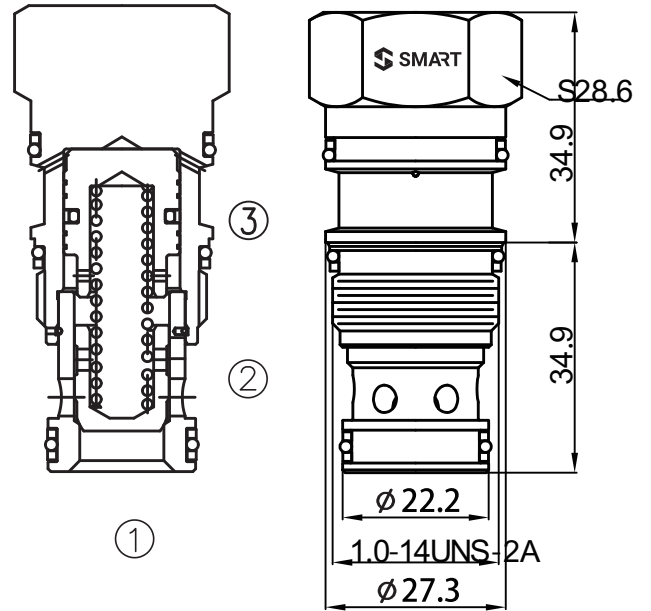
# ZCOFA

## SYMBOL



## SPECIFICATIONS

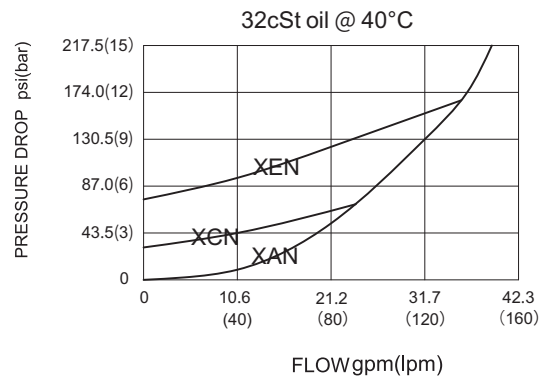
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	2drops/min. max. at 350bar
Pilot Ratio:	1.8:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A See pageG-4
Installation Torque:	60-70Nm



## OPERATION

Pressure at ① overcomes the spring-bias poppet and allows free flow to ②. Flow in the opposite direction, from ② to ①, is blocked by the poppet. When the required pilot pressure is achieved at ③, the poppet is held closed to block flow between ① and ②. The pilot piston area to poppet seat area ratio is 1.8 to 1.

## PRESSURE DROP VS. FLOW



## TO ORDER

ZCOFA - X \* \*

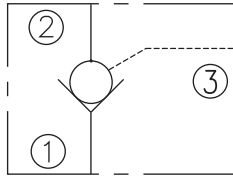
Flow  
D=150L/min  
CONTROL  
X= Standard Pilot

Cracking Pressure  
A=0.3bar  
B=1.0bar  
C=2.0bar  
D=3.5bar  
E=5.0bar  
F=7.0bar  
J=9.5bar

Seal Kits  
N= Buna N  
V= Viton

# ZCOHA

## SYMBOL

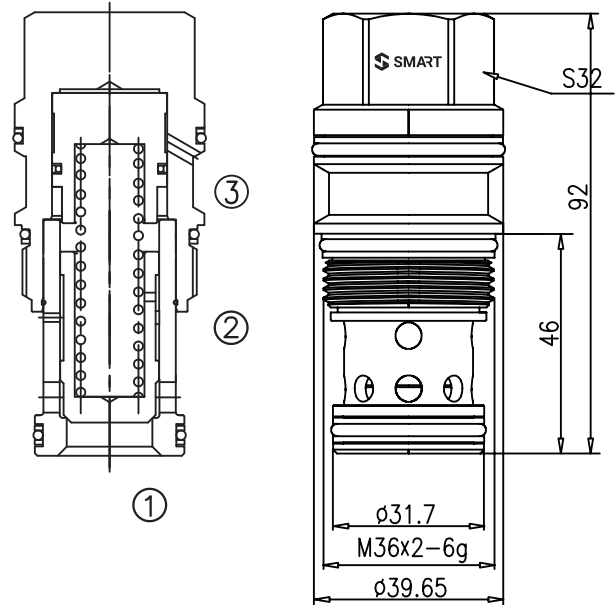


## SPECIFICATIONS

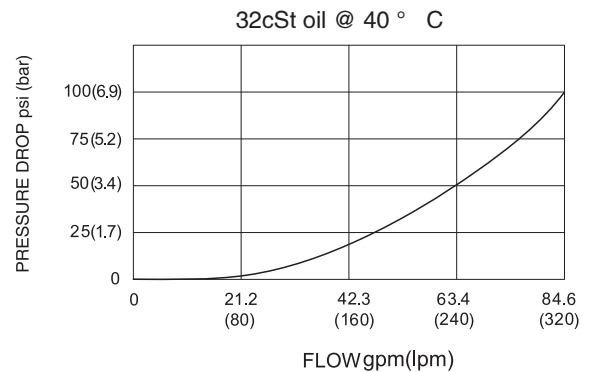
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	2drops/min. max. at 350bar
Pilot Ratio:	1.8:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUNT-17A See page G-5
Installation Torque:	200-215Nm

## OPERATION

Pressure at ① overcomes the spring-bias poppet and allows free flow ②. Flow in the opposite direction, from ② to ①, is blocked by the poppet. When the required pilot pressure is achieved at ③, the poppet is held closed to block flow between ① and ②. The pilot piston area to poppet seat area ratio is 1.8 to 1.



## PRESSURE DROP VS. FLOW



## TO ORDER

ZCOHA - X \* \*

Flow  
H=320L/min

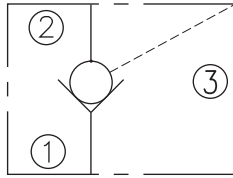
CONTROL  
X= Standard Pilot

Cracking Pressure  
A=0.3bar  
B=1.0bar  
C=2.0bar  
D=3.5bar  
E=5.0bar  
F=7.0bar

Seal Kits  
N= Buna N  
V= Viton

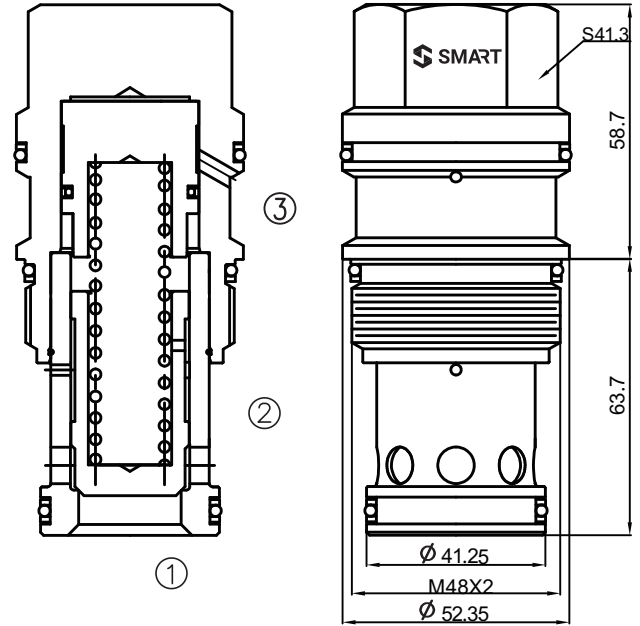
# ZCOJA

## SYMBOL



## SPECIFICATIONS

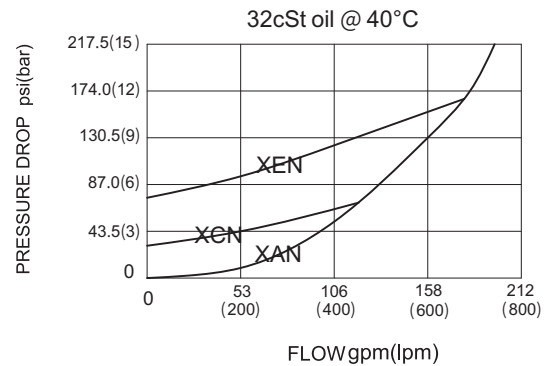
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	2drops/min. max. at 350bar
Pilot Ratio:	1.8:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-19A See page G-6
Installation Torque:	465-500Nm



## OPERATION

Pressure at ① overcomes the spring-bias poppet and allows free flow to ②. Flow in the opposite direction, from ② to ①, is blocked by the poppet. When the required pilot pressure is achieved at ③, the poppet is held closed to block flow between ① and ②. The pilot piston area to poppet seat area ratio is 1.8 to 1.

## PRESSURE DROP VS. FLOW



## TO ORDER

ZCOJA - X \* \*

Flow  
J=600L/min

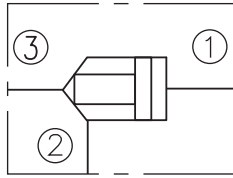
CONTROL  
X= Standard Pilot

Cracking Pressure  
A=0.3bar  
B=1.0bar  
C=2.0bar  
D=3.5bar  
E=5.0bar  
F=7.0bar  
G=10.5bar

Seal Kits  
N= Buna N  
V= Viton

# ZPC5-10

## SYMBOL



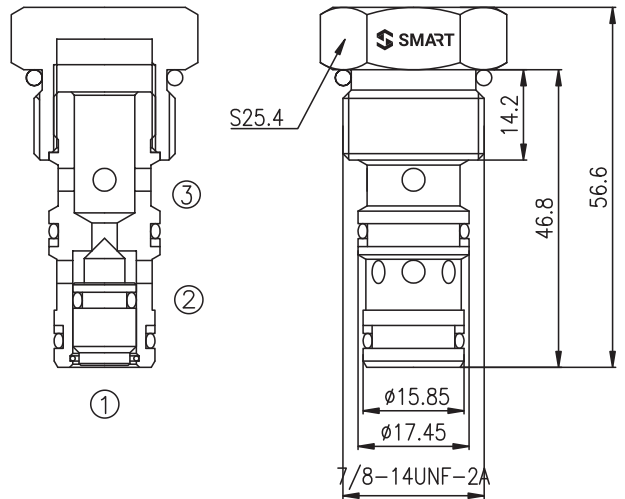
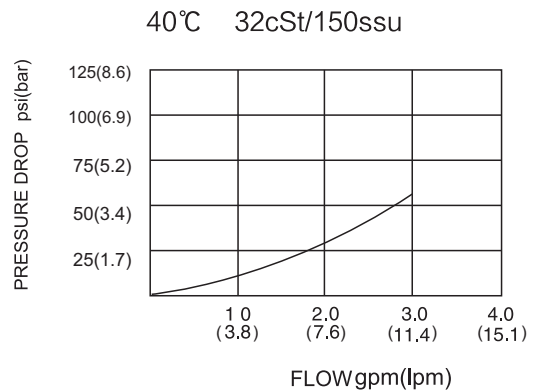
## SPECIFICATIONS

MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	3drops/min. max. at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	33.9-36.7Nm

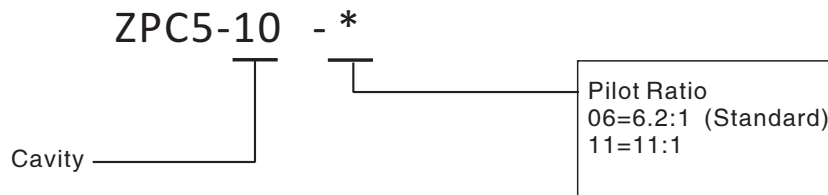
## OPERATION

In a normal state, the valve allowing free flow ② to ③;  
When ① port pressure is 1/6.2 of the ③ port the valve blocking flow form ② to ③ and ③ to ②.

## PRESSURE DROP VS. FLOW



## TO ORDER

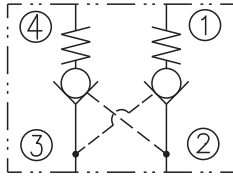


# Dual Pilot-to-Open Check Valves



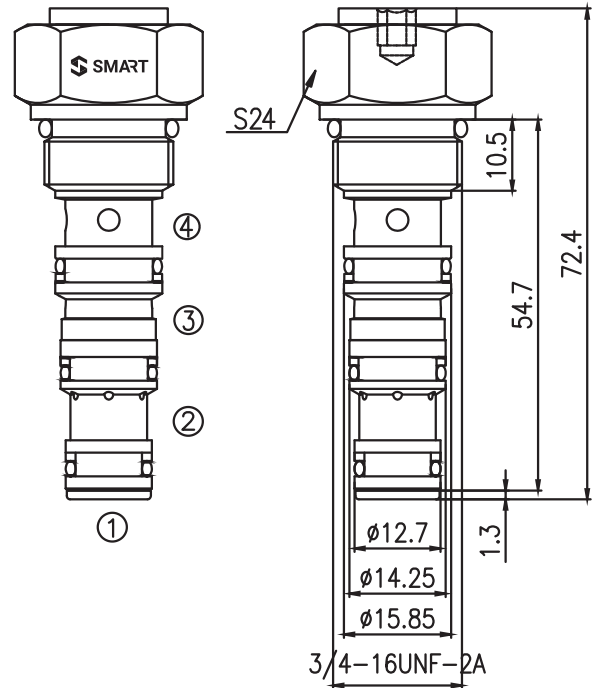
## ZDPC08-40

### SYMBOL



### SPECIFICATIONS

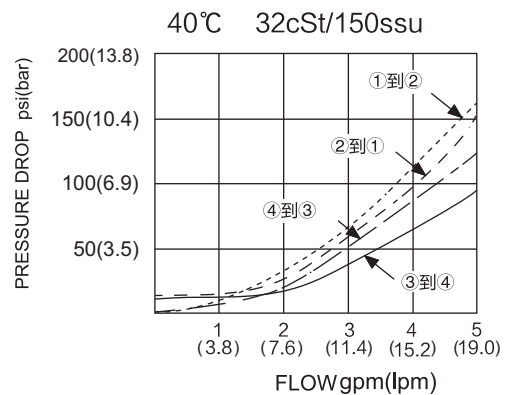
MAX. Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	3drops/min. max. at 207bar
Pilot Ratio:	2.5:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-4 See page G-1
Installation Torque:	24.5-27.1Nm



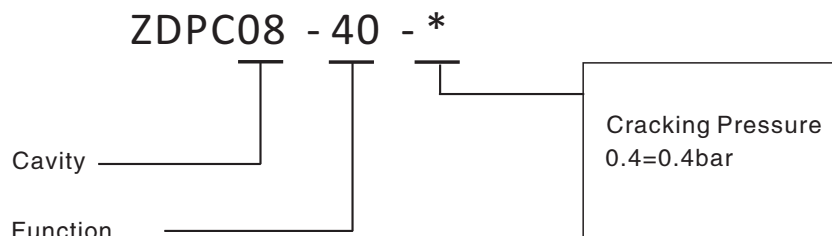
### OPERATION

The valve will block flow from ① to ② and from ④ to ③. Flow is allowed in the opposite direction when pressure is applied to port ③ or ②. The valve has a 2.5:1 pilot ratio, so at least 40 percent of the load pressure at port ① or ④ is required at the pilot lines (port ③ or ②) to open the flow passage to allow flow from port ① or ④.

### PRESSURE DROP VS. FLOW



### TO ORDER

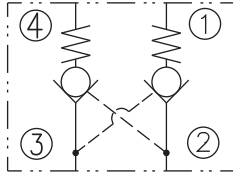


# Dual Pilot-to-Open Check Valves



## ZDPC10-40

### SYMBOL

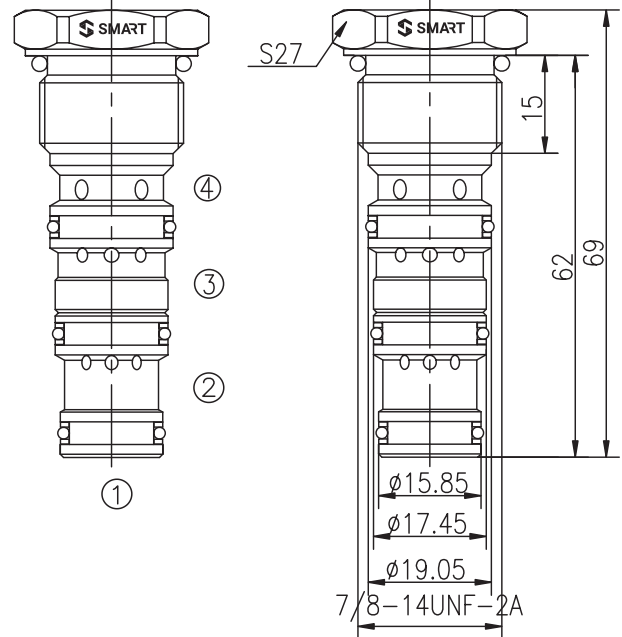


### SPECIFICATIONS

MAX. Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	3drops/min. max. at 207bar
Pilot Ratio:	2.5:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-4 See page G-2
Installation Torque:	33.9-36.7Nm

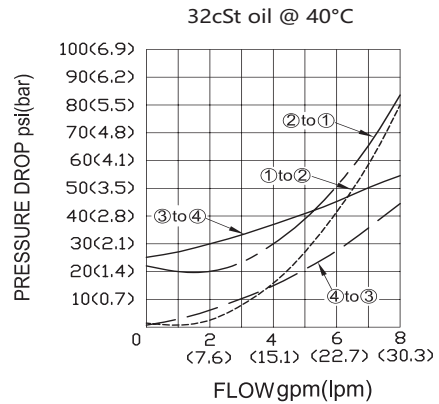
### OPERATION

The valve will block flow from ① to ② and from ④ to ③. Flow is allowed in the opposite direction when pressure is applied to port ③ or ②. The valve has a 2.5:1 pilot ratio, so at least 40 percent of the load pressure at port ① or ④ is required at the pilot lines (port ③ or ②) to open the flow passage to allow flow from port ① or ④.

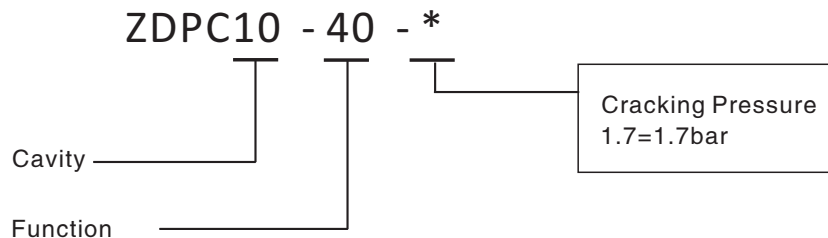


B

### PRESSURE DROP VS. FLOW

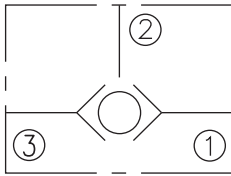


### TO ORDER



# ZLS-G18

## SYMBOL

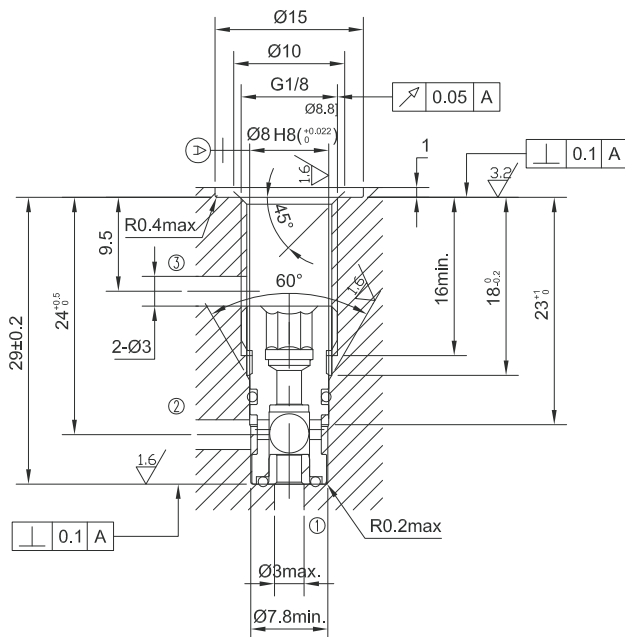
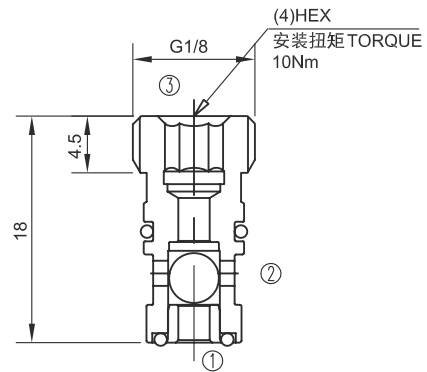


## SPECIFICATIONS

MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1

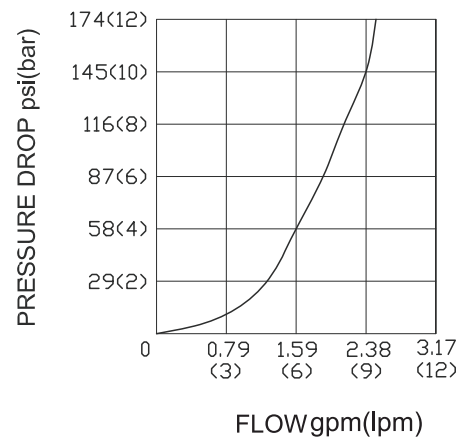
## OPERATION

The valve will allow flow from the higher pressure of port ① or ③ to the port ②. The valve is commonly used to direct oil from the pressure side of a bidirectional hydraulic motor to a pressure-released hydraulic brake.



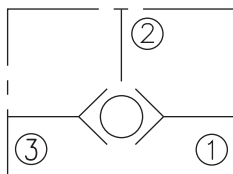
## PRESSURE DROP VS. FLOW

40°C 32cSt/150ssu



# ZLS-G14

## SYMBOL

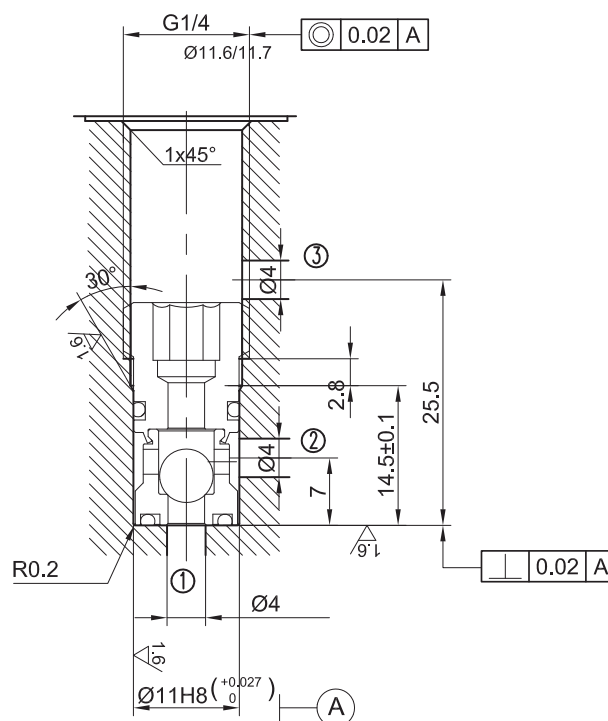
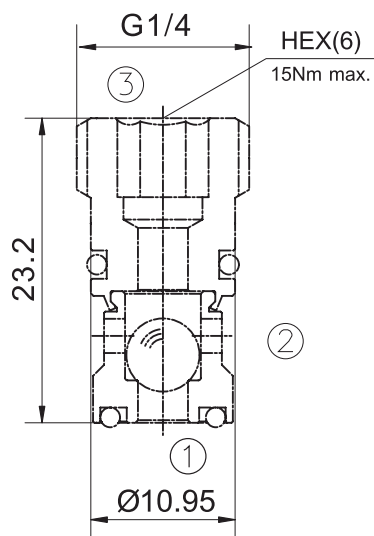


## SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	15L/min
Internal Leakage:	5drops/min.max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1

## OPERATION

The valve will allow flow from the higher pressure of port ① or ③ to the port ②. The valve is commonly used to direct oil from the pressure side of a bidirectional hydraulic motor to a pressure-released hydraulic brake.

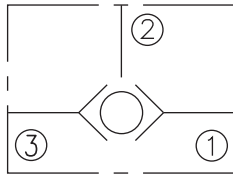


Unit=Millimeters

B

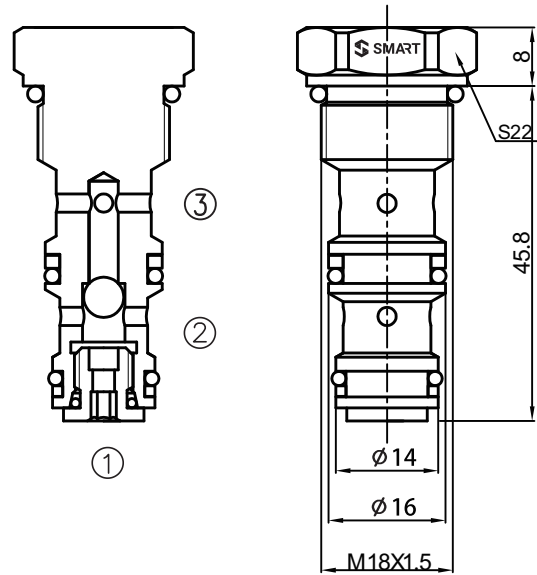
# ZLS06-01B

## SYMBOL



## SPECIFICATIONS

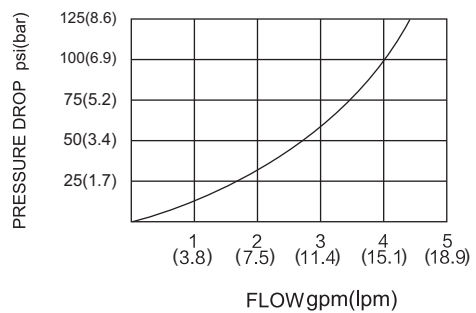
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T4-S2 See page G-8
Installation Torque:	25.2-27.2Nm



## OPERATION

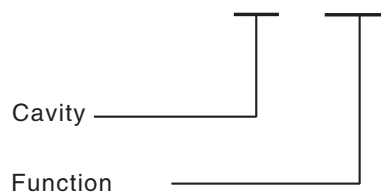
The valve will allow flow from the higher pressure of port ① or ③ to the port ②. The valve is commonly used to direct oil from the pressure side of a bidirectional hydraulic motor to a pressure-released hydraulic brake.

## PRESSURE DROP VS. FLOW



## TO ORDER

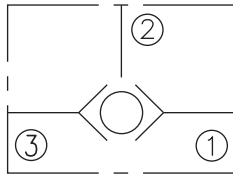
ZLS 06 - 01B



# Shuttle Valves

## ZLS08-30

### SYMBOL

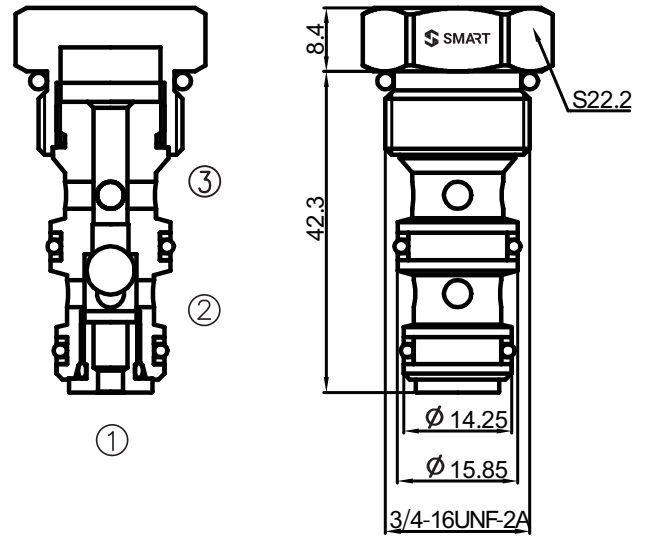


### SPECIFICATIONS

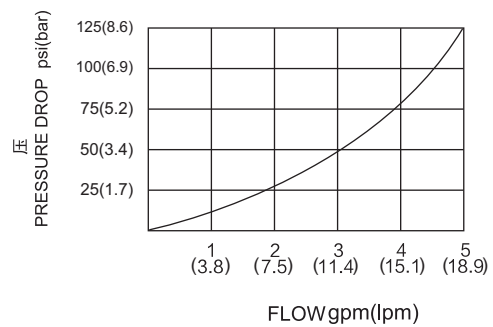
MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at 210bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	24.5-27.1Nm

### OPERATION

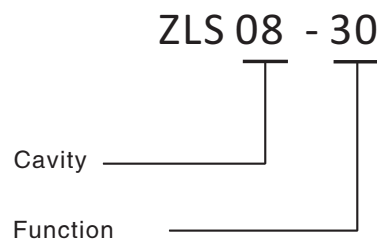
The valve will allow flow from the higher pressure of port ① or ③ to the port ②. The valve is commonly used to direct oil from the pressure side of a bidirectional hydraulic motor to a pressure-released hydraulic brake.



### PRESSURE DROP VS. FLOW



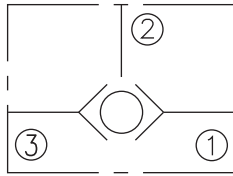
### TO ORDER



# Shuttle Valves

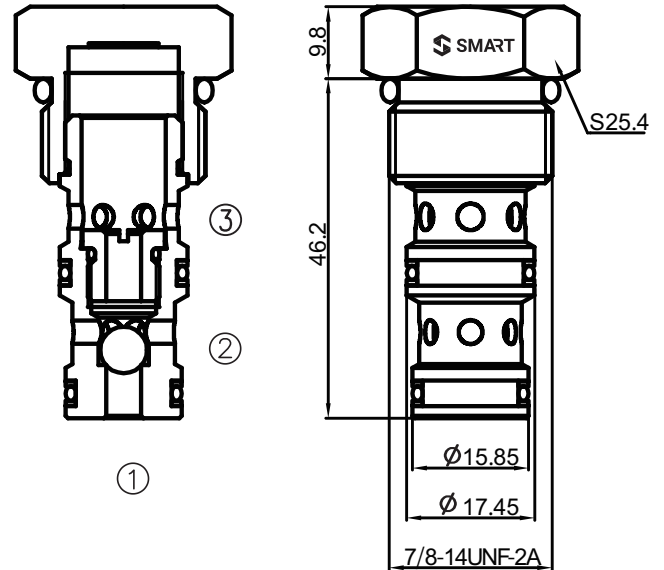
## ZLS10-30

### SYMBOL



### SPECIFICATIONS

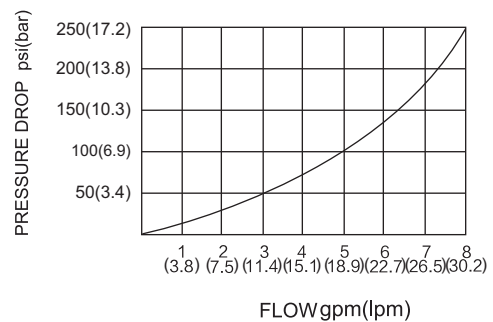
MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at 210bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	33.9-36.7Nm



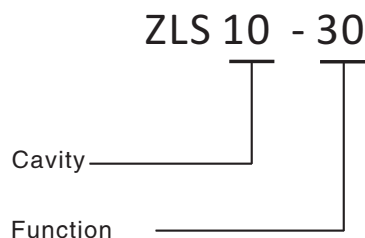
### OPERATION

The valve will allow flow from the higher pressure of port ① or ③ to the port ②. The valve is commonly used to direct oil from the pressure side of a bidirectional hydraulic motor to a pressure-released hydraulic brake.

### PRESSURE DROP VS. FLOW

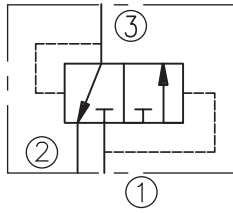


### TO ORDER



# ZLS2-08

## SYMBOL

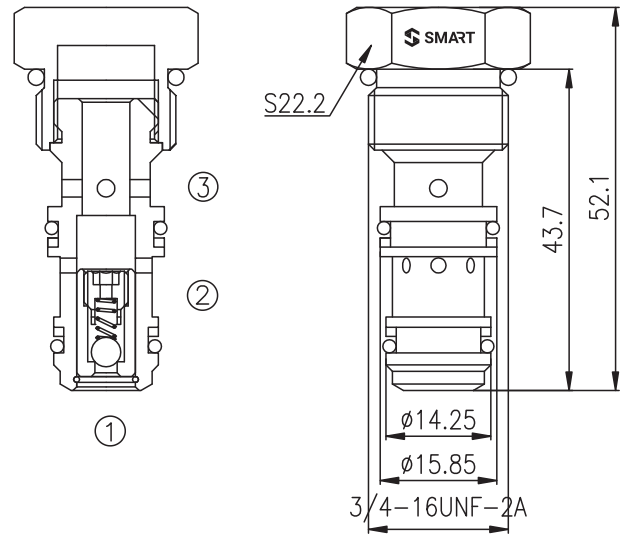


## SPECIFICATIONS

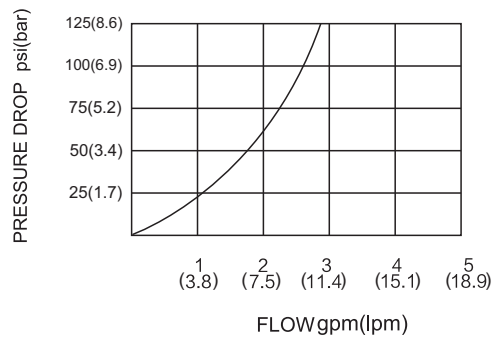
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	80cc/minmax.at 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	24.5-27.1Nm

## OPERATION

When ①port pressure more than ③port,the valve will allow flow from ①port to the ③port; on the contrary ,the ③to②.



## PRESSURE DROP VS.FLOW



## TO ORDER

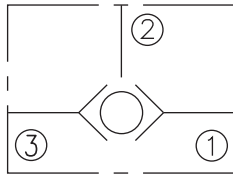
ZLS2 - 08

Cavity \_\_\_\_\_

# Shuttle Valves

## ZCSAD

### SYMBOL

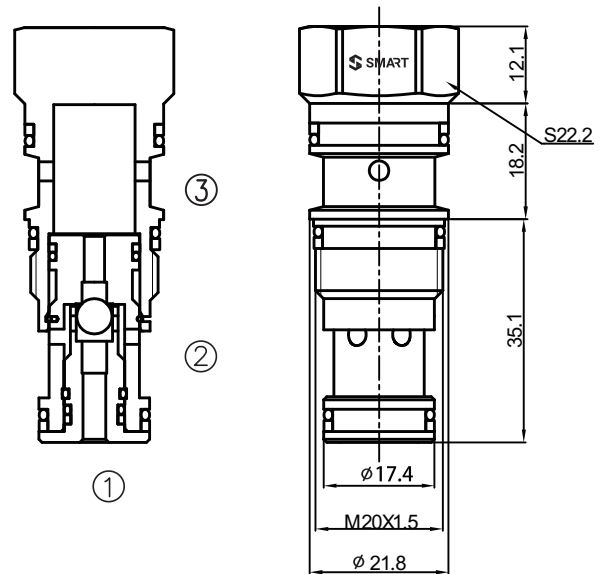


### SPECIFICATIONS

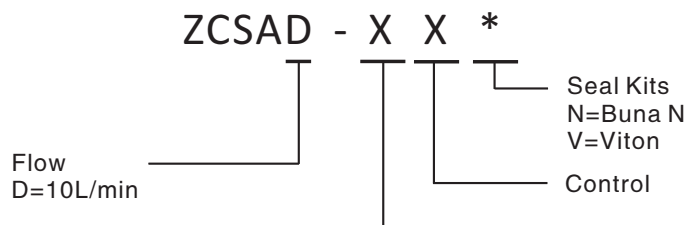
MAX. Operating Pressure:	350bar
Flow:	10L/min
Internal Leakage:	5drops/min. max. at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUNT-11A See page G-4
Installation Torque:	45-50Nm

### OPERATION

The valve will allow flow from the higher pressure of port ① or ③ to the port ②.



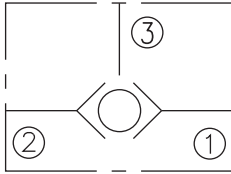
### TO ORDER



# Shuttle Valves

## ZCSAB

### SYMBOL

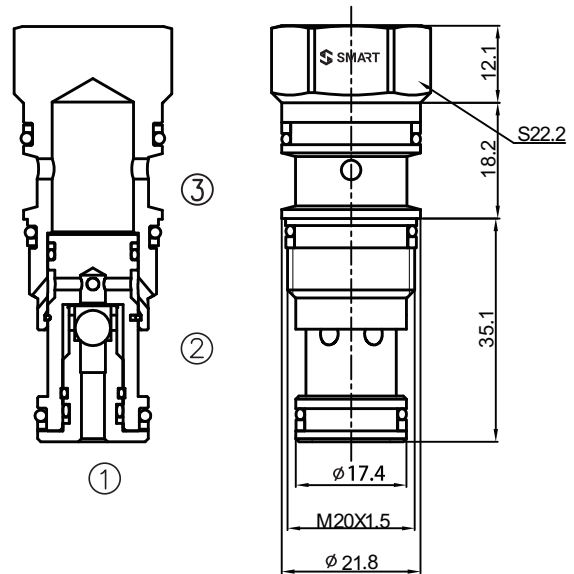


### SPECIFICATIONS

MAX. Operating Pressure:	350bar
Flow:	10L/min
Internal Leakage:	5drops/min.max.at 350bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUNT-11A See page G-4
Installation Torque:	45-50Nm

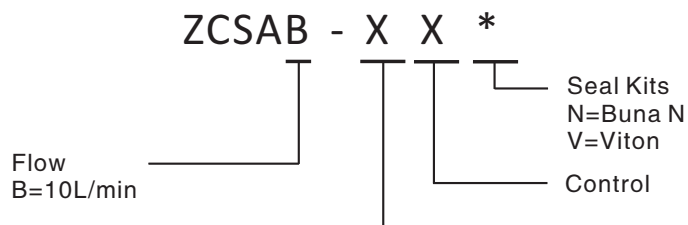
### OPERATION

The valve will allow flow from the higher pressure of port ① or ② to the port ③.



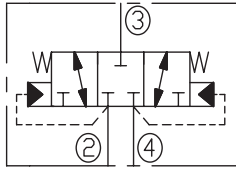
B

### TO ORDER



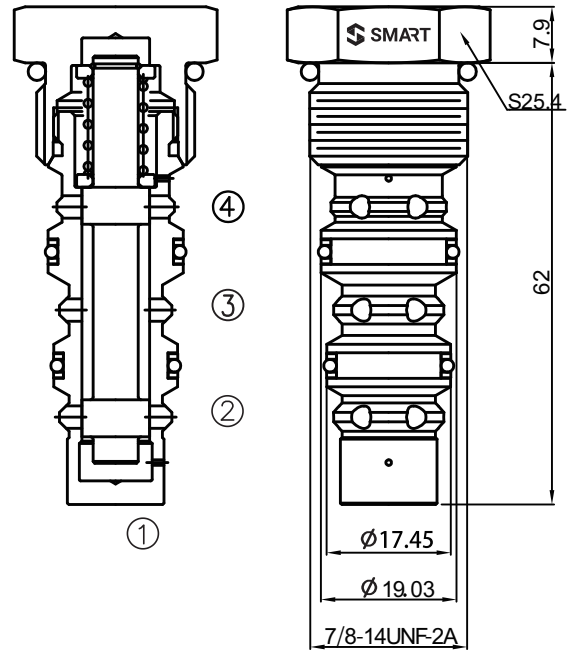
# ZHS5-10-43

## SYMBOL



## SPECIFICATIONS

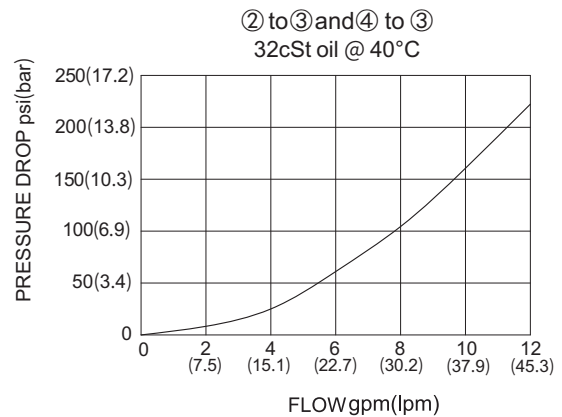
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-4 See page G-2
Installation Torque:	75-85Nm



## OPERATION

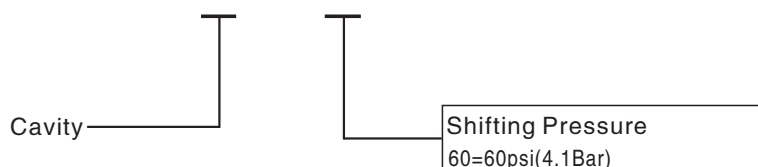
Low-side(hot oil)shuttle cartridges allow hot oil to be diverted from the low pressure side of a closed loop system . When both work ports (ports ② and ④) are at equal pressures the valve is spring-centered to an all-ports-blocked position. When one of the work ports( port② or ④) sees a higher pressure the opposite work port is connected to the common port ( port ③ ).

## PRESSURE DROP VS. FLOW



## TO ORDER

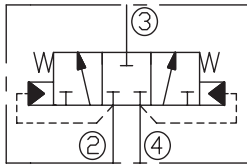
ZHS5 - 10-43 - \*



# Shuttle Valves

## ZDSCH

### SYMBOL

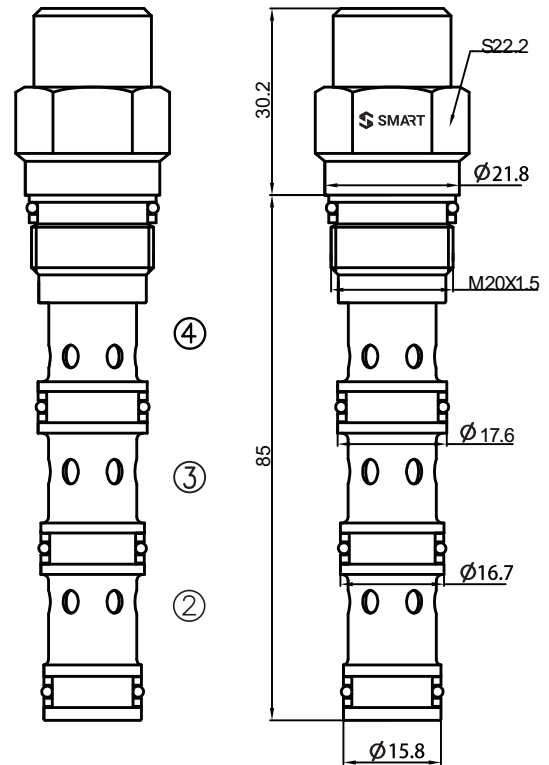


### SPECIFICATIONS

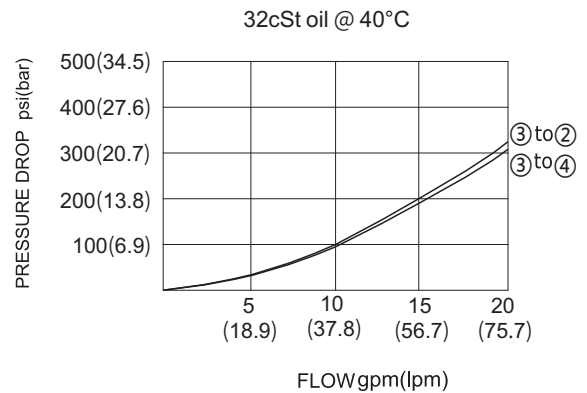
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-31A See page G-22
Installation Torque:	45-50Nm

### OPERATION

Low-side (hot oil) shuttle cartridges allow hot oil to be diverted from the low pressure side of a closed loop system. When both work ports (ports ② and ④) are at equal pressures the valve is spring-centered to an all-ports-blocked position. When one of the work ports (port ② or ④) sees a higher pressure the opposite work port is connected to the common port (port ③).



### PRESSURE DROP VS. FLOW



### TO ORDER

ZDSCH - X \* \*

Flow  
C=40L/min

CONTROL  
X=Not Adjustable

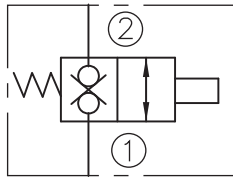
Shifting Pressure  
H= 200psi(14Bar)  
G=150psi(10.5Bar)

Seal Kits  
N= Buna N  
V= Viton

# Mobile Operated Directional Valves

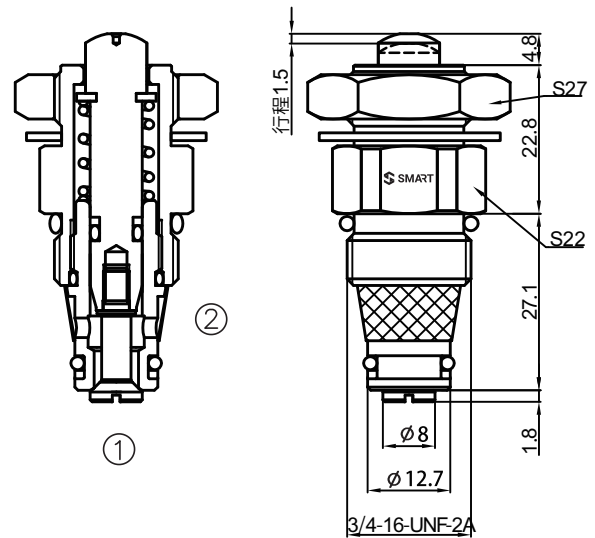
## ZMV-08

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	3drops/min. max. at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



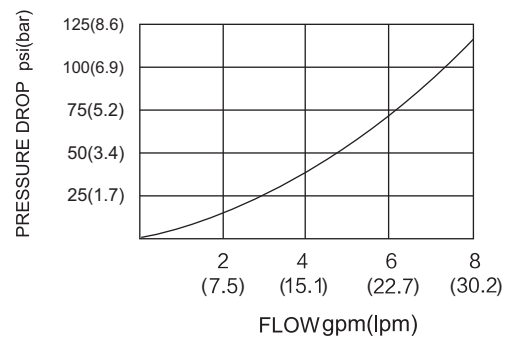
### OPERATION

In neutral state, the valve blocks flow from ② to ① and ① to ②. While the F beyond 32N, the allows flow from ② to ①, the F continue to increase 42N, the valve reaches to all displacement 3.5mm.

Back pressure at ① will increase the F even Unable to open ② to ①. ② is pressure port and ① is tank port.

### PRESSURE DROP VS. FLOW

40°C时 32cSt/150ssu



### TO ORDER

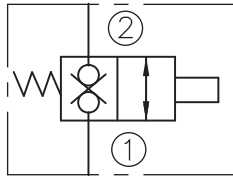
ZMV-08

Cavity

# Mobile Operated Directional Valves

## ZMV2-08

### SYMBOL



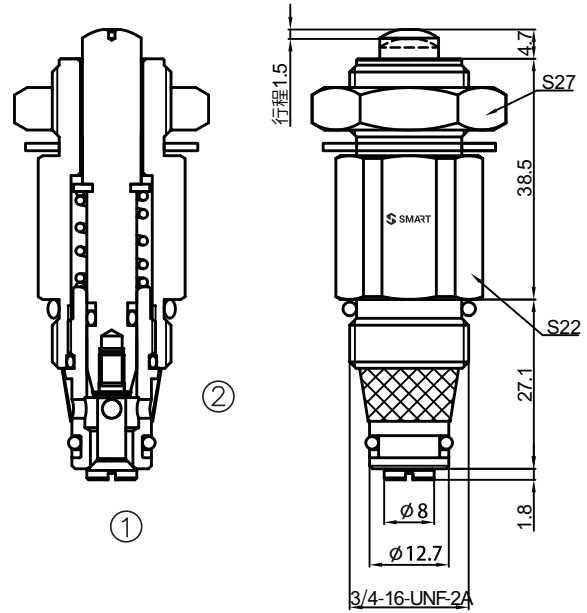
### SPECIFICATIONS

MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min.max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5-27.1Nm

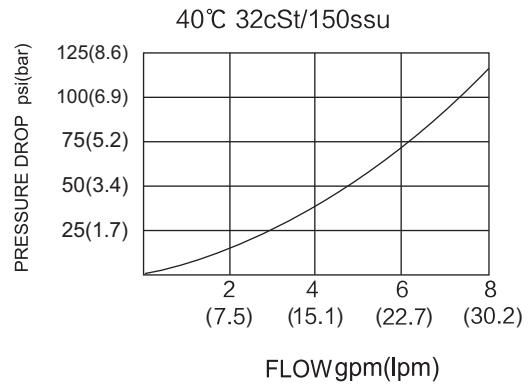
### OPERATION

In neutral state, the valve blocks flow from ② to ① and ① to ②. While the F beyond 32N, the allows flow from ② to ①, the F continue to increase 42N, the valve reaches to all displacement 3.5mm.

Back pressure at ① will increase the F even Unable to open ② to ①. ② is pressure port and ① is tank port.



### PRESSURE DROP VS. FLOW



### TO ORDER

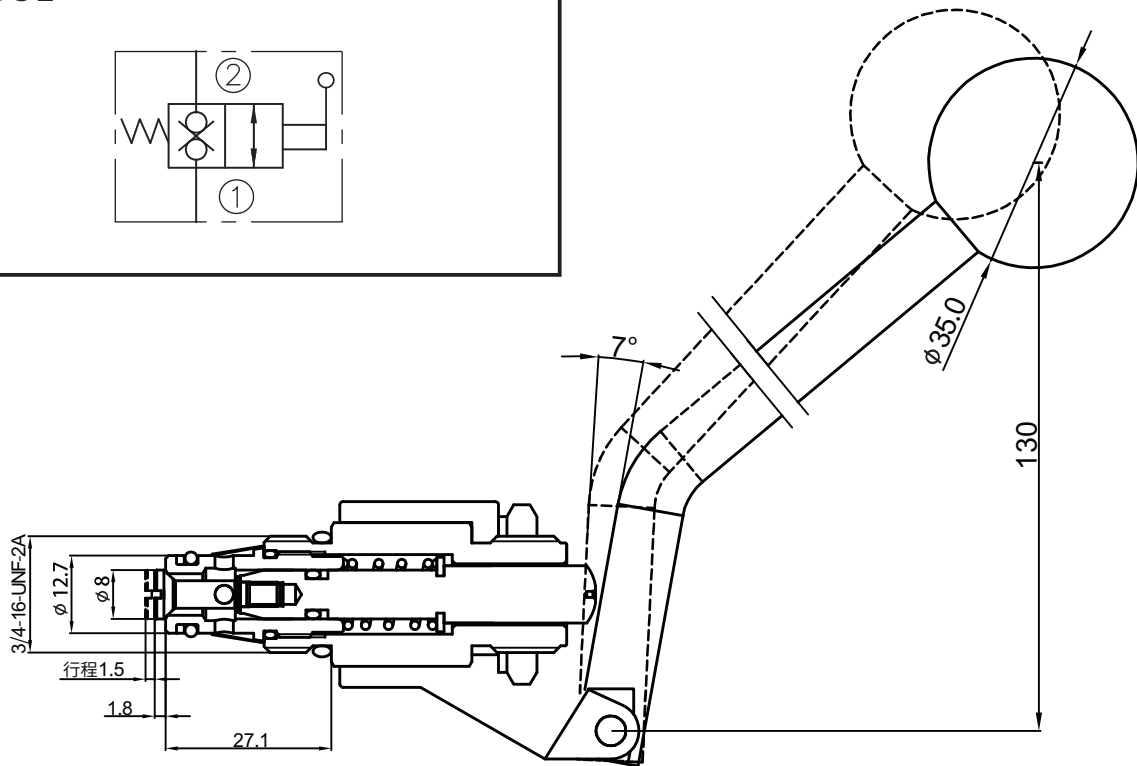
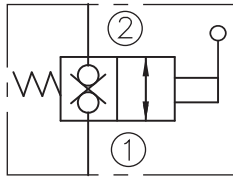
ZMV2-08

Cavity

# Manual Operated Directional Valves

## ZMRV-08

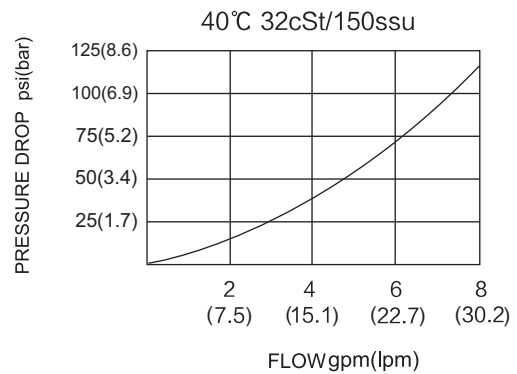
### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	3drops/min. max. at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm

### PRESSURE DROP VS. FLOW

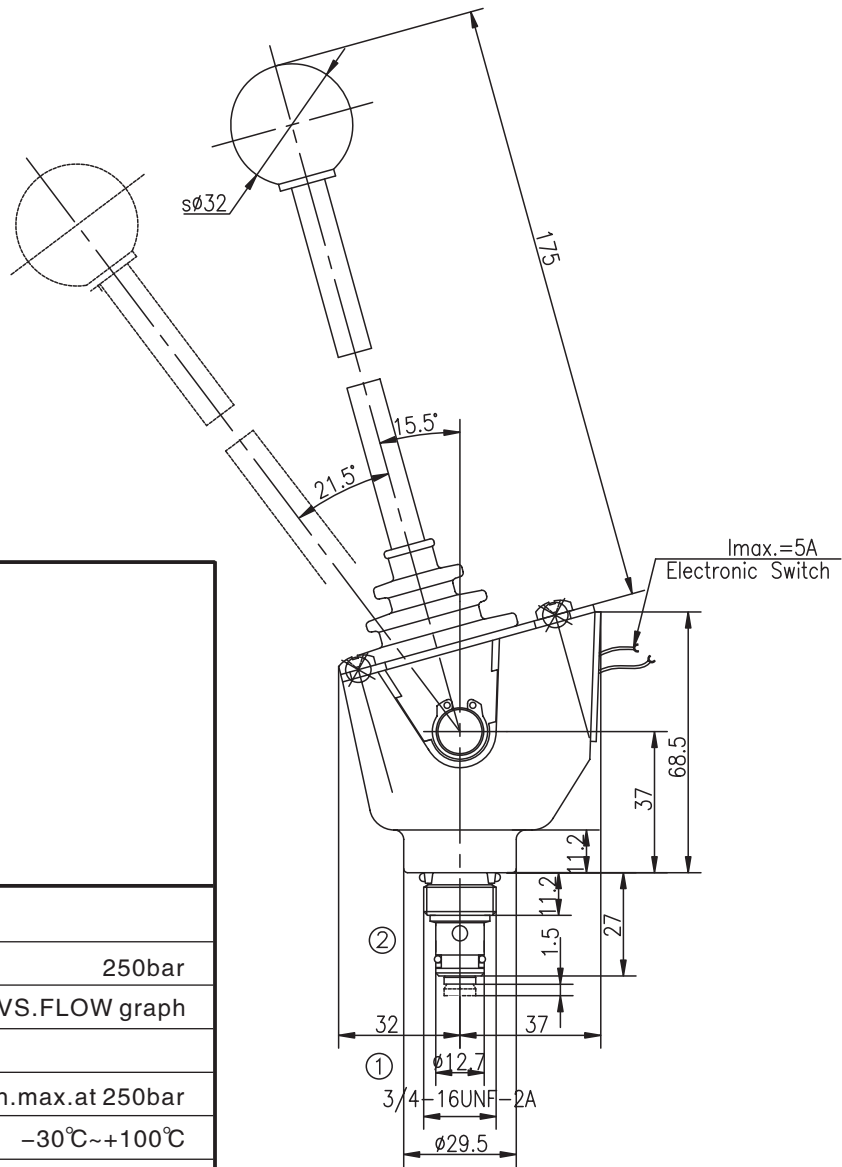


### TO ORDER

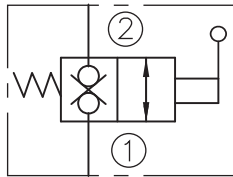
ZMRV-08  
Cavity

# ZMRV2-08

B



## SYMBOL



## SPECIFICATIONS

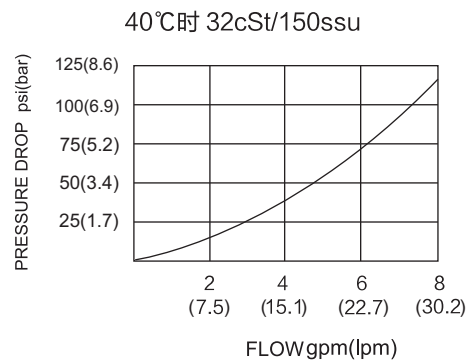
MAX.Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	3drops/min.max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5-27.1Nm

## TO ORDER

ZMRV2-08

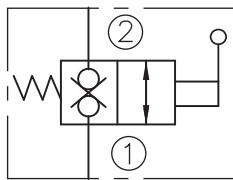
Cavity \_\_\_\_\_

## PRESSURE DROP VS.FLOW



# ZMRV3-08

## SYMBOL



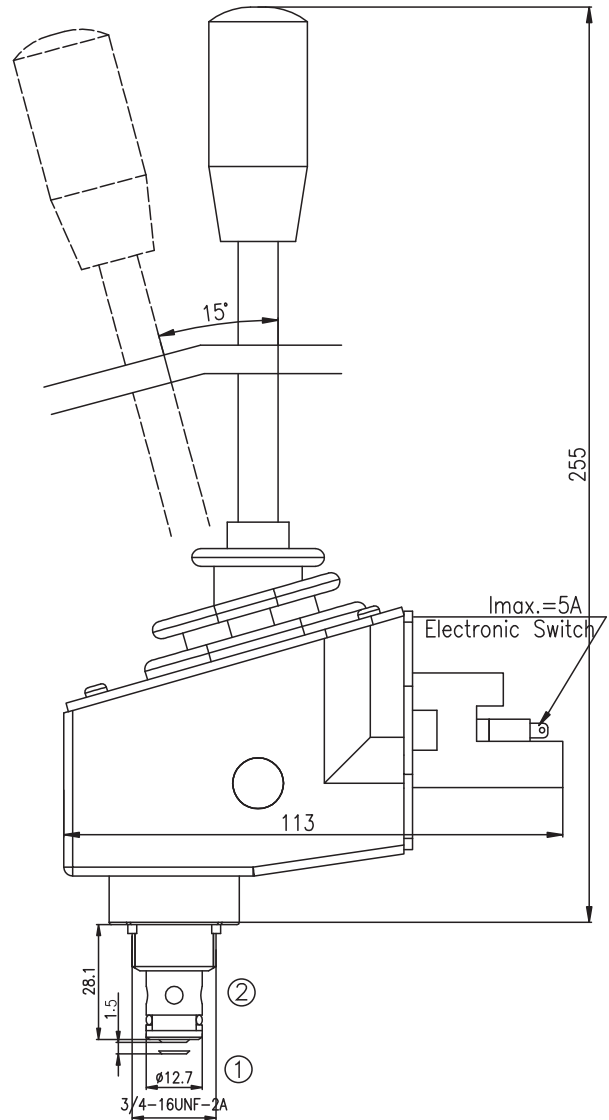
## SPECIFICATIONS

MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	3drops/min.max.at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5-27.1Nm

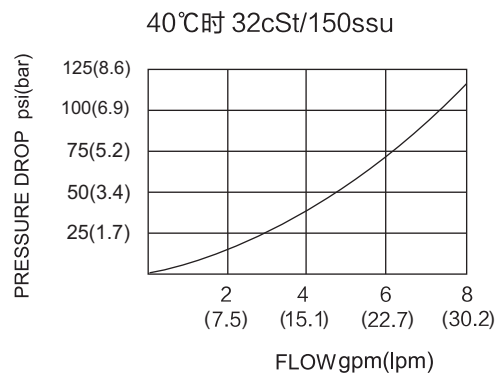
## TO ORDER

ZMRV3-08

Cavity \_\_\_\_\_



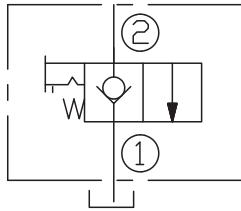
## PRESSURE DROP VS. FLOW



# Manual Operated Directional Valves

## ZMP-08-L

### SYMBOL

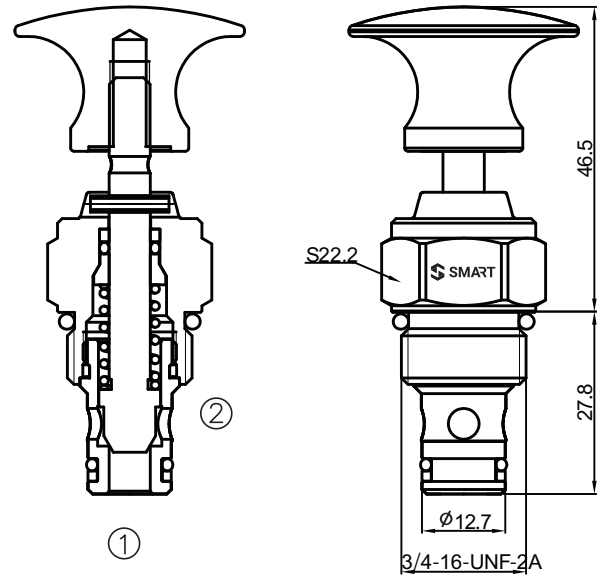


### SPECIFICATIONS

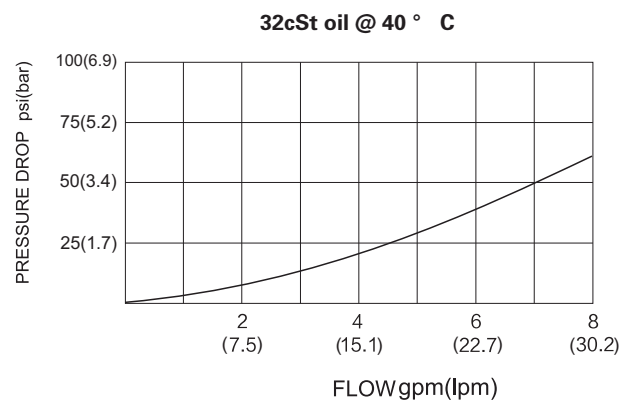
MAX. Operating Pressure:	210bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drop/min. max. at 210bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	26-28.5Nm

### OPERATION

The valve blocks flow ② to ① until an operator pulls the shaft out ward. A unique pull-and-rotate feature for holding the positive actuated position is optional. A 90° rotation is required to position at the hold slot. the valve resets to spring-return de-actuated with a slight pull and a 90° turn from the locked actuated position.



### PRESSURE DROP VS. FLOW



### TO ORDER

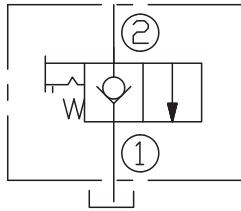
ZMP - 08 - L

Cavity

# Manual Operated Directional Valves

## ZMP10-20

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure: 207bar

Flow: See PRESSURE DROP VS. FLOW graph

Mechanical Pull Effort Required: 7.3kg.

Internal Leakage:

5drop/min.max.at 207bar

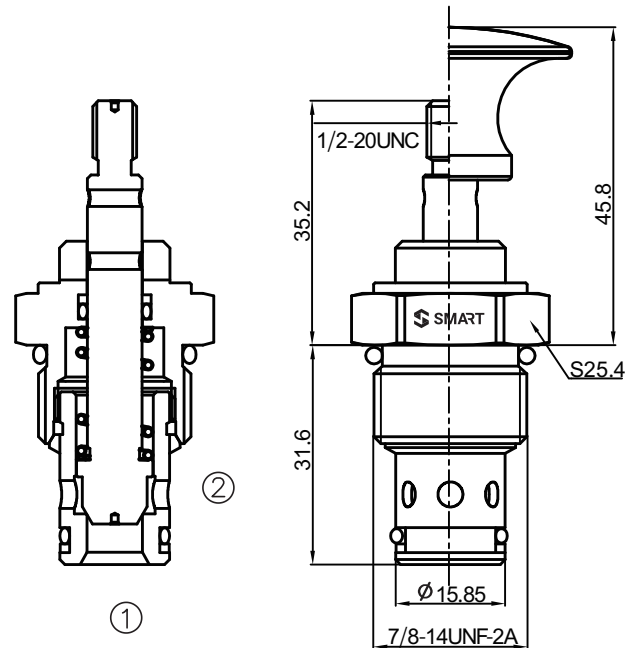
Temperature: -30°C~+100°C

( Standard bana seals )

Filtration: See page Z-1

Cavity: 10-2 See page G-2

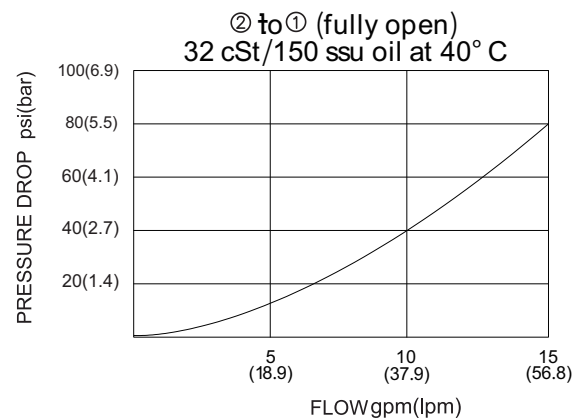
Installation Torque: MAX33.9Nm



### OPERATION

The valve blocks flow from ② to ① flow path until an operator pulls the shaft outward. Note: Pressure at port ② will directly act on the spool and spring. Port ④ is intended to be a tank port only. The bias spring allows for up to 12.4 bar (180 psi) back-pressure at ④ before the valve will open. A unique 90° rotational lock is optional for positive “open” position holding. The valve resets to spring return-to-close with a 90° turn from the locked-open position.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZMP10 - 20 \*

Cavity

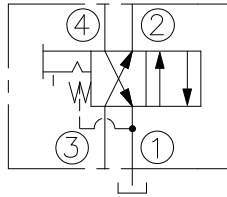
#### Option

- T= Threaded Shaft/Spring Return
- R= Threaded Shaft/Lock Position Pin
- J= Knob/Spring Return
- L= Knob/Lock Position Pin

# Manual Operated Directional Valves

## ZMP08-40

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:

油口②、③和④(On②,③and④): 240bar

油口①最大压力(On①Max.): 最大为14bar

Flow: See PRESSURE DROP VS.FLOW graph

Internal Leakage: 82cc/min.max.

Temperature: -30℃~+100℃  
( Standard bana seals )

Filtration: See page Z-1

Cavity: 08-4 See pageG-1

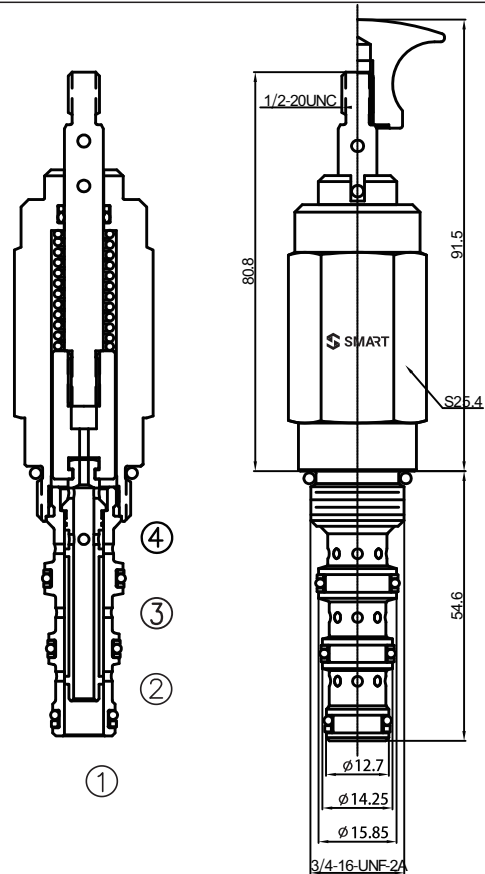
Installation Torque: 24.5-27.2Nm

### OPERATION

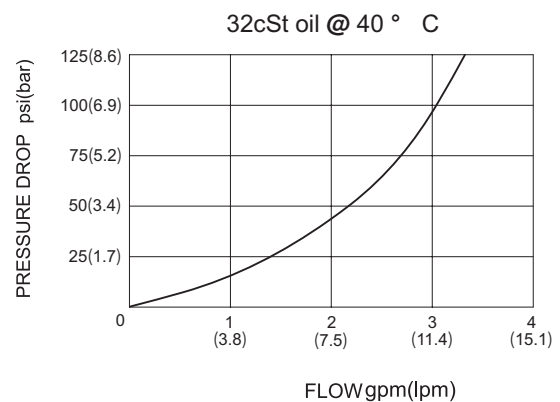
In its steady-state, spring-offset position, the valve directs flow from ③ to ② , and from④ to ① . In the actuated (pulled) position, the cartridge directs flow from ③ to ④ ,andfrom ② to ① . The spring chamber is vented at ① .

Note: Pressure at port @ will directly act on the spool and spring. Port @ isintended to be a tank port only. Series operation is prohibited due to the tank port① pressure rating.

A uniaue pull-and-rotate feature for holding the positive actuated position is optional.A 90° rotation is required to position at the hold slot. The valve resets to spring-returnde-actuated with a slight pull and a 90° turn from the locked actuated position.

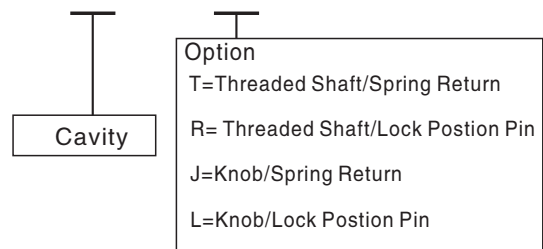


### PRESSURE DROP VS.FLOW



### TO ORDER

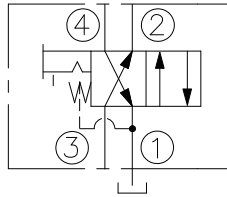
ZMP08 - 40 \*



# Manual Operated Directional Valves

## ZMP10-40

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:

在②③和④油口; 207bar, 在①油口; 最大14bar.

Flow: See PRESSURE DROP VS.FLOW graph

Internal Leakage:

82cc/min.max.at 207bar

Temperature: -30°C~+100°C

( Standard bana seals )

Filtration: See page Z-1

Cavity: 10-4 See page G-2

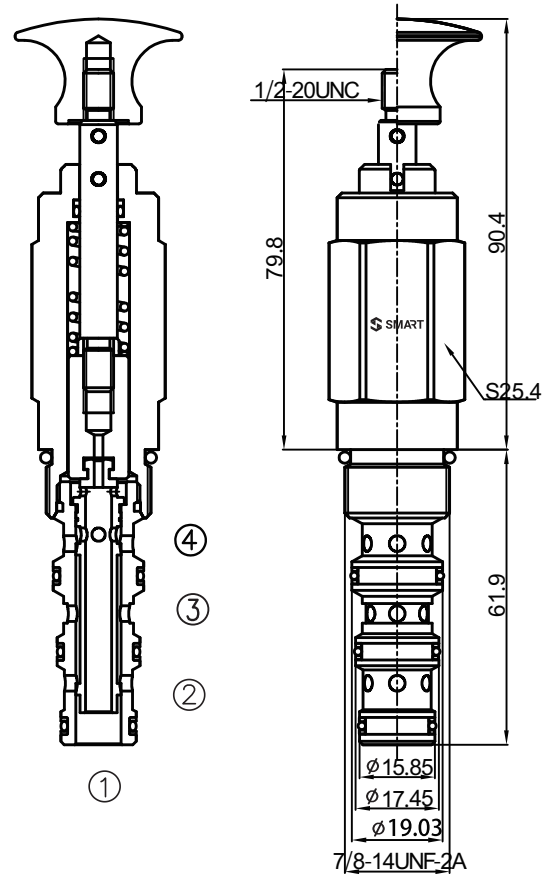
Installation Torque: MAX33.9Nm

### OPERATION

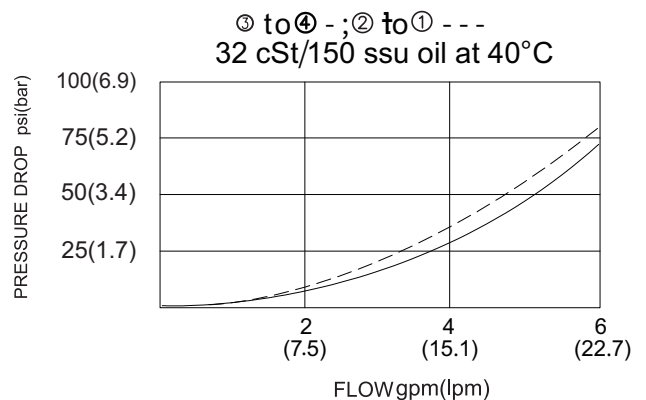
In its steady-state, spring-offset position, the valve directs flow from ③ to ②, and from ④ to ①. In the actuated (pulled) position, the cartridge directs flow from ③ to ④, and from ② to ①. The spring chamber is vented at ①.

Note: Pressure at port @ will directly act on the spool and spring. Port @ is intended to be a tank port only. Series operation is prohibited due to the tank port ① pressure rating.

A uniaue pull-and-rotate feature for holding the positive actuated position is optional. A 90° rotation is required to position at the hold slot. The valve resets to spring-returnde-actuated with a slight pull and a 90° turn from the locked actuated position.

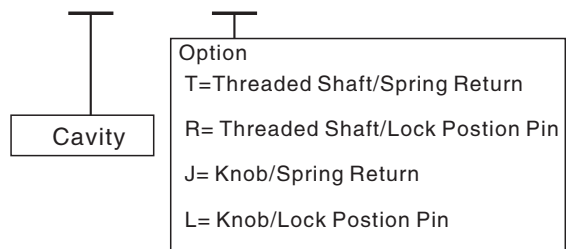


### PRESSURE DROP VS.FLOW



### TO ORDER

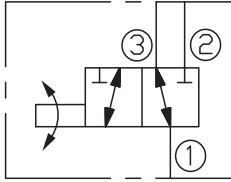
ZMP10 - 40 \*



# Manual Rotary Valves

## ZMR10-3

### SYMBOL

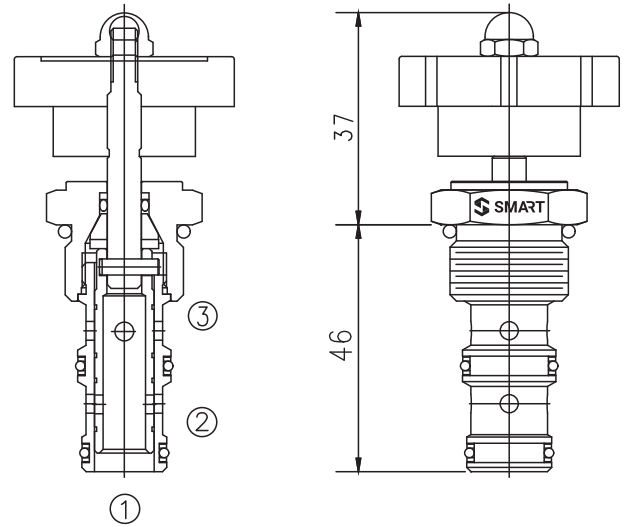


### SPECIFICATIONS

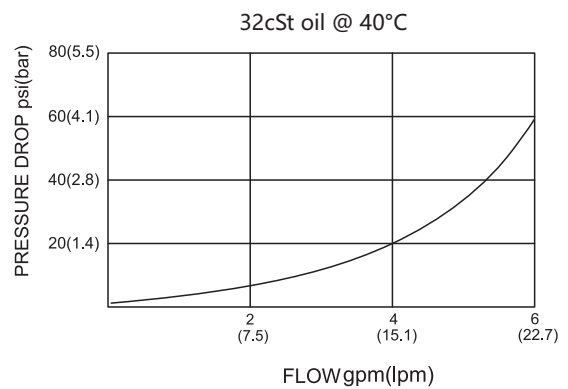
MAX. Operating Pressure:	210bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	164cc/min. max. at 210bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	33.9-36.7Nm

### OPERATION

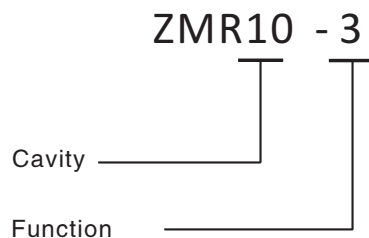
This valve will direct flow between ports ① and ③ and block port ② in one position, and by turning the operator 90°, flow will be directed between port ① and ②, port ③ will be blocked. During cross-over transition, all ports are blocked.



### PRESSURE DROP VS. FLOW



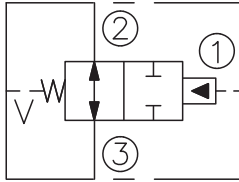
### TO ORDER



# Hydraulic Operated Directional Valves

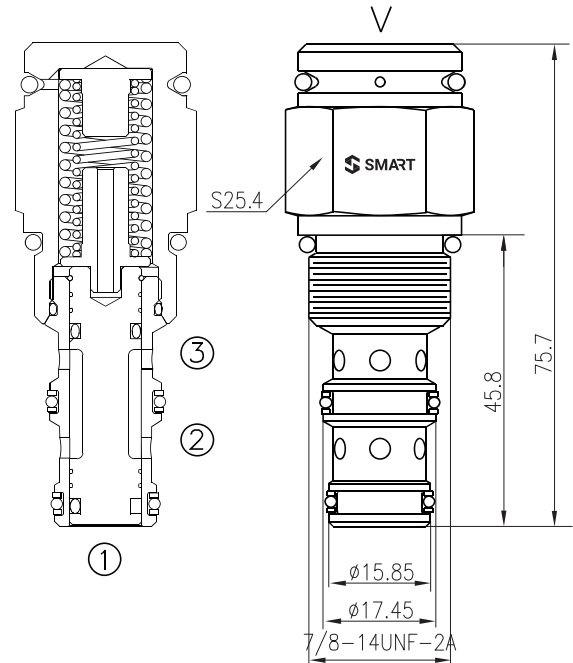
## ZPD10-30

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min.(毫升/分)max.at 240bar
Pilot Pressure Required:	To Full Spool Shift
	采用4.1 bar 弹簧 (for 4.1 bar spring): 4.7bar
	采用7.6 bar 弹簧 (for 4.1 bar spring): 8.6bar
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	32-35Nm



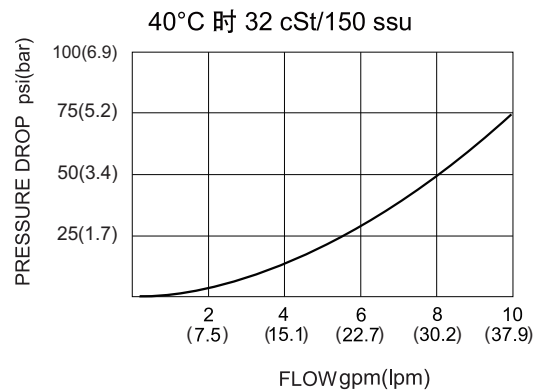
### OPERATION

Unpiloted, the valve allow flow from ③ to ② bidirectionally. V is a spring chamber vent-to-atmosphere, which is internally O-ring sealed from the cartridge flow paths.

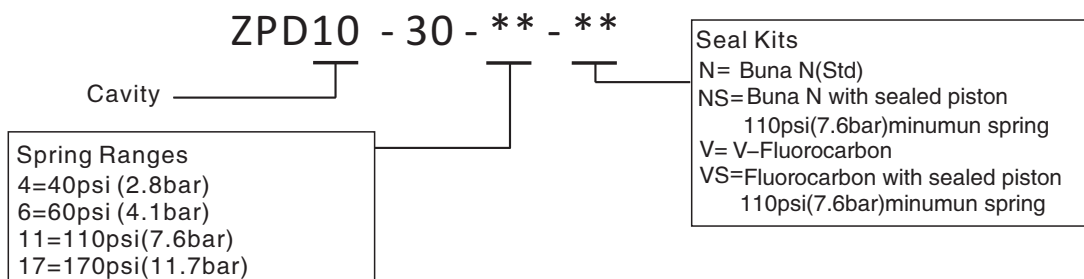
On remote pilot signal at ①, the valve shifts to block ③ to ② bidirectionally.

Because of the vented spring chamber, the cartridge may be fully prssurized at any port without affecting required pilot pressure.

### PRESSURE DROP VS. FLOW



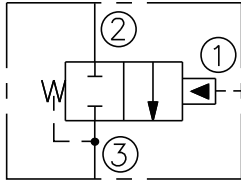
### TO ORDER



# Hydraulic Operated Directional Valves

## ZPD10-32

### SYMBOL

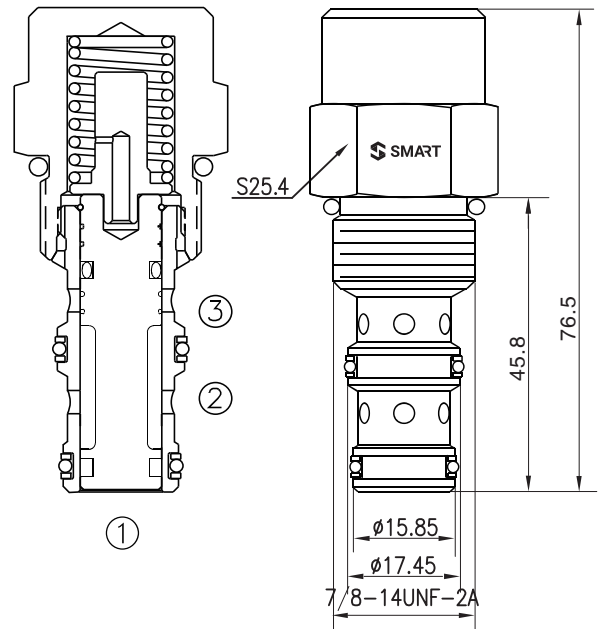


### SPECIFICATIONS

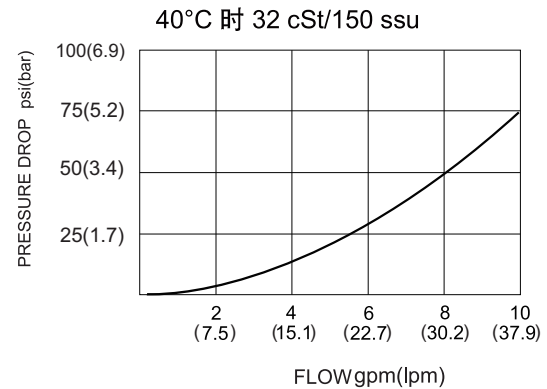
MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. at 240bar
Pilot Pressure Required:	To Full Spool Shift (for 4.1 bar spring): 4.7bar (for 4.1 bar spring): 8.6bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	32-35Nm

### OPERATION

Unpiloted, the valve blocks flow from ③ to ② bidirectionally.  
On remote pilot signal at ①, the valve shifts to open ② to ③ unbidirectionally.



### PRESSURE DROP VS. FLOW



### TO ORDER

**ZPD10 - 32 - \*\* - \*\***

Cavity

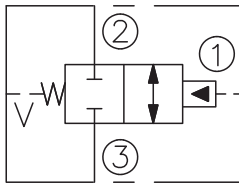
Spring Ranges  
4=40psi (2.8bar)  
6=60psi (4.1bar)  
11=110psi(7.6bar)  
17=170psi(11.7bar)

Seal Kits  
N= Buna N(Std)  
NS= Buna N with sealed piston  
110psi(7.6bar)minumun spring  
V= V-Fluorocarbon  
VS=Fluorocarbon with sealed piston  
110psi(7.6bar)minumun spring

# Hydraulic Operated Directional Valves

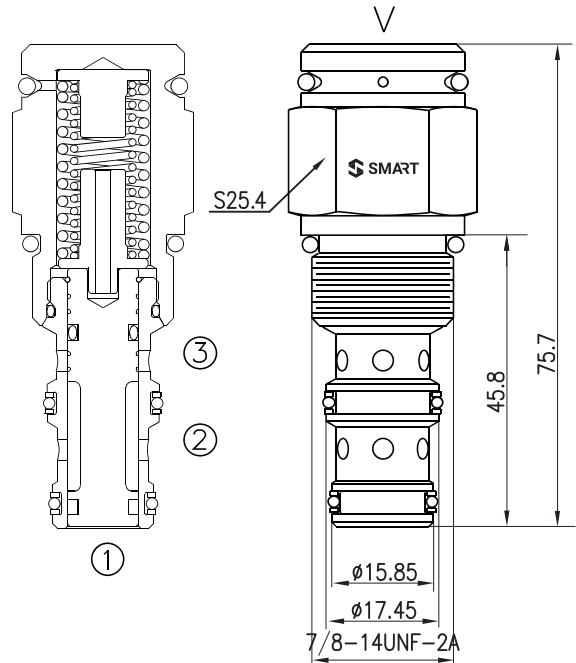
## ZPD10-34

### SYMBOL



### SPECIFICATIONS

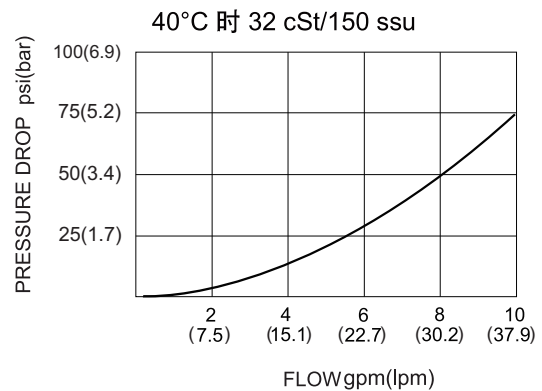
MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. at 240bar
Pilot Pressure Required:	To Full Spool Shift
	(for 4.1 bar spring): 4.7bar
	(for 4.1 bar spring): 8.6bar
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	32-35Nm



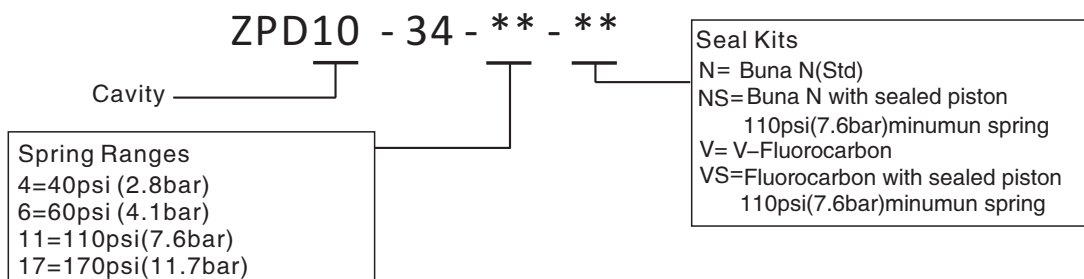
### OPERATION

Unpiloted, the valve blocks flow from ③ to ② bidirectionally. V is a spring chamber vent-to-atmosphere, which is internally O-ring sealed from the cartridge flow paths.  
 On remote pilot signal at ①, the valve shifts to open ② to ③ bidirectionally.  
 Because of the vented spring chamber, the cartridge may be fully pressurized at any port without affecting required pilot pressure.

### PRESSURE DROP VS. FLOW



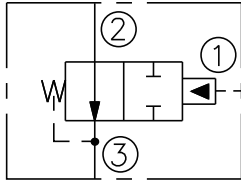
### TO ORDER



# Hydraulic Operated Directional Valves

## ZPD10-35

### SYMBOL

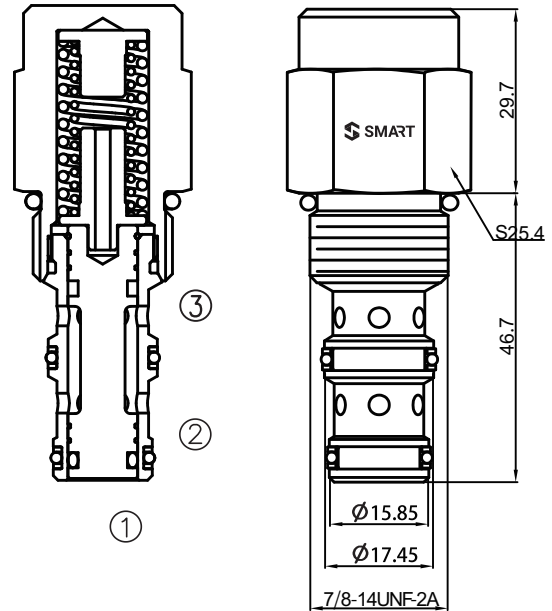


### SPECIFICATIONS

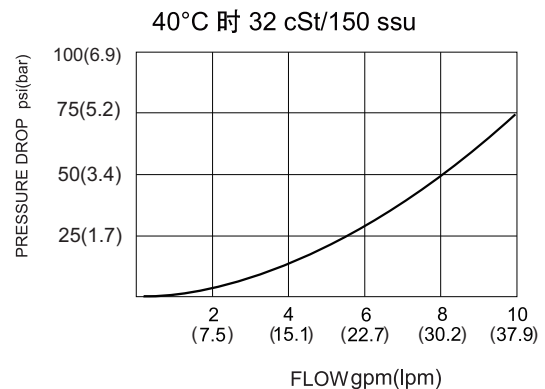
MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. at 240bar
Pilot Pressure Required:	To Full Spool Shift (for 4.1 bar spring): 4.7bar (for 4.1 bar spring): 8.6bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	32-35Nm

### OPERATION

Unpiloted, the valve allows flow from ② to ③. The spring bias chamber is internally vented to ③. On remote pilot signal at ①, the valve shifts to block ② to ③ bidirectionally.  
NOTE: Back pressure at ③ will increase the pilot pressure required at ① to shift, at a ratio of 1:1.



### PRESSURE DROP VS. FLOW



### TO ORDER

**ZPD10 - 35 - \*\* - \*\***

Cavity

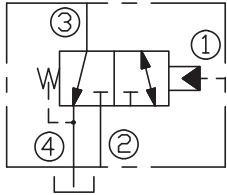
Spring Ranges  
4=40psi (2.8bar)  
6=60psi (4.1bar)  
11=110psi(7.6bar)  
17=170psi(11.7bar)

Seal Kits  
N= Buna N(Std)  
NS= Buna N with sealed piston  
110psi(7.6bar)minumun spring  
V= V-Fluorocarbon  
VS=Fluorocarbon with sealed piston  
110psi(7.6bar)minumun spring

# Hydraulic Operated Directional Valves

## ZPD-10-4

### SYMBOL



### SPECIFICATIONS

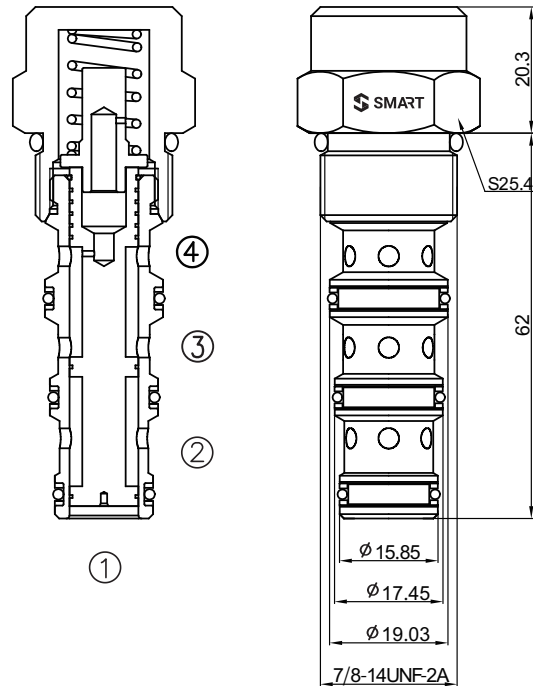
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min.max.at 250bar
Pilot Pressure Required:	
Valve core displacement:	Use 4.1 bar (60 psi) Spring: 4.7 bar (68.2 psi) Use 7.6 bar (110 psi) Spring: 7.6 bar (110 psi)
Spool fully changed:	Use 4.1 bar (60 psi) Spring: 5.2 bar (75 psi) Use 7.6 bar (110 psi) Spring: 8.6 bar (125 psi)
Temperature:	-30°C~+100°C
Filtration:	See page Z-1
Cavity:	10-4 See page G-2
Installation Torque:	MAX33.9Nm

### OPERATION

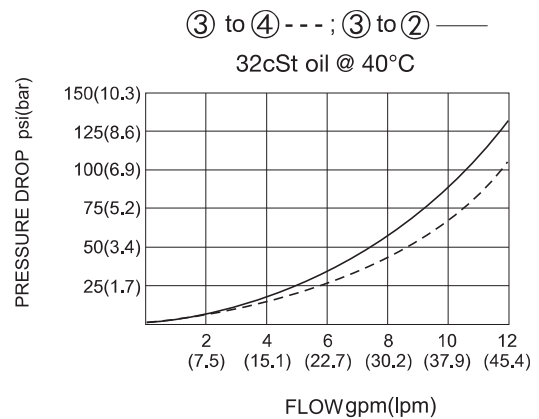
On no remote pilot signal at ①, the valve allows flow from ③ to ④, while flow is blocked at ②.

On remote pilot signal at ①, the valve shifts to open from ③ to ②, while blocking flow at ④.

Since ④ is common to the spring chamber, pressure on ④ will directly (1 : 1) affect the pilot pressure required, and must always be added to the bias spring value.

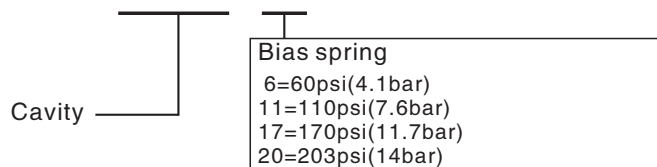


### PRESSURE DROP VS. FLOW



### TO ORDER

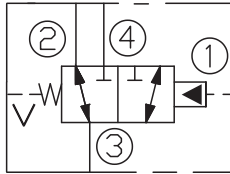
ZPD-10 - 4 - \*



# Hydraulic Operated Directional Valves

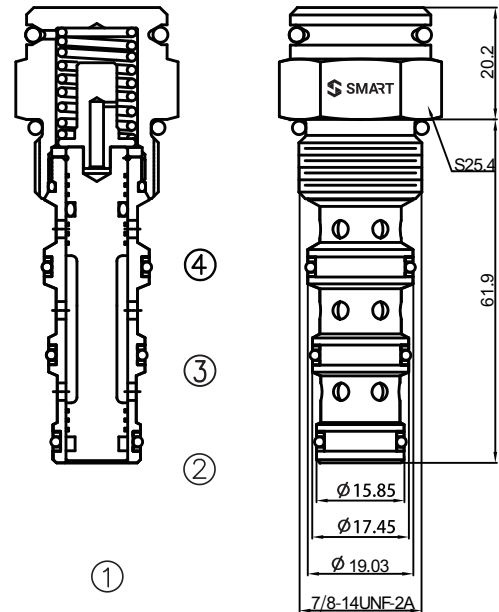
## ZPD2-10-4

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. at 250bar
Pilot Pressure Required:	
	To Spool Crossover 7.6bar (110psi)
	To Full Spool Shift 8.6bar (125psi)
Temperature:	-30°C ~ +100°C
	( Standard buna seals )
Filtration:	See page Z-1
Cavity:	10-4 See page G-2
Installation Torque:	32-35Nm

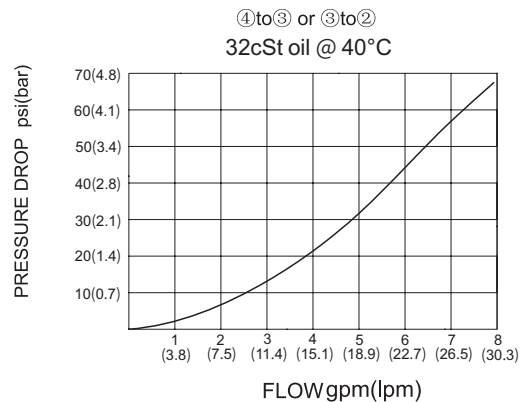


B

### OPERATION

On no remote pilot signal at ①, the valve allows flow from ③ to ② bi-directionally, while flow is blocked at ④, spring chamber vent-to-atmosphere, which is internally O-ring sealed from the cartridge flow paths. On no remote pilot signal at ①, the valve shifts to open from ③ to ④, while blocking flow at ②. Because of the vented spring chamber, the cartridge may be fully pressurized at any port without affecting required pilot pressure.

### PRESSURE DROP VS. FLOW



### TO ORDER

**ZPD2-10 -4- \*\* - \*\***

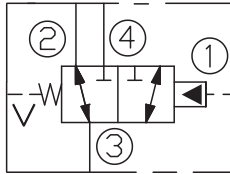
**Cavity**

**Spring Ranges**  
 4=40psi(2.8bar)  
 6=60psi(4.1bar)  
 8=80psi(5.5bar)  
 11=110psi(7.6bar)  
 16=160psi(11bar)

**Seal Kits**  
 N= Buna N(Std)  
 NS= Buna N with sealed piston  
     110psi(7.6bar)minumun spring  
 V= V-Fluorocarbon  
 VS=Fluorocarbon with sealed piston  
     110psi(7.6bar)minumun spring

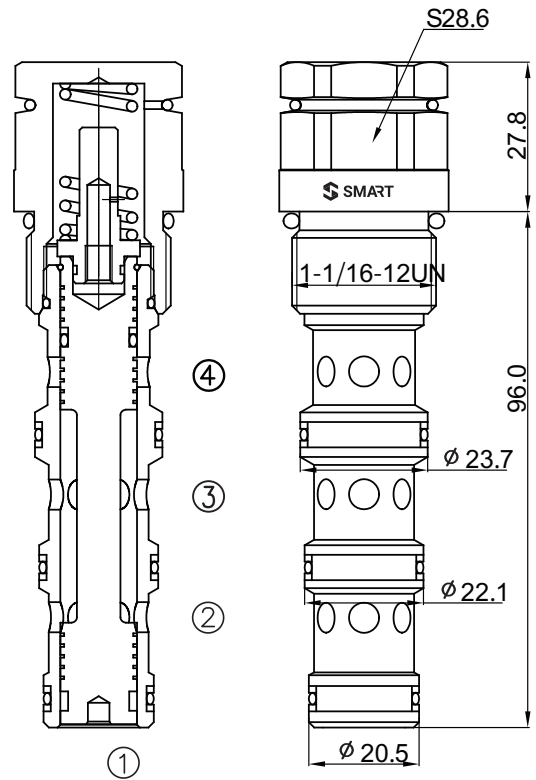
# ZPD12-40

## SYMBOL



## SPECIFICATIONS

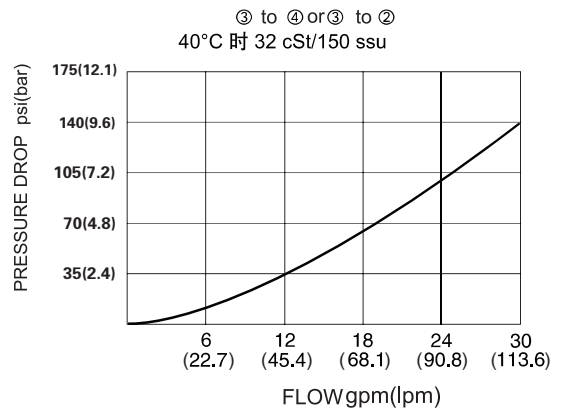
MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	164cc/min.max.at 240bar
Pilot Pressure Required:	
	To Spool Crossover 7.6bar(110psi)
	To Full Spool Shift 9.1bar(132psi)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	12-4 See page G-19
Installation Torque:	MAX47.4Nm



## OPERATION

On no remote pilot signal at ①, the valve allows flow from ③ to ② bi-directionally, while flow is blocked at ④, spring chamber vent-to-atmosphere, which is internally O-ring sealed from the cartridge flow paths. On no remote pilot signal at ①, the valve shifts to open from ③ to ④, while blocking flow at ②. Because of the vented spring chamber, the cartridge may be fully pressurized at any port without affecting required pilot pressure.

## PRESSURE DROP VS.FLOW



## TO ORDER

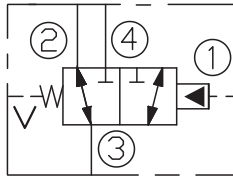
ZPD12 -40- \*\* - \*\*

<p>Cavity</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>Spring Ranges 110=110psi(7.6bar) 170=170psi(11.7bar)</p> </div>	<p>Seal Kits</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>N= Buna N(Std) NS=丁腈橡胶 ( 活塞上带密封圈 ) V=氟橡胶V-Fluorocarbon VS=氟橡胶 ( 活塞上带密封圈 )</p> </div>
---	---

# Hydraulic Operated Directional Valves

## ZPD2C-10-4

### SYMBOL



### SPECIFICATIONS

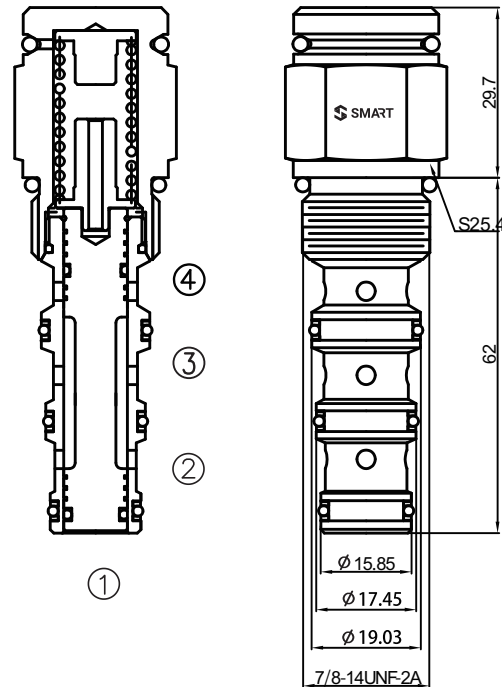
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. at 250bar
Pilot Pressure Required:	To Full Spool Shift
	(for 4.1 bar spring): 4.7bar
	(for 7.6 bar spring): 8.6bar
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-4 See page G-2
Installation Torque:	32-35Nm

### OPERATION

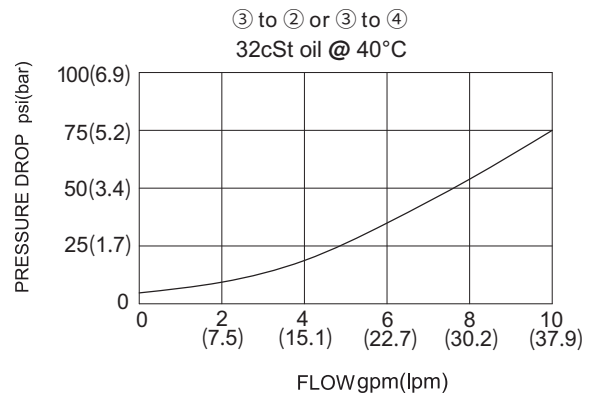
In neutral position (unpiloted), the valve allows flow from port ③ to ② bidirectionally, while port ④ is blocked. The spring chamber is vented to atmosphere, which is internally O-ring sealed from the cartridge flow paths.

On remote pilot signal at port ①, the valve's spool shifts to open port ③ to ④, while port ② is blocked.

Because of the vented spring chamber, the cartridge may be fully pressurized at any port without affecting required pilot pressure.



### PRESSURE DROP VS. FLOW



### TO ORDER

ZPD2C-10 -4- \*\* - \*\*

Cavity

**Spring Ranges**

4=40psi(2.8bar)

6=60psi(4.1bar)

8=80psi(5.5bar)

11=110psi(7.6bar)

**Seal Kits**

N= Buna N(Std)

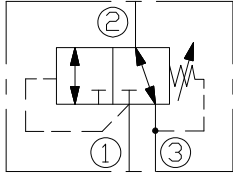
NS= Buna N with sealed piston  
110psi(7.6bar)minumun spring

V= V-Fluorocarbon

VS=Fluorocarbon with sealed piston  
110psi(7.6bar)minumun spring

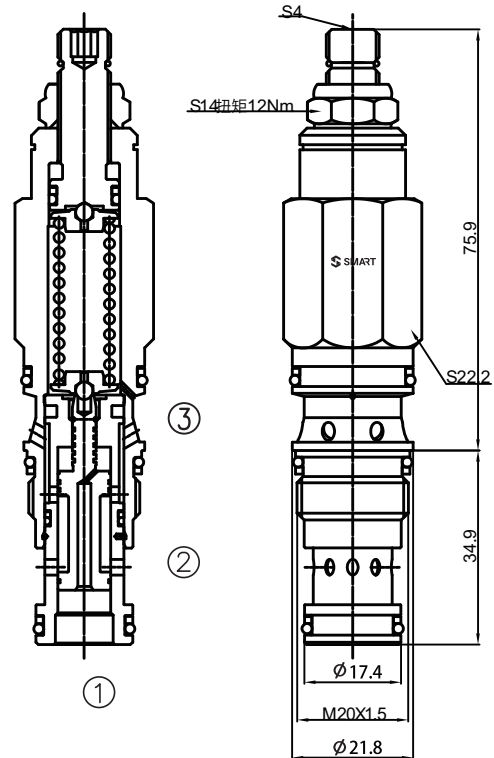
# ZDRBC

## SYMBOL



## SPECIFICATIONS

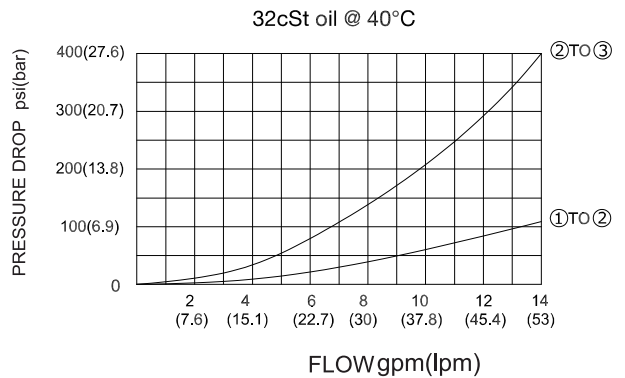
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	30cc/min.max.at 70bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	45-50Nm



## OPERATION

Direct-acting, 3-way directional cartridges (① blocked, ② to ③ open) are switching devices typically used in moderate flow circuits. They can be used by themselves or to actuate larger pilot-operated directional cartridges or logic cartridges. The valve shifts, when the pressure differential between port ① and port ③ exceeds the setting. Pressure at port ③ is directly additive to the setting of the valve. Because of this port ③ may not be useable as a work port in your circuit.

## PRESSURE DROP VS. FLOW



## TO ORDER

ZDRBC - \* \* \*

Flow C=28L/min

CONTROL L=Standard Screw Adjustment

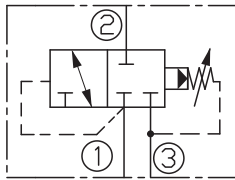
Seal Kits  
N= Buna N  
V= Viton

Spring Ranges  
 A=35-210bar Preset 70bar  
 B=3.5-105bar Preset 14bar  
 D=1.7-55bar Preset 14bar  
 E=1.7-28bar Preset 14bar  
 S=1.7-14bar Preset 14bar  
 W=50-315bar Preset 70bar  
 Factory Pressure setting established at 15L/min;

# Hydraulic Operated Directional Valves

## ZDPCB

### SYMBOL

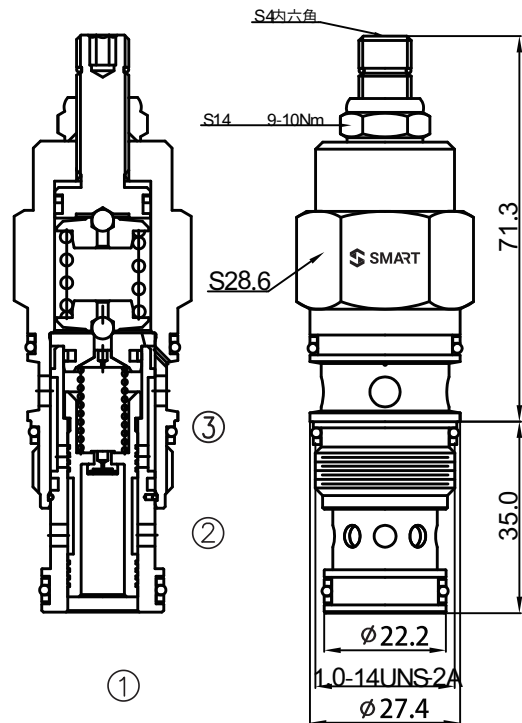


### SPECIFICATIONS

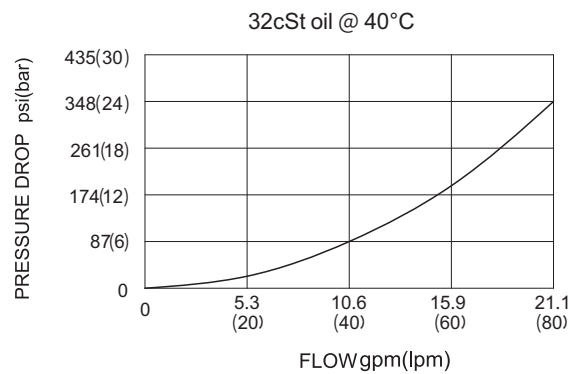
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	16cc/min.max.at 70bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A See page G-4
Installation Torque:	60-70Nm

### OPERATION

Pilot-operated, 2-way, directional cartridges valve, normally closed, the valve shifts when the pressure differential between port ① and port ③ exceeds the setting Pressure at port ③ is directly additive to the setting of the valve. Because of this, port ③ may not be useable as a work port in your circuit. Port ③ can be blocked to prevent the valve from shifting and Maximum pressure at port ③ should be limited to 3000 psi (210 bar).



### PRESSURE DROP VS. FLOW



### TO ORDER

ZDPCB - \* \* \*

Flow  
C=60L/min

CONTROL  
L=Standard Screw Adjustment

Seal Kits  
N= Buna N  
V= Viton

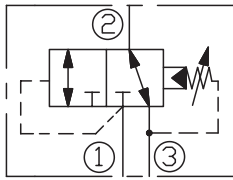
#### Spring Ranges

A=7-210bar Preset 70bar  
 B=3.5-105bar Preset 70bar  
 D=1.7-55bar Preset 28bar  
 E=10.5-315bar Preset 14bar  
 W=10.5-315bar Preset 70bar  
 Factory Pressure setting established at 15L/min;

# Hydraulic Operated Directional Valves

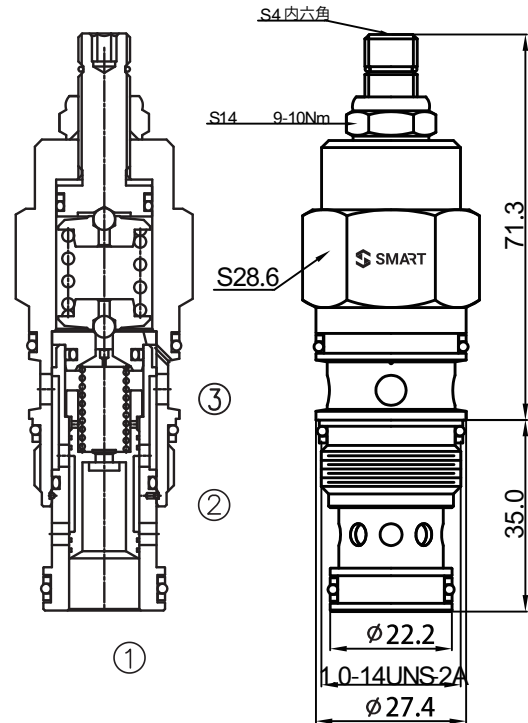
## ZDPCC

### SYMBOL



### SPECIFICATIONS

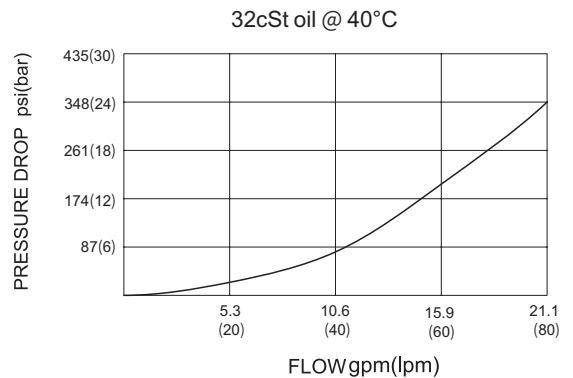
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	15cc/min. max. at 70bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A See page G-4
Installation Torque:	60-70Nm



### OPERATION

Pilot-operated, 3-way directional cartridges valve, normally ① blocked, ② to ③ open, the valve shifts when the pressure differential between port ① and port ③ exceeds the setting. Pressure at port ③, is directly additive to the setting of the valve. Because of this, port ③ may not be useable as a work port in your circuit. Port ③ can be blocked to prevent the valve from shifting and Maximum pressure at port ③ should be limited to 3000 psi (210 bar).

### PRESSURE DROP VS. FLOW



### TO ORDER

ZDPCC - \* \* \*

Flow  
C=60L/min

CONTROL  
L=Standard Screw Adjustment

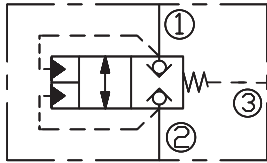
Seal Kits  
N= Buna N  
V= Viton

Spring Ranges  
 A=7-210bar    Preset 70bar  
 B=3.5-105bar    Preset 70bar  
 D=1.7-55bar    Preset 28bar  
 E=1.7-28bar    Preset 14bar  
 H=2.4-210bar    Preset 70bar  
 W=7-315bar    Preset 70bar  
 Factory Pressure setting established at 15L/min;

# Logic valves

## ZLODC(Spring-biased closed )

### SYMBOL



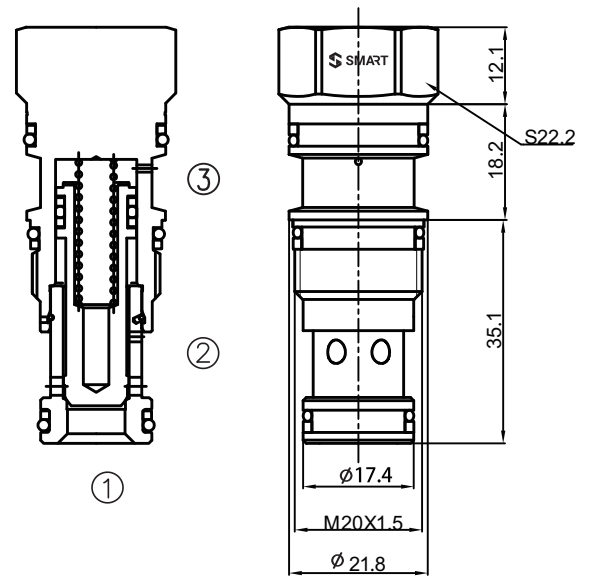
### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	10drops/min.
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	45-50Nm

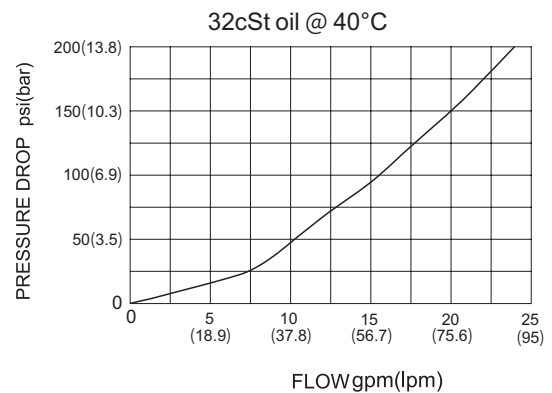
### OPERATION

These unbalanced, pilot-to-close logic valves are 2-way switching elements that are spring biased closed. Pressure at either work port ① or ② will oppose the spring and tend to open the valve while pressure at port ③ will tend to close it. The force generated at port ③, plus the spring force, must be greater than the sum of the forces acting at port ① and port ② for the valve to remain closed.

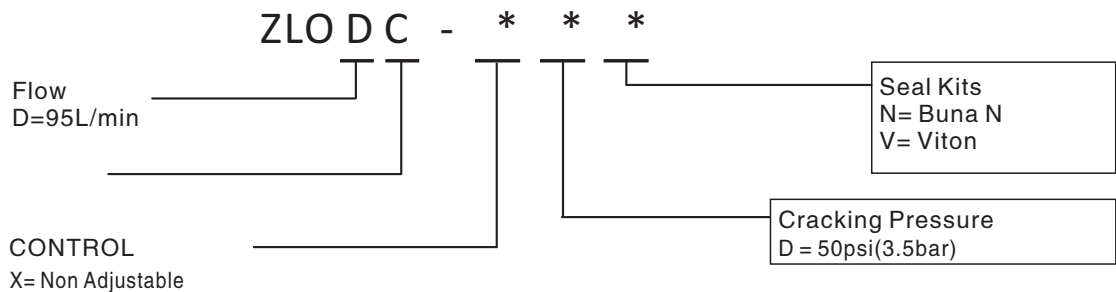
NOTE: The pilot area (port ③) is 1.8 times the area at port ① and 2.25 times the area at port ②.



### PRESSURE DROP VS.FLOW



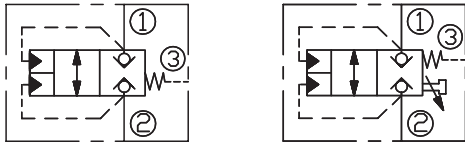
### TO ORDER



# Logic valves

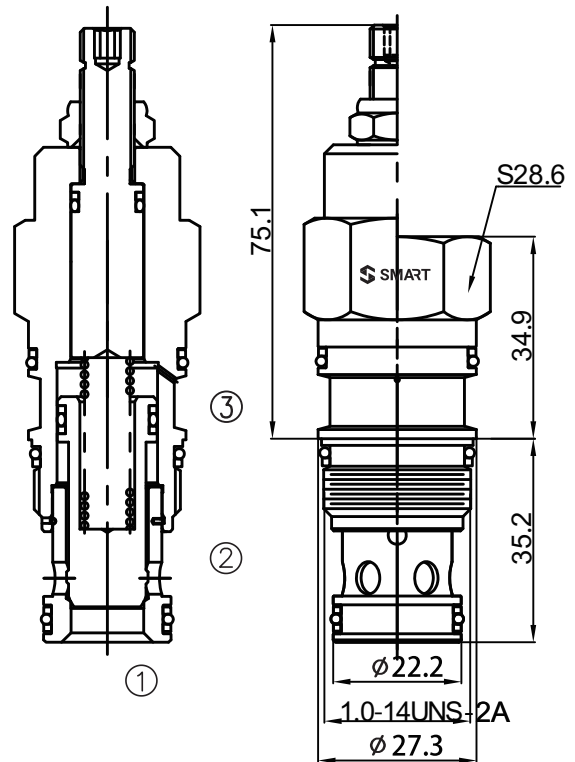
## ZLOFC(Spring-biased closed)

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	10 drops/min
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A See page G-4
Installation Torque:	60-70Nm

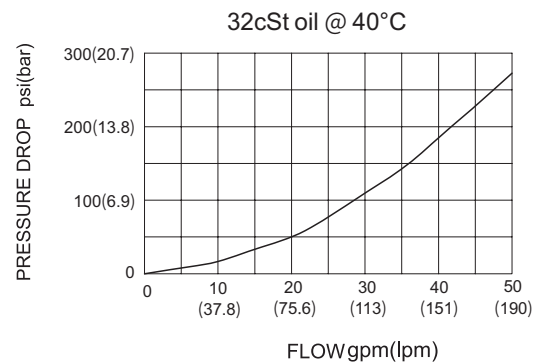


### OPERATION

These unbalanced, pilot-to-close logic valves are 2-way switching elements that are spring biased closed. Pressure at either work port ① or ② will oppose the spring and tend to open the valve while pressure at port ③ will tend to close it. The force generated at port ③, plus the spring force, must be greater than the sum of the forces acting at port ① and port ② for the valve to remain closed.

NOTE: The pilot area (port ③) is 1.8 times the area at port ① and 2.25 times the area at port ②.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZLOFC - \* \* \*

Flow  
F=200L/min

CONTROL  
X=Standard Pilot  
L=Seroke Adjustment

Seal Kits  
N= Buna N  
V= Viton

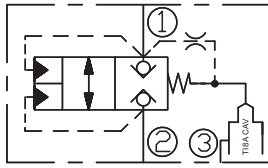
Cracking Pressure  
D = 50psi(3.5bar)

Logic valves

**ZLOFA-8DN(Spring-biased closed )**

**B**

**SYMBOL**

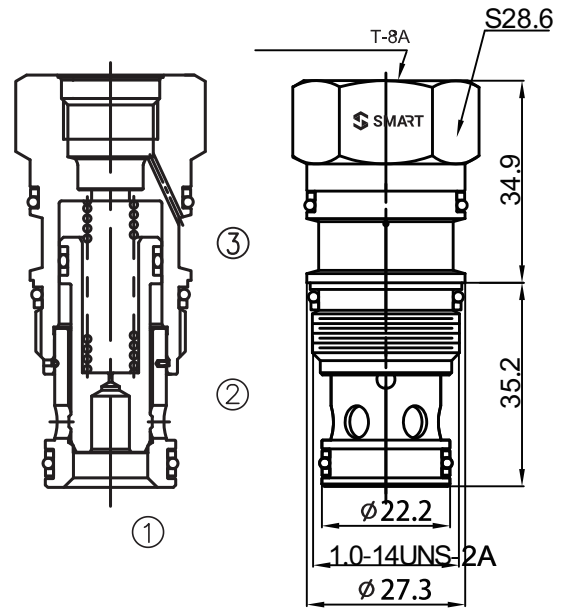


**SPECIFICATIONS**

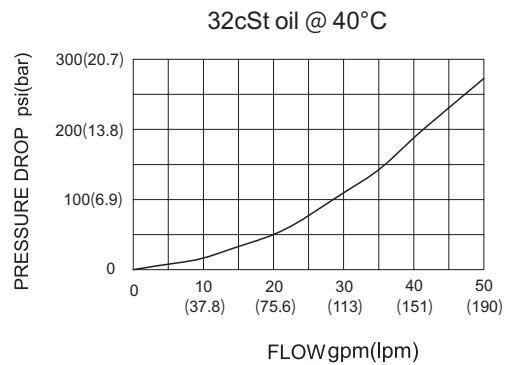
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A See page G-4
Installation Torque:	60-70Nm

**OPERATION**

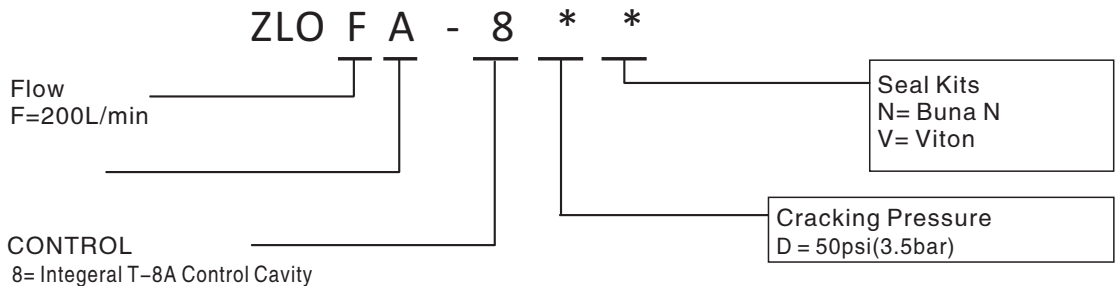
This valve is an unbalanced, vent-to-open, 2-way logic switching element with an integral pilot control cavity. It is spring biased closed and uses port ① as a pilot source. With a pilot 2-way valve in the closed position installed in the T-8A cavity, the logic element will remain in the closed position. With the pilot valve open, the logic element will open providing there is a sufficient combination of pressures to overcome the spring force. The force generated at port ③, plus the spring force, must be greater than the sum of the forces acting at port ① and port ② for the valve to remain closed. NOTE: The pilot area (port ③) is 1.8 times the area at port ① and 2.25 times the area at port ②.



**PRESSURE DROP VS.FLOW**

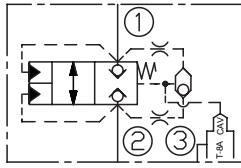


**TO ORDER**



# ZLOHD-8DN(Spring-biased closed )

## SYMBOL

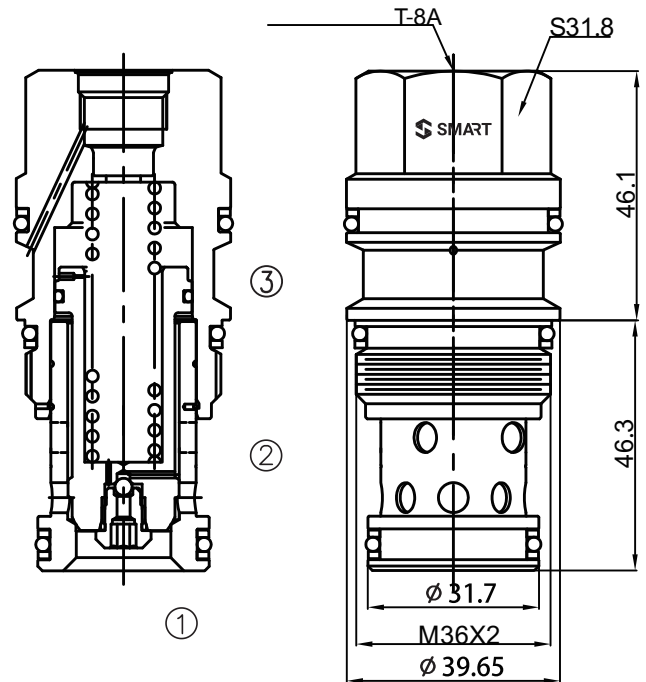


## SPECIFICATIONS

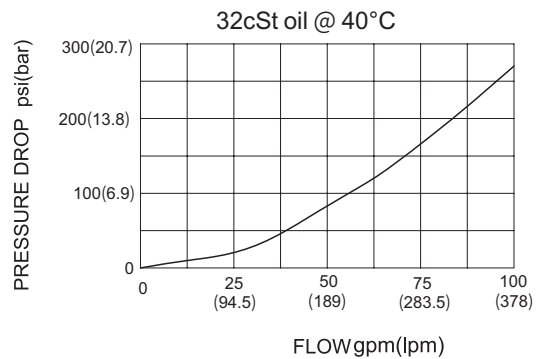
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-17A See page G-5
Installation Torque:	200-215Nm

## OPERATION

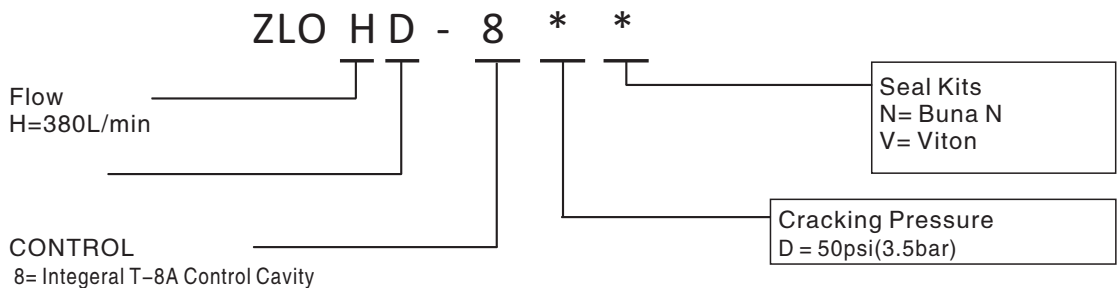
This valve is an unbalanced, vent-to-open, 2-way logic switching element with an integral pilot control cavity. It is spring biased closed and uses port ① or ② as a pilot source. With a pilot 2-way valve in the closed position installed in the T-8A cavity, the logic element will remain in the closed position. With the pilot valve open, the logic element will open providing there is a sufficient combination of pressures to overcome the spring force. The force generated at port ③, plus the spring force, must be greater than the sum of the forces acting at port ① and port ② for the valve to remain closed. NOTE: The pilot area (port ③) is 1.8 times the area at port ① and 2.25 times the area at port ②.



## PRESSURE DROP VS.FLOW

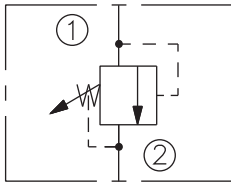


## TO ORDER



# ZRV-SAE6

## SYMBOL



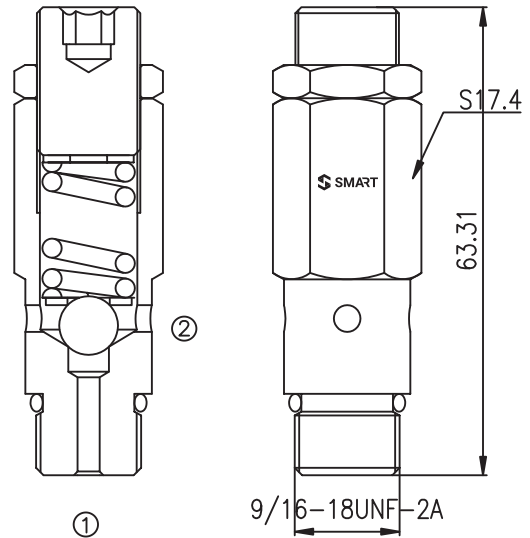
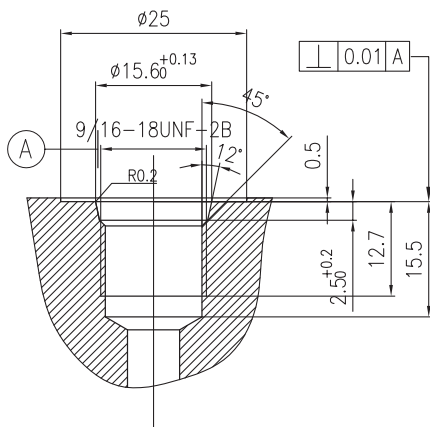
## SPECIFICATIONS

MAX. Operating Pressure:	210bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min.max.at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Installation Torque:	13.6-16.3Nm

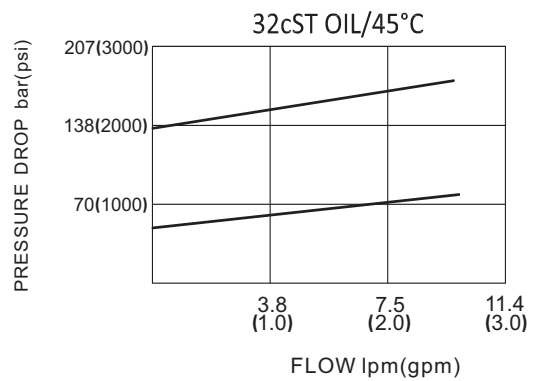
## OPERATION

The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.

## CAVITY



## PRESSURE DROP VS. FLOW



## TO ORDER

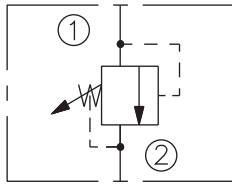
ZRV-SAE6 - \* \*

Cavity

Spring Ranges  
 12=15-82bar Preset 22bar  
 30=70-210bar Preset 160bar

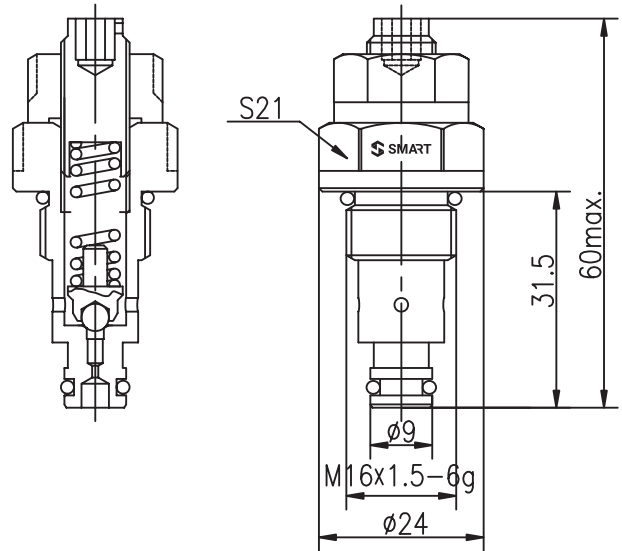
# ZRV-041

## SYMBOL



## SPECIFICATIONS

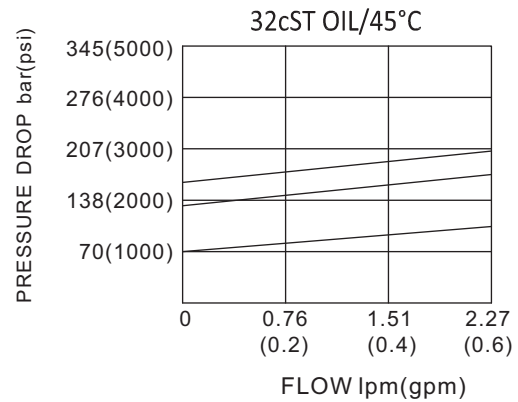
MAX. Operating Pressure:	320bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T041-2 See page G-11
Installation Torque:	13.6-16.3Nm



## OPERATION

The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.

## PRESSURE DROP VS. FLOW



## TO ORDER

ZRV-041 - \*\*

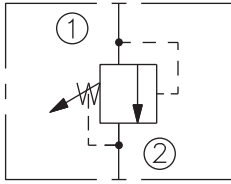
Cavity

### Spring Ranges

- 10=5-120bar    Preset 70bar
- 15=100-220bar    Preset 120bar
- 20=160-320bar    Preset 200bar

# ZRV-08

## SYMBOL

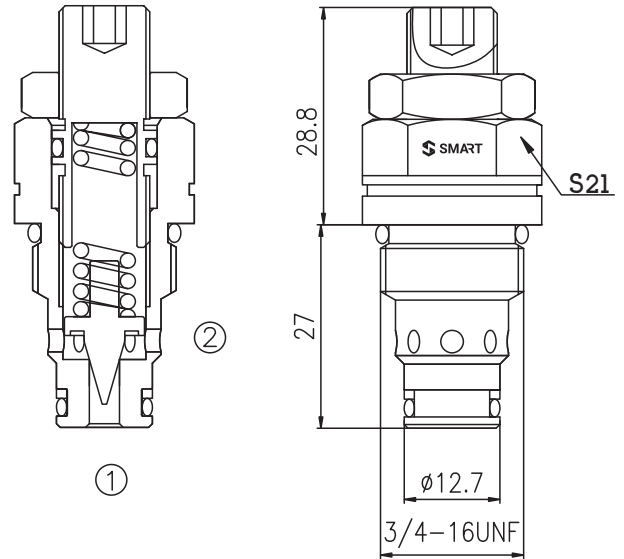


## SPECIFICATIONS

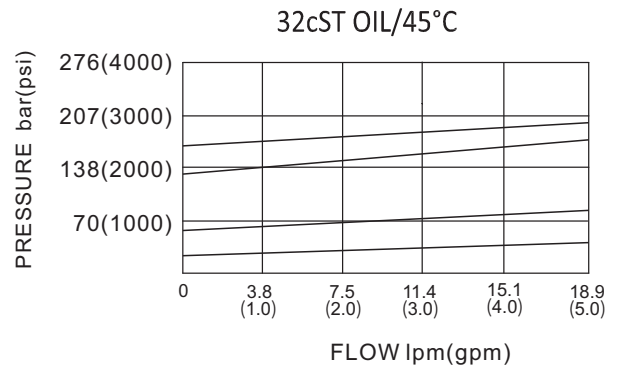
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min.max.at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.2Nm

## OPERATION

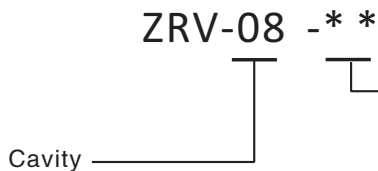
The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.



## PRESSURE DROP VS. FLOW



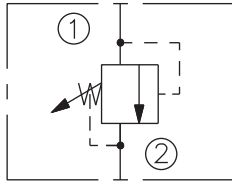
## TO ORDER



Spring Ranges	
08=20-80bar	Preset 50bar
16=80-165bar	Preset 120bar
25=100-250bar	Preset 200bar

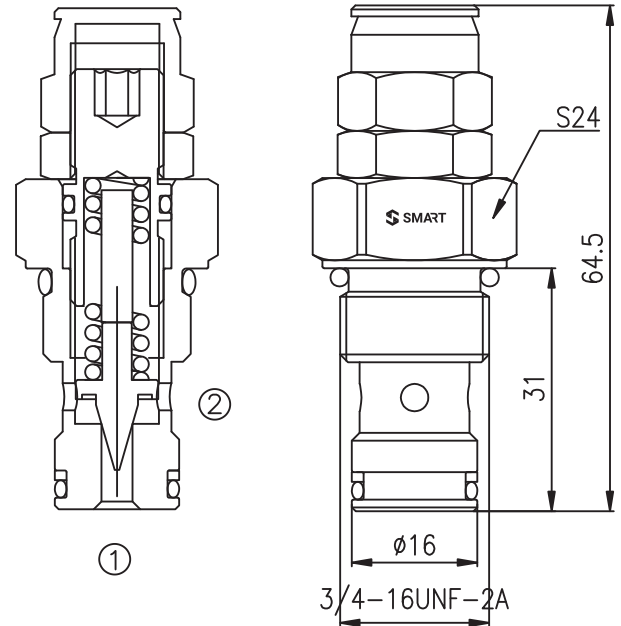
# ZRV-08E

## SYMBOL



## SPECIFICATIONS

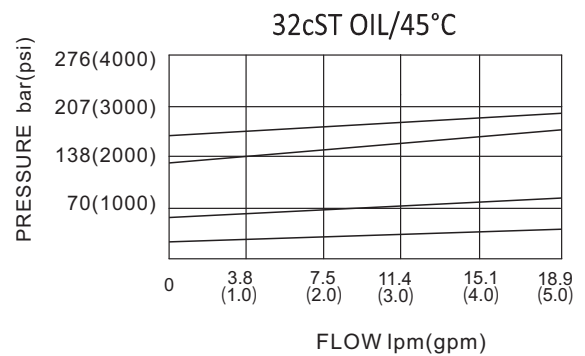
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min.max.at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T08E-2 See page G-8
Installation Torque:	24.5- 27.2Nm



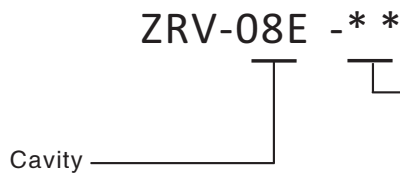
## OPERATION

The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.

## PRESSURE DROP VS. FLOW



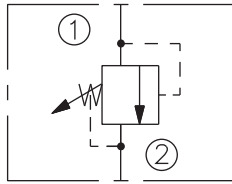
## TO ORDER



Spring Range	
08=20-80bar	Preset 50bar
16=80-165bar	Preset 120bar
25=100-250bar	Preset 200bar

# ZCRV-08

## SYMBOL

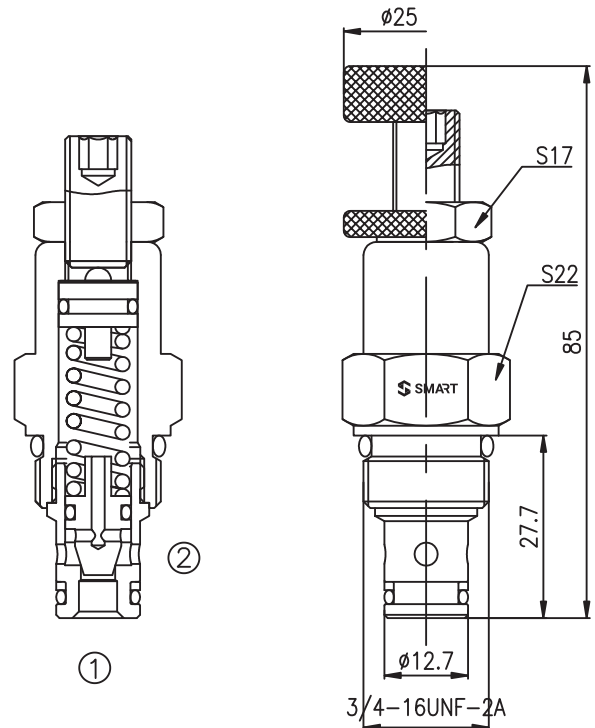


## SPECIFICATIONS

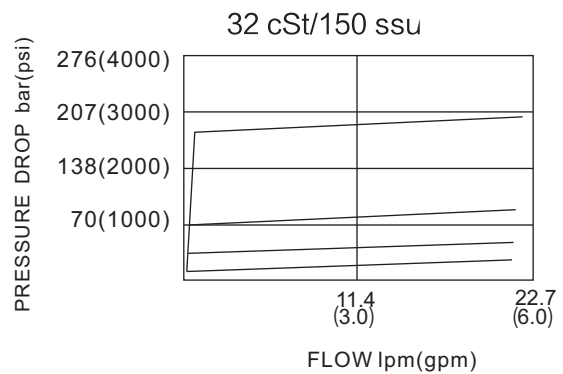
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min.max.at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.2Nm

## OPERATION

The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.



## PRESSURE DROP VS. FLOW



## TO ORDER

ZCRV-08 - \* - \* \*

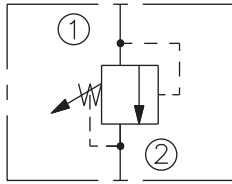
Cavity

**Adjustment**  
B = 25mm Dia Knob  
Omit for 5mm Hex Allen head

**Spring Range**  
06=0-60bar    Preset 50bar  
16=40-180bar    Preset 160bar  
20=80-250bar    Preset 200bar

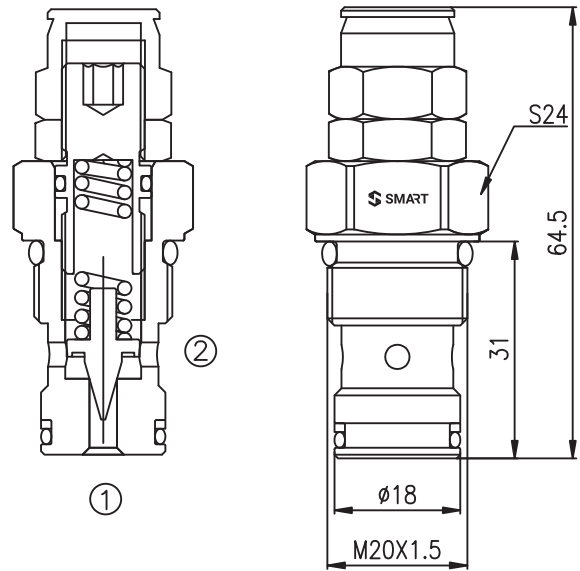
# ZRV-08M

## SYMBOL



## SPECIFICATIONS

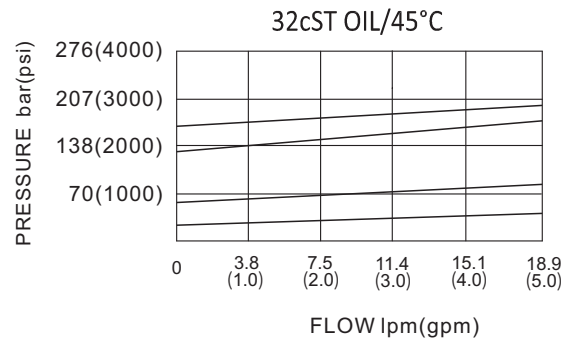
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min.max.at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T08M-2 See page G-8
Installation Torque:	24.5- 27.2Nm



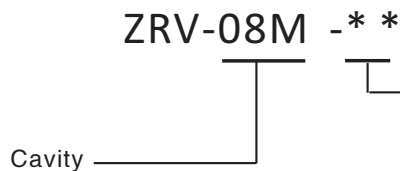
## OPERATION

The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.

## PRESSURE DROP VS. FLOW



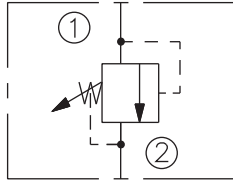
## TO ORDER



Spring Range	
08=20-80bar	Preset 50bar
16=80-165bar	Preset 120bar
25=100-250bar	Preset 200bar

# ZNRV-08

## SYMBOL

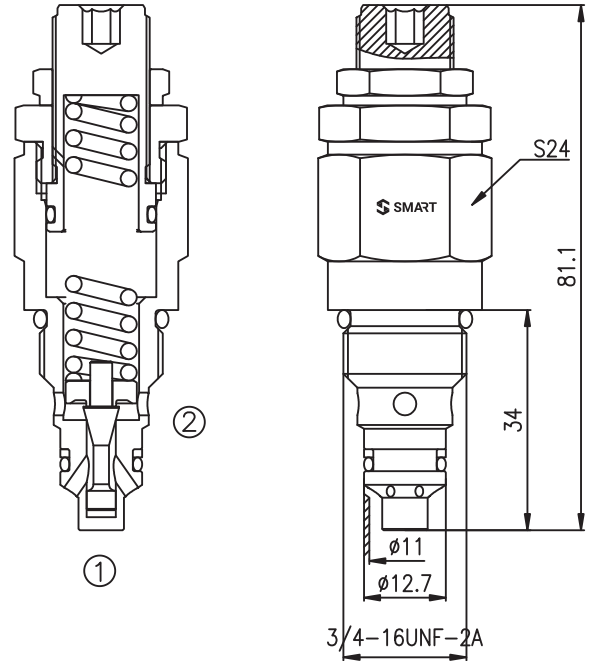


## SPECIFICATIONS

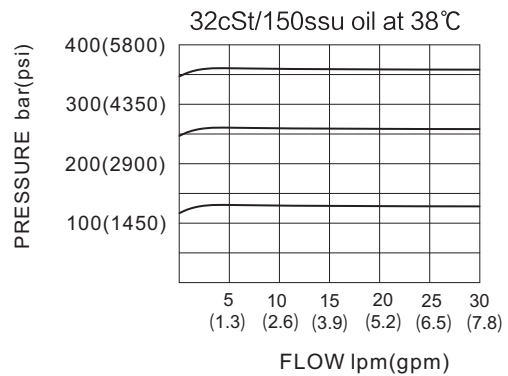
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min.max. at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.2Nm

## OPERATION

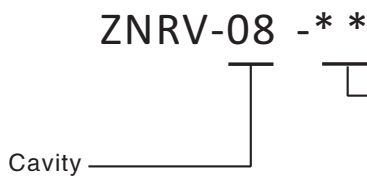
The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.



## PRESSURE DROP VS. FLOW



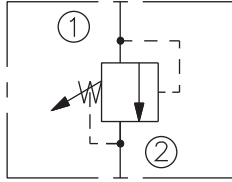
## TO ORDER



Spring Range	
18=20-125bar	Preset 69bar
26=40-180bar	Preset 138bar
50=180-350bar	Preset 207bar

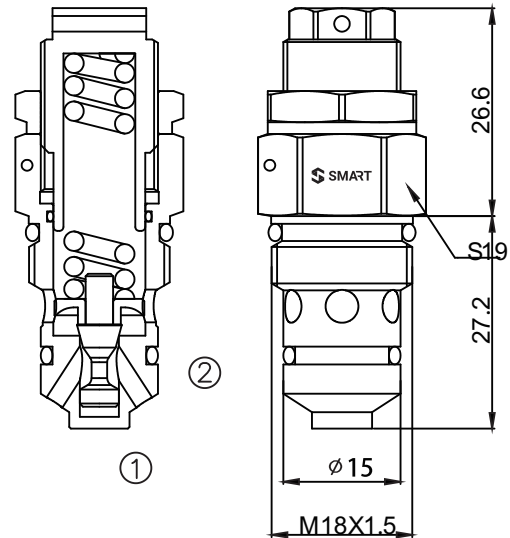
# ZRVY0.M18

## SYMBOL



## SPECIFICATIONS

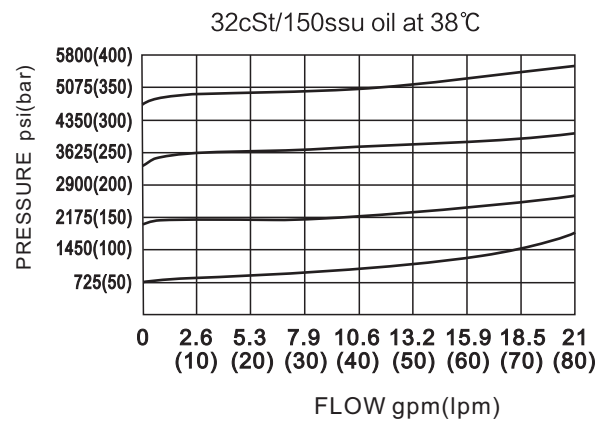
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	5drops/min.max.at to 80% of nominal setting
Reseat Pressure:	90% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	VH 039 See page G-17
Installation Torque:	40-45Nm



## OPERATION

The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.

## 压力流量曲线 PRESSURE DROP VS.FLOW



## TO ORDER

ZRVY0 . M18 . 0 N . \*\*\*

Spring Range  
G=10-200bar  
N=200-350bar

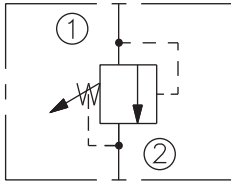
Pressure setting  
000=No specific setting required  
例: 100=100bar

Factory Pressure setting established at 5L/min

# Directly Operated Relief Valves

## ZNRV-10

### SYMBOL

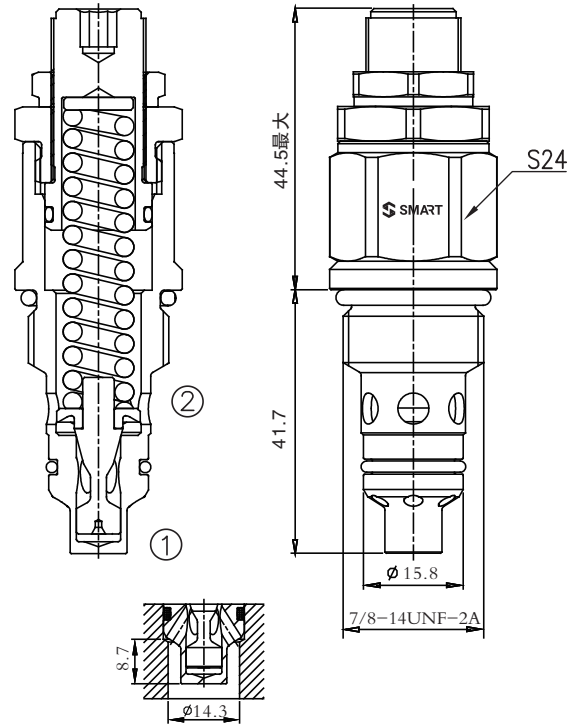


### SPECIFICATIONS

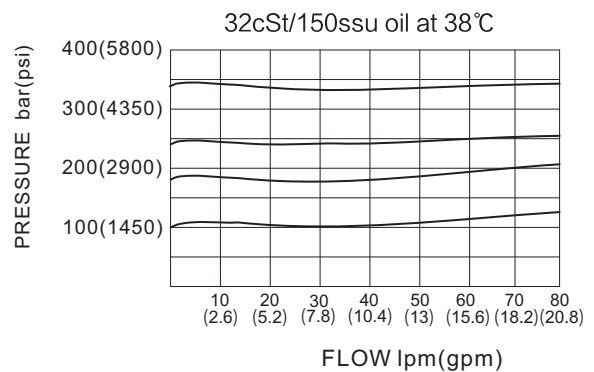
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min.max.at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	35-40Nm

### OPERATION

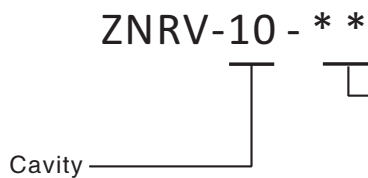
The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.



### PRESSURE DROP VS. FLOW



### TO ORDER

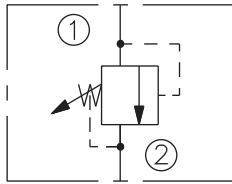


Spring Range	
05=5-75bar	Preset 40bar
12=76-125bar	Preset 100bar
18=126-220bar	Preset 180bar
25=221-350bar	Preset 280bar

Cavity

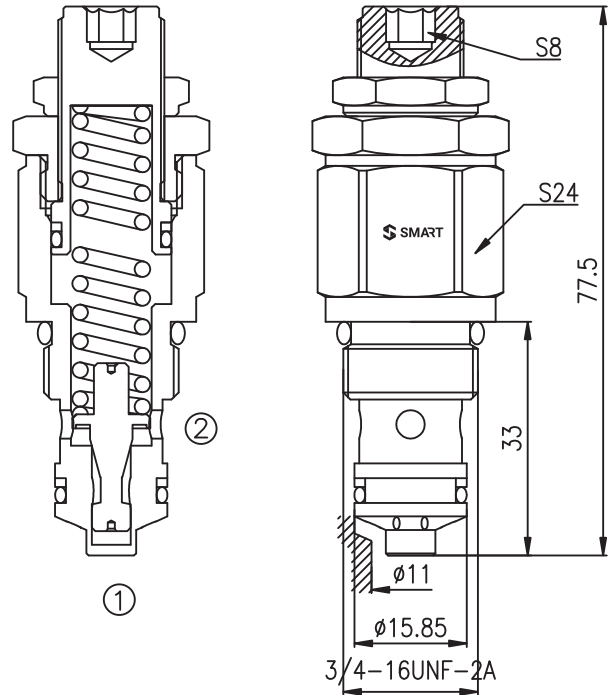
# ZNRV-08S

## SYMBOL



## SPECIFICATIONS

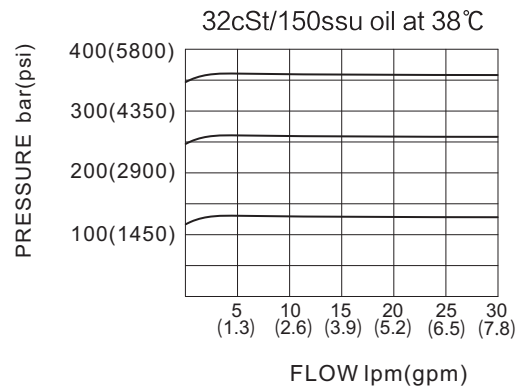
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08S-2 See page G-1
Installation Torque:	24.5- 27.2Nm



## OPERATION

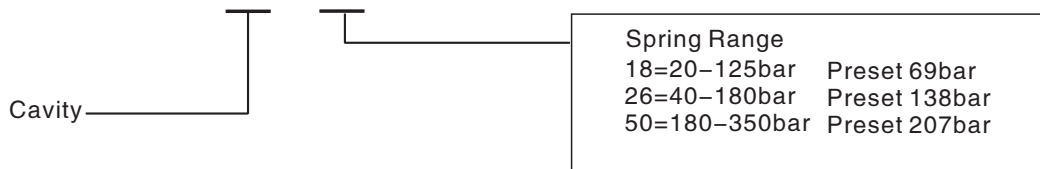
The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.

## PRESSURE DROP VS. FLOW



## TO ORDER

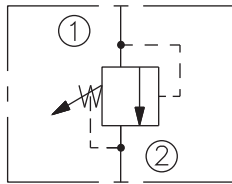
ZNRV-08S - \* \*



# Directly Operated Relief Valves

## ZRV08-20

### SYMBOL

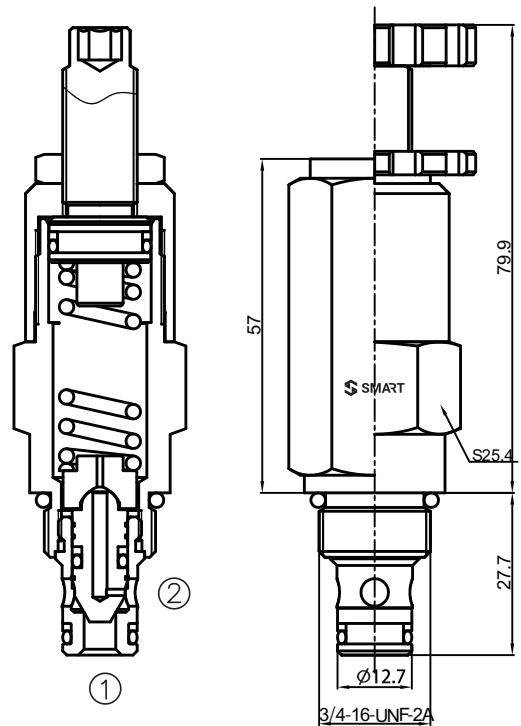


### SPECIFICATIONS

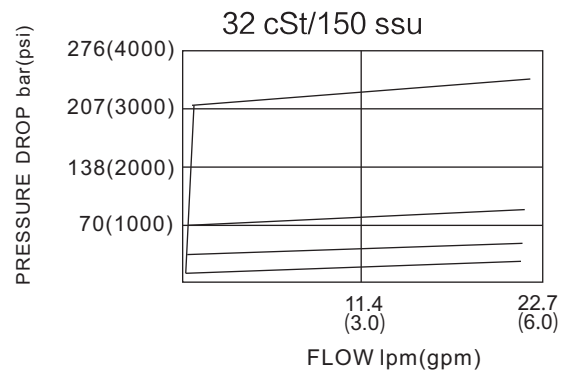
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.2Nm

### OPERATION

The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.



### PRESSURE DROP VS. FLOW



### TO ORDER

ZRV08 - 20 - \* - \* \*

Cavity \_\_\_\_\_

Function \_\_\_\_\_

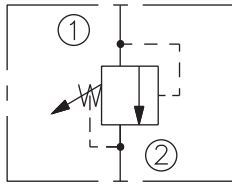
Adjustment  
 B = Alum. Knob  
 H = Factory Preset Hidden Adj.  
 Omit for 6.35mm Hex Allen head

Spring Range  
 5=4-35bar      Preset 17bar  
 11=7-76bar     Preset 38bar  
 23=17-159bar   Preset 79bar  
 37=17-250bar   Preset 124bar

# Directly Operated Relief Valves

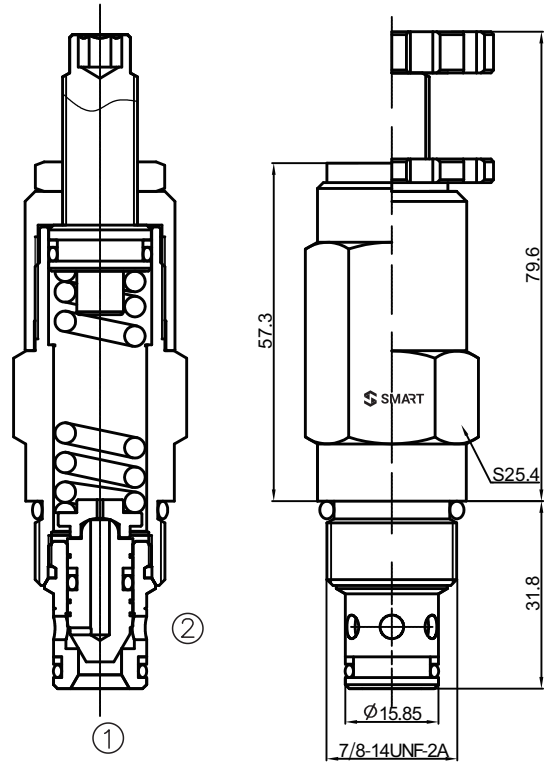
## ZRV10-20

### SYMBOL



### SPECIFICATIONS

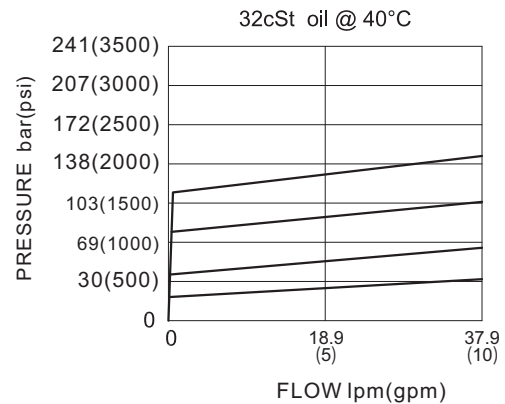
MAX. Operating Pressure:	228bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	32-35Nm



### OPERATION

The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZRV10 - 20 - \* - \* \*

Cavity \_\_\_\_\_

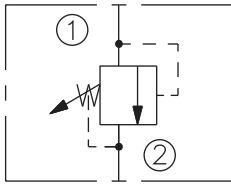
Function \_\_\_\_\_

Adjustment  
 B = Alum. Knob  
 H = Factory Preset Hidden Adj.  
 Omit for 6.35mm Hex Allen head

Spring Range  
 6=3.5-41.4bar    Preset 20.7bar  
 12=10.3-82.8bar    Preset 41.4bar  
 23=17.2-158.6bar    Preset 80bar  
 33=17.2-227.6bar    Preset 113.8bar

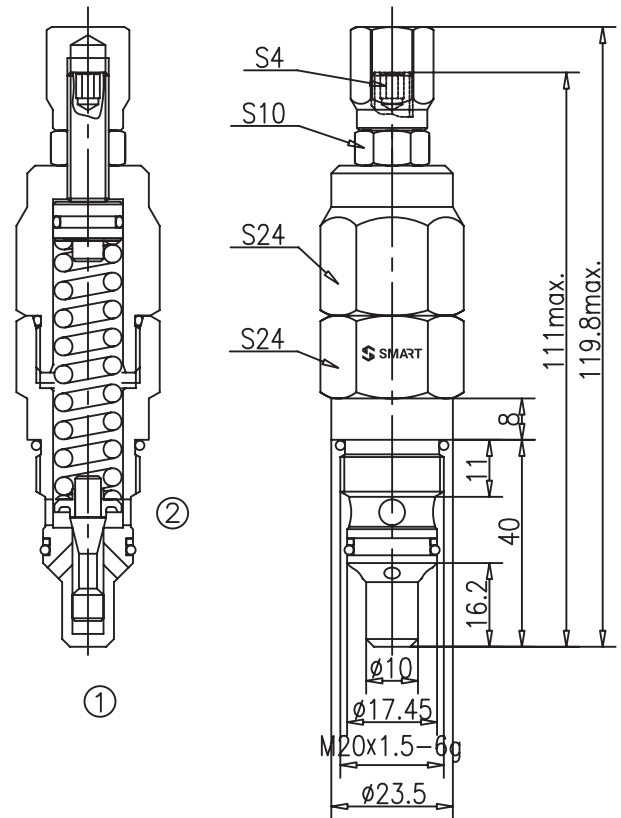
# ZNRV-089

## SYMBOL



## SPECIFICATIONS

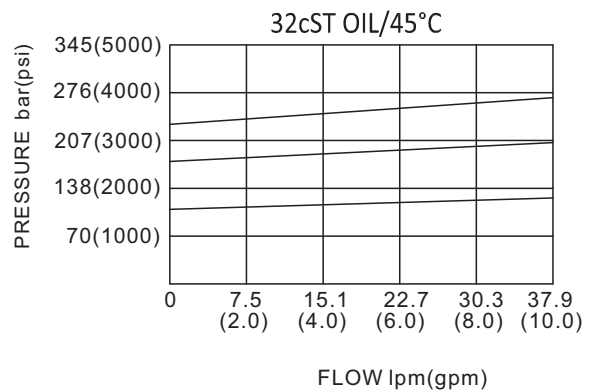
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T089-2 See page G-10
Installation Torque:	24.5- 27.2Nm



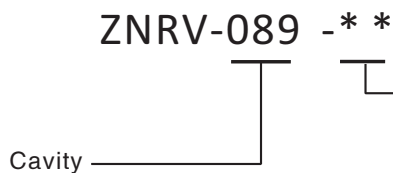
## OPERATION

The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.

## PRESSURE DROP VS. FLOW



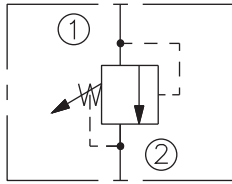
## TO ORDER



Spring Ranges	
05=40-123bar	Preset 120bar
10=97-210bar	Preset 200bar
15=178-350bar	Preset 250bar

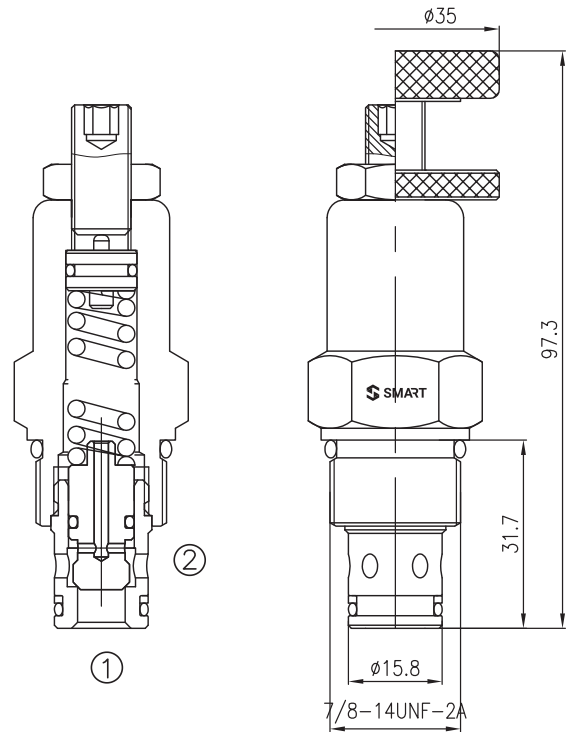
# ZCRV-10

## SYMBOL



## SPECIFICATIONS

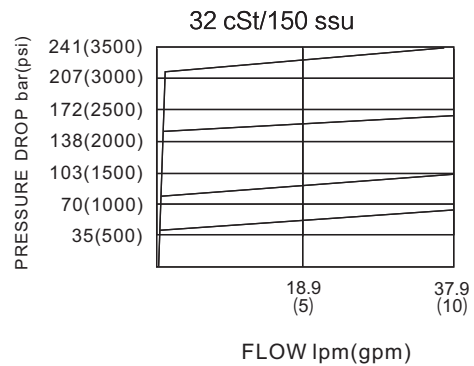
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



## OPERATION

The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.

## PRESSURE DROP VS. FLOW



## TO ORDER

ZCRV 10 - \* - \* \*

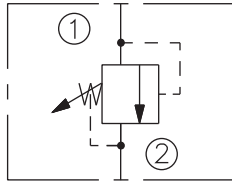
Cavity

Adjustment  
B = 38mm Dia Knob  
Omit for 6.35mm Hex Allen head

Spring Range	
6=3-41bar	Preset 20bar
12=10-80bar	Preset 40bar
23=17-161bar	Preset 80bar
30=20-210bar	Preset 120bar

# ZNRV-10B

## SYMBOL

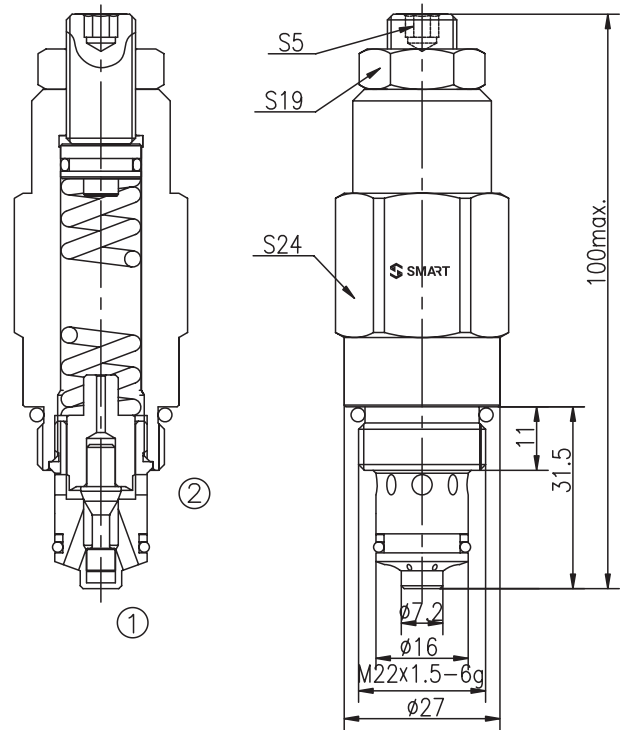


## SPECIFICATIONS

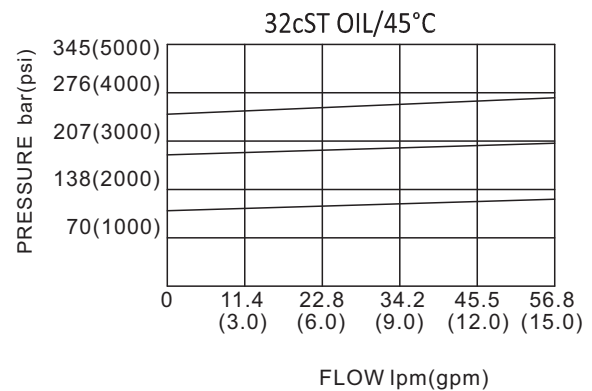
MAX. Operating Pressure:	210bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T10B-2 See page G-10
Installation Torque:	35-40Nm

## OPERATION

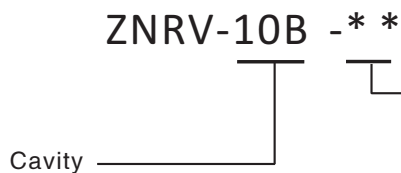
The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.



## PRESSURE DROP VS. FLOW



## TO ORDER



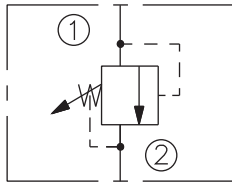
Spring Ranges	
05=5-55bar	Preset 35bar
10=37-155bar	Preset 100bar
15=94-210bar	Preset 160bar

C

## Directly Operated Relief Valves

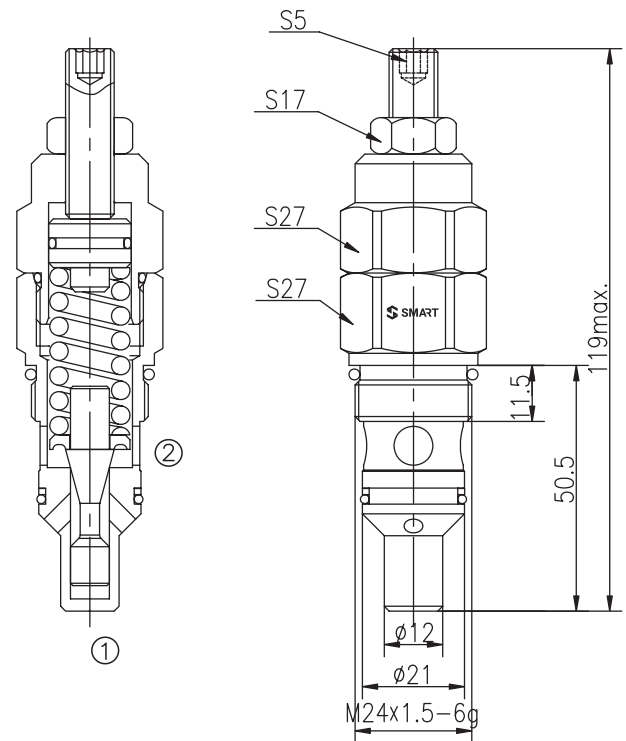
### ZNRV-100

#### SYMBOL



#### SPECIFICATIONS

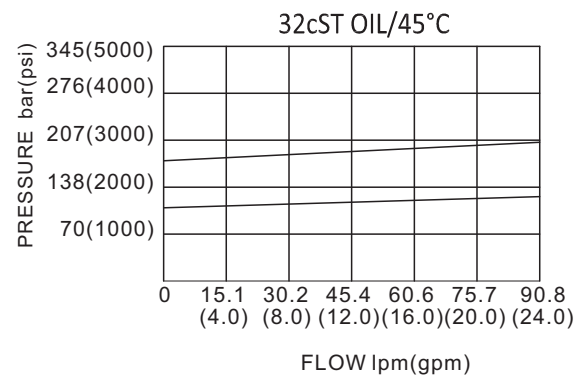
MAX. Operating Pressure:	210bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min.max.at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T100-2 See page G-10
Installation Torque:	38.7-43.8Nm



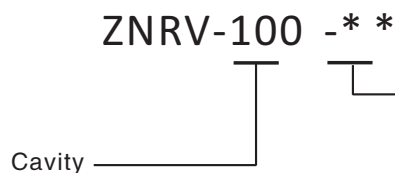
#### OPERATION

The valve prevents flow from ① to ② until the set crack pressure at ① is achieved. The poppet then unseats allowing flow from ① to ② protecting the circuit from over pressurization.

#### PRESSURE DROP VS. FLOW



#### TO ORDER

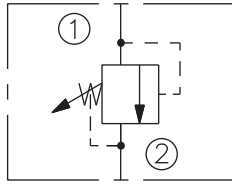


Spring Ranges  
 05=29-128bar Preset 120bar  
 10=97-210bar Preset 200bar

## Directly Operated Relief Valves

### ZRDBA

#### SYMBOL

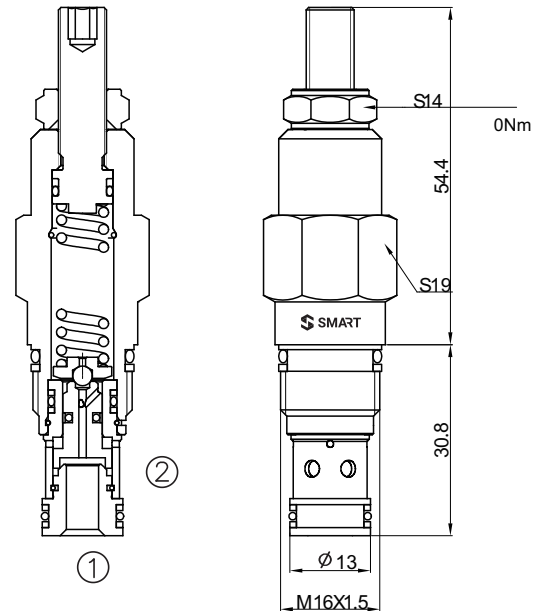


#### SPECIFICATIONS

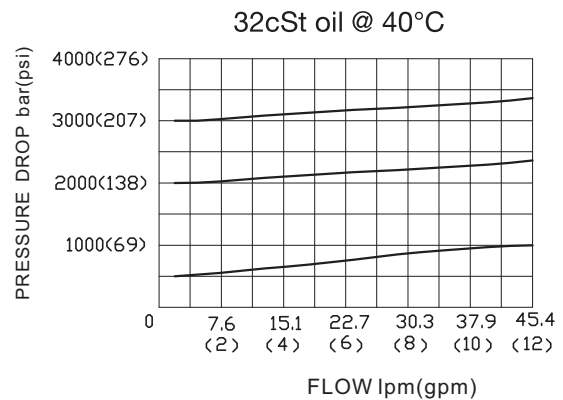
MAX. Operating Pressure:	350bar
Flow:	45L/min
Internal Leakage:	10drops/min.max
Reseat Pressure:	>80% of setting pressure
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-162A See page G-22
Installation Torque:	27-33Nm

#### OPERATION

The valve is normally closed, pressure-limiting valves used to protect hydraulic components from pressure transients. When the pressure at the inlet (port ①) reaches the valve setting, the valve starts to open to tank (port ②), throttling flow to limit the pressure rise. These valves are smooth and quiet, essentially zero leak, dirt tolerant, immune to silting and are very fast.



#### PRESSURE DROP VS. FLOW



#### TO ORDER

ZRDBA - \* \* \*

CONTROL  
L = Standard Screw Adjustment  
K = Konb

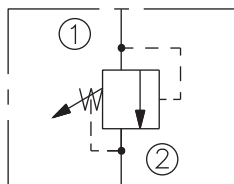
Seal Kits  
N = Buna N  
V = Viton

Factory Pressure setting established at 15L/min

Spring Ranges	
A=3.5-210bar	Preset 70bar
B=20-105bar	Preset 70bar
C=70-420bar	Preset 70bar
D=14-55bar	Preset 28bar
E=7-28bar	Preset 14bar
S=3.5-14bar	Preset 7bar
W=55-315bar	Preset 70bar

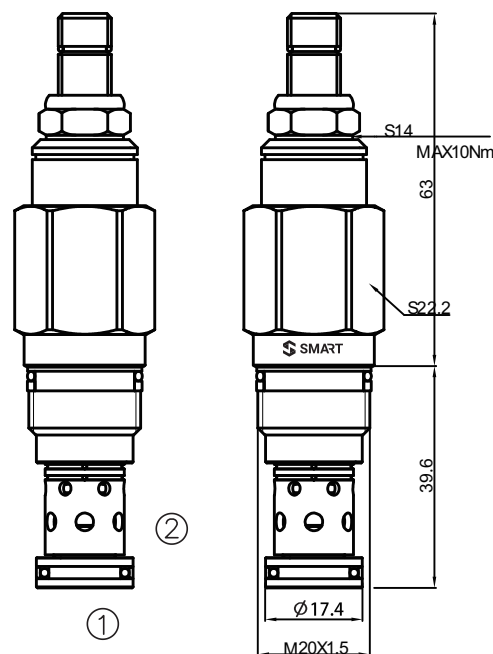
## ZRDDA

### SYMBOL



### SPECIFICATIONS

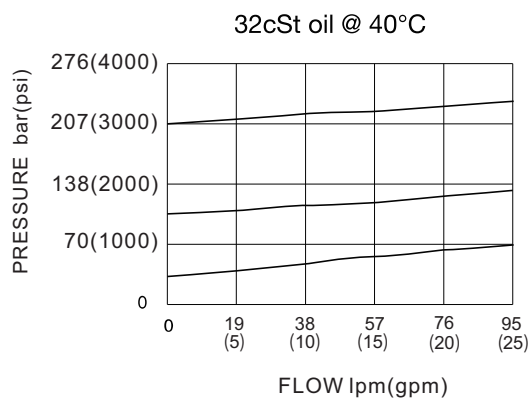
MAX. Operating Pressure:	350bar
Flow:	95L/min
Internal Leakage:	10drops/min.max
Reseat Pressure:	>80% of setting pressure
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-10A See page G-5
Installation Torque:	40-50Nm



### OPERATION

The valve is normally closed, pressure-limiting valves used to protect hydraulic components from pressure transients. When the pressure at the inlet (port ①) reaches the valve setting, the valve starts to open to tank (port ②), throttling flow to limit the pressure rise. These valves are smooth and quiet, essentially zero leak, dirt tolerant, immune to silting and are very fast.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZRDDA - \* \* \*

CONTROL  
L Standard Screw Adjustment  
K=Konb

Seal Kits  
N= Buna N  
V= Viton

Factory Pressure setting established at 15L/min

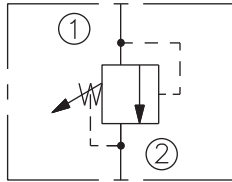
Spring Ranges  
A=35-210bar Preset 70bar  
B=20-105bar Preset 70bar  
C=70-420bar Preset 70bar  
D=14-55bar Preset 28bar  
W=55-315bar Preset 70bar

# Directly Operated Relief Valves



## ZRDFA

### SYMBOL

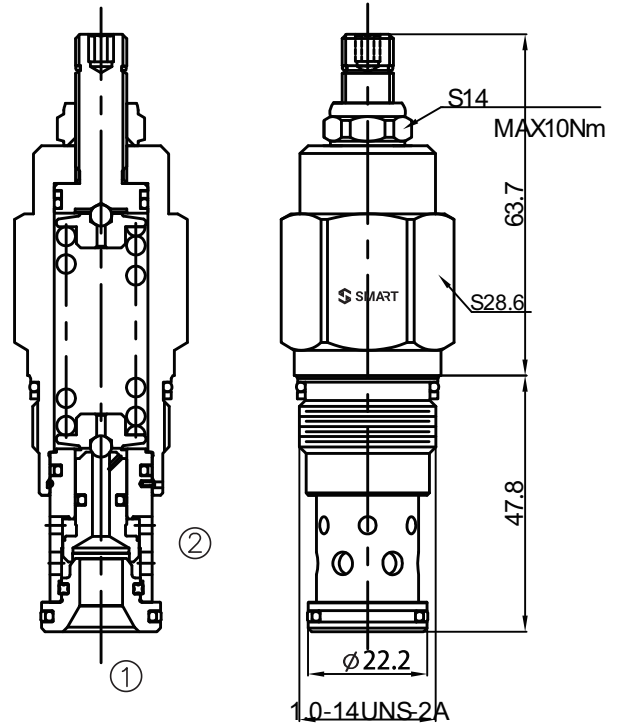


### SPECIFICATIONS

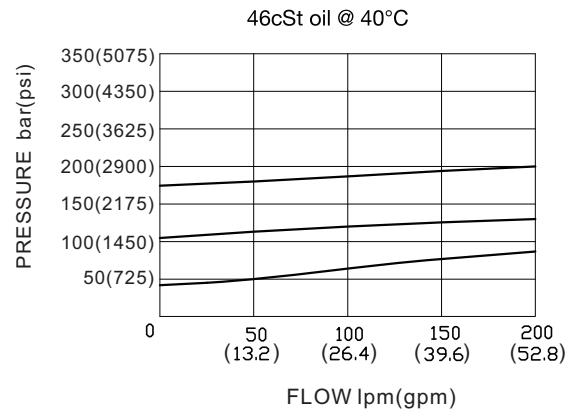
MAX. Operating Pressure:	350bar
Flow:	200L/min
Internal Leakage:	10drops/min.max
Reseat Pressure:	>80% of setting pressure
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-3A See page G-6
Installation Torque:	60-70Nm

### OPERATION

The valve is normally closed, pressure-limiting valves used to protect hydraulic components from pressure transients. When the pressure at the inlet (port ①) reaches the valve setting, the valve starts to open to tank (port ②), throttling flow to limit the pressure rise. These valves are smooth and quiet, essentially zero leak, dirt tolerant, immune to silting and are very fast.



### PRESSURE DROP VS. FLOW



### TO ORDER

ZRDFA - \* \* \*

**CONTROL**  
L = Standard Screw Adjustment  
K = Konb

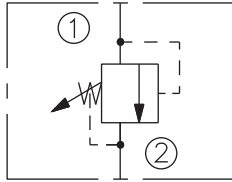
**Seal Kits**  
N = Buna N  
V = Viton

Factory Pressure setting established at 15L/min

Spring Ranges	
A=35-210bar	Preset 70bar
B=20-105bar	Preset 70bar
C=70-420bar	Preset 70bar
D=14-55bar	Preset 28bar
E=7-28bar	Preset 14bar
W=55-315bar	Preset 70bar
S=3.5-14bar	Preset 7bar

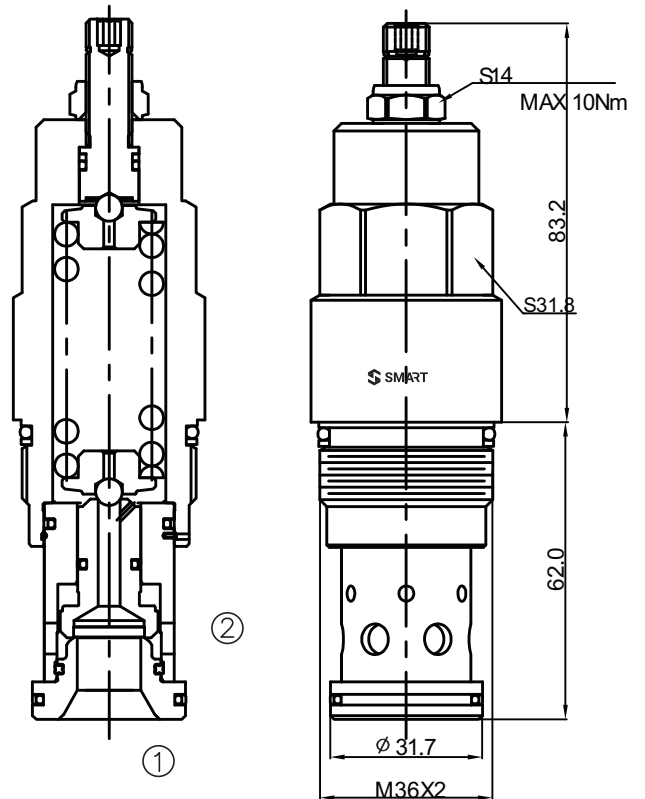
# ZRDHA

## SYMBOL



## SPECIFICATIONS

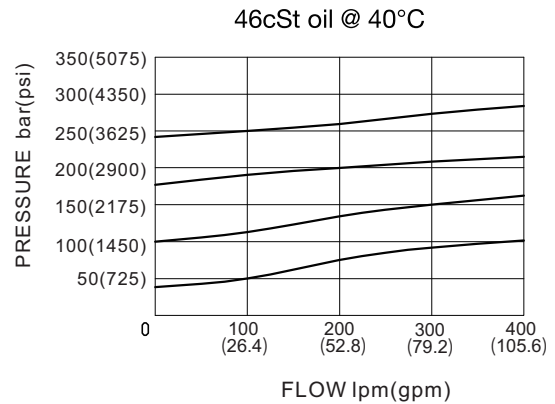
MAX. Operating Pressure:	350bar
Flow:	380L/min
Internal Leakage:	10drops/min.max
Reseat Pressure:	>80% of setting pressure
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-16A See page G-21
Installation Torque:	200-215Nm



## OPERATION

The valve is normally closed, pressure-limiting valves used to protect hydraulic components from pressure transients. When the pressure at the inlet (port ①) reaches the valve setting, the valve starts to open to tank (port ②), throttling flow to limit the pressure rise. These valves are smooth and quiet, essentially zero leak, dirt tolerant, immune to silting and are very fast.

## PRESSURE DROP VS. FLOW



## TO ORDER

ZRDHA - \* \* \*

CONTROL  
L = Standard Screw Adjustment

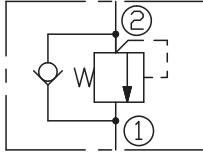
Seal Kits  
N= Buna N  
V= Viton

Factory Pressure setting established at 15L/min

Spring Ranges	
A=35-210bar	Preset 70bar
B=20-105bar	Preset 70bar
C=70-420bar	Preset 70bar
D=14-55bar	Preset 28bar
E=7-28bar	Preset 14bar
W=55-315bar	Preset 70bar
S=3.5-14bar	Preset 7bar

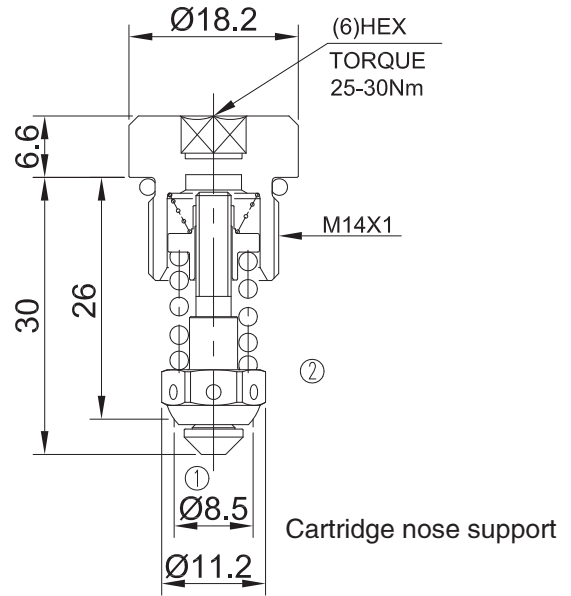
# ZACR.M14

## SYMBOL



## SPECIFICATIONS

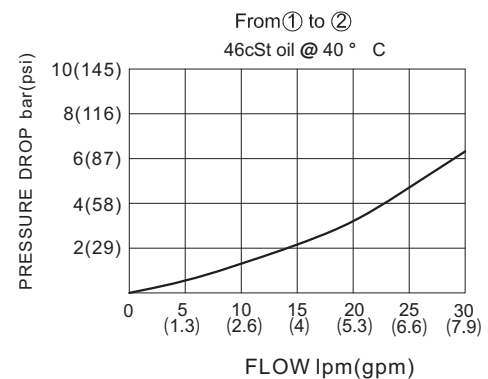
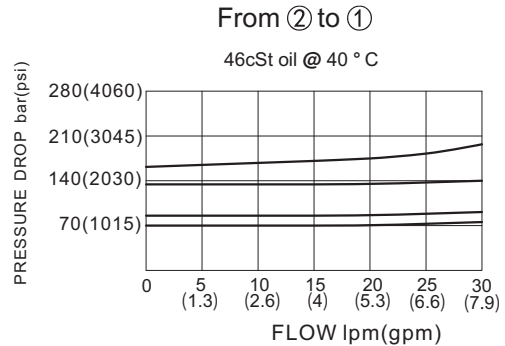
Operating Pressure:	210bar
Flow:	See PRESSURE DROP VS.FLOW graph
Maximum valve leakage at reseal:	15 drops/min
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	Rexroth-869 See page G-12
Installation Torque:	25-30Nm



## OPERATION

Flow is free from ① to ②. Unit ② pressure increases to meet the selected valve setting, allowing relief flow through port ① to tank. This valve combines the typical function of shock relief valve (direct acting) and anti-cavitation function through the check valve. The direct action and the specific design allow a very fast opening and closing.

## PRESSURE DROP VS.FLOW



## TO ORDER

ZACR.M14 - \*\* / \*\*\*

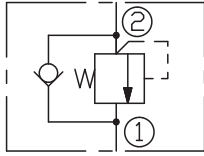
Spring Range  
05=20-70bar  
10=70-100bar  
20=100-210bar

Setting In Bar  
Blank=Preset  
Example:070=70bar  
psi(bar) Q=5L/min

# Anti-Cavitation Relief Valve

## ZACR.M18

### SYMBOL

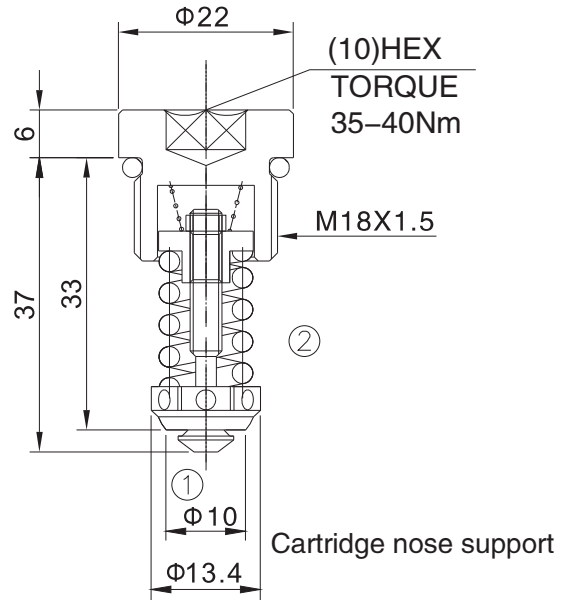


### SPECIFICATIONS

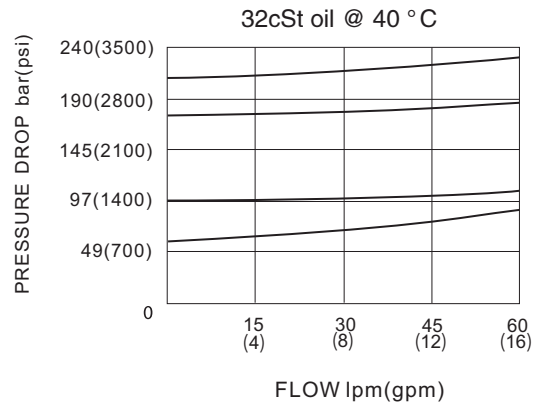
Operating Pressure:	380bar
Flow:	See PRESSURE DROP VS.FLOW graph
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	Rexroth-730 See page G-13
Installation Torque:	35-40Nm

### OPERATION

Flow is free from ① to ②. Unit ② pressure increases to meet the selected valve setting, allowing relief flow through port ① to tank. This valve combines the typical function of shock relief valve (direct acting) and anti-cavitation function through the check valve. The direct action and the specific design allow a very fast opening and closing.  
 Note: to obtain a good leak proof performance coin the cavity seat using a loose valve seat as a coning tool.  
 Torque to be applied :  $4.5 \pm 2$ Nm.



### PRESSURE DROP VS.FLOW



### TO ORDER

ZACR.M18 - \*\* / \*\*\*

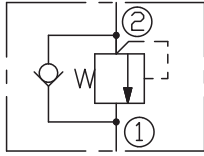
Spring Range  
 05=20-70bar  
 10=70-100bar  
 20=100-210bar  
 27=200-270bar  
 32=270-320bar  
 35=320-380bar

Setting In Bar  
 Blank=Preset  
 Example:070=70bar  
 psi(bar) Q=5L/min

# Anti-Cavitation Relief Valve

## ZACR.M20

### SYMBOL



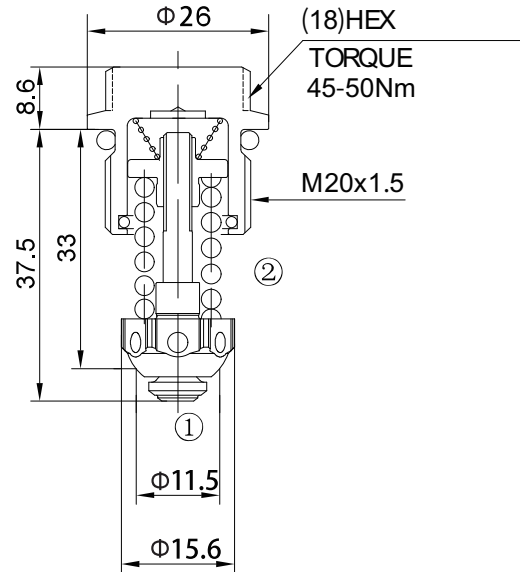
### SPECIFICATIONS

Operating Pressure:	420bar
MAX.Flow:	75l/min
Internal Leakage:	15drop/minmax.at to 80% of nominal setting
Temperature:	-30°C~+100°C
Filtration:	See page Z-1
Cavity:	VH003 See page G-17
Installation Torque:	45-50Nm

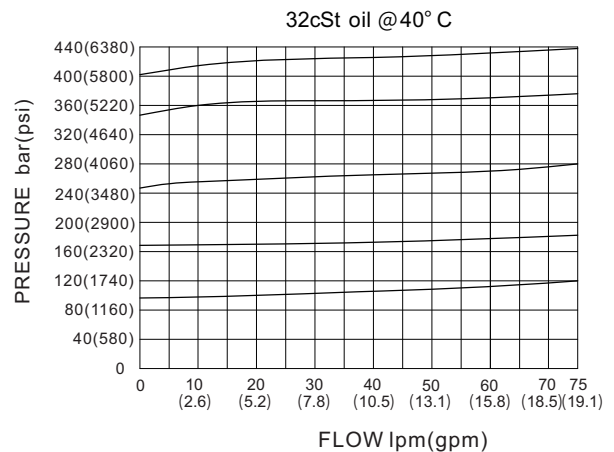
### OPERATION

Flow is free from ① to ②. Unit ② pressure increases to meet the selected valve setting, allowing relief flow through port ① to tank. This valve combines the typical function of shock relief valve (direct acting) and anti-cavitation function through the check valve. The direct action and the specific design allow a very fast opening and closing.

Note: to obtain a good leak proof performance coin the cavity seat using a loose valve seat as a coning tool.  
Torque to be applied :  $4.5 \pm 2$ Nm.



### PRESSURE DROP VS.FLOW



### TO ORDER

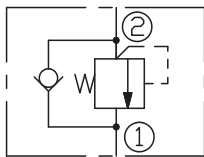
ZACR.M20 - \*\* / \*\*\*

Spring Range  
10=20-100bar  
17=101-170bar  
25=171-250bar  
35=251-350bar  
42=351-420bar

Setting In Bar  
Blank=Preset  
Example: 100=100bar  
psi(bar) Q=10L/min

## ZACR.M24

### SYMBOL



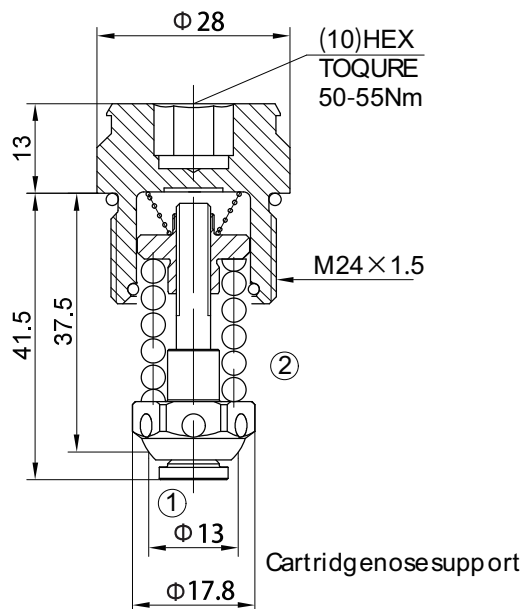
### SPECIFICATIONS

Operating Pressure:	400bar
Flow:	See PRESSURE DROP VS.FLOW graph
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	Rexroth-870 See page G-13
Installation Torque:	50-55Nm

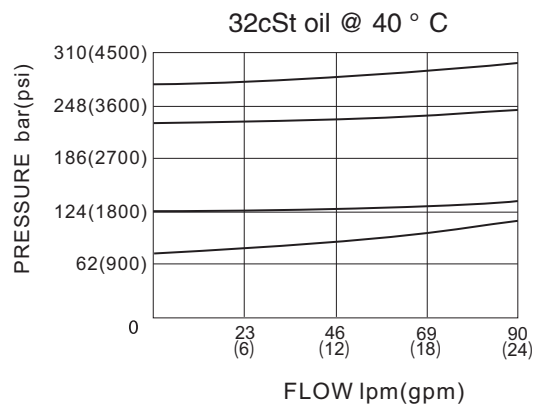
### OPERATION

Flow is free from ① to ②. Unit ② pressure increases to meet the selected valve setting, allowing relief flow through port ① to tank. This valve combines the typical function of shock relief valve (direct acting) and anti-cavitation function through the check valve. The direct action and the specific design allow a very fast opening and closing.

Note: to obtain a good leak proof performance coin the cavity seat using a loose valve seat as a coning tool.  
Torque to be applied :  $6.5 \pm 2$  Nm.



### PRESSURE DROP VS.FLOW



### TO ORDER

ZACR.M24 - \*\* / \*\*\*

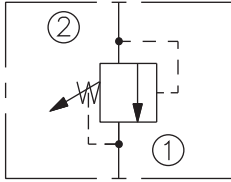
Spring Range  
10=90-140bar  
20=140-270bar  
35=270-350bar  
40=350-400bar

Setting In Bar  
Blank=Preset  
Example:070=70bar  
psi(bar) Q=10L/min

## Differential Area Relief Valves

### ZDRV-08

#### SYMBOL

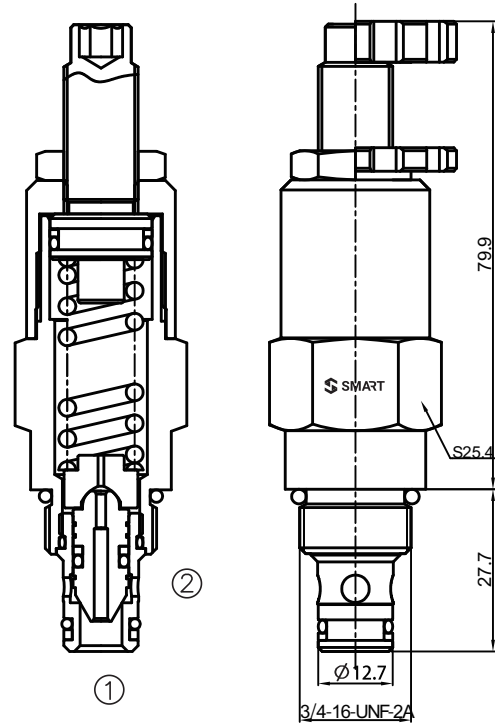


#### SPECIFICATIONS

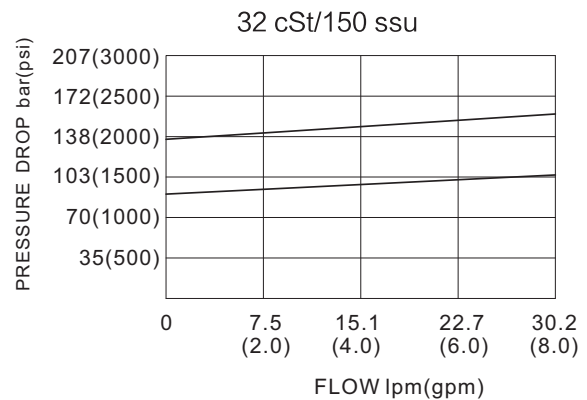
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min.max.at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5-27.2Nm

#### OPERATION

The valve blocks flow from ② to ① until sufficient pressure is present at ② to force the poppet from its seat.



#### PRESSURE DROP VS. FLOW



#### TO ORDER

ZDRV-08 - \* - \* \*

Cavity \_\_\_\_\_

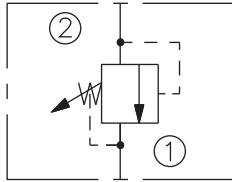
Adjustment  
B = Alum. Knob  
Omit for 6.35mm Hex Allen head

Spring Range

4=3.45-27.59bar	Preset 14bar
9=6.90-62.07bar	Preset 31bar
17=6.90-117.24bar	Preset 58bar
36=17.24-250bar	Preset 110bar

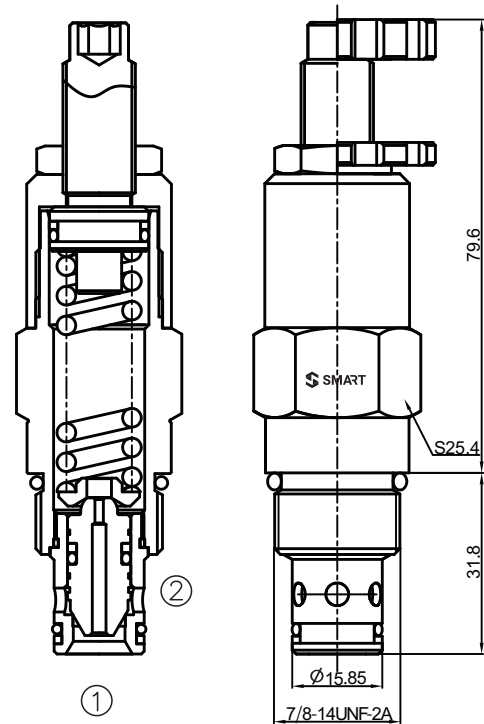
# ZDRV8-10

## SYMBOL



## SPECIFICATIONS

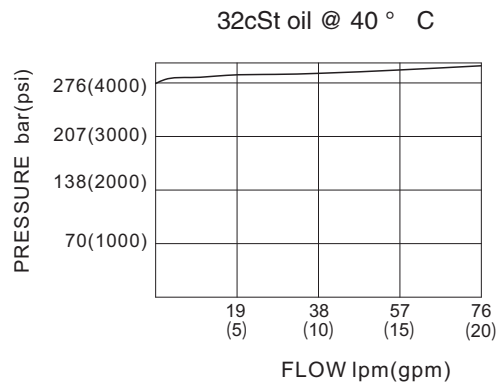
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min. max. at to 80% of nominal setting
Reseat Pressure:	85% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	44-56Nm



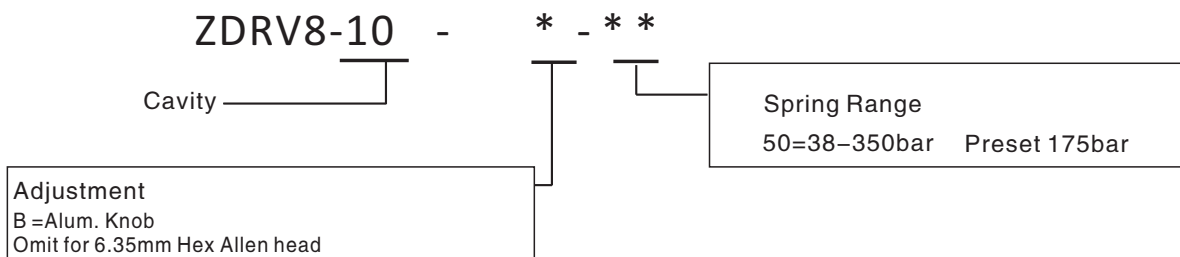
## OPERATION

The valve blocks flow from ② to ① until sufficient pressure is present at ② to force the poppet from its seat.

## PRESSURE DROP VS. FLOW

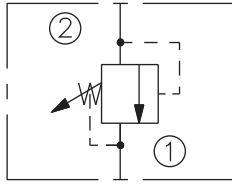


## TO ORDER



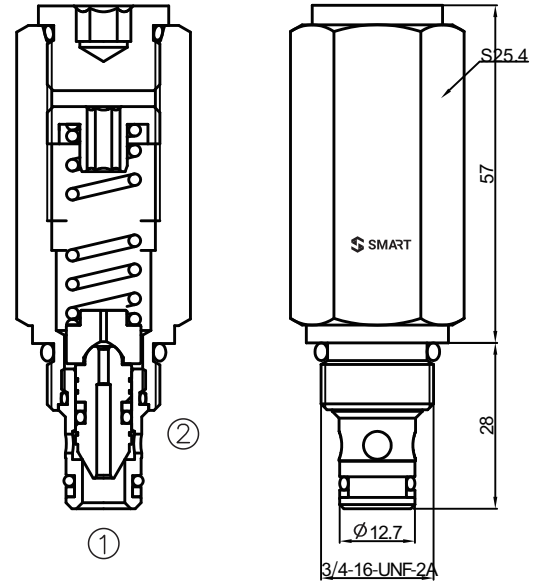
# ZRV08-22H

## SYMBOL



## SPECIFICATIONS

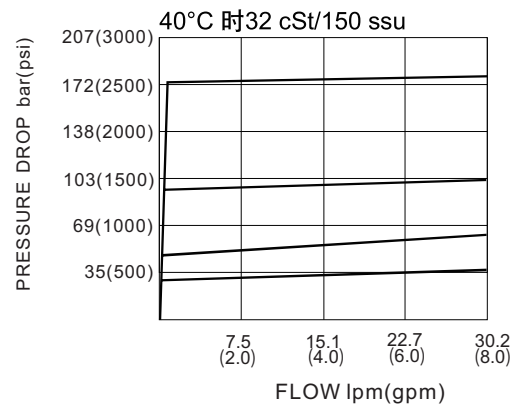
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min.max.at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5-27.2Nm



## OPERATION

The valve blocks flow from ② to ① until sufficient pressure is present at ② to force the poppet from its seat.

## PRESSURE DROP VS. FLOW



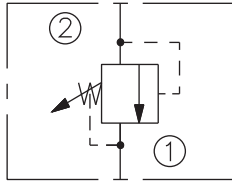
## TO ORDER

ZRV08-22H - \*\*  
 Cavity \_\_\_\_\_

Spring Range	
6=3.5-41.4bar	Preset 21bar
12=10.3-82.8bar	Preset 41bar
23=17.2-158.6bar	Preset 80bar
33=17.2-227.6bar	Preset 115bar

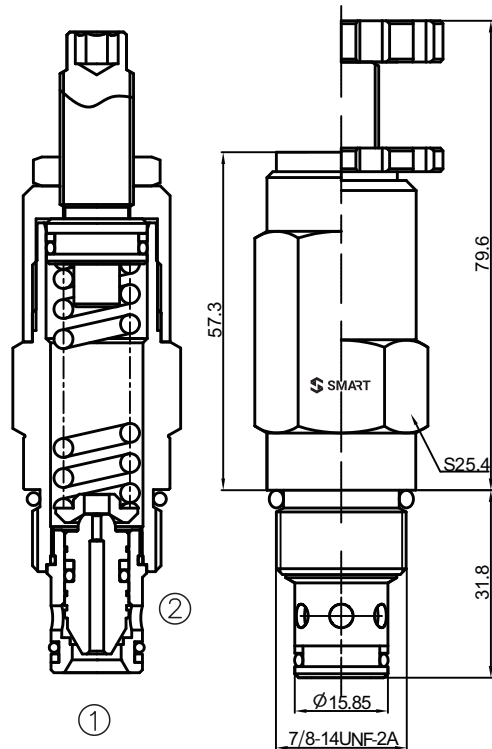
# ZRV10-22

## SYMBOL



## SPECIFICATIONS

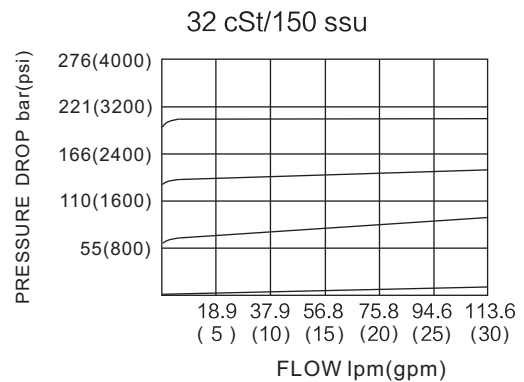
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	5drops/min.max.at to 80% of nominal setting
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



## OPERATION

The valve blocks flow from ② to ① until sufficient pressure is present at ② to force the poppet from its seat.

## PRESSURE DROP VS. FLOW



## TO ORDER

ZRV 10 - 22 \* - \* \*

Cavity

Adjustment  
 B = Alum. Knob  
 H = Factory Preset Hidden Adj.  
 Omit for 6.35mm Hex Allen head

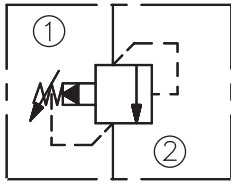
Spring Range

6=10.34-41.38bar Preset 20bar  
 13=10.34-89.66bar Preset 45bar  
 25=17.24-165.52bar Preset 80bar  
 35=17.24-241.38bar Preset 120bar

# Pilot-operated Relief Valves

## ZPSRV3-08

### SYMBOL

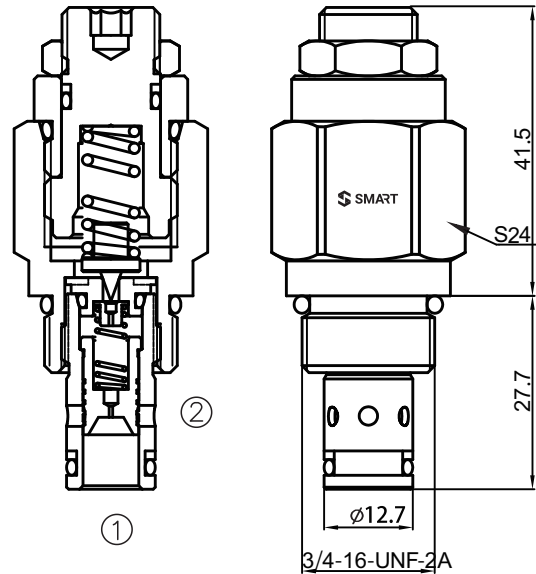


### SPECIFICATIONS

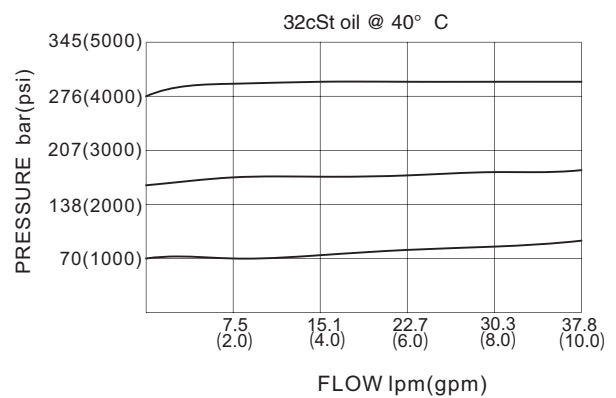
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	80cc/min. max. at to 90% of nominal setting
Reseat Pressure:	85% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5-27.2Nm

### OPERATION

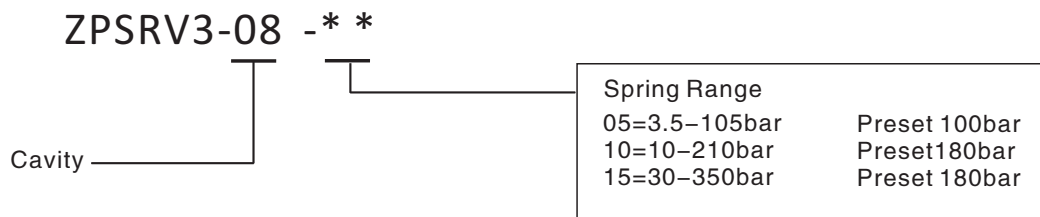
The valve prevents flow from ① to ② until pressure at ① exceeds the set crack pressure and opens the pilot section. The pilot flow creates a pressure differential across the spool which causes the valve to open allowing flow from ① to ② protecting the circuit from over pressurization. This cartridge relief valve offers a smooth transition in response to a load change in a hydraulic circuit.



### PRESSURE DROP VS. FLOW



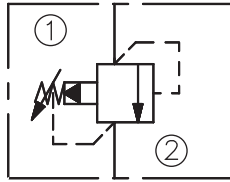
### TO ORDER



# Pilot-operated Relief Valves

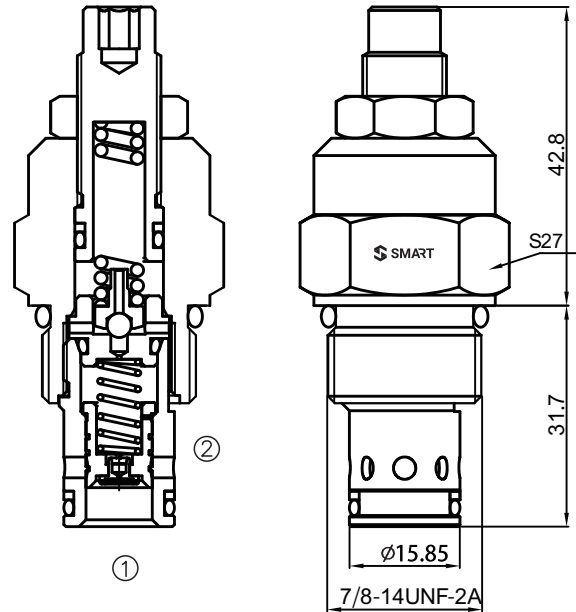
## ZPSRV3-10

### SYMBOL



### SPECIFICATIONS

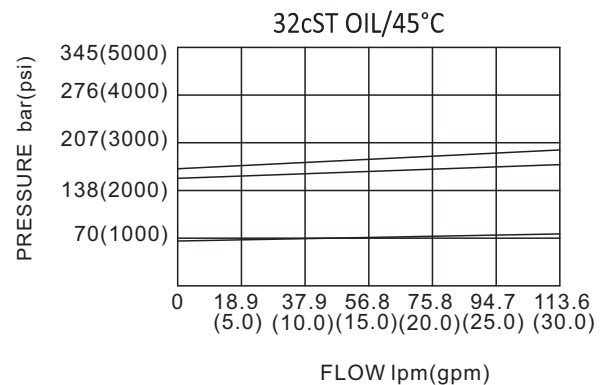
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. at to 90% of nominal setting
Reseat Pressure:	85% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



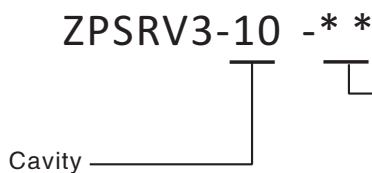
### OPERATION

The valve prevents flow from ① to ② until pressure at ① exceeds the set crack pressure and opens the pilot section. The pilot flow creates a pressure differential across the spool which causes the valve to open allowing flow from ① to ② protecting the circuit from over pressurization. This cartridge relief valve offers a smooth transition in response to a load change in a hydraulic circuit.

### PRESSURE DROP VS. FLOW



### TO ORDER

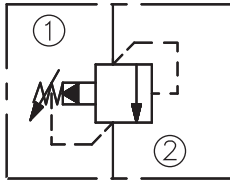


Spring Range	
8=10-83bar	Preset 80bar
16=45-165bar	Preset 160bar
35=80-345bar	Preset 160bar

# Pilot-operated Relief Valves

## ZPSRV2-12

### SYMBOL

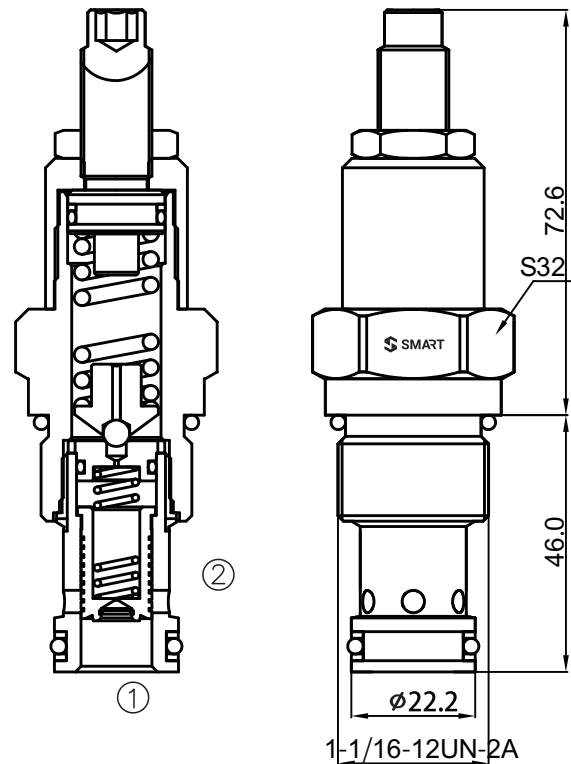


### SPECIFICATIONS

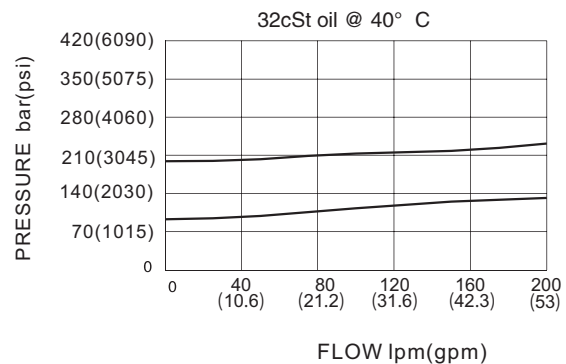
MAX. Operating Pressure:	310bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	115cc/min. max. at to 90% of nominal setting
Reseat Pressure:	85% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	12-2 See page G-3
Installation Torque:	45-50Nm

### OPERATION

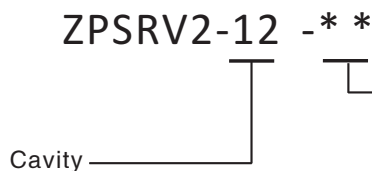
The valve prevents flow from ① to ② until pressure at ① exceeds the set crack pressure and opens the pilot section. The pilot flow creates a pressure differential across the spool which causes the valve to open allowing flow from ① to ② protecting the circuit from over pressurization. This cartridge relief valve offers a smooth transition in response to a load change in a hydraulic circuit.



### PRESSURE DROP VS. FLOW



### TO ORDER

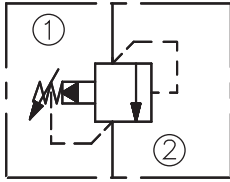


Spring Range	Preset 20bar
4=6.9-27.6bar	Preset 90bar
15=10.3-103.4bar	Preset 190bar
35=20.7-241bar	

# Pilot-operated Relief Valves

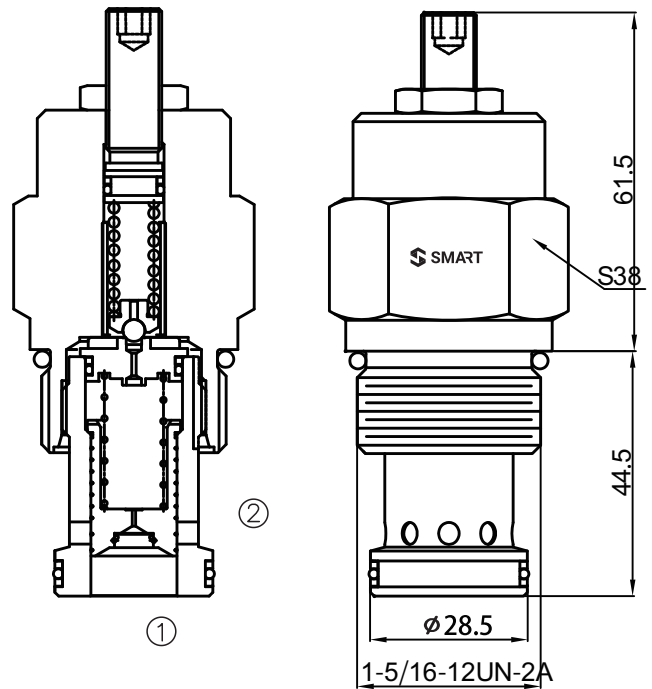
## ZPSRV2-16

### SYMBOL



### SPECIFICATIONS

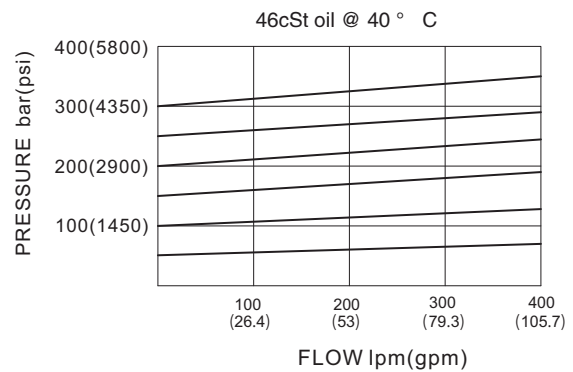
MAX. Operating Pressure:	420bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. at to 80% of nominal setting
Reseat Pressure:	85% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	16-2 See page G-3
Installation Torque:	95-100Nm



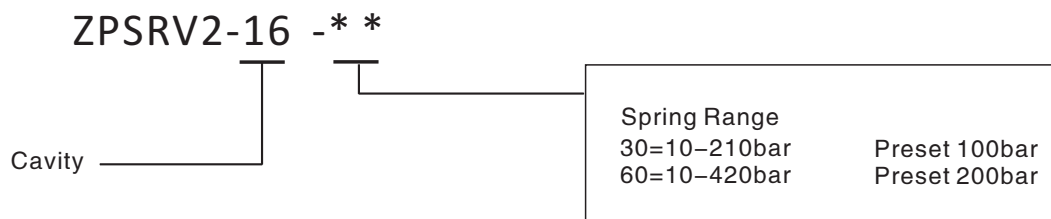
### OPERATION

The valve prevents flow from ① to ② until pressure at ① exceeds the set crack pressure and opens the pilot section. The pilot flow creates a pressure differential across the spool which causes the valve to open allowing flow from ① to ② protecting the circuit from over pressurization.

### PRESSURE DROP VS. FLOW



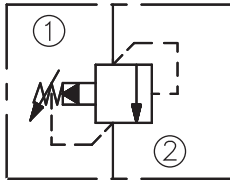
### TO ORDER



# Pilot-operated Relief Valves

## ZPSRV-101

### SYMBOL

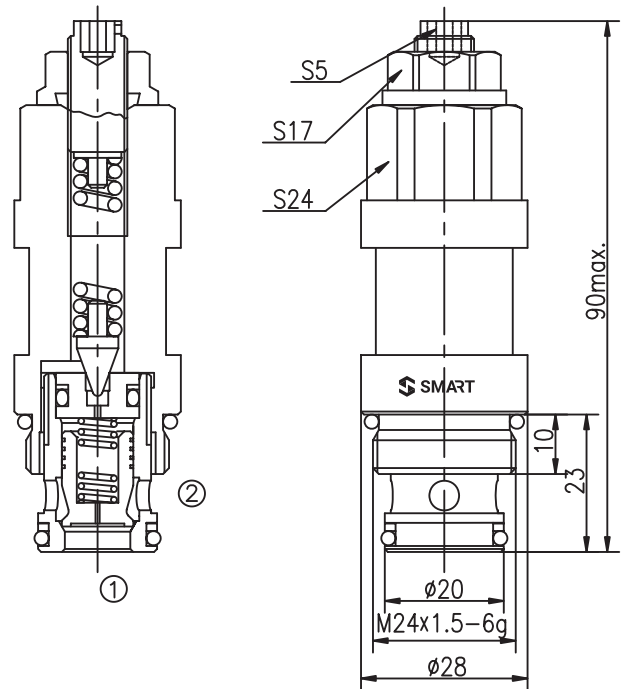


### SPECIFICATIONS

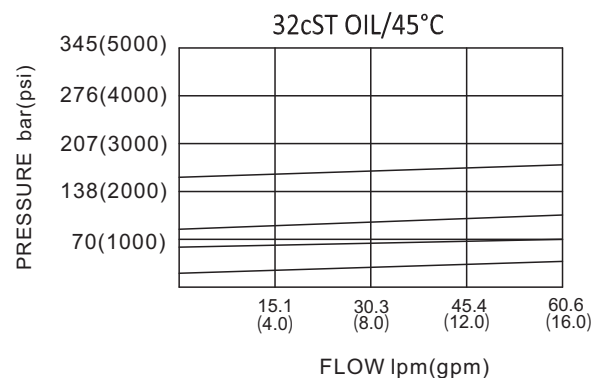
MAX. Operating Pressure:	315bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	30cc/min. max. at to 90% of nominal setting
Reseat Pressure:	85% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T101-2 See page G-11
Installation Torque:	38.7-43.8Nm

### OPERATION

The valve prevents flow from ① to ② until pressure at ① exceeds the set crack pressure and opens the pilot section. The pilot flow creates a pressure differential across the spool which causes the valve to open allowing flow from ① to ② protecting the circuit from over pressurization. This cartridge relief valve offers a smooth transition in response to a load change in a hydraulic circuit.



### PRESSURE DROP VS. FLOW



### TO ORDER

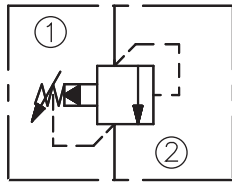


Spring Ranges  
 10=40-99bar Preset 70bar  
 15=50-150bar Preset 120bar  
 20=130-315bar Preset 175bar

# Pilot-operated Relief Valves

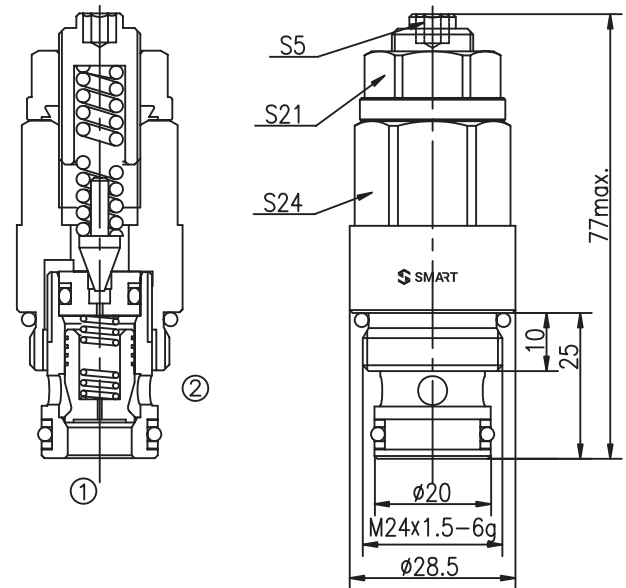
## ZPSRV-102

### SYMBOL



### SPECIFICATIONS

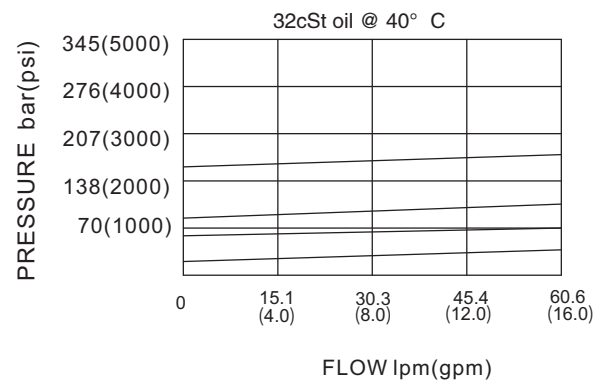
MAX. Operating Pressure:	315bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	30cc/min. max. at to 90% of nominal setting
Reseat Pressure:	85% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T101-2 See page G-11
Installation Torque:	38.7-43.8Nm



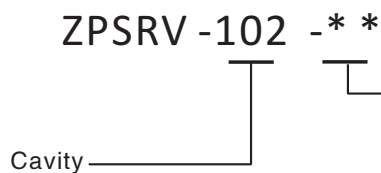
### OPERATION

The valve prevents flow from ① to ② until pressure at ① exceeds the set crack pressure and opens the pilot section. The pilot flow creates a pressure differential across the spool which causes the valve to open allowing flow from ① to ② protecting the circuit from over pressurization. This cartridge relief valve offers a smooth transition in response to a load change in a hydraulic circuit.

### PRESSURE DROP VS. FLOW



### TO ORDER

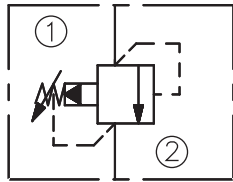


Spring Ranges  
 10=40-99bar Preset 70bar  
 15=50-150bar Preset 120bar  
 20=130-315bar Preset 175bar

# Pilot-operated Relief Valves

## ZPSRV-105

### SYMBOL

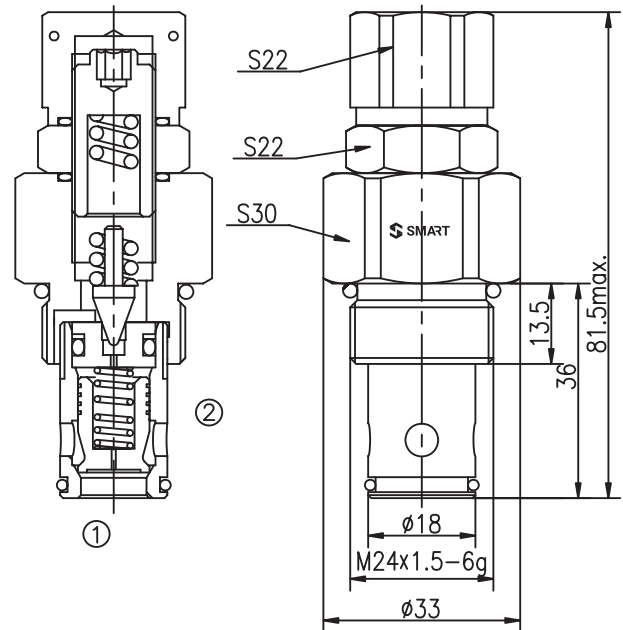


### SPECIFICATIONS

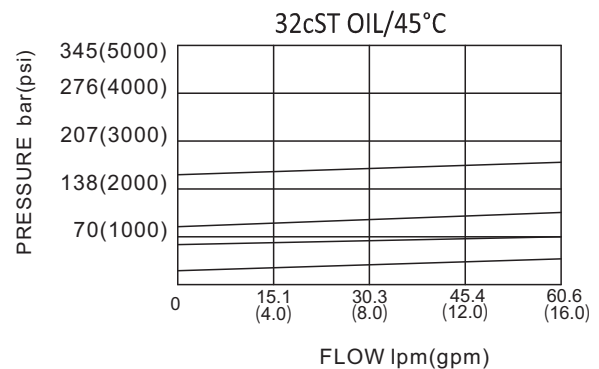
MAX. Operating Pressure:	315bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	30cc/min. max. at to 90% of nominal setting
Reseat Pressure:	85% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T105-2 See page G-11
Installation Torque:	38.7-43.8Nm

### OPERATION

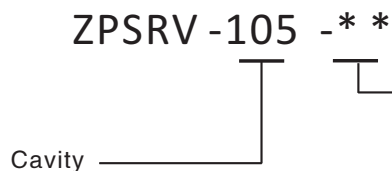
The valve prevents flow from ① to ② until pressure at ① exceeds the set crack pressure and opens the pilot section. The pilot flow creates a pressure differential across the spool which causes the valve to open allowing flow from ① to ② protecting the circuit from over pressurization. This cartridge relief valve offers a smooth transition in response to a load change in a hydraulic circuit.



### PRESSURE DROP VS. FLOW



### TO ORDER



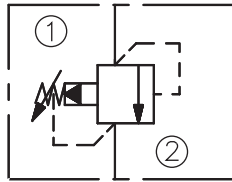
Spring Ranges  
 10=40-99bar Preset 70bar  
 15=50-150bar Preset 120bar  
 20=130-315bar Preset 175bar

# Pilot-operated Relief Valves



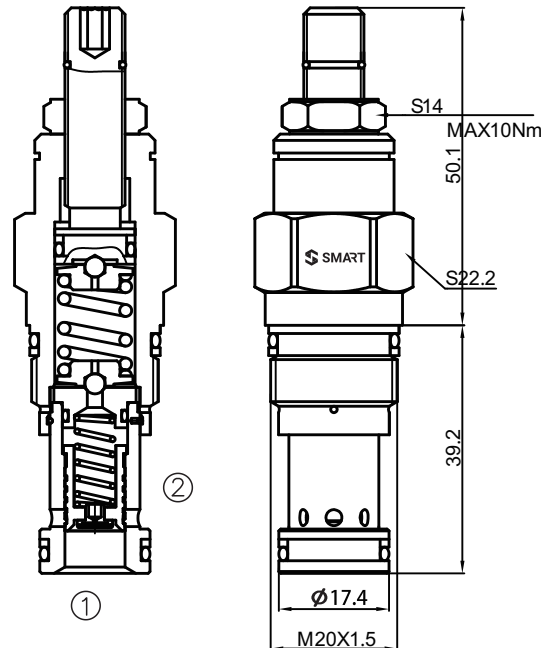
## ZRPEE

### SYMBOL



### SPECIFICATIONS

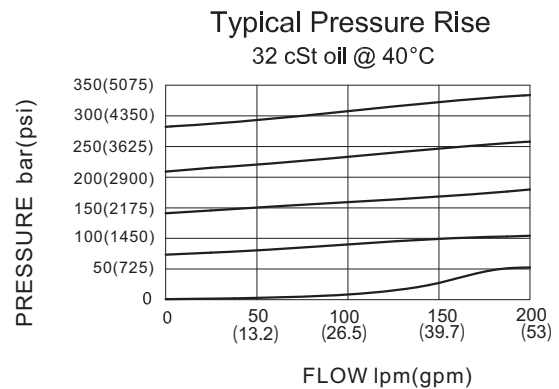
MAX. Operating Pressure:	350bar
Flow:	95L/min
Internal Leakage:	30cc/min at 70bar
Response Time-Typical:	2ms
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-10A See page G-5
Installation Torque:	45-50Nm



### OPERATION

The valve are normally closed, pressure-limiting valves used of protect hydraulics components from pressure transients. Fast opening and closing is gained at the expense of smoothness. When the pressure at the inlet (port ①) reaches the valve setting, the valve starts to open to tank (port ②), throttling flow to limit the pressure rise. These valves have low pressure rise vs. flow and are very fast. Back pressure on the tank port ② is directly additive to the valve setting at a 1:1 ratio.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZRPEE - \* \* \*

CONTROL  
L = Standard Screw Adjustment

Seal Kits  
N= Buna N  
V= Viton

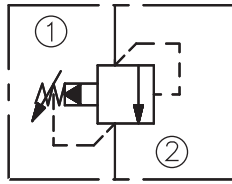
Factory Pressure setting established at 15L/min

Spring Ranges  
A=7-210bar Preset 70bar  
B=3.5-105bar Preset 70bar  
C=10.5-420bar Preset 70bar  
D=1.7-55bar Preset 28bar  
E=1.7-28bar Preset 14bar  
W=10.5-315bar Preset 70bar

# Pilot-operated Relief Valves

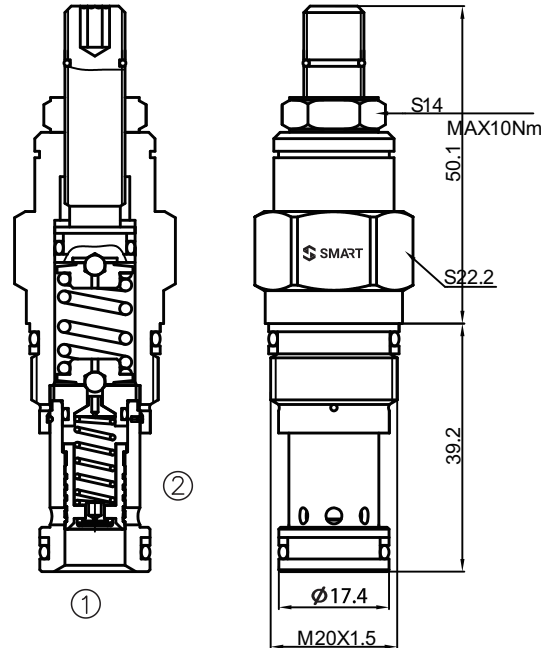
## ZRPEC

### SYMBOL



### SPECIFICATIONS

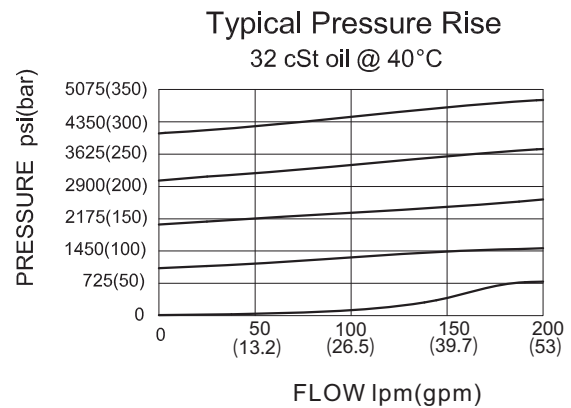
MAX. Operating Pressure:	350bar
Flow:	95L/min
Internal Leakage:	30cc/min at 70bar
Response Time-Typical:	10ms
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-10A See page G-5
Installation Torque:	45-50Nm



### OPERATION

The valve are normally closed, pressure-limiting valves used of protect hydraulics components from pressure transients. When the pressure at the inlet (port ①) reaches the valve setting, the valve starts to open to tank (port ②), throttling flow to limit the pressure rise. The valves are accurate, have low pressure rise flow they are smooth and quiet, and are moderately fast. Back pressure on the tank port ② is directly additive to the valve setting at a 1:1 ratio.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZRPEC - \* \* \*

CONTROL  
L = Standard Screw Adjustment

Seal Kits  
N= Buna N  
V= Viton

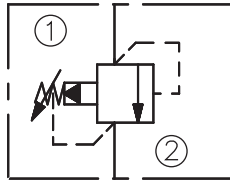
Factory Pressure setting established at 15L/min

Spring Ranges	
A=7-210bar	Preset 70bar
B=3.5-105bar	Preset 70bar
C=10.5-420bar	Preset 70bar
N=4-55bar	Preset 28bar
Q=4-28bar	Preset 14bar
W=10.5-315bar	Preset 70bar

# Pilot-operated Relief Valves

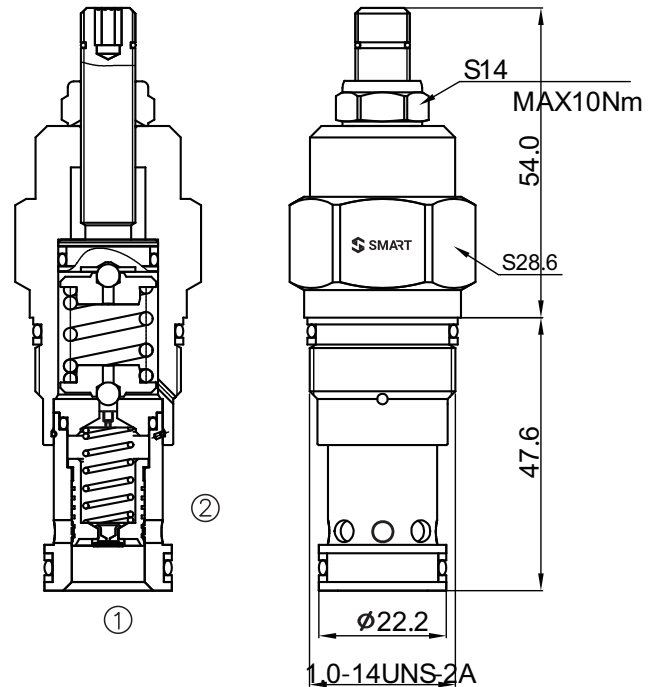
## ZRPGC

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	350bar
Flow:	200L/min
Internal Leakage:	50cc/min at 70bar
Response Time-Typicall:	10ms
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-3A See page G-6
Installation Torque:	60-70Nm

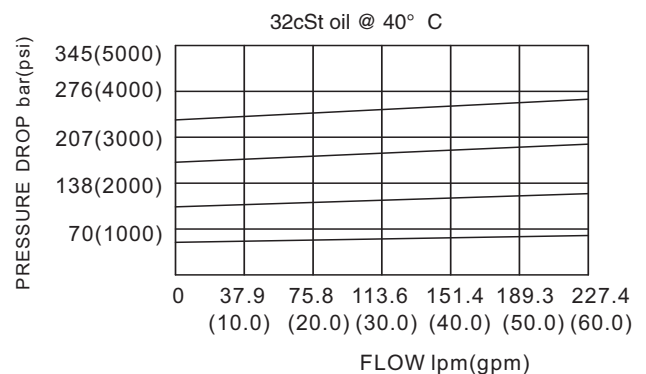


### OPERATION

The valve are normally closed, pressure-limiting valves used of protect hydraulics components from pressure transients. When the pressure at the inlet (port ①) reaches the valve setting, the valve starts to open to tank (port ②), throttling flow to limit the pressure rise. The valves are accurate, have low pressure rise flow they are smooth and quiet, and are moderately fast.

Back pressure on the tank port ② is directly additive to the valve setting at a 1:1 ratio.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZRPGC - \* \* \*

CONTROL

L = Standard Screw Adjustment

Seal Kits  
N= Buna N  
V= Viton

Factory Pressure setting established at 15L/min

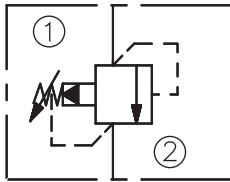
Spring Ranges

A=7-210bar	Preset 70bar
B=3.5-105bar	Preset 70bar
C=10.5-420bar	Preset 70bar
N=4-55bar	Preset 28bar
Q=4-28bar	Preset 14bar
W=10.5-315bar	Preset 70bar

# Pilot-operated Relief Valves

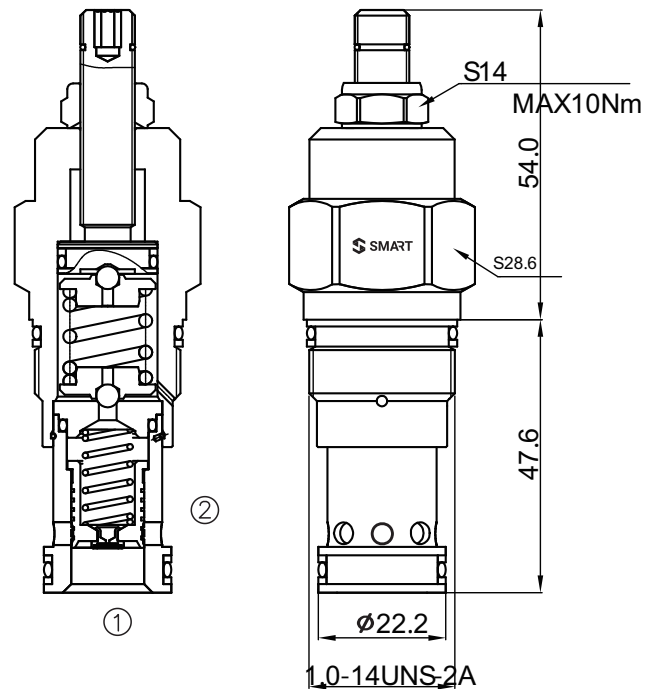
## ZRPGE

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	350bar
Flow:	200L/min
Internal Leakage:	50cc/min at 70bar
Response Time-Typical:	2ms
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-3A See page G-6
Installation Torque:	60-70Nm

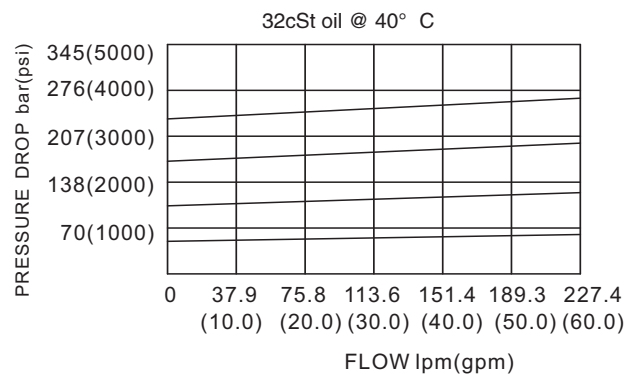


### OPERATION

The valve are normally closed, pressure-limiting valves used of protect hydraulics components from pressure transients. Fast opening and closing is gained at the expense of smoothness. When the pressure at the inlet (port ①) reaches the valve setting, the valve starts to open to tank (port ②), throttling flow to limit the pressure rise. These valves have low pressure rise vs. flow and are very fast.

Back pressure on the tank port ② is directly additive to the valve setting at a 1:1 ratio.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZRPGE - \* \* \*

CONTROL  
L = Standard Screw Adjustment

Seal Kits  
N= Buna N  
V= Viton

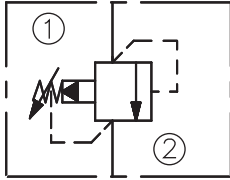
Factory Pressure setting established at 15L/min

Spring Ranges  
A=7-210bar Preset 70bar  
B=3.5-105bar Preset 70bar  
C=10.5-420bar Preset 70bar  
D=1.7-55bar Preset 28bar  
E=1.7-28bar Preset 14bar  
W=10.5-315bar Preset 70bar

# Pilot-operated Relief Valves

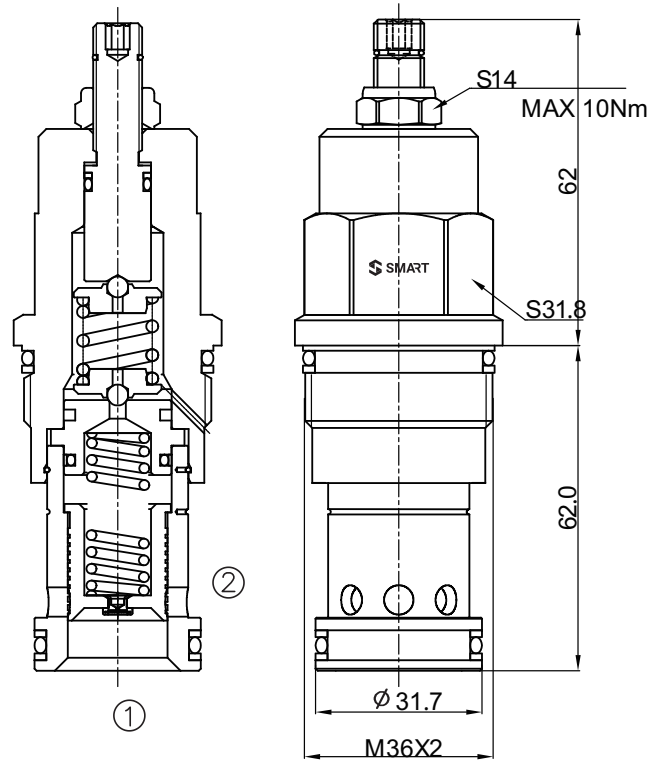
## ZRPIE

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	350bar
Flow:	380L/min
Internal Leakage:	50cc/min at 70bar
Response Time-Typicall:	2ms
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-16A See page G-21
Installation Torque:	200-215Nm

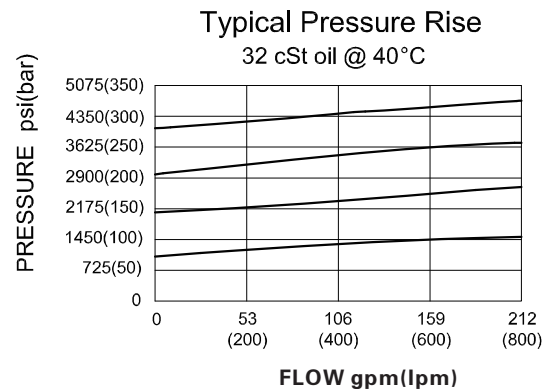


### OPERATION

The valve are normally closed, pressure-limiting valves used of protect hydraulics components from pressure transients. Fast opening and closing is gained at the expense of smoothness. When the pressure at the inlet (port ①) reaches the valve setting, the valve starts to open to tank (port ②), throttling flow to limit the pressure rise. These valves have low pressure rise vs. flow and are very fast.

Back pressure on the tank port ② is directly additive to the valve setting at a 1:1 ratio.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZRPIE - \* \* \*

CONTROL  
L = Standard Screw Adjustment

Seal Kits  
N= Buna N  
V= Viton

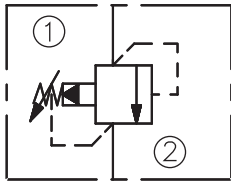
Factory Pressure setting established at 15L/min

Spring Ranges  
A=7-210bar Preset 70bar  
B=3.5-105bar Preset 70bar  
C=10.5-420bar Preset 70bar  
D=1.7-55bar Preset 28bar  
E=1.7-28bar Preset 14bar  
W=10.5-315bar Preset 70bar

# Pilot-operated Relief Valves

## ZRPIC

### SYMBOL



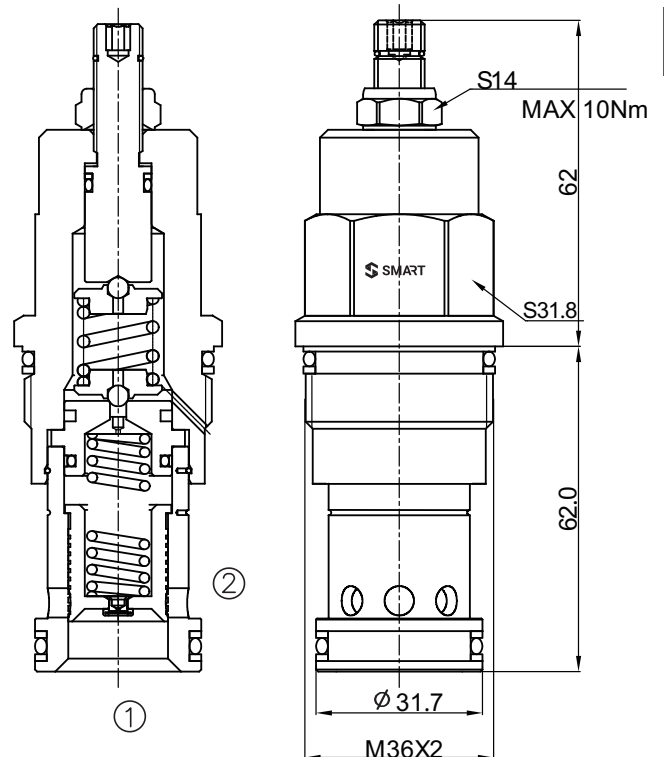
### SPECIFICATIONS

MAX. Operating Pressure:	350bar
Flow:	380L/min
Internal Leakage:	50cc/min at 70bar
Response Time-Typical:	10ms
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-16A See page G-21
Installation Torque:	200-215Nm

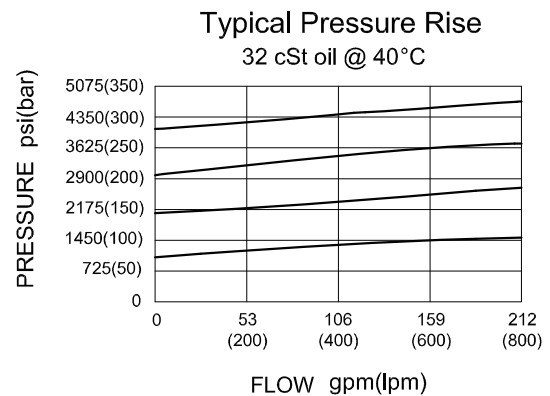
### OPERATION

The valve are normally closed, pressure-limiting valves used of protect hydraulics components from pressure transients. When the pressure at the inlet (port ①) reaches the valve setting, the valve starts to open to tank (port ②), throttling flow to limit the pressure rise. The valves are accurate, have low pressure rise flow they are smooth and quiet, and are moderately fast.

Back pressure on the tank port ② is directly additive to the valve setting at a 1:1 ratio.



### PRESSURE DROP VS. FLOW



### TO ORDER

ZRPIC - \* \* \*

CONTROL  
L = Standard Screw Adjustment

Seal Kits  
N= Buna N  
V= Viton

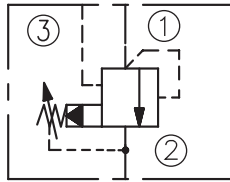
Factory Pressure setting established at 15L/min

Spring Ranges	
A=7-210bar	Preset 70bar
B=3.5-105bar	Preset 70bar
C=10.5-420bar	Preset 70bar
D=1.7-55bar	Preset 28bar
E=1.7-28bar	Preset 14bar
W=10.5-315bar	Preset 70bar
N=4-55bar	Preset 28bar
Q=4-28bar	Preset 14bar

# Pilot-operated Relief Valves

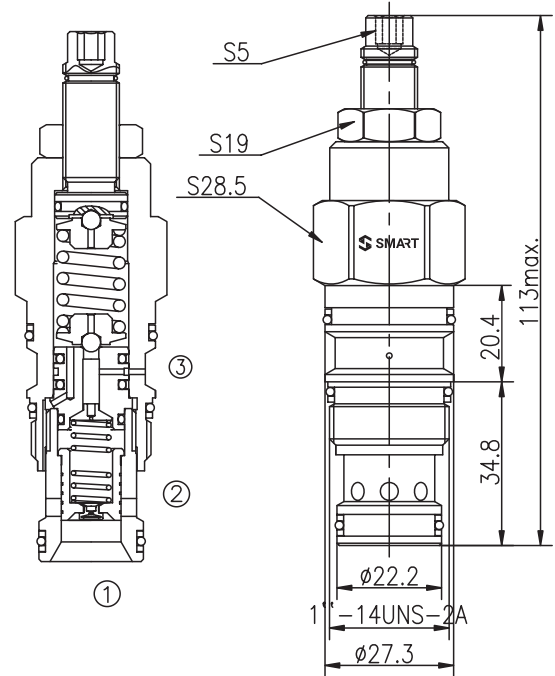
## ZRVEA

### SYMBOL



### SPECIFICATIONS

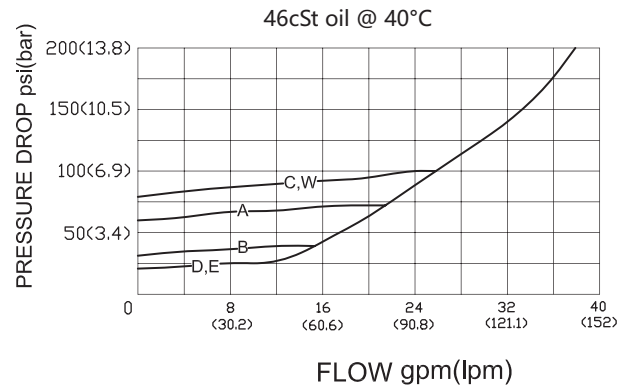
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	50cc/min at 70bar
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A See page G-4
Installation Torque:	60-70Nm



### OPERATION

The valve is normally closed pressure regulating valves. When the pressure at the inlet (port ①) reaches the valve setting, the valve starts to open to tank (port ②), throttling flow to regulate the pressure. They provide a vent port (port ③) that connects between the main piston and pilot stage to provide for remote control by other pilot or 2-way valves. These valves are accurate, have low pressure rise vs. flow, they are smooth and quiet, and are moderately fast.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZRVEA - \* \* \*

CONTROL  
L = Standard Screw Adjustment

Seal Kits  
N= Buna N  
V= Viton

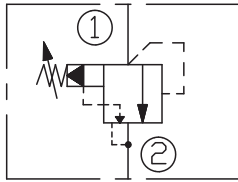
Factory Pressure setting established at 15L/min

Spring Ranges	
A=7-210bar	Preset 70bar
B=3.5-105bar	Preset 70bar
C=10.5-420bar	Preset 70bar
D=1.7-55bar	Preset 28bar
E=1.7-28bar	Preset 14bar
W=10.5-315bar	Preset 70bar

# Pilot-operated Relief Valves

## ZRQEB

### SYMBOL

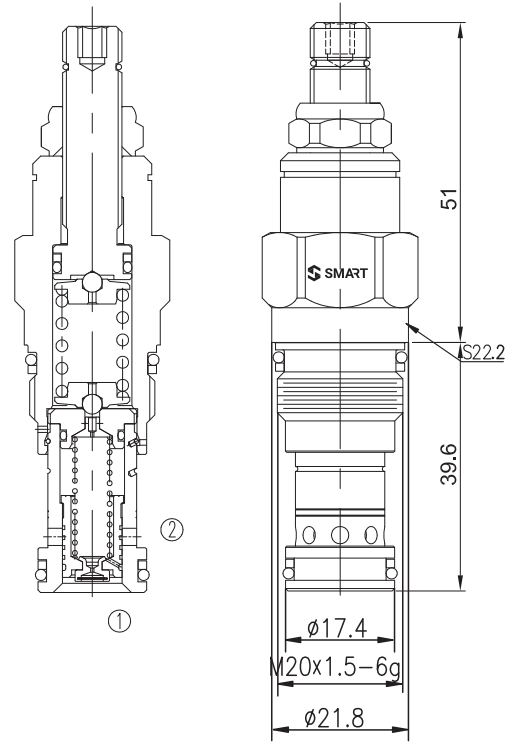


### SPECIFICATIONS

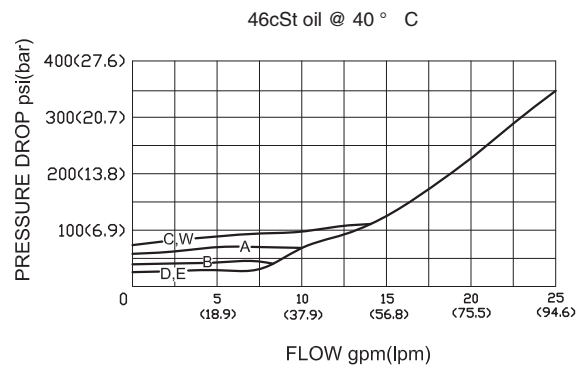
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	30cc/min at 70bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-10A See page G-5
Installation Torque:	45-50Nm

### OPERATION

Kick-down relief cartridges act similar to a circuit breaker in an electrical system. The valves will kick completely open and remain open once the pressure at the inlet (port ①) exceeds the valve setting, creating an unrestricted flow path from port ① to tank (port ②). The valve remains open as long as the pressure at port ① exceeds the pressure at port ②. To reset the valve pressure at port ① must fall below the setting of the valve, flow from ① to ② must cease; pressure at port ② must be equal to or greater than the pressure at port ①.



### PRESSURE DROP VS. FLOW



### TO ORDER

ZRQEB - \* \* \*

**CONTROL**  
L = Standard Screw Adjustment

**Seal Kits**  
N= Buna N  
V= Viton

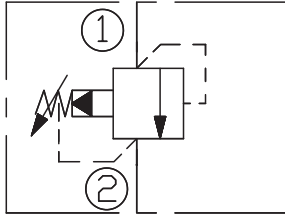
**Spring Ranges**

A=7-210bar	Preset 70bar
B=3.5-105bar	Preset 70bar
C=10.5-420bar	Preset 70bar
D=1.7-55bar	Preset 28bar
E=1.7-28bar	Preset 14bar
W=10.5-315bar	Preset 70bar

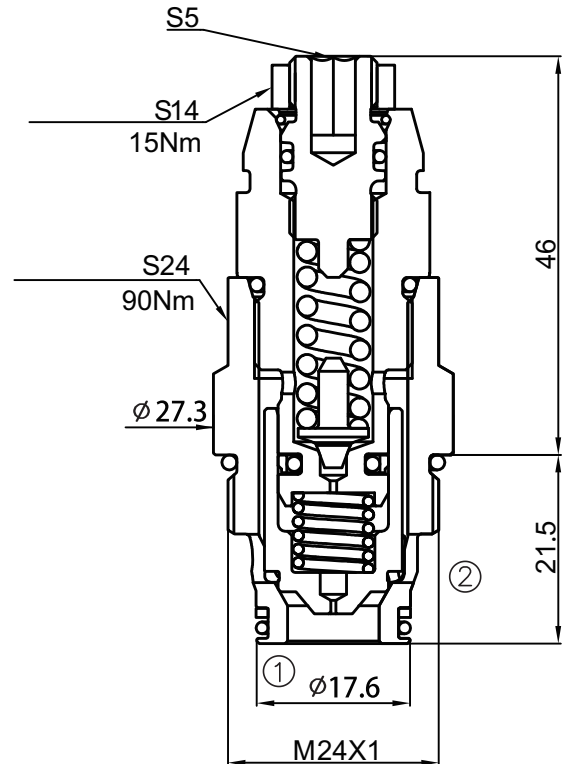
## Pilot-operated Relief Valves

### ZVMP1.100.NG/070

#### SYMBOL



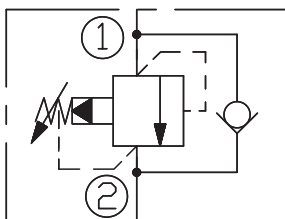
Flow:	100L/min
Max.Pressure:	42Mpa
Fluid temperature range:	-20°C~+120°C
24mm HEX Torque:	90Nm
Cavity:	Rexroth-FB,see page (G-14)



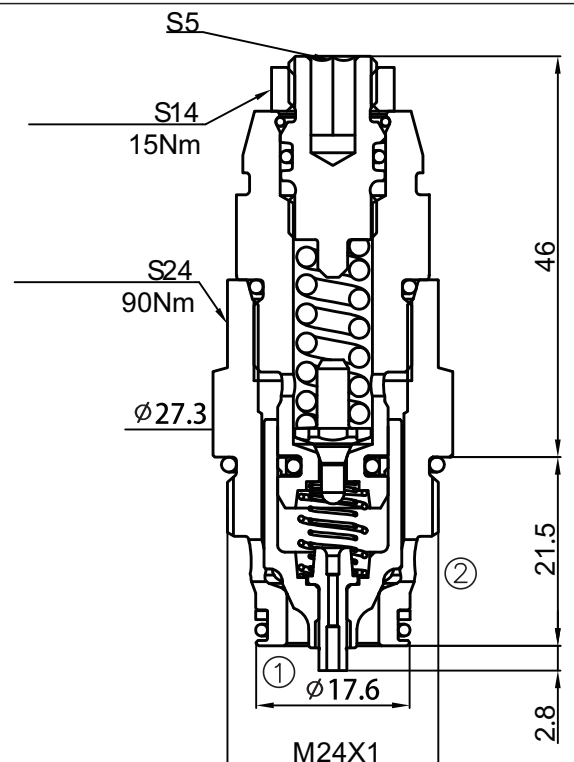
## Pilot-operated Check Relief Valves

### ZVMR1.100.NG/030

#### SYMBOL



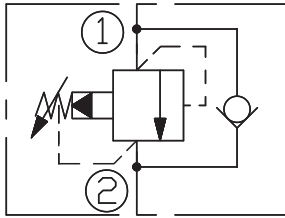
Flow:	100L/min
Max.Pressure:	42Mpa
Fluid temperature range:	-20°C~+120°C
24mm HEX Torque:	90Nm
Cavity:	Rexroth-FB,see page (G-14)



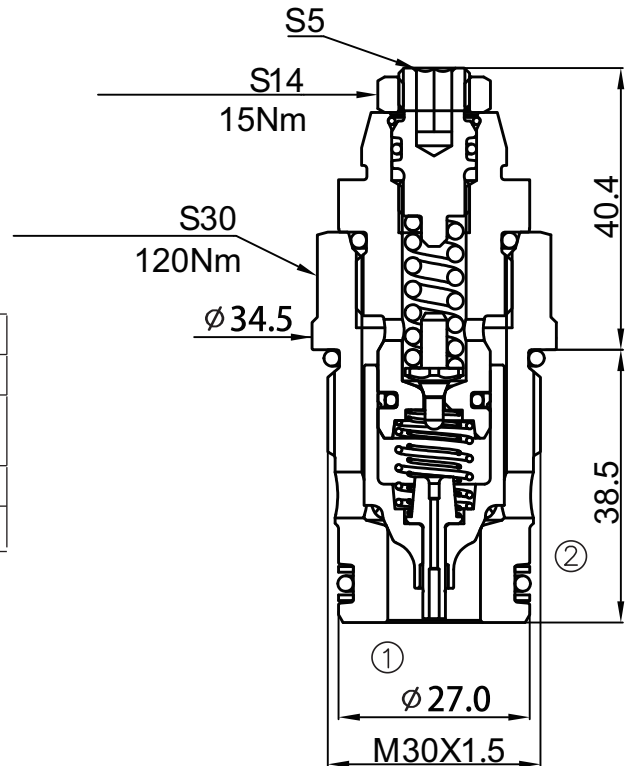
## Pilot-operated Check Relief Valves

### ZVMR2.240.LG/010

#### SYMBOL



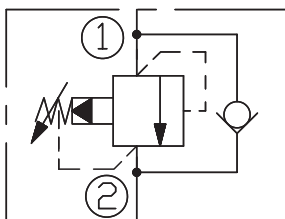
Flow:	240L/min
Max.Pressure:	42Mpa
Fluid temperature range:	-20°C~+120°C
30mm HEX Torque:	120Nm
Cavity:	Rexroth-LG, see page (G-24)



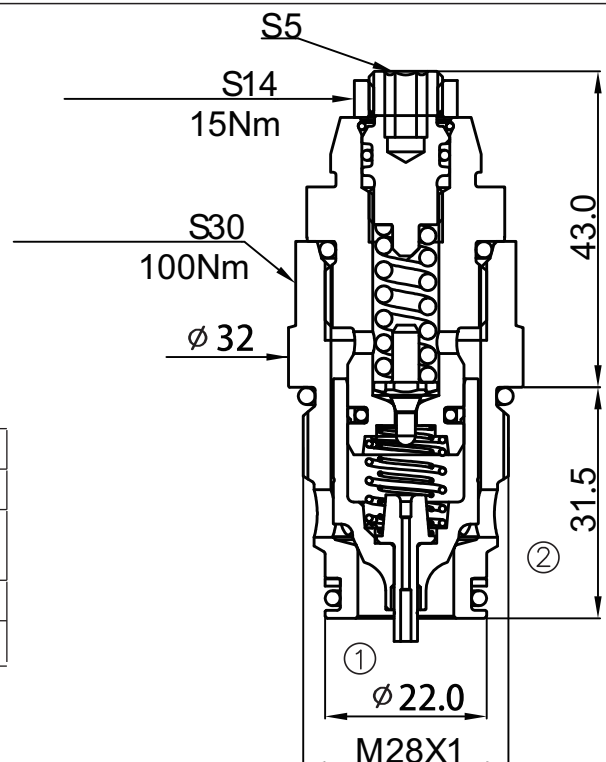
## Pilot-operated Check Relief Valves

### ZVMR2.240.NG/010

#### SYMBOL



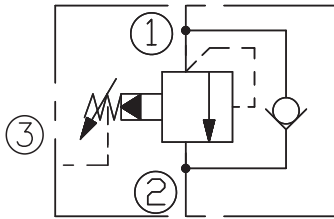
Flow:	240L/min
Max.Pressure:	42Mpa
Fluid temperature range:	-20°C~+120°C
30mm HEX Torque:	100Nm
Cavity:	Rexroth-FC, see page (G-24)



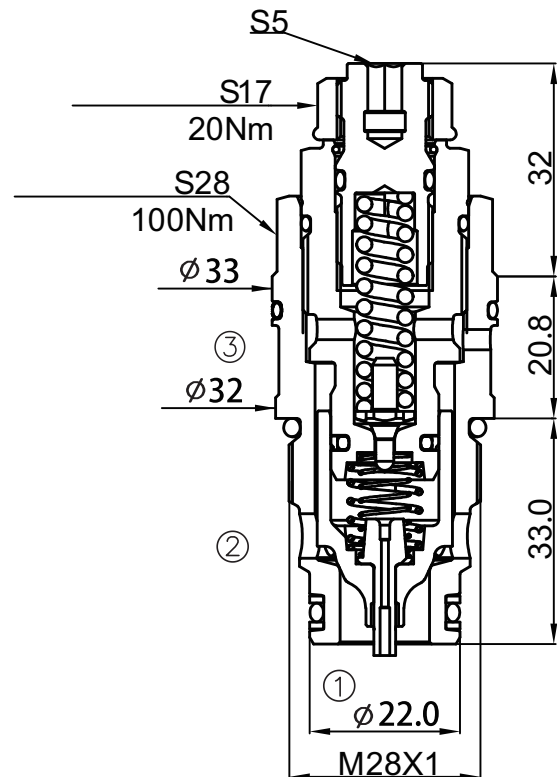
## Pilot-operated Check Relief Valves

### ZVMR2.YHC.VG/000

#### SYMBOL



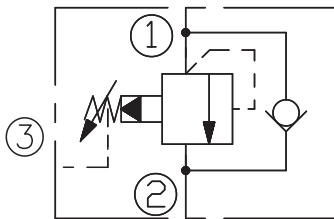
Flow:	240L/min
Max.Pressure:	42Mpa
Fluid temperature range:	-20°C~+120°C
28mm HEX Torque:	100Nm
Cavity:	Rexroth-HC, see page (G-26)



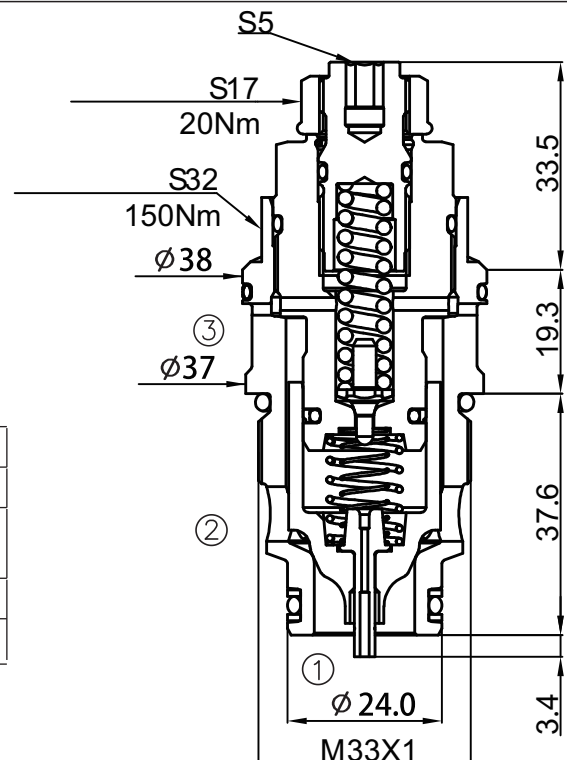
## Pilot-operated Check Relief Valves

### ZVMR3.YHK.VG/000

#### SYMBOL



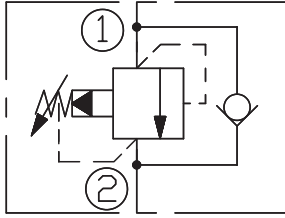
Flow:	400L/min
Max.Pressure:	42Mpa
Fluid temperature range:	-20°C~+120°C
32mm HEX Torque:	150Nm
Cavity:	Rexroth-HK, see page (G-25)



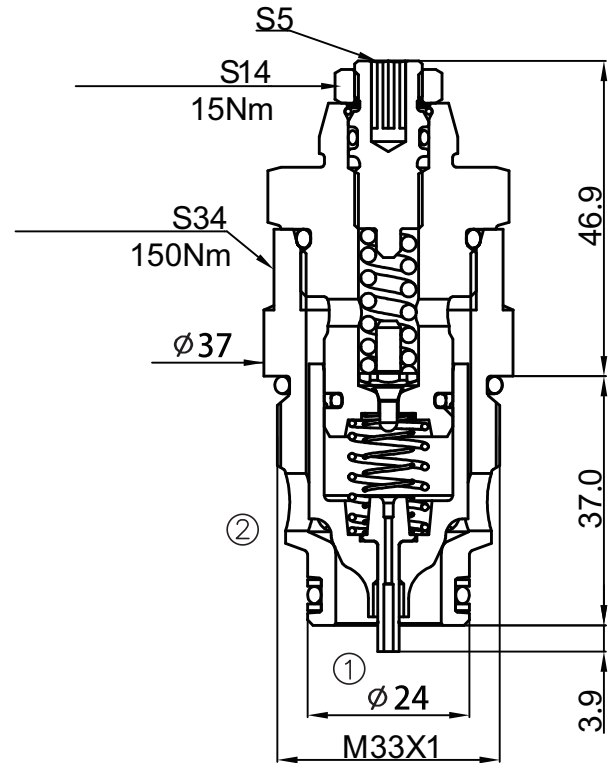
## Pilot-operated Check Relief Valves

### ZVMR3.HFK.VG/010

#### SYMBOL



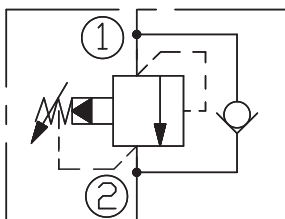
Flow:	400L/min
Max.Pressure:	42Mpa
Fluid temperature range:	-20°C~+120°C
34mm HEX Torque:	150Nm
Cavity:	Rexroth-FK, see page (G-26)



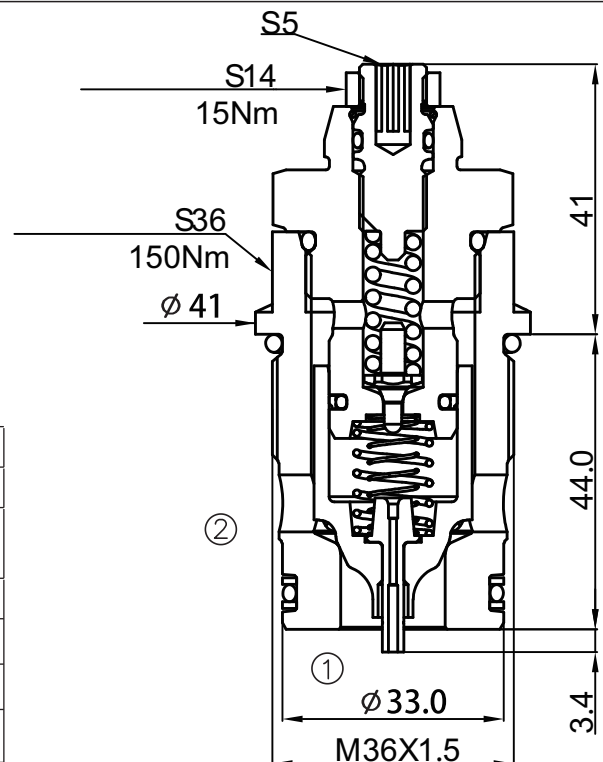
## Pilot-operated Check Relief Valves

### ZVMR3.HLM

#### SYMBOL



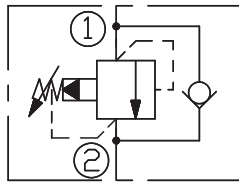
Flow:	400L/min
Max.Pressure:	42Mpa
Fluid temperature range:	-20°C~+120°C
36mm HEX Torque:	150Nm
Cavity:	Rexroth-LM, see page (G-25)
ZVMR3.HLM.VB.010 20~100bar	
ZVMR3.HLM.VG.010 100~420bar	



## Pilot-operated Check Relief Valves

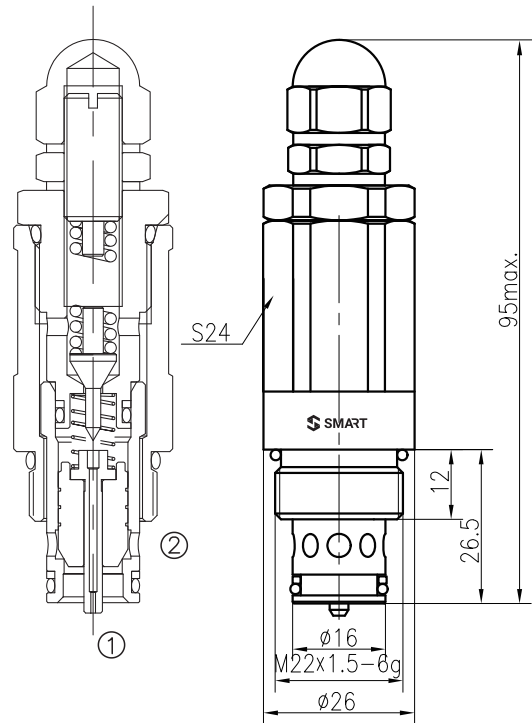
### ZPOSRV15-02

#### SYMBOL



#### SPECIFICATIONS

MAX. Operating Pressure:	315bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	<30cc/min
Temperature:	-30°C~+100°C ( Standard bana seals )
Reverse Cracking Pressure:	1.5bar
Filtration:	See page Z-1
Cavity:	T-2114 See page G-11
Installation Torque:	33.9-36.7Nm

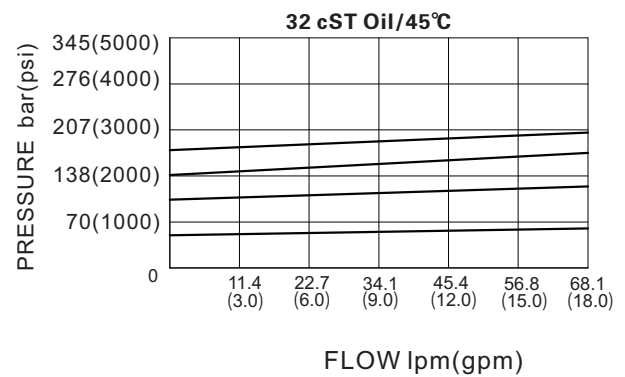


#### OPERATION

The valve prevents flow from ① to ② until pressure at ① exceeds the set crack pressure and opens the pilot section. The pilot flow creates a pressure differential across the poppet which causes the valve to open allowing flow from ① to ② protecting the circuit from over pressurization .

Pressure at ② overcomes the spring-bias pressure 1.5bar and allows free flow from ② to ① .

#### PRESSURE DROP VS. FLOW



#### TO ORDER

ZPOSRV15-02 - \* \*

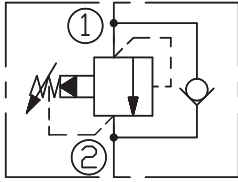
#### Spring Ranges

05=10-64bar Preset 48bar  
 10=55-130bar Preset 102bar  
 15=110-210bar Preset 140bar  
 20=160-315bar Preset 180bar

## Pilot-operated Check Relief Valves

### ZPOSRV20-00

#### SYMBOL



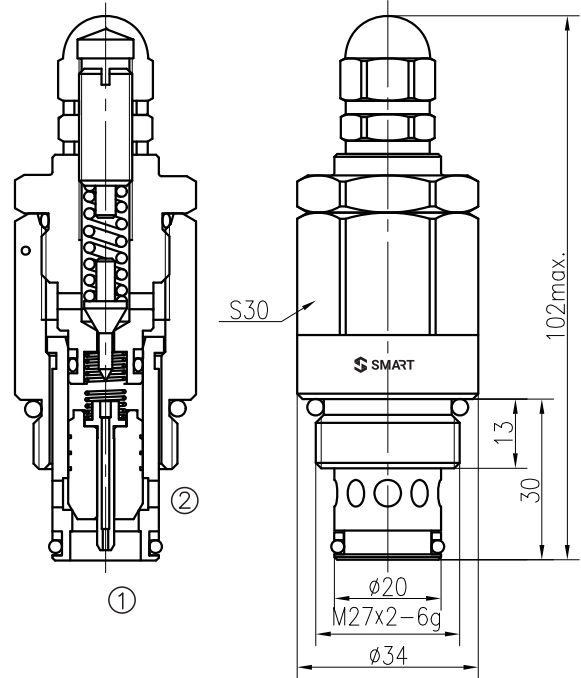
#### SPECIFICATIONS

MAX. Operating Pressure:	315bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	<30cc/min
Temperature:	-30°C~+100°C ( Standard bana seals )
Reverse Cracking Pressure:	1.5bar
Filtration:	See page Z-1
Cavity:	T-2402 See page G-9
Installation Torque:	44.9-50.3Nm

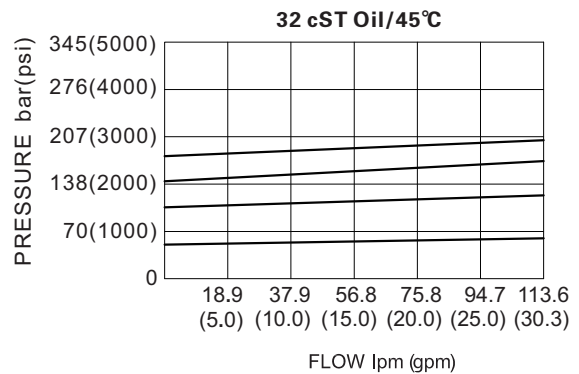
#### OPERATION

The valve prevents flow from ① to ② until pressure at ① exceeds the set crack pressure and opens the pilot section. The pilot flow creates a pressure differential across the poppet which causes the valve to open allowing flow from ① to ② protecting the circuit from over pressurization .

Pressure at ② overcomes the spring-bias pressure 1.5bar and allows free flow from ② to ①.



#### PRESSURE DROP VS. FLOW



#### TO ORDER

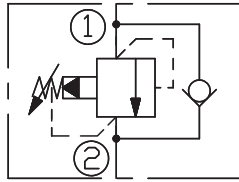
ZPOSRV20-00 - \* \*

Spring Ranges  
 05=10-64bar Preset 48bar  
 10=55-130bar Preset 102bar  
 15=110-210bar Preset 140bar  
 20=160-315bar Preset 180bar

# Pilot-operated Check Relief Valves

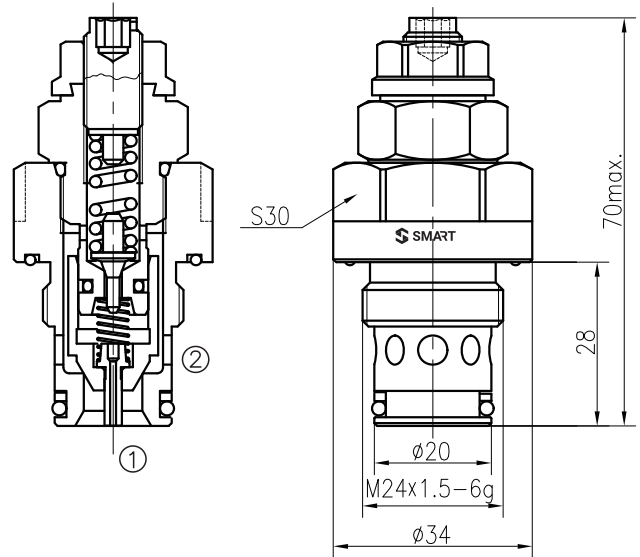
## ZPOSRV20-02

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	315bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	<30cc/min
Temperature:	-30°C~+100°C ( Standard bana seals )
Reverse Cracking Pressure:	1.5bar
Filtration:	See page Z-1
Cavity:	T-2404 See page G-9
Installation Torque:	38.7-43.8Nm

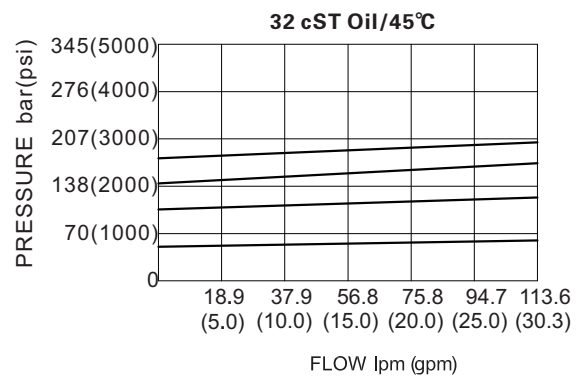


### OPERATION

The valve prevents flow from ① to ② until pressure at ① exceeds the set crack pressure and opens the pilot section. The pilot flow creates a pressure differential across the poppet which causes the valve to open allowing flow from ① to ② protecting the circuit from over pressurization .

Pressure at ② overcomes the spring-bias pressure 1.5bar and allows free flow from ② to ①.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZPOSRV20-02 - \* \*

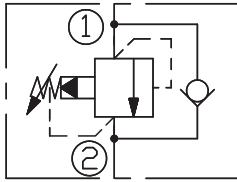
#### Spring Ranges

05=10-64bar Preset 48bar  
 10=55-130bar Preset 102bar  
 15=110-210bar Preset 140bar  
 20=160-315bar Preset 180bar

# Pilot-operated Check Relief Valves

## ZPOSRV20-03

### SYMBOL



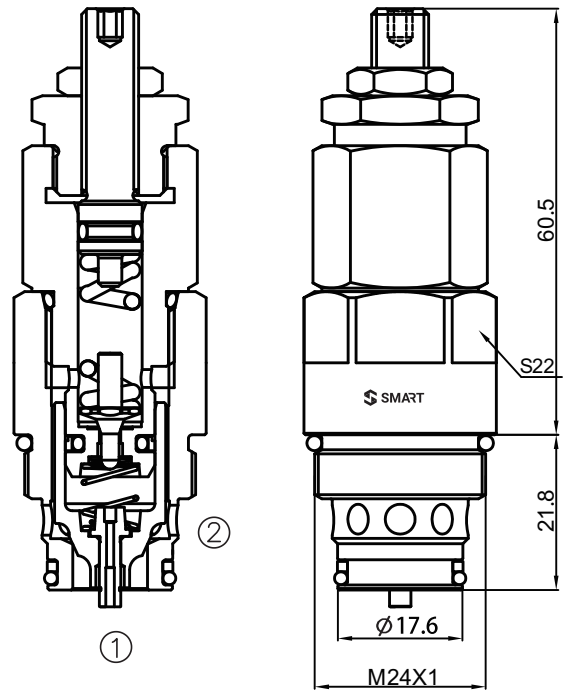
### SPECIFICATIONS

MAX. Operating Pressure:	315bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	<30cc/min
Temperature:	-30°C~+100°C ( Standard bana seals )
Reverse Cracking Pressure:	1.5bar
Filtration:	See page Z-1
Cavity:	Rexroth-FB See page G-14
Installation Torque:	38.7-43.8Nm

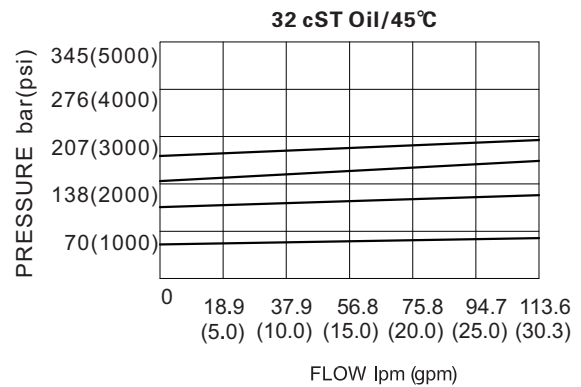
### OPERATION

The valve prevents flow from ① to ② until pressure at ① exceeds the set crack pressure and opens the pilot section. The pilot flow creates a pressure differential across the poppet which causes the valve to open allowing flow from ① to ② protecting the circuit from over pressurization .

Pressure at ② overcomes the spring-bias pressure 1.5bar and allows free flow from ② to ① .



### PRESSURE DROP VS. FLOW



### TO ORDER

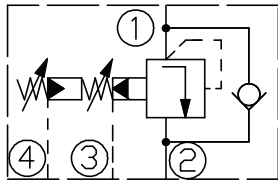
ZPOSRV20-03 - \* \*

Spring Ranges  
 05=10-64bar Preset 48bar  
 10=55-130bar Preset 102bar  
 15=110-210bar Preset 140bar  
 20=160-315bar Preset 180bar

## Pilot-operated Check Relief Valves

# ZPOSRV2KPHK-M28

### SYMBOL

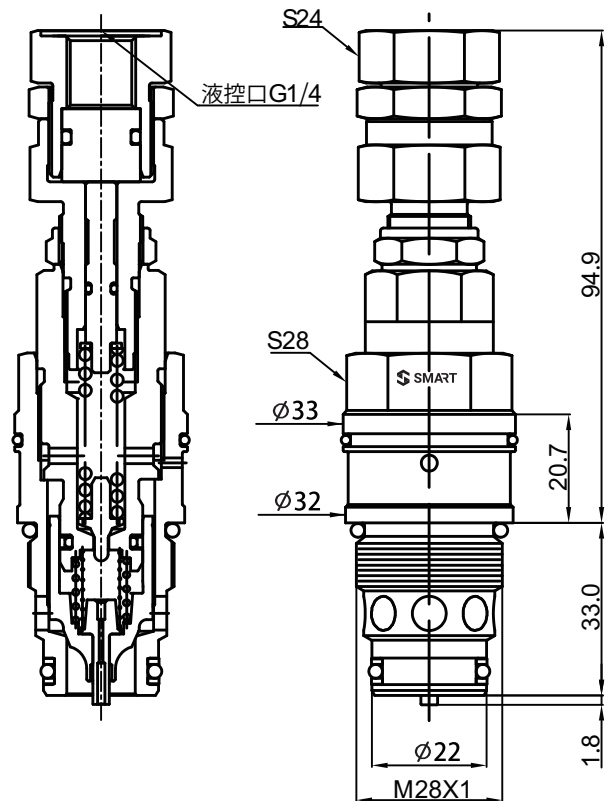


### SPECIFICATIONS

MAX. Operating Pressure:	420bar
Flow:	200L/min
Internal Leakage:	10drops/min
Temperature:	-20°C~+120°C
Spring Ranges:	100-420bar
Filtration:	See page Z-1
Cavity:	Rexroth-HC See page G-26
Installation Torque:	90-100Nm

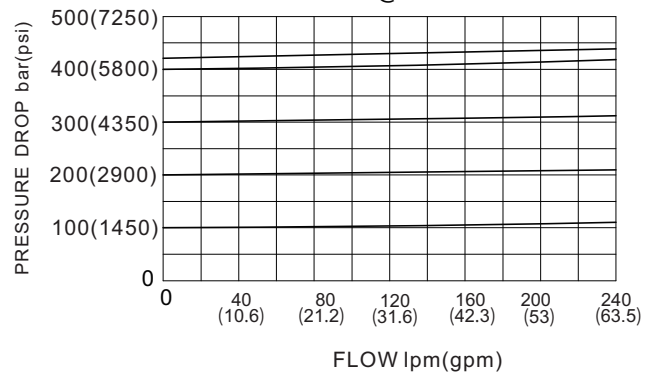
### OPERATION

The valve prevents flow from ① to ② until pressure at ① exceeds the set crack pressure and opens the pilot section. The pilot flow creates a pressure differential across the poppet which causes the valve to open allowing flow from ① to ② protecting the circuit from over pressurization. If the pressure at ② is at least 2 bar higher than Pressure at ①. The main poppet will be lifted out of its seat, to allow flow from ② to ①, this feed function is used to make up for lacking hydraulic fluid volumes. Pressure at port ③ is directly additive to the valve setting at a 1:1 ratio and should not exceed 50bar. By connecting pilot oil pressure to the external port ④, the control piston is pressurized. This increases the preload of the main spring and the maximum set system pressure.



### PRESSURE DROP VS. FLOW

32cSt oil @ 40 ° C



### TO ORDER

ZPOSRV2KPHK-M28 - \* - \* - \*

Spring Ranges  
60=100-420bar

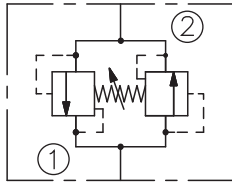
Setting In bar  
Preset 130bar  
例 Example:200=200bar

Setting In bar  
Preset 260bar  
例 Example:280=280bar

## Bi-directional Relief Valves

### ZBRV-10

#### SYMBOL

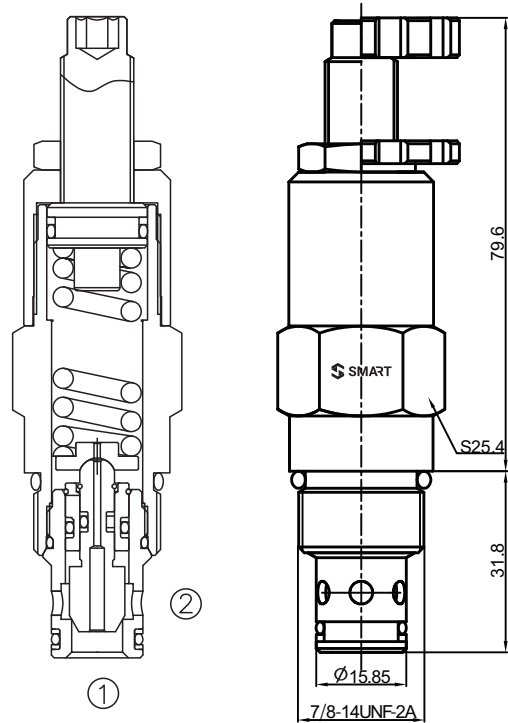


#### SPECIFICATIONS

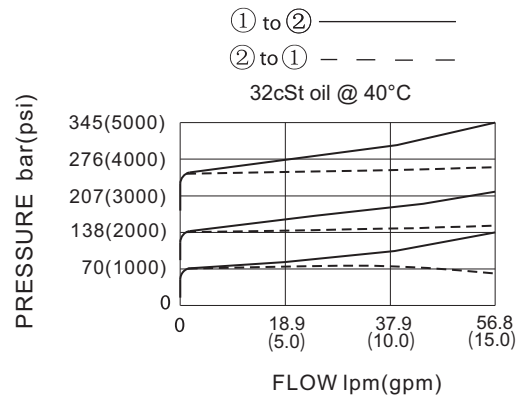
MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	when reseal to 80% of crack pressure 3cc/min
Reseat Pressure:	80% of crack pressure (crack pressure at 0.95lpm)
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	32-35Nm

#### OPERATION

The valve is a direct-acting, dual cross-over relief valve in a single cartridge format. When pressure at either port exceeds the nominal setting value, flow will be transmitted to the opposite port. Back pressure at either port will affect the nominal setting of the opposite port on a 1:1 basis.



#### PRESSURE DROP VS. FLOW



#### TO ORDER

ZBRV-10 - \* - \*\*  
 Cavity ————

Adjustment  
 Dia Knob  
 Omit for 6.35mm Hex Allen head

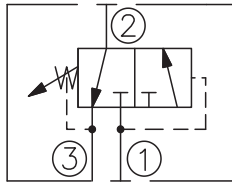
#### Spring Ranges

7=5-45bar Preset 21bar  
 21=15-150bar Preset 69bar  
 36=50-250bar Preset 138bar

# Direct-acting Sequence Valves

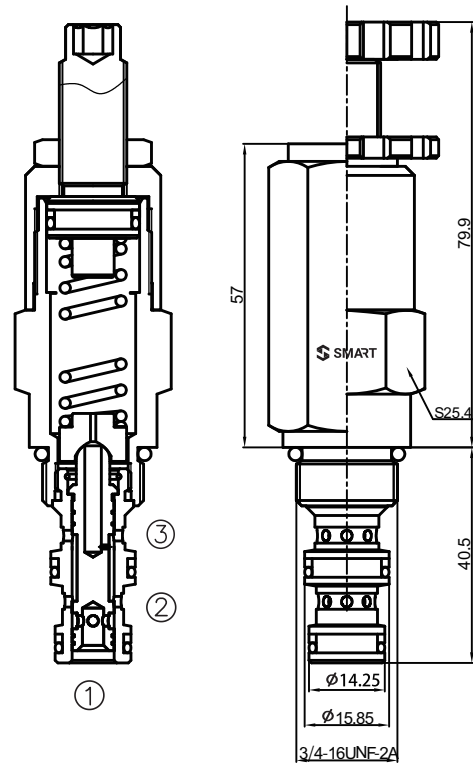
## ZPS08-30

### SYMBOL



### SPECIFICATIONS

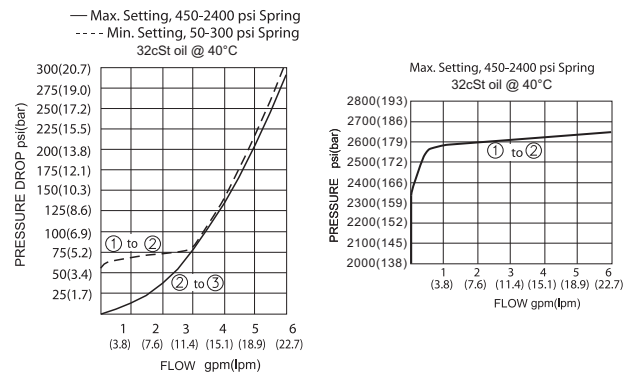
MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. to 85% of nominal setting
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	26-28.5Nm



### OPERATION

In its steady state, the valve blocks flow at ①, while allowing flow to pass from ② to ③. On attainment of a pre-determined pressure at ①, the cartridge shifts to open ① to ②.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZPS 08 - 30 - \* - \* \*

Cavity \_\_\_\_\_  
 Function \_\_\_\_\_

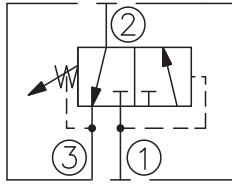
Adjustment  
 Alum. Knob  
 Factory Preset Hidden Adj.  
 Omit for 6.35mm Hex Allen head

Spring Ranges  
 3=3.4-20.7bar      Preset 10bar  
 6=6.9-41.4bar      Preset 21bar  
 13=10.3-89.7bar    Preset 45bar  
 24=31.0-165.5bar   Preset 83bar

# Direct-acting Sequence Valves

## ZPS10-30

### SYMBOL

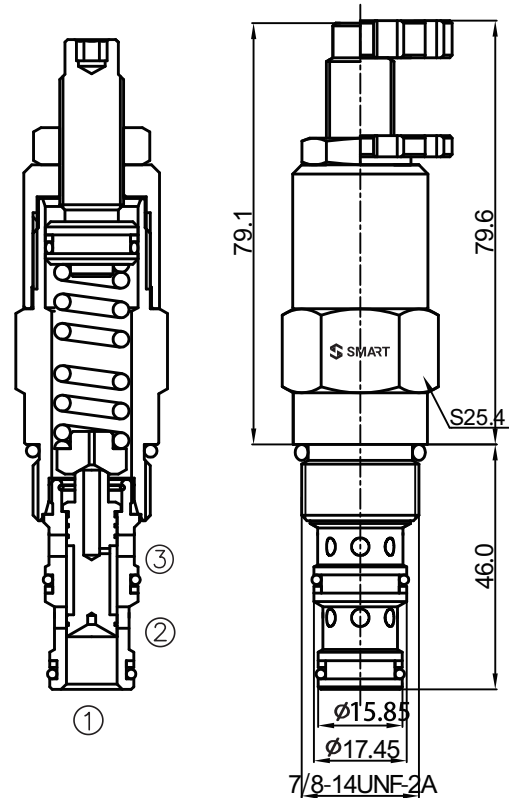


### SPECIFICATIONS

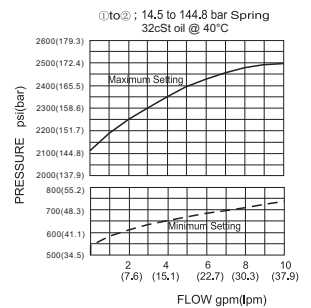
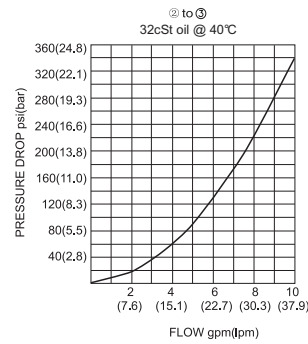
MAX. Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min.max.to 85% of nominal setting
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	32-35Nm

### OPERATION

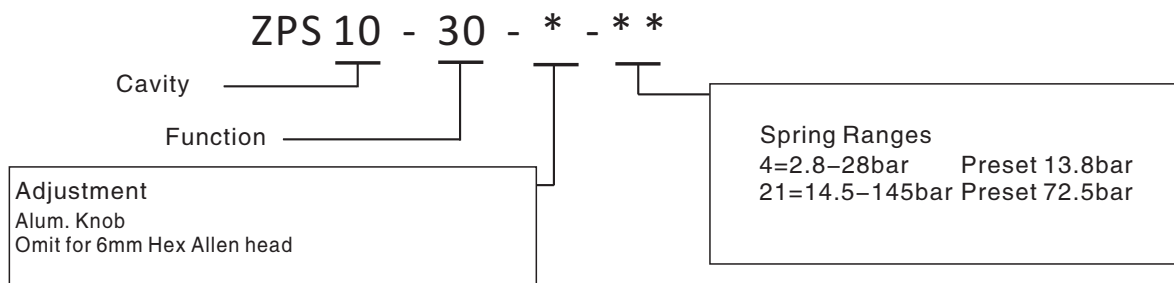
In its steady state, the valve blocks flow at ①, while allowing flow to pass from ② to ③. On attainment of a pre-determined pressure at ①, the cartridge shifts to open ① to ②.



### PRESSURE DROP VS. FLOW



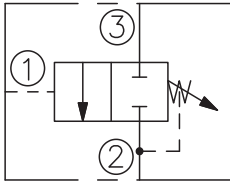
### TO ORDER



## Direct-acting Sequence Valves

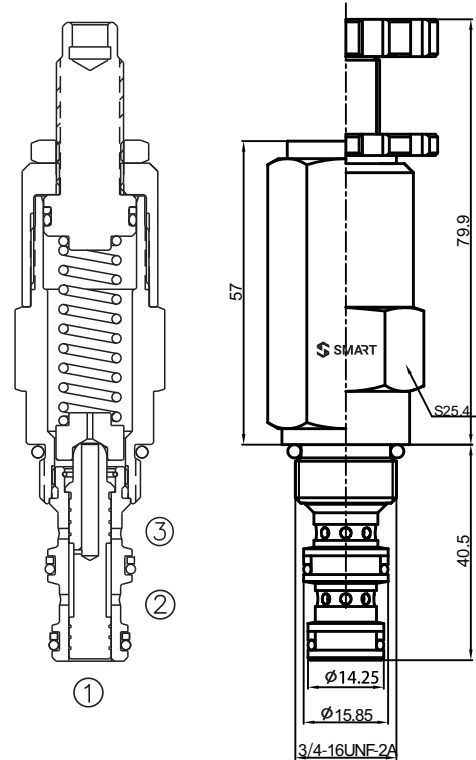
### ZPS08-32

#### SYMBOL



#### SPECIFICATIONS

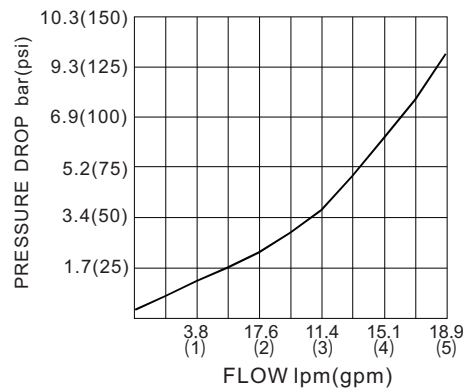
MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. to 85% of nominal setting
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	26-28.5Nm



#### OPERATION

In its steady state, the valve blocks flow from ③ to ②. On attainment of pre-determined pressure at ①, the cartridge shifts to open ③ to ②. Since the spring chamber is vented at ②, back pressure at ② will directly (1:1) affect the valve's setting.

#### PRESSURE DROP VS. FLOW



#### TO ORDER

**ZPS 08 - 32 - \* - \* \***

Cavity \_\_\_\_\_

Function \_\_\_\_\_

**Spring Ranges**

3=3.4-20.7bar	Preset 10bar
6=6.9-41.4bar	Preset 21bar
13=10.3-89.7bar	Preset 45bar
24=31.0-165.5bar	Preset 83bar

**Adjustment**

Alum. Knob

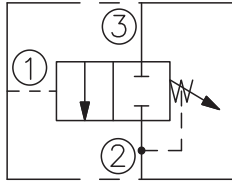
Factory Preset Hidden Adj.

Omit for 6.35mm Hex Allen head

# Direct-acting Sequence Valves

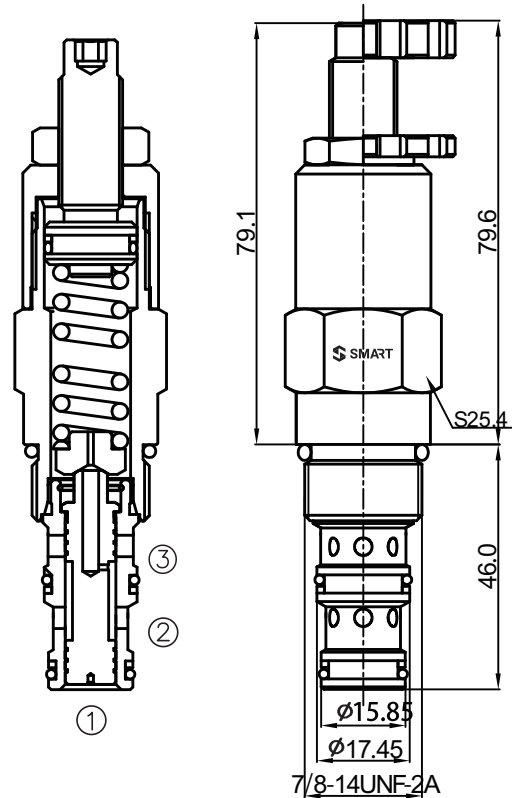
## ZPS10-32

### SYMBOL



### SPECIFICATIONS

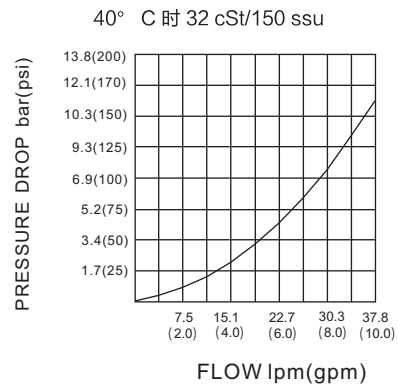
MAX. Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. to 85% of nominal setting
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	32-35Nm



### OPERATION

In its steady state, the valve blocks flow from ③ to ②. On attainment of pre-determined pressure at ①, the cartridge shifts to open ③ to ②. Since the spring chamber is vented at ②, back pressure at ② will directly (1:1) affect the valve's setting.

### PRESSURE DROP VS. FLOW



### TO ORDER

**ZPS 10 - 32 - \* - \* \***

Cavity ————

Function ————

**Spring Ranges**

4=5.5-27.6bar	Preset 13.8bar
8=13.8-55.2bar	Preset 27bar
15=20.7-103bar	Preset 51.5bar
21=28-145bar	Preset 72.5bar

**Adjustment**

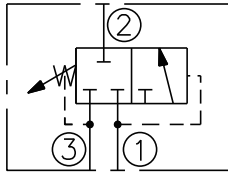
Alum. Knob

Omit for 6mm Hex Allen head

## Direct-acting Sequence Valves

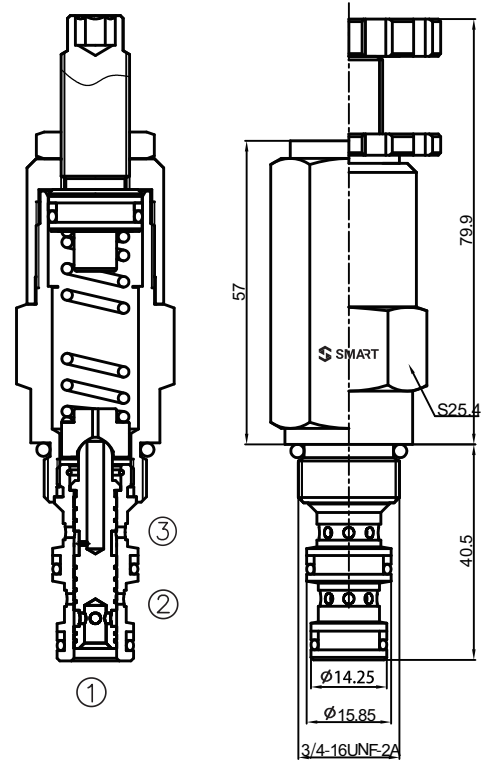
# ZPS08-34

### SYMBOL



### SPECIFICATIONS

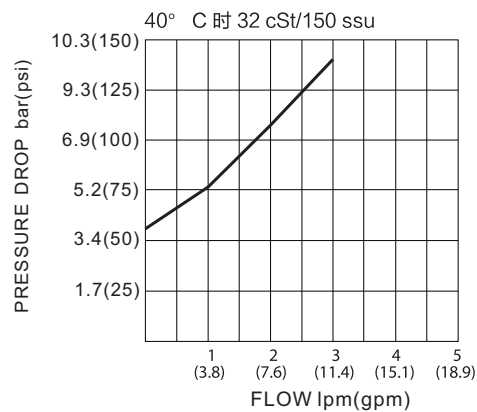
MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. to 85% of nominal setting
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	26-28.5Nm



### OPERATION

In its steady state, the valve blocks flow from ① to ②, with the spring chamber drained at ③. On attainment of a predetermined pressure at ①, the cartridge shifts to open ① to ②. Note that back-pressure on ③ adds to the spring setting value.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZPS 08 - 34 - \* - \* \*

Cavity \_\_\_\_\_  
Function \_\_\_\_\_

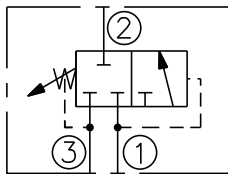
Adjustment  
B = Alum. Knob  
H = Factory Preset Hidden Adj.  
Omit for 6.35mm Hex Allen head

Spring Ranges  
3=3.4-20.7bar      Preset 10bar  
6=6.9-41.4bar      Preset 21bar  
13=10.3-89.7bar    Preset 45bar  
24=31.0-165.5bar   Preset 83bar

# Direct-acting Sequence Valves

## ZPS10-34

### SYMBOL

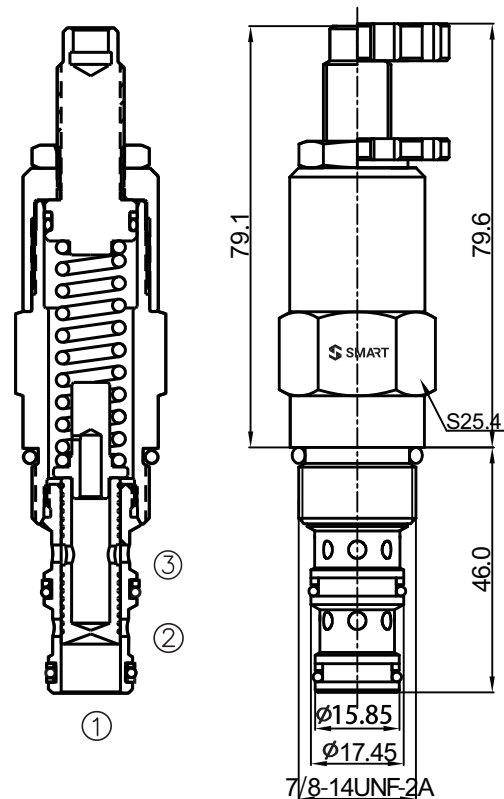


### SPECIFICATIONS

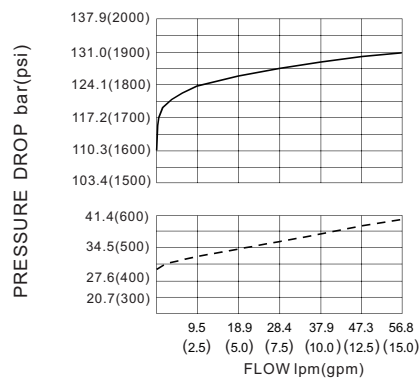
MAX. Operating Pressure:	207bar
Sequence Pressure Max:	117bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. to 85% of nominal setting
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	32-35Nm

### OPERATION

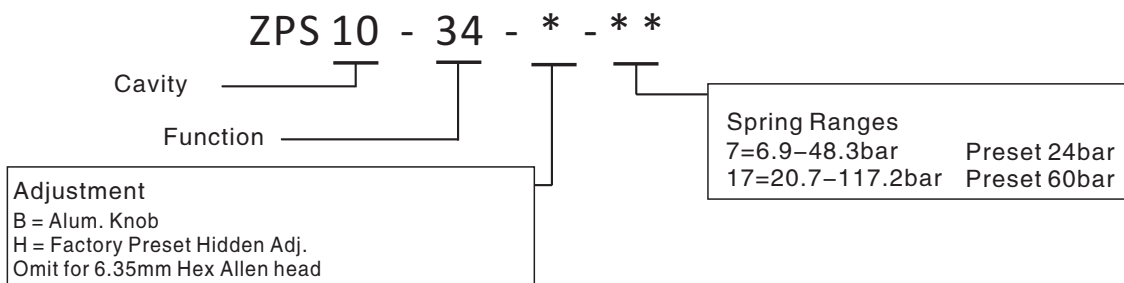
In its steady state, the valve blocks flow from ① to ②, with the spring chamber drained at ③. On attainment of a predetermined pressure at ①, the cartridge shifts to open ① to ②. Note that back-pressure on ③ adds to the spring setting value.



### PRESSURE DROP VS. FLOW



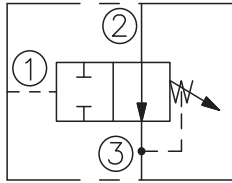
### TO ORDER



## Direct-acting Sequence Valves

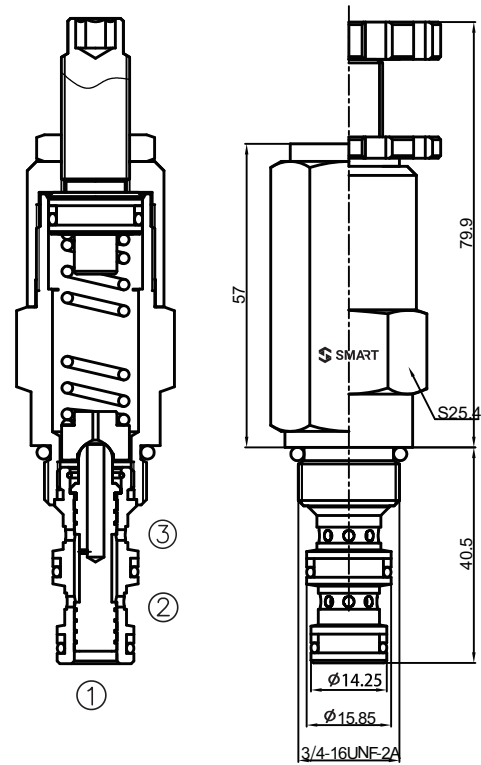
# ZPS08-35

### SYMBOL



### SPECIFICATIONS

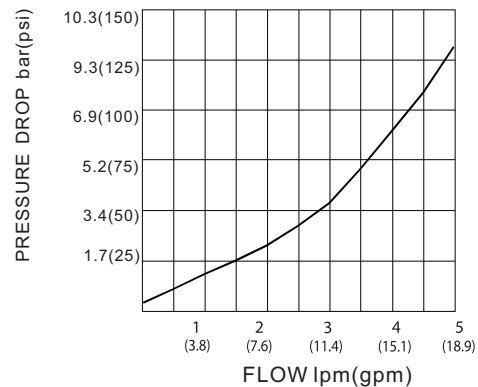
MAX. Operating Pressure:	240bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. to 85% of nominal setting
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	26-28.5Nm



### OPERATION

In its steady state, the valve flows from ② to ③. On attainment of pre-determined pressure at ①, the cartridge shifts to close ② to ③. Since the spring chamber is vented at ③, back pressure at ③ will directly (1:1) affect the valve's setting.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZPS 08 - 35 - \* - \* \*

Cavity ————  
Function ————

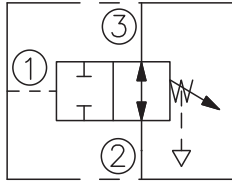
Adjustment  
B = Alum. Knob  
H = Factory Preset Hidden Adj.  
Omit for 6.35mm Hex Allen head

Spring Ranges  
3=3.4-20.7bar      Preset 10bar  
6=6.9-41.4bar      Preset 21bar  
13=10.3-89.7bar    Preset 45bar  
24=31.0-165.5bar   Preset 83bar

## Direct-acting Sequence Valves

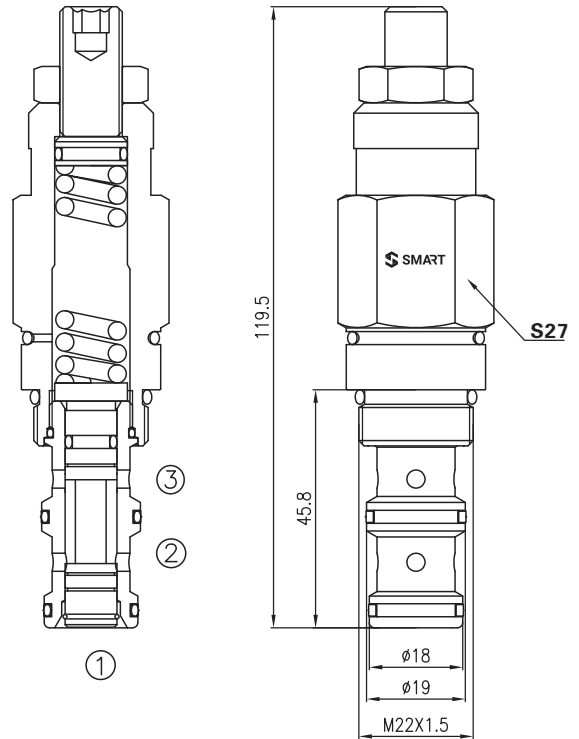
### ZPS30-3201 (透气型)

#### SYMBOL



#### SPECIFICATIONS

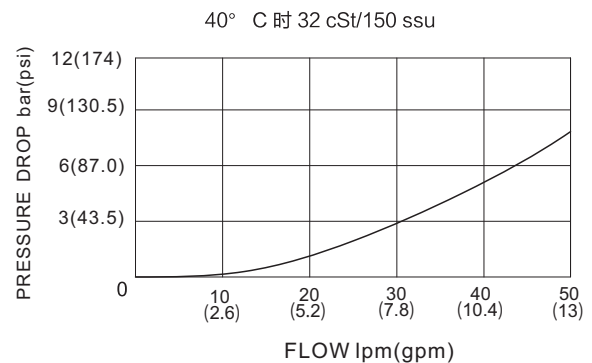
MAX.Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	82cc/min.max.to 85% of nominal setting
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	TS30-3 See pageG-8
Installation Torque:	50-60Nm



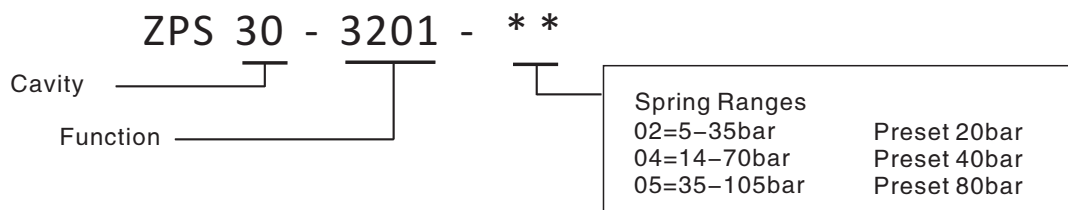
#### OPERATION

In its steady state, the valve free flow from ③ to ②. On attainment of pre-determined pressure at ①, the cartridge shifts to close ③ to ②. The spring chamber for this valve is externally vented to atmosphere.

#### PRESSURE DROP VS.FLOW



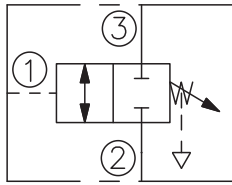
#### TO ORDER



# Direct-acting Sequence Valves

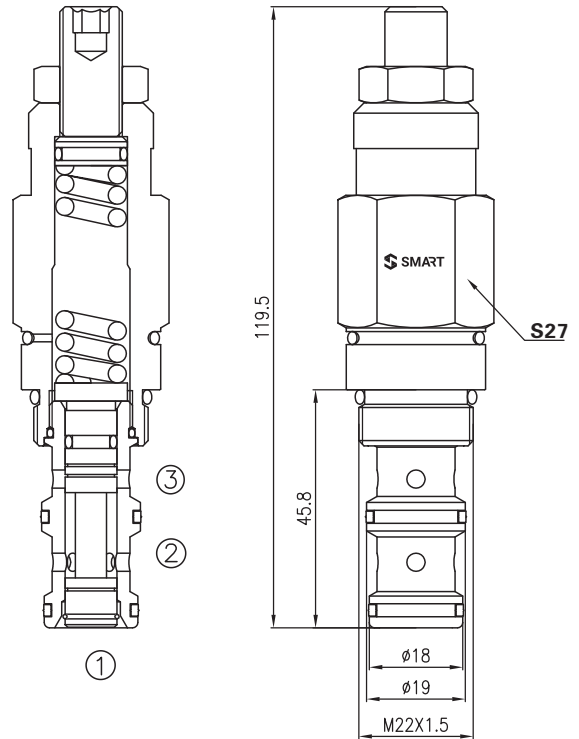
## ZPS30-3202

### SYMBOL



### SPECIFICATIONS

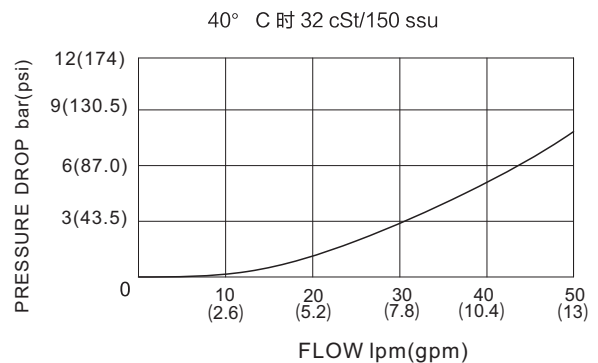
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. to 85% of nominal setting
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	TS30-3 See page G-8
Installation Torque:	50-60Nm



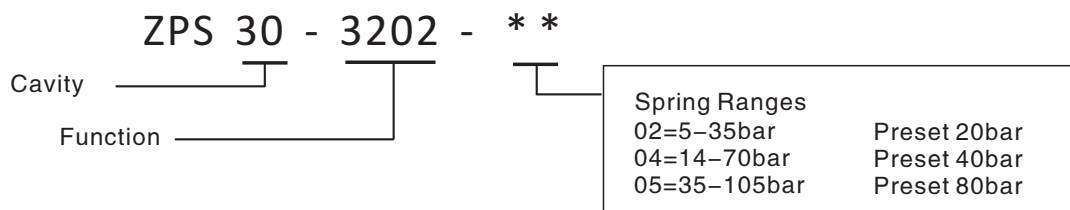
### OPERATION

In its steady state, the valve blocks flow from ③ to ②. On attainment of pre-determined pressure at ①, the cartridge shifts to open ③ to ②. The spring chamber for this valve is externally vented to atmosphere.

### PRESSURE DROP VS. FLOW



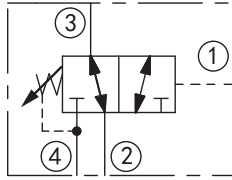
### TO ORDER



# Direct-acting Sequence Valves

## ZPS10-43

### SYMBOL



### SPECIFICATIONS

Operating Pressure:

ports ①、②、③: 240bar

ports ④: 69bar

Flow: See PRESSURE DROP VS.FLOW graph

Internal Leakage:

82ml/min.max.to 85% of nominal setting

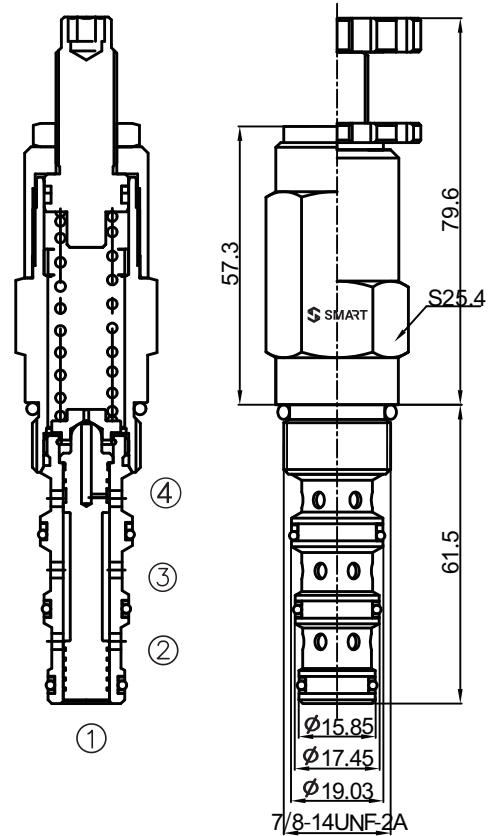
Temperature: -30°C~+100°C

( Standard bana seals )

Filtration: See page Z-1

Cavity: 10-4 See page G-4

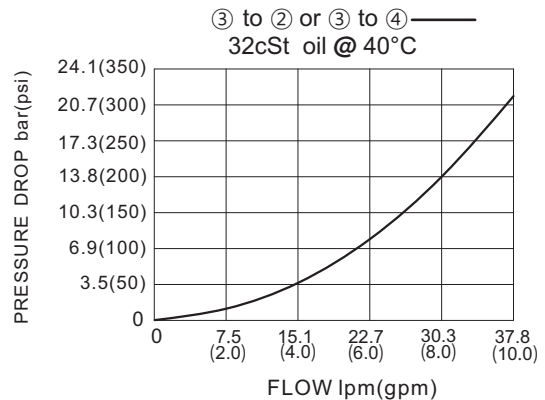
Installation Torque: 32-35Nm



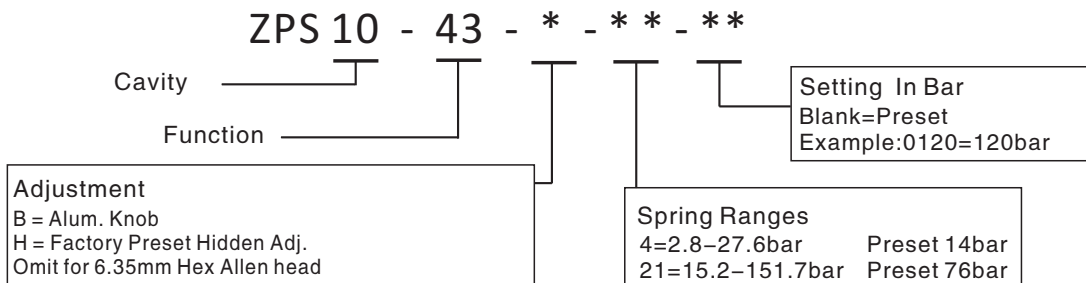
### OPERATION

In neutral (unpiloted), the valve allows flow to pass bi-directionally from port ③ to port ②, while blocking at port ④. The spring chamber is constantly drained at port ④. Upon attainment of a predetermined pressure at port ①, the spool shifts to close port ③ to port ②, while opening port ③ to port ④.  
 Note: the back-pressure at port ④ will directly add to the spring setting value.

### PRESSURE DROP VS.FLOW



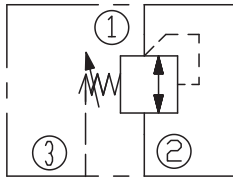
### TO ORDER



## Direct-acting Sequence Valves

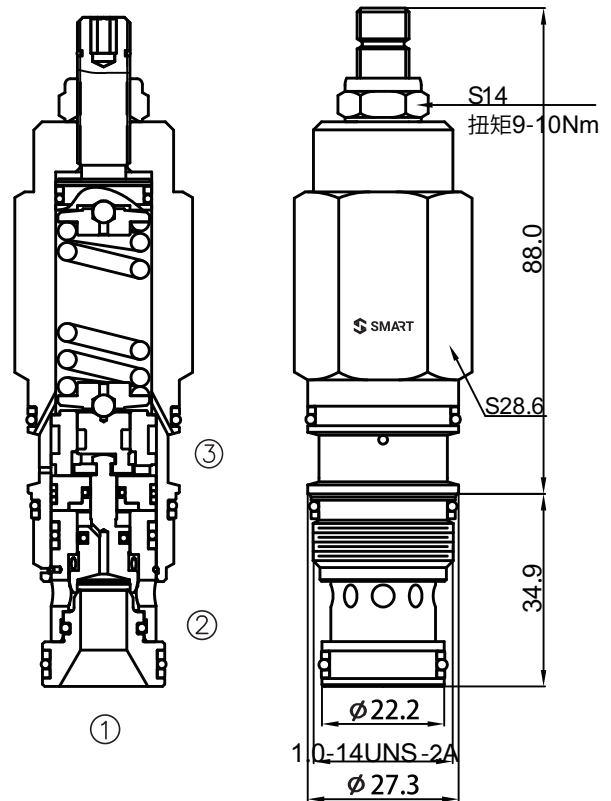
### ZSXEA

#### SYMBOL



#### SPECIFICATIONS

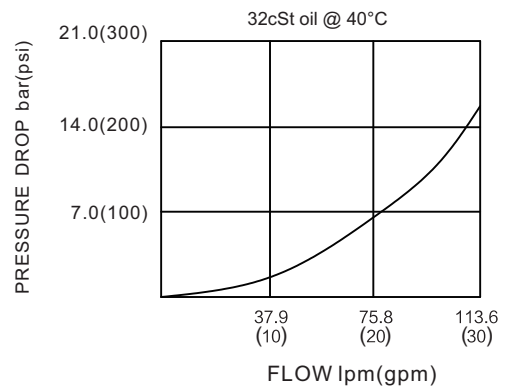
MAX. Operating Pressure:	350bar
Flow:	120L/min
Internal Leakage:	30cc/min Max at 70bar
Response Time-Typicall:	2ms
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A See page G-4
Installation Torque:	61-68Nm



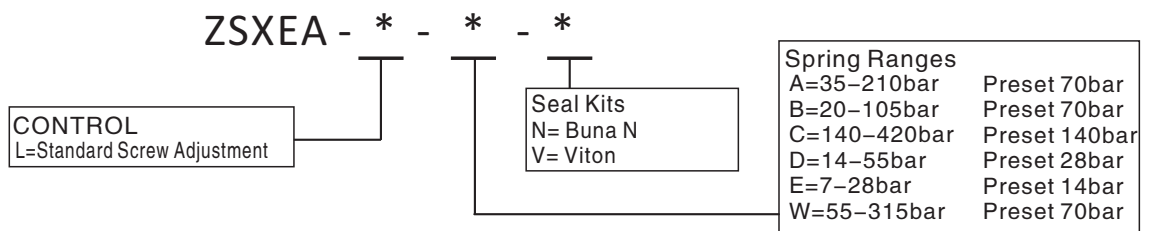
#### OPERATION

The valves will supply a secondary circuit with flow once the pressure at the inlet (port ①) has exceeded the valve setting. The pressure setting of a sequence valve controls the pressure at inlet (port ①) relative to the pressure at the drain (port ③). Note: the back-pressure at port ④ will directly add to the spring setting value.

#### PRESSURE DROP VS. FLOW



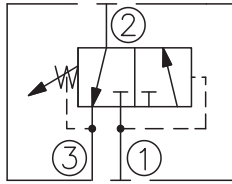
#### TO ORDER



## Pilot-operated Sequence Valves

### ZPSCS-08

#### SYMBOL

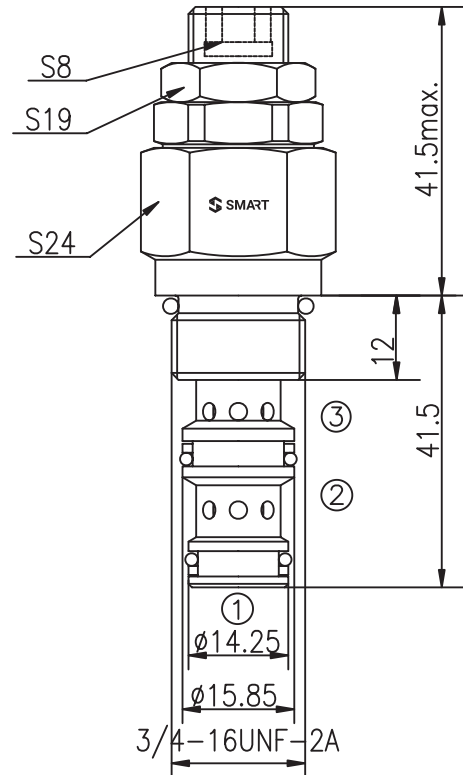


#### SPECIFICATIONS

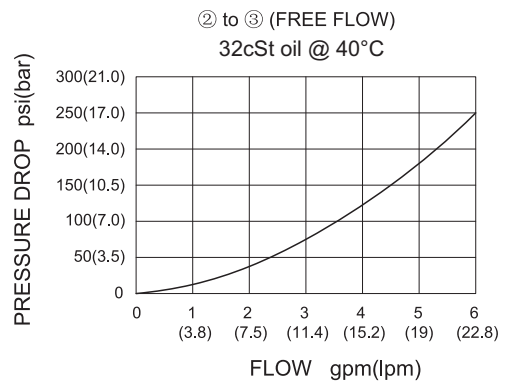
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	82cc/min. max. to 85% of nominal setting
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	26-28.5Nm

#### OPERATION

In its steady state, the valve blocks flow at ①, while allowing flow to pass from ② to ③. On attainment of a pre-determined pressure at ①, the cartridge shifts to open ① to ②.



#### PRESSURE DROP VS. FLOW



#### TO ORDER

ZPSCS- 08 - \* \*

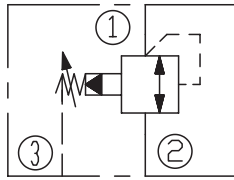
Cavity

Spring Ranges	
15=3.5-103.5bar	Preset 31bar
30=3.5-206.9bar	Preset 65.5bar
50=3.5-344.8bar	Preset 103bar

# Pilot-operated Sequence Valves

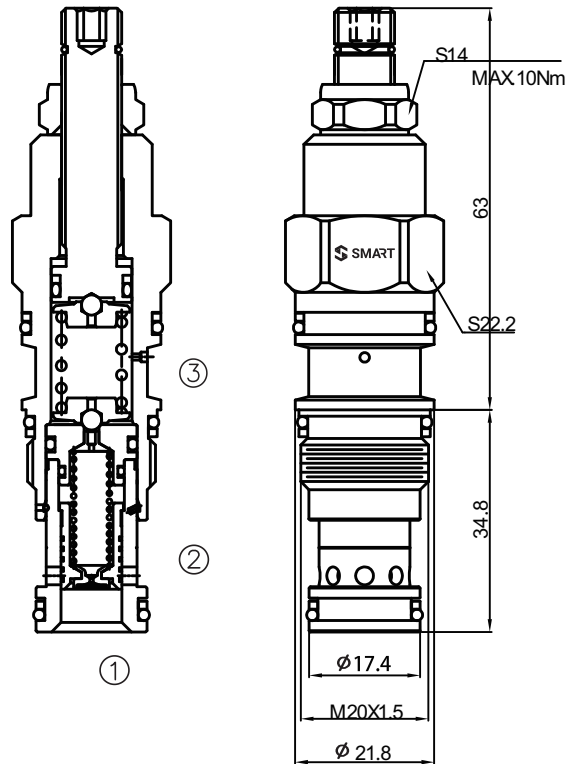
## ZRSDC

### SYMBOL



### SPECIFICATIONS

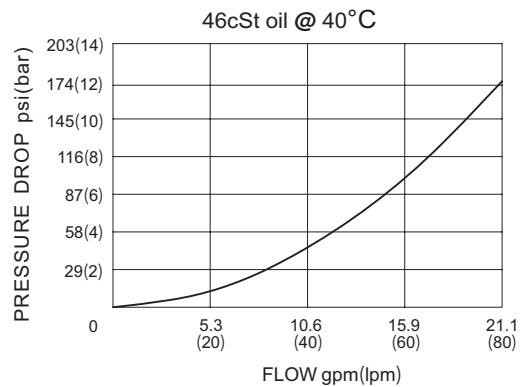
MAX. Operating Pressure:	350bar
Flow:	60L/min
Internal Leakage:	30cc/min Max at 70bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	40-50Nm



### OPERATION

The valves will supply a secondary circuit with flow once the pressure at the inlet (port ①) has exceeded the valve setting. The pressure setting of a sequence valve controls the pressure at inlet (port ①) relative to the pressure at the drain (port ③). These valves are insensitive to back pressure at port ②, up to the valve setting. They may be used to regulate pressure in place of 2-port relief valves if there is pressure in the return line.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZRSDC - \* - \* \* - \* \*

**CONTROL**  
L=Standard Screw Adjustment

Seal Kits  
N= Buna N  
V= Viton

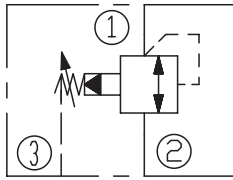
**Spring Ranges**

A=7-210bar	Preset 70bar
B=3.5-105bar	Preset 70bar
C=10.5-420bar	Preset 70bar
D=1.7-55bar	Preset 28bar
E=1.7-28bar	Preset 14bar
N=4-55bar	Preset 28bar
Q=4-28bar	Preset 14bar
W=10.5-315bar	Preset 70bar

# Pilot-operated Sequence Valves

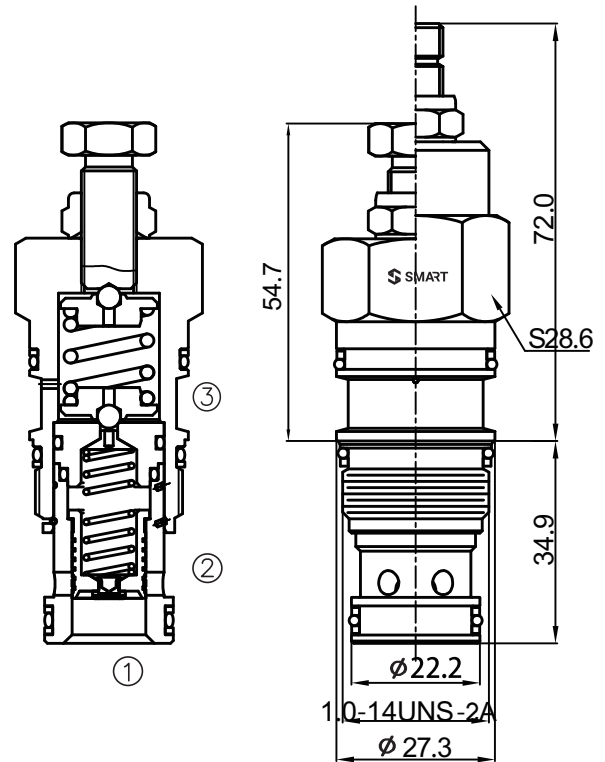
## ZRSFC

### SYMBOL



### SPECIFICATIONS

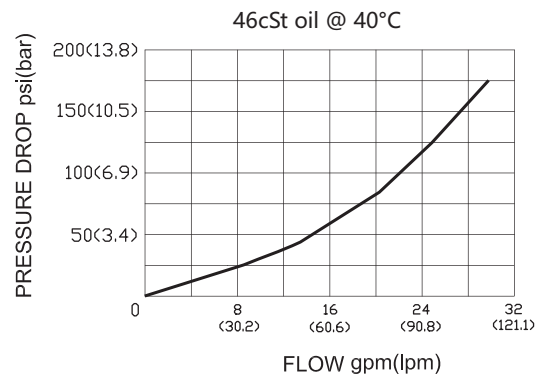
MAX. Operating Pressure:	350bar
Flow:	120L/min
Internal Leakage:	50cc/min Max at 70bar
Response Time–Typical:	10ms
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A See page G-4
Installation Torque:	61-68Nm



### OPERATION

The valves will supply a secondary circuit with flow once the pressure at the inlet (port ①) has exceeded the valve setting. The pressure setting of a sequence valve controls the pressure at inlet (port ①) relative to the pressure at the drain (port ③). These valves are insensitive to back pressure at port ②, up to the valve setting. They may be used to regulate pressure in place of 2-port relief valves if there is pressure in the return line.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZRSFC - \* - \* \* - \* \*

**CONTROL**  
L=Standard Screw Adjustment  
F=Hex Head Screw with Locknut

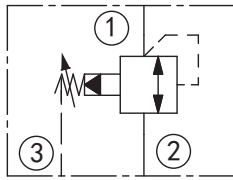
Seal Kits  
N= Buna N  
V= Viton

Spring Ranges	
A=7-210bar	Preset 70bar
B=3.5-105bar	Preset 70bar
C=10.5-420bar	Preset 70bar
D=1.7-55bar	Preset 28bar
E=1.7-28bar	Preset 14bar
N=4-55bar	Preset 28bar
Q=4-28bar	Preset 14bar
W=10.5-315bar	Preset 70bar

# Pilot-operated Sequence Valves

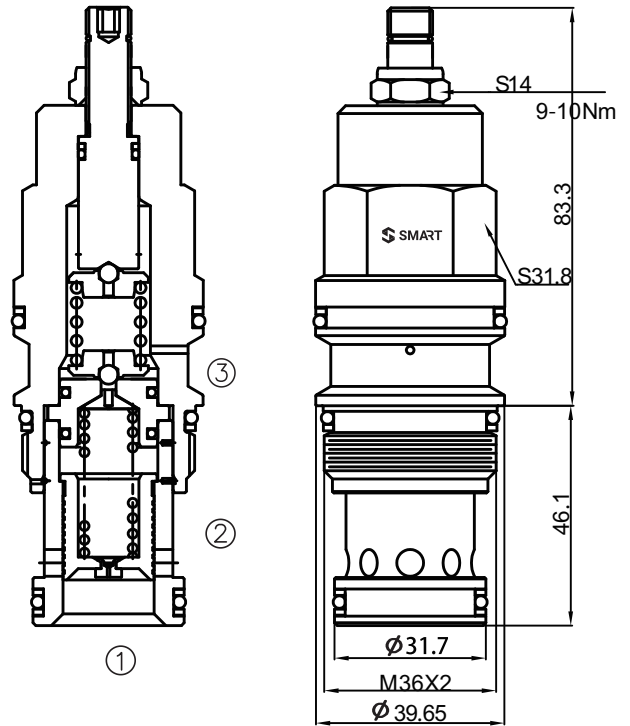
## ZRSHC

### SYMBOL



### SPECIFICATIONS

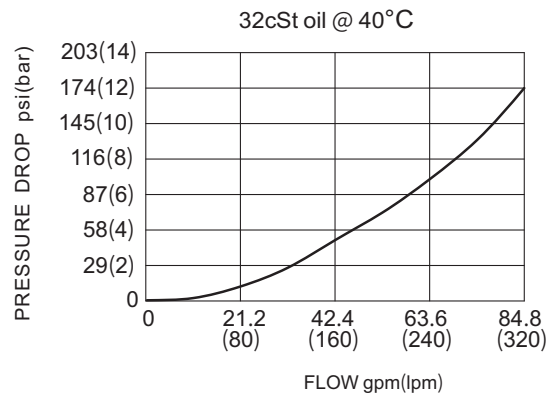
MAX. Operating Pressure:	350bar
Flow:	240L/min
Internal Leakage:	65cc/min.max.at 70bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-17A See page G-5
Installation Torque:	200-215Nm



### OPERATION

The valves will supply a secondary circuit with flow once the pressure at the inlet (port ①) has exceeded the valve setting. The pressure setting of a sequence valve controls the pressure at inlet (port ①) relative to the pressure at the drain (port ③). These valves are insensitive to back pressure at port ②, up to the valve setting. They may be used to regulate pressure in place of 2-port relief valves if there is pressure in the return line.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZRSHC - \* - \* \* - \* \*

CONTROL  
L=Standard Screw Adjustment

Seal Kits  
N= Buna N  
V= Viton

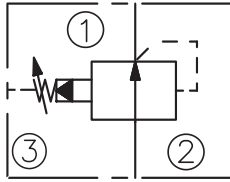
#### Spring Ranges

A=7-210bar	Preset 70bar
B=3.5-105bar	Preset 70bar
C=10.5-420bar	Preset 70bar
D=1.7-55bar	Preset 28bar
E=1.7-28bar	Preset 14bar
N=4-55bar	Preset 28bar
W=10.5-315bar	Preset 70bar

# Pilot-operated Pressure Reducing Valves

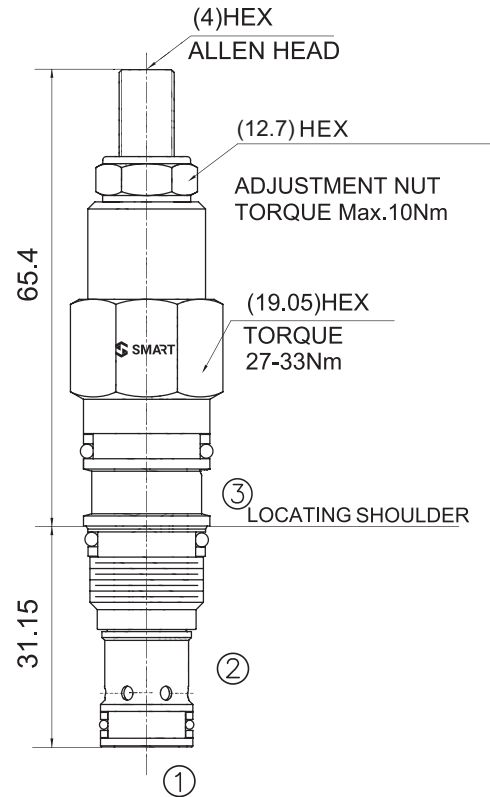
## ZPBBB

### SYMBOL



### SPECIFICATIONS

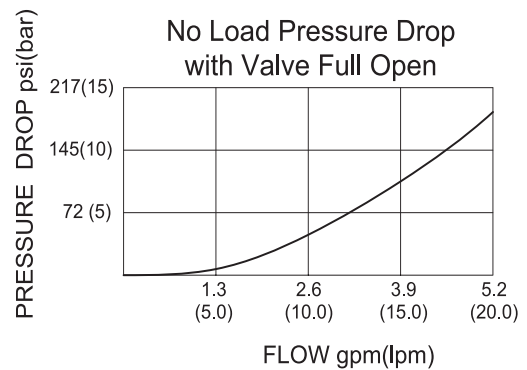
MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-163A See page G-7
Installation Torque:	27-33Nm



### OPERATION

Pilot-operated, pressure reducing valves reduce a high primary pressure at the inlet (port ②) to a constant reduced pressure at port ①, allowing circuits with multiple pressure requirements to be operated using a single pump. Pressure at port ③ is directly additive to the valve setting at a 1:1 ratio and should not exceed 4500 psi (315bar). Minimum setting is 75 psi (5bar) for all spring ranges.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZPBBB - \* \* \*

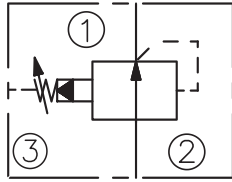
CONTROL  
L = Standard Screw Adjustment

Seal Kits  
N= Buna N  
V= Viton

Spring Ranges  
A=5-210bar Preset 14bar  
B=5-105bar Preset 14bar  
N=5-55bar Preset 14bar  
Q=5-28bar Preset 14bar  
W=5-315bar Preset 14bar

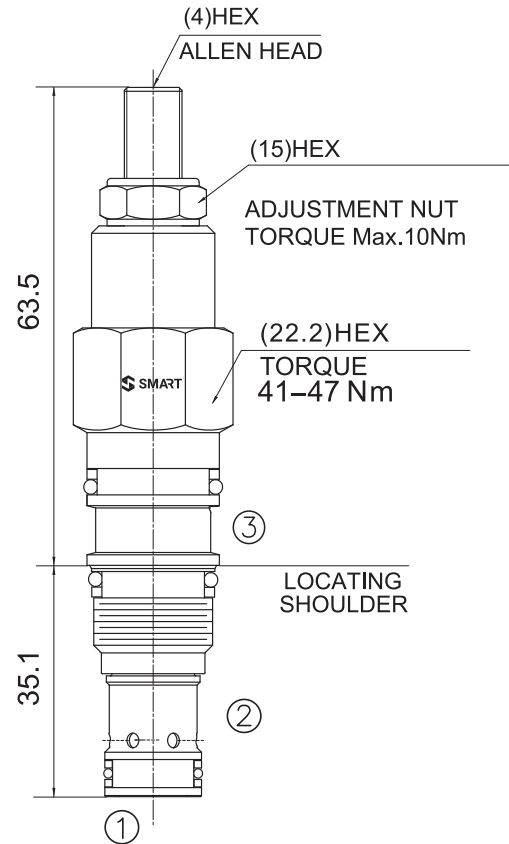
# ZPBDB

## SYMBOL



## SPECIFICATIONS

MAX. Operating Pressure:	350bar
Flow:	See PRESSURE DROP VS. FLOW graph
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	41-47Nm

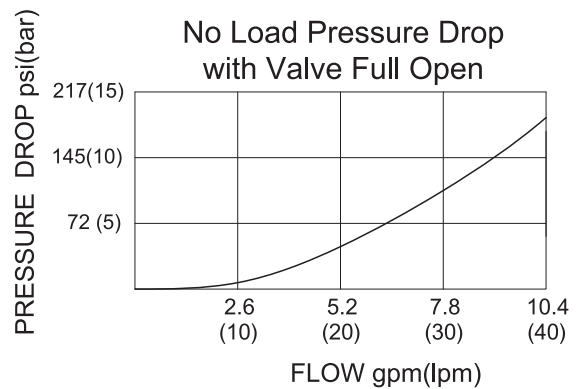


## OPERATION

Pilot-operated, pressure reducing valves reduce a high primary pressure at the inlet (port ②) to a constant reduced pressure at port ①, allowing circuits with multiple pressure requirements to be operated using a single pump.

Pressure at port ③ is directly additive to the valve setting at a 1:1 ratio and should not exceed 4500 psi (315bar). Minimum setting is 75 psi (5bar) for all spring ranges.

## PRESSURE DROP VS. FLOW



## TO ORDER

ZPBDB - \* \* \*

**CONTROL**  
L = Standard Screw Adjustment

**Seal Kits**  
N= Buna N  
V= Viton

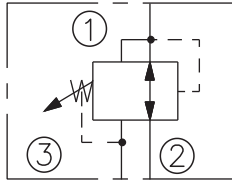
**Spring Ranges**

A=7-210bar	Preset 14bar
B=3.5-105bar	Preset 14bar
N=4-55bar	Preset 14bar
Q=4-28bar	Preset 14bar
W=10.5-315bar	Preset 14bar

# Direct-acting Pressure Reducing/Relieving Valves

## ZPR08-32

### SYMBOL

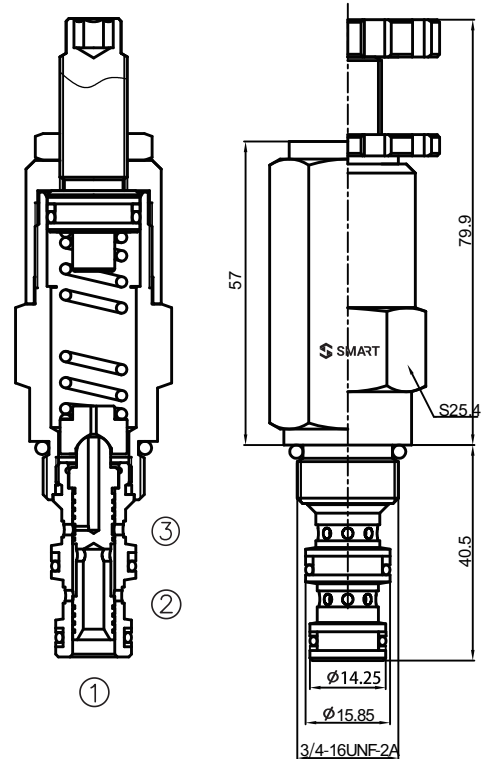


### SPECIFICATIONS

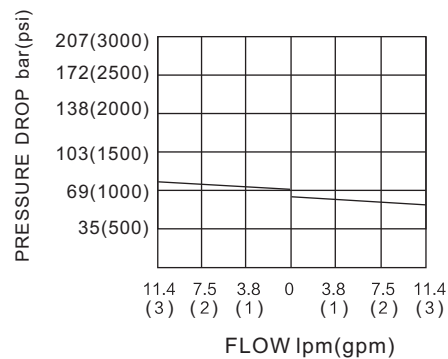
MAX. Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	from ② to ③ 82cc/min. max. at Δp 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	26-28.5Nm

### OPERATION

In its steady state, the valve allows flow to pass bi-directionally from ② to ①, with the spring chamber constantly drained at ③. On attainment of a pre-determined pressure at ①, the cartridge shifts to restrict input flow at ②, thereby regulating pressure at ①. In this mode, the valve will also relieve ① to ③ at approximately 10 bar over the reducing setting.



### PRESSURE DROP VS. FLOW



### TO ORDER

**ZPR 08 - 32 - \* - \* \***

Cavity ————

Function ————

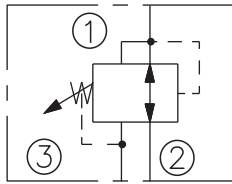
**Adjustment**  
 B = Alum. Knob  
 H = Factory Preset Hidden Adj.  
 Omit for 6.35mm Hex Allen head

**Spring Range**

3=3.4-20.7bar	Preset 10.3bar
6=6.9-41.4bar	Preset 20.7bar
12=20.7-82.8bar	Preset 41.4bar
22=34.5-152bar	Preset 76bar

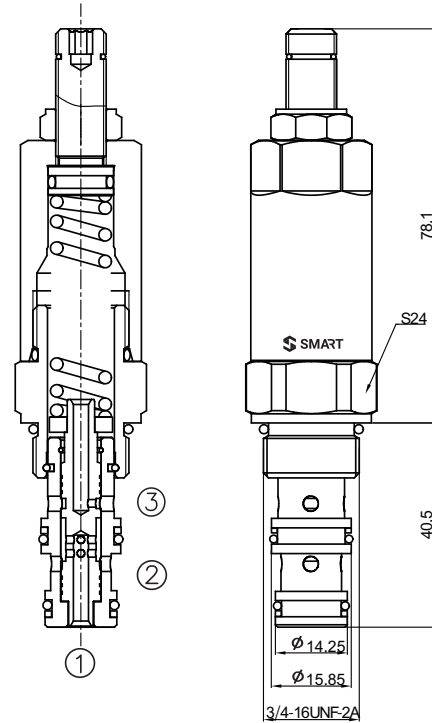
# ZPR3-08

## SYMBOL



## SPECIFICATIONS

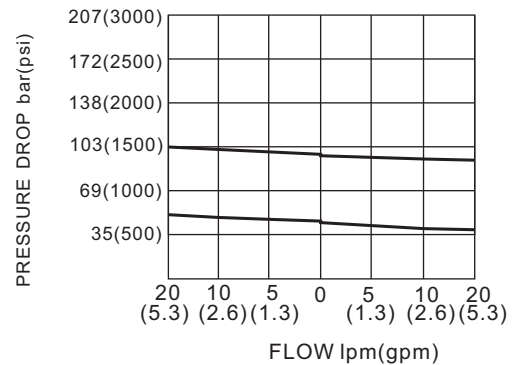
MAX.Operating Pressure:	420bar
Flow:	15L/min
Internal Leakage:	from ②to③ 82cc/min
Temperature:	-30℃~+100℃ ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	26-28.5Nm



## OPERATION

In its steady state, the valve allows flow to pass bi-directionally from ② to ①, with the spring chamber constantly drained at ③. On attainment of a pre-determined pressure at ①, the cartridge shifts to restrict input flow at ②, thereby regulating pressure at ①. In this mode, the valve will also relieve ① to ③ at approximately 10 bar over the reducing setting.

## PRESSURE DROP VS. FLOW



## TO ORDER

ZPR 3-08 - N - S - \* \*

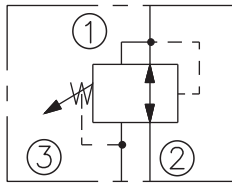
Seal Kits  
N= Buna N  
V= Viton

Adjustment  
S = Screw Adjust

Spring Range  
080=0-80bar      Preset 40bar  
150=0-150bar    Preset 75bar

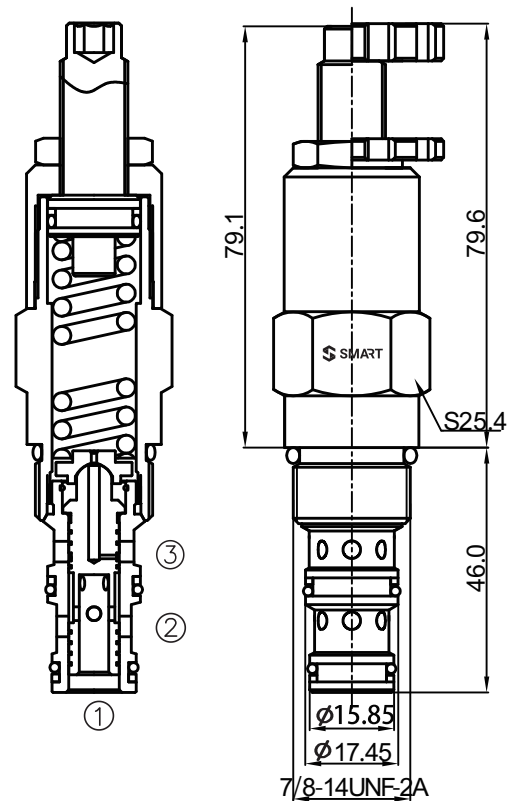
# ZPR10-32

## SYMBOL



## SPECIFICATIONS

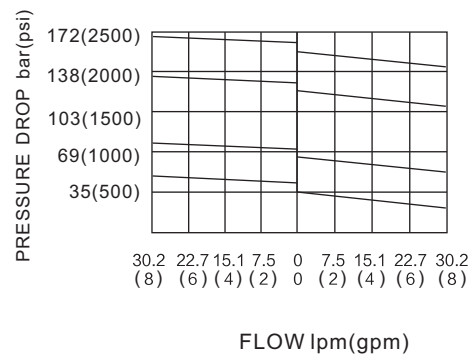
MAX. Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	from ② to ③ 82cc/min. max. at Δp 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	32-35Nm



## OPERATION

In its steady state, the valve allows flow to pass bi-directionally from ② to ①, with the spring chamber constantly drained at ③. On attainment of a pre-determined pressure at ①, the cartridge shifts to restrict input flow at ②, thereby regulating pressure at ①. In this mode, the valve will also relieve ① to ③ at approximately 10 bar over the reducing setting.

## PRESSURE DROP VS. FLOW



## TO ORDER

**ZPR 10 - 32 - \* - \* \***

Cavity ————

Function ————

**Spring Range**

4=5.5-27.6bar	Preset 13.8bar
8=13.8-55.2bar	Preset 27.6bar
15=20.7-103bar	Preset 51.5bar
21=27.6-145bar	Preset 72.5bar

**Adjustment**

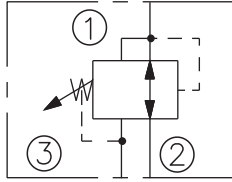
B = Alum. Knob

H = Factory Preset Hidden Adj.

Omit for 6.35mm Hex Allen head

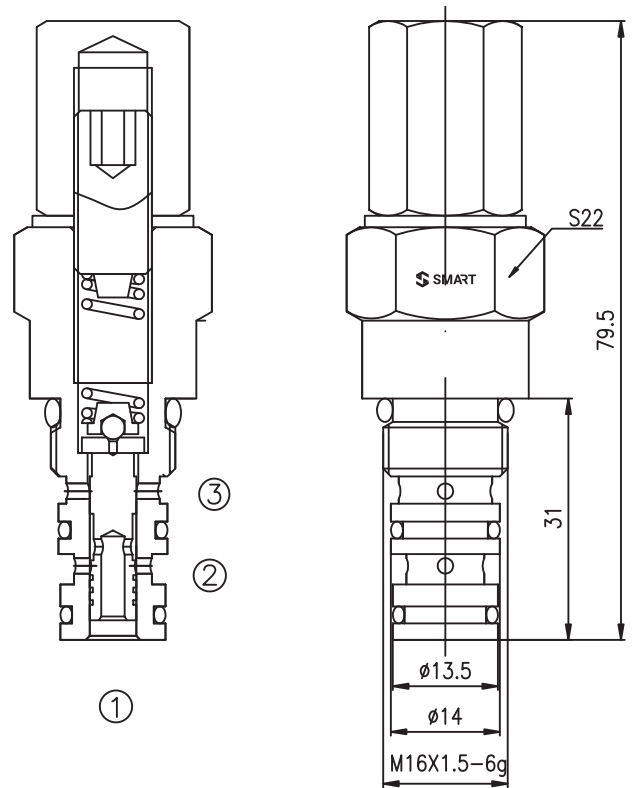
# ZDPR-04

## SYMBOL



## SPECIFICATIONS

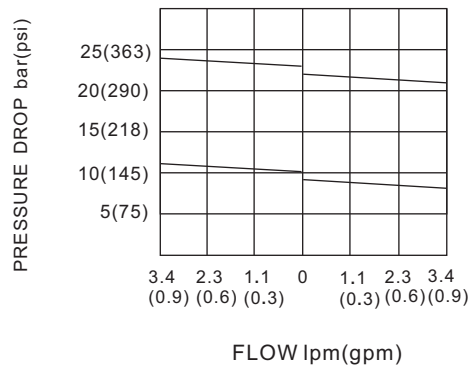
MAX.Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS.FLOW graph
Internal Leakage:	from ②to③ 100cc/min.max.at Δp 207bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T04A-3 See page G-9
Installation Torque:	26-28.5Nm



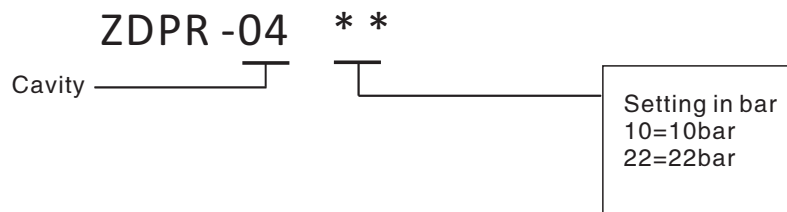
## OPERATION

In its steady state, the valve allows flow to pass bi-directionally from ② to ①, with the spring chamber constantly drained at ③. On attainment of a pre-determined pressure at ①, the cartridge shifts to restrict input flow at ②, thereby regulating pressure at ①. In this mode, the valve will also relieve ① to ③ at approximately 5 bar over the reducing setting.

## PRESSURE DROP VS. FLOW



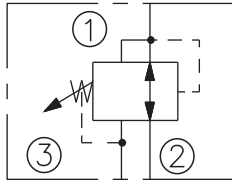
## TO ORDER



# Direct-acting Pressure Reducing/Relieving Valves

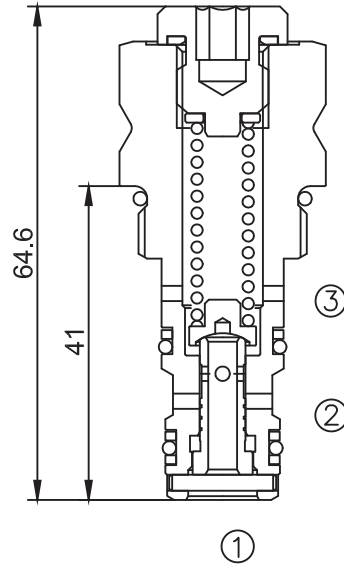
## ZDPR-06A

### SYMBOL



### SPECIFICATIONS

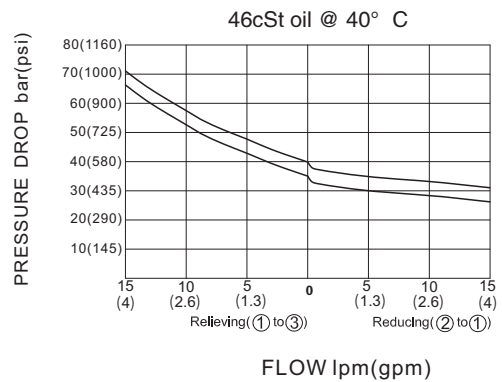
MAX. Operating Pressure:	420bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	from ② to ③ 50cc/min. max. at $\Delta p$ 300bar
Temperature:	-30°C ~ +100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T06A-3 See page G-7
Installation Torque:	34-37Nm



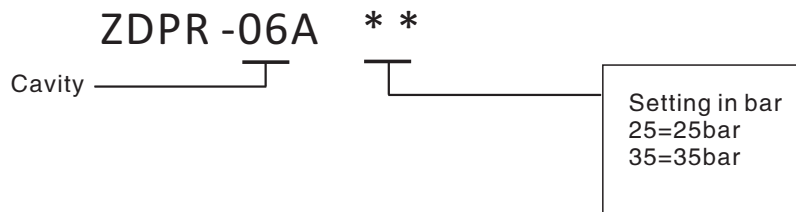
### OPERATION

In its steady state, the valve allows flow to pass bi-directionally from ② to ①, with the spring chamber constantly drained at ③. On attainment of a pre-determined pressure at ①, the cartridge shifts to restrict input flow at ②, thereby regulating pressure at ①. In this mode, the valve will also relieve ① to ③ at approximately 5.8 bar over the reducing setting.

### PRESSURE DROP VS. FLOW

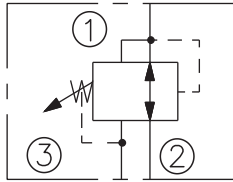


### TO ORDER



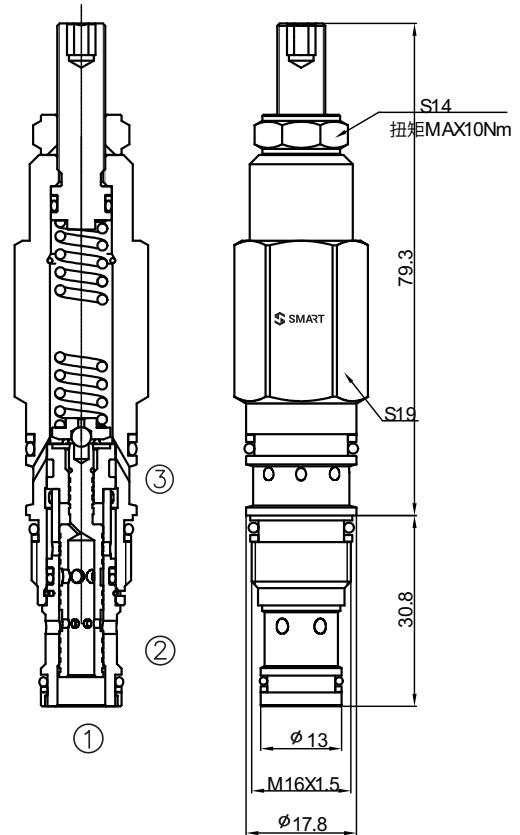
# ZPRBB

## SYMBOL



## SPECIFICATIONS

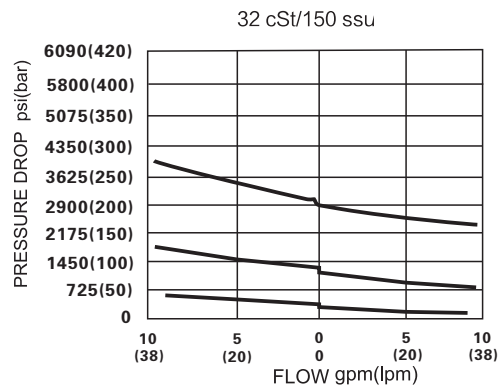
MAX. Operating Pressure:	350bar
Flow:	20L/min
Internal Leakage:	30cc/min Max at 70bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-163A See page G-7
Installation Torque:	27-33Nm



## OPERATION

Direct-acting, pressure reducing/relieving valves reduce a high primary pressure at the inlet (port 2) to a constant reduced pressure at port 1, with a full-flow relief function from port 1 to tank (port 3). These valves incorporate a damped construction for stable operation allowing the use of high reduced pressure.

## PRESSURE DROP VS. FLOW



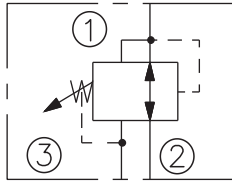
## TO ORDER

ZPRBB - \* - \* \* - \* \*

CONTROL L=Standard Screw Adjustment	Seal Kits N= Buna N V= Viton	Spring Ranges	
		A=35-210bar	Preset 50bar
		B=3.5-105bar	Preset 14bar
		D=1.7-55bar	Preset 14bar
		E=1.7-28bar	Preset 14bar
		S=1.7-14bar	Preset 7bar
		W=50-315bar	Preset 70bar

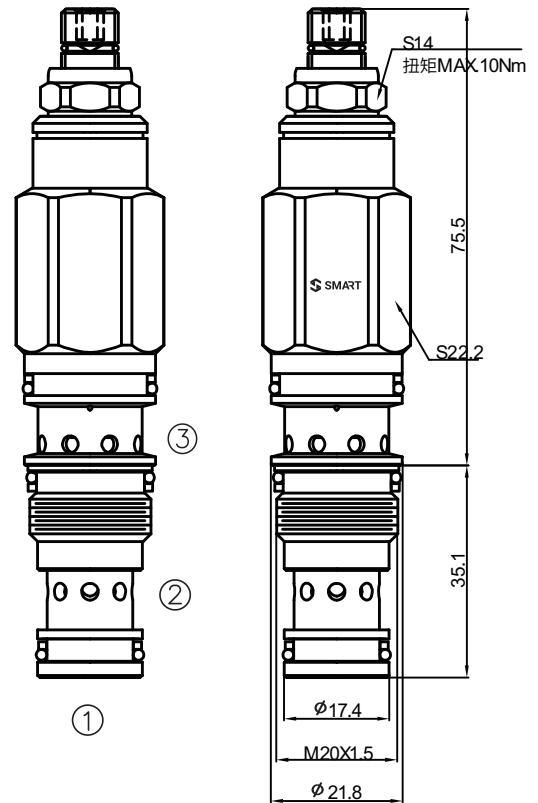
# ZPRDB

## SYMBOL



## SPECIFICATIONS

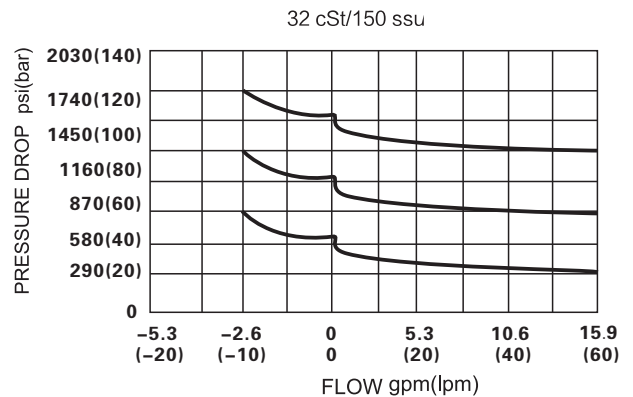
MAX. Operating Pressure:	350bar
Flow:	40L/min
Internal Leakage:	30cc/min Max at 70bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	41-47Nm



## OPERATION

Direct-acting, pressure reducing/relieving valves reduce a high primary pressure at the inlet (port 2) to a constant reduced pressure at port 1, with a full-flow relief function from port 1 to tank (port 3). These valves incorporate a damped construction for stable operation allowing the use of high reduced pressure.

## PRESSURE DROP VS. FLOW



## TO ORDER

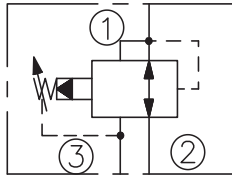
ZPRDB - \* - \* \* - \* \*

CONTROL L=Standard Screw Adjustment	Seal Kits N= Buna N V= Viton	<b>Spring Ranges</b> A=35-210bar Preset 50bar B=3.5-105bar Preset 14bar D=1.7-55bar Preset 14bar E=1.7-28bar Preset 14bar S=1.7-14bar Preset 7bar W=50-315bar Preset 70bar
--	------------------------------------	--

# Pilot-operated Pressure Reducing/Relieving Valves

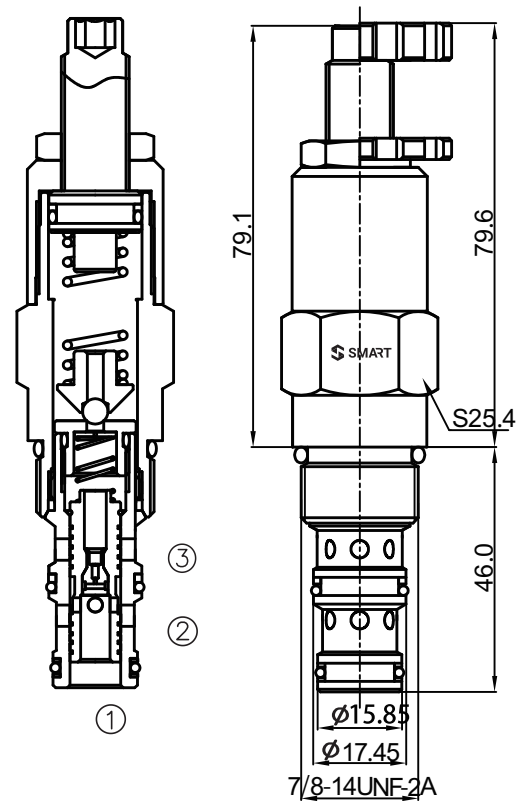
## ZPR10-36

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	210bar
Flow:	See PRESSURE DROP VS. FLOW graph
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	32-35Nm



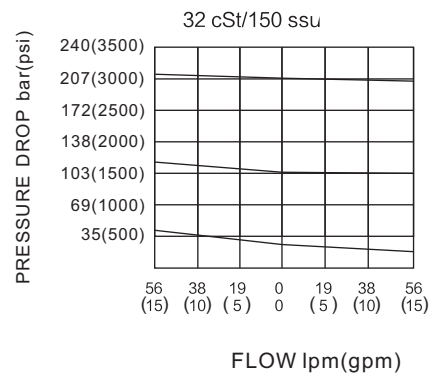
### OPERATION

In its steady state, the valve allows flow to pass bi-directionally from ② to ①, with the spring chamber constantly drained at ③. On attainment of a pre-determined pressure at ①, the cartridge shifts to restrict input flow at ②, thereby regulating pressure at ①. In this mode, the valve will also relieve ① to ③.

Dead band (from reducing to relieving) pressure rise over reduced pressure setting.

Non-flow condition: approximately 0.55 bar(8psi), with flow: approximately 2.1 bar(30 psi).

### PRESSURE DROP VS. FLOW



### TO ORDER

ZPR 10 - 36 - \* - \* \*

Cavity

Function

#### Adjustment

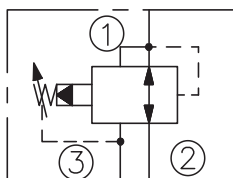
B = Alum. Knob  
H = Factory Preset Hidden Adj.  
Omit for 6.35mm Hex Allen head

#### Spring Range

4=6.9-27.6bar    Preset 13.8bar  
15=10.3-103bar    Preset 56bar  
30=27.6-207bar    Preset 103bar

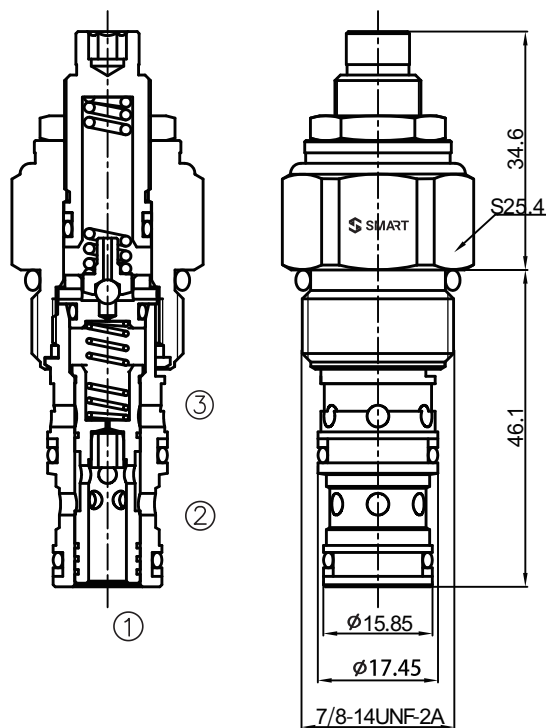
# ZPRH101S

## SYMBOL



## SPECIFICATIONS

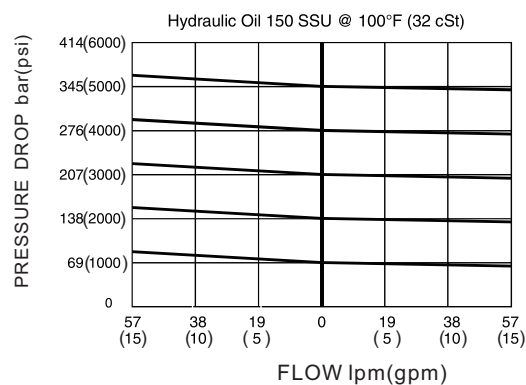
MAX. Operating Pressure:	350bar
Flow:	56.3L/min
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	69-75Nm



## OPERATION

In its steady state, the valve allows flow to pass bi-directionally from ② to ①, with the spring chamber constantly drained at ③. On attainment of a pre-determined pressure at ①, the cartridge shifts to restrict input flow at ②, thereby regulating pressure at ①. In this mode, the valve will also relieve ① to ③. Dead band (from reducing to relieving) pressure rise over reduced pressure setting.

## PRESSURE DROP VS. FLOW



## TO ORDER

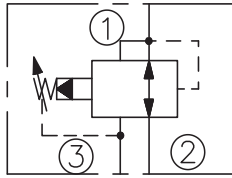
ZPRH101 S - \* \*

Adjustment  
S = Screw Adjust

Spring Range	
6=6.9-34.5bar	Preset 17.2bar
10=13.7-69bar	Preset 24.5bar
20=27-138bar	Preset 69bar
30=41.4-207bar	Preset 103.5bar
50=82.8-345bar	Preset 172.4bar

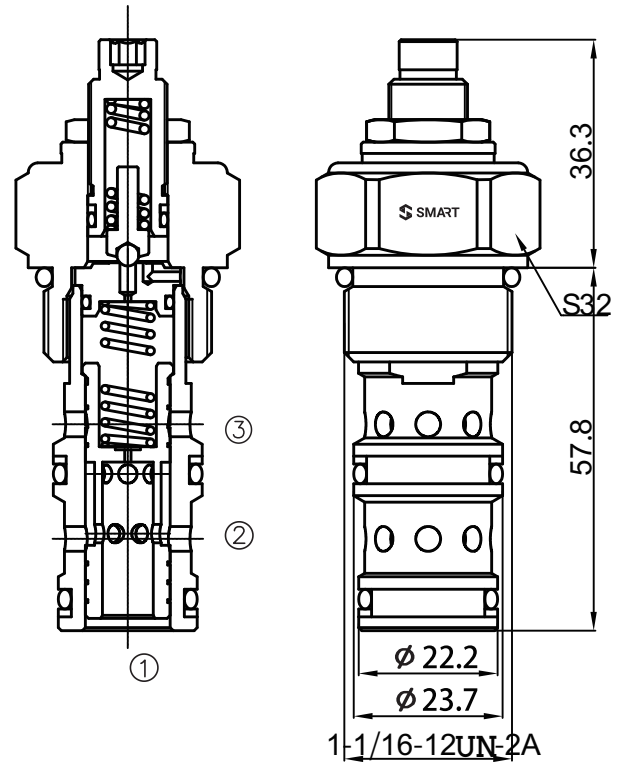
# ZPRH121S

## SYMBOL



## SPECIFICATIONS

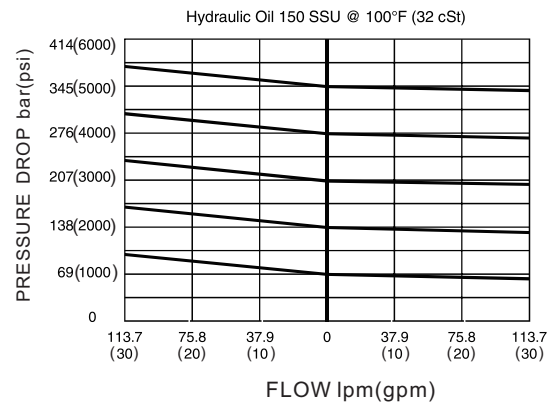
MAX. Operating Pressure:	350bar
Flow:	113.7L/min
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	Parker C12-3 See page G-27
Installation Torque:	76Nm



## OPERATION

In its steady state, the valve allows flow to pass bi-directionally from ② to ①, with the spring chamber constantly drained at ③. On attainment of a pre-determined pressure at ①, the cartridge shifts to restrict input flow at ②, thereby regulating pressure at ①. In this mode, the valve will also relieve ① to ③. Dead band (from reducing to relieving) pressure rise over reduced pressure setting.

## PRESSURE DROP VS. FLOW



## TO ORDER

ZPRH121 S - \* \*

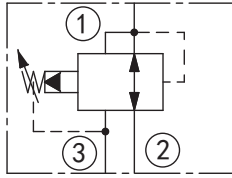
Adjustment  
S = Screw Adjust

Spring Range	
10=6.9-69bar	Preset 34.5bar
20=13.8-138bar	Preset 69bar
30=20.7-207bar	Preset 103.5bar
50=34.5-345bar	Preset 172.4bar

# Pilot-operated Pressure Reducing/Relieving Valves

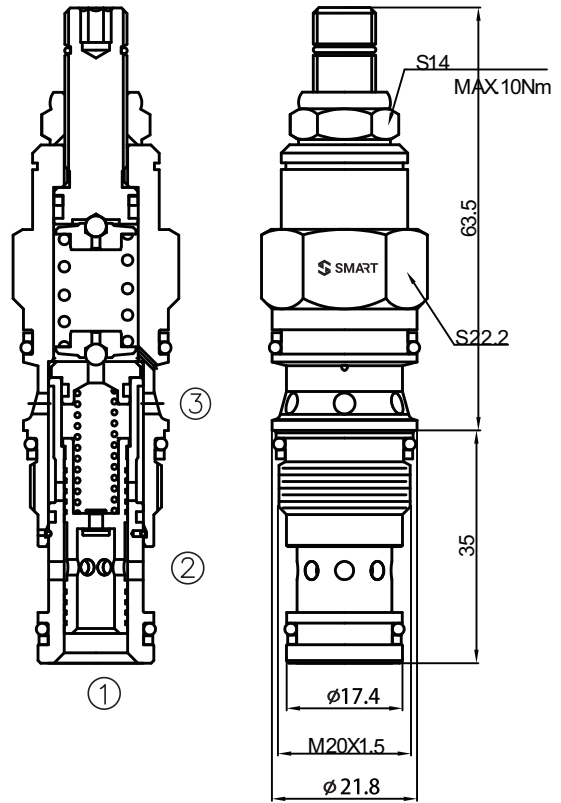
## ZPPDB

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	350bar
Flow:	40L/min
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	41-47Nm

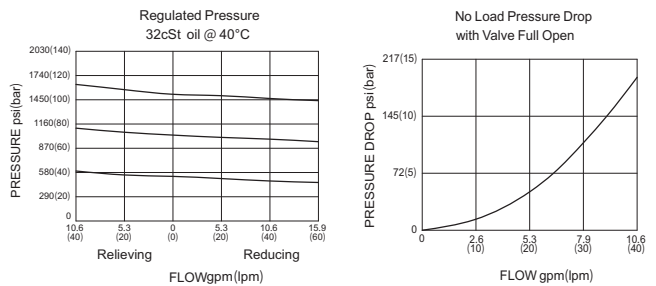


### OPERATION

Pilot-operated, pressure reducing/relieving valves reduce a high primary pressure at the inlet (port ②) to a constant reduced pressure at port ①, with a full-flow relief function from port ① to tank (port ③). Pressure at port ③ is directly additive to the valve setting at a 1:1 ratio and should not exceed 350 bar.

Recommended maximum inlet pressure is determined by the adjustment range. Ranges D, E, N, and Q are tested with a 2000 psi (140 bar) maximum differential between inlet and reduced pressure. Ranges A, B, and H are tested with a 3000 psi (210 bar) maximum differential between inlet and reduced pressure. Ranges C, and W are tested with a 5000 psi (350 bar) of inlet pressure.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZPPDB - \* - \* - \*

CONTROL  
L=Standard screw Adjustment

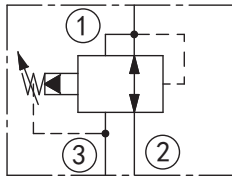
Seal Kits  
N= Buna N  
V= Viton

#### Spring Range

A=7-210bar	Preset 14bar	E=1.7-28bar	Preset 14bar
B=3.5-105bar	Preset 14bar	H=2-210bar	Preset 14bar
C=10.5-420bar	Preset 14bar	J=1.7-105bar	Preset 14bar
D=1.7-55bar	Preset 14bar	K=5-105bar	Preset 14bar
N=4-55bar	Preset 14bar	O=1-28bar	Preset 14bar
Q=4-28bar	Preset 14bar	P=2.8-28bar	Preset 14bar
W=10.5-315	Preset 14bar		

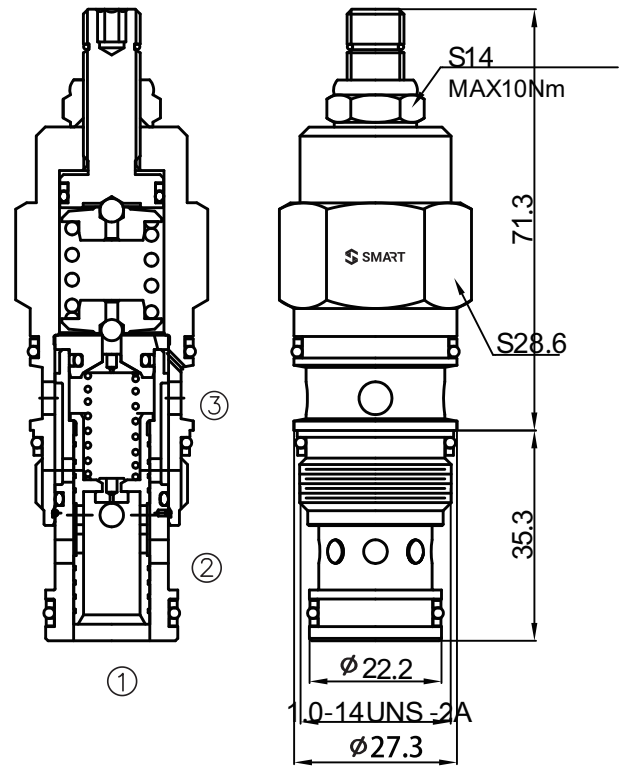
# ZPPFB

## SYMBOL



## SPECIFICATIONS

MAX. Operating Pressure:	350bar
Flow:	80L/min
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A See page G-4
Installation Torque:	60-70Nm

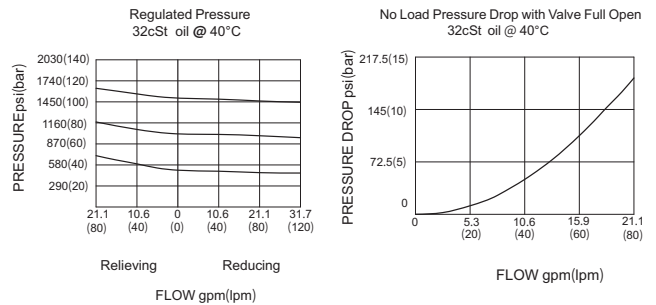


## OPERATION

Pilot-operated, pressure reducing/relieving valves reduce a high primary pressure at the inlet (port ②) to a constant reduced pressure at port ①, with a full-flow relief function from port ① to tank (port ③). Pressure at port ③ is directly additive to the valve setting at a 1:1 ratio and should not exceed 210 bar.

Recommended maximum inlet pressure is determined by the adjustment range. Ranges D, E, N, and Q are tested with a 2000 psi (140 bar) maximum differential between inlet and reduced pressure. Ranges A, B, and H are tested with a 3000 psi (210 bar) maximum differential between inlet and reduced pressure. Ranges C, and W are tested with a 5000 psi (350 bar) of inlet pressure.

## PRESSURE DROP VS. FLOW



## TO ORDER

ZPPFB - \* - \* - \*

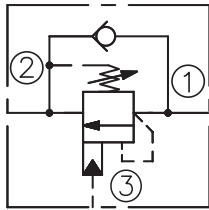
CONTROL  
L=Standard screw Adjustment

Seal Kits  
N= Buna N  
V= Viton

Spring Range	A=7-210bar	Preset 14bar	E=1.7-28bar	Preset 14bar
	B=3.5-105bar	Preset 14bar	H=2-210bar	Preset 14bar
	D=1.7-55bar	Preset 14bar	J=1.7-105bar	Preset 14bar
	N=4-55bar	Preset 14bar	K=5-105bar	Preset 14bar
	Q=4-28bar	Preset 14bar	S=1.7-14bar	Preset 7bar
	W=10.5-315	Preset 14bar		

# ZCBAH

## SYMBOL



## SPECIFICATIONS

MAX.Setting:	350bar
MAX.Recommended Load Pressure at MAX.Setting:	270bar
Flow:	10L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	10:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	45-50Nm

## OPERATION

Counterbalance valves with pilot assist are meant to control an overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at a rate determined by the pilot ratio.

## FEATURES

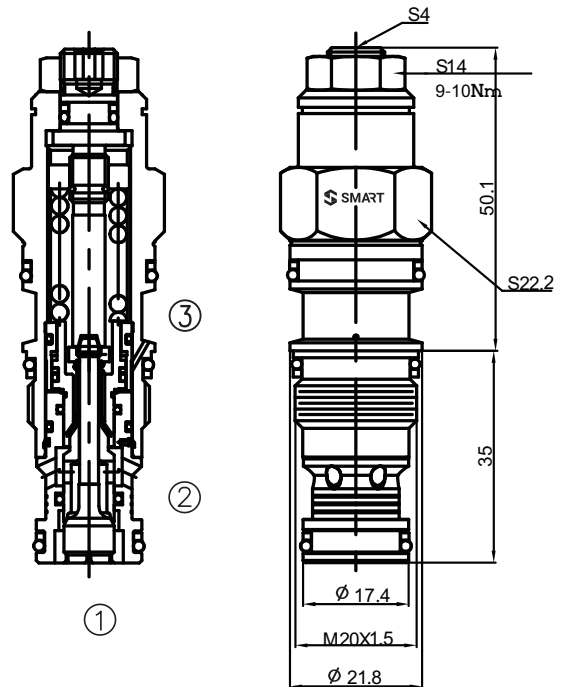
Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

Restrictive valves have no relief capacity other than as a thermal relief .

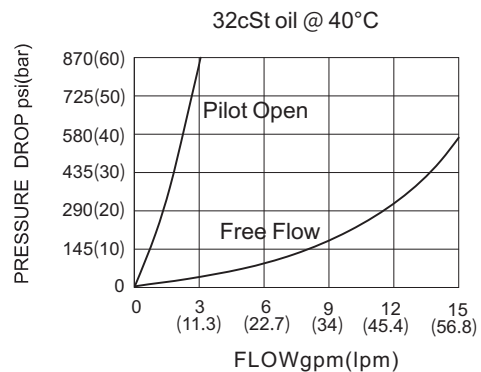
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set.Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min(2 in3/min).



## PRESSURE DROP VS.FLOW



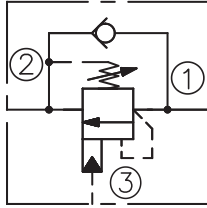
## TO ORDER

ZCBAH - \* \* \*

- Seal Kits
  - N= Buna N
  - V= Viton
- Spring Range
  - J=140-350bar Preset 210bar Check:1.7bar
  - K=70-175bar Preset 140bar Check:1.7bar
  - C=140-350bar Preset 210bar Check:0.3bar
  - D=70-175bar Preset 140bar Check:0.3bar
- CONTROL
  - L = Standard Screw Adjustment

# ZCBBA

## SYMBOL



## SPECIFICATIONS

MAX.Setting:	280bar
MAX.Recommended Load Pressure at MAX.Setting:	215bar
Flow:	15L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	3:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	45-50Nm

## OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

## FEATURES

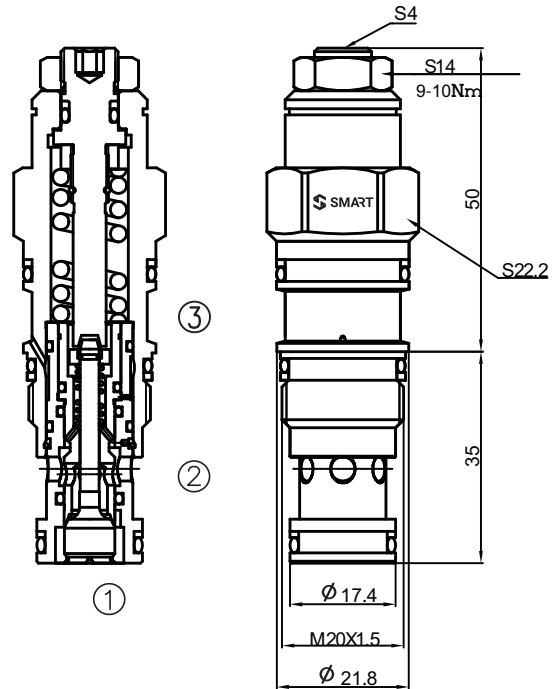
Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

Full clockwise setting is less than 14 bar.

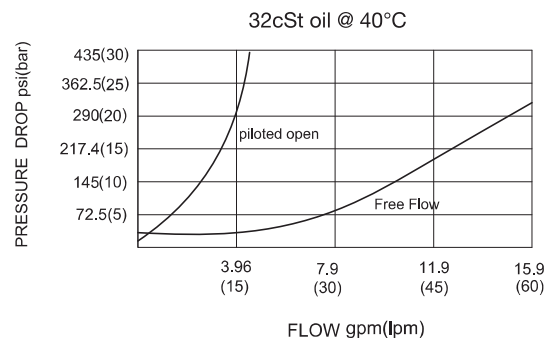
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min(2 in<sup>3</sup>/min).



## PRESSURE DROP VS.FLOW



## TO ORDER

ZCBBA - \* \* \*

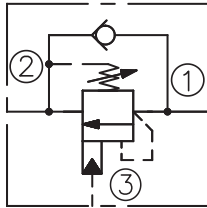
CONTROL  
 L = Standard Screw Adjustment

Seal Kits  
 N= Buna N  
 V= Viton

Spring Range  
 H=70-280bar Preset 210bar Check:1.7bar  
 I=28-105bar Preset 70bar Check:1.7bar  
 A=70-280bar Preset 210bar Check:0.3bar  
 B=28-105bar Preset 70bar Check:0.3bar

# ZCBBG

## SYMBOL



## SPECIFICATIONS

MAX.Setting:	350bar
MAX.Recommended Load Pressure at MAX.Setting:	270bar
Flow:	15L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	4.5:1
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	45-50Nm

## OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

## FEATURES

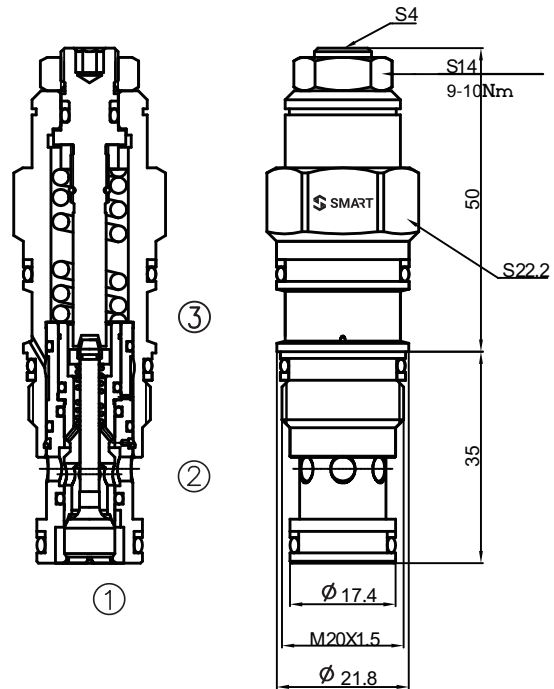
Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

Full clockwise setting is less than 14 bar.

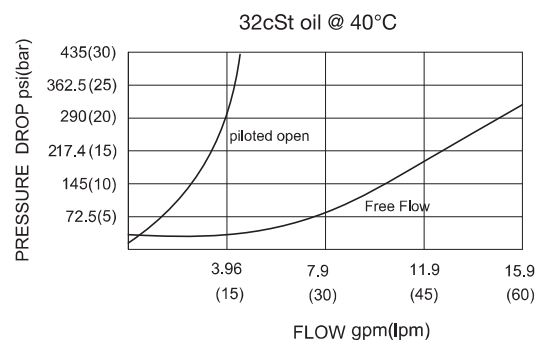
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min(2 in<sup>3</sup>/min).



## PRESSURE DROP VS.FLOW



## TO ORDER

ZCBBG - \* \* \*

CONTROL  
L=Standard Screw Adjustment

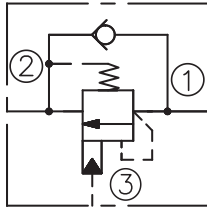
Seal Kits  
N= Buna N  
V= Viton

Spring Range  
J=140-350bar Preset 210bar Check:1.7bar  
K=70-175bar Preset 140bar Check:1.7bar  
C=140-350bar Preset 210bar Check:0.3bar  
D=70-175bar Preset 140bar Check:0.3bar

D

# ZCBBGX

## SYMBOL



## SPECIFICATIONS

MAX. Recommended Load Pressure :	M Series系列(250bar); V Series(170bar); XSeries(190bar); ZSeries(220bar);
Flow:	20L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	4.5:1
Check Cracking Pressure:	1.7bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	45-50Nm

## OPERATION

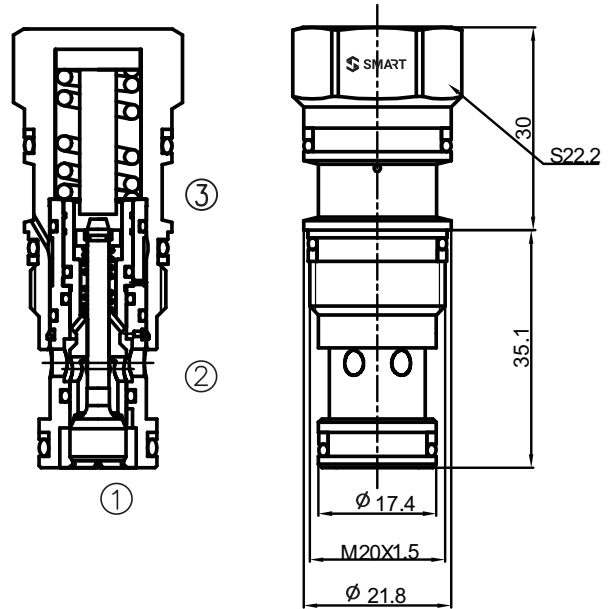
Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

## FEATURES

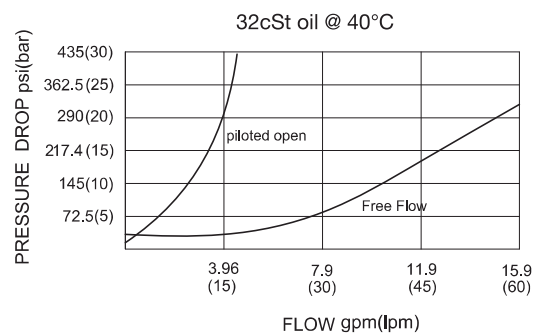
Restrictive valves have no relief capacity other than as a thermal relief.

In the case of the fixed-setting version, the setting tolerance can only be maintained within a several hundred psi span, depending on the range. The maximum recommended load pressure for any given range is the minimum possible setting divided by 1.3.

Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.



## PRESSURE DROP VS. FLOW



## TO ORDER

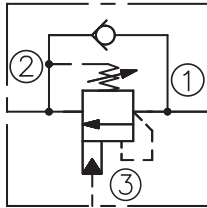
ZCBBGX - \* \*

Seal Kits  
N= Buna N  
V= Viton

Fixed Pressure Range  
V=220-260bar(3200-3800psi)  
M=325-390bar(4700-5600psi)  
X=245-290bar(3500-4200psi)  
Z=285-340bar(4125-4900psi)

# ZCBBB

## SYMBOL



## SPECIFICATIONS

MAX.Setting:	280bar
MAX.Recommended Load Pressure at MAX.Setting:	215bar
Flow:	40L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	1.5:1
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	45-50Nm

## OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

## FEATURES

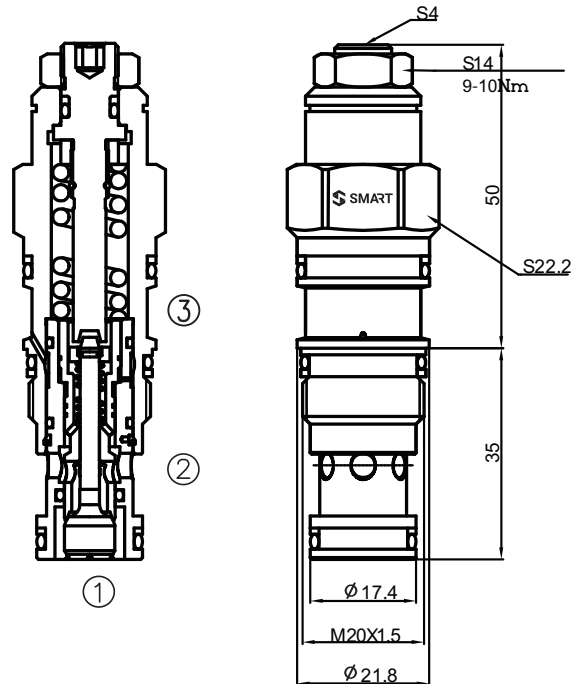
Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

Full clockwise setting is less than 14 bar.

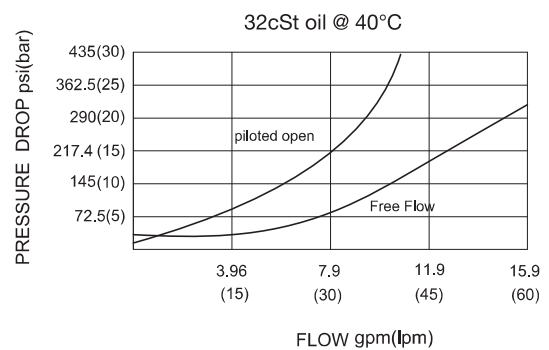
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min(2 in<sup>3</sup>/min).



## PRESSURE DROP VS.FLOW



## TO ORDER

ZCBBB - \* \* \*

CONTROL  
L=Standard Screw Adjustment

Seal Kits  
N= Buna N  
V= Viton

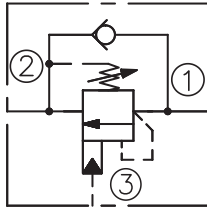
Spring Range  
H=70-280bar Preset 210bar Check:1.7bar  
I=28-105bar Preset 70bar Check:1.7bar  
A=70-280bar Preset 210bar Check:0.3bar  
B=28-105bar Preset 70bar Check:0.3bar

D

## Counterbalance Valves

### ZCBBC

#### SYMBOL



#### SPECIFICATIONS

MAX. Setting:	280bar
MAX. Recommended Load Pressure at MAX. Setting:	215bar
Flow:	40L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	3:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See pageZ-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	45-50Nm

#### OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

#### FEATURES

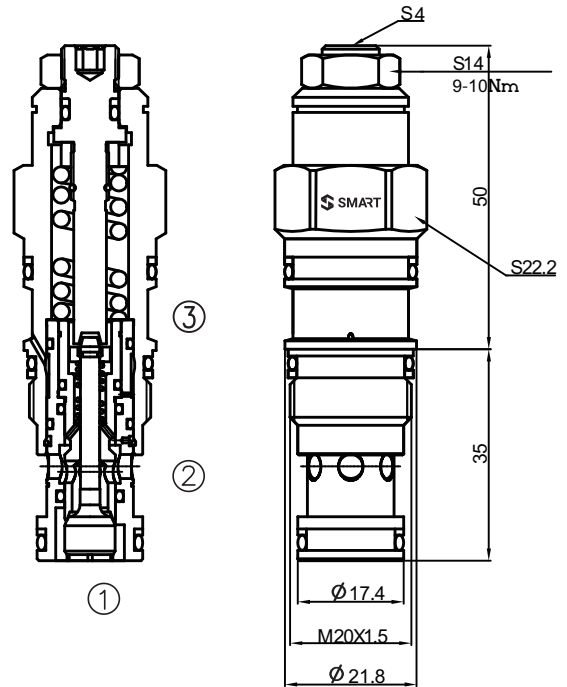
Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

Full clockwise setting is less than 14 bar.

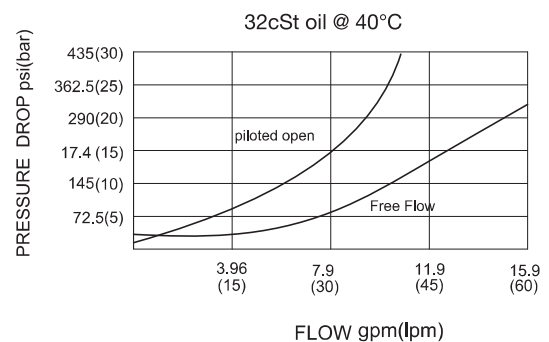
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min(2 in<sup>3</sup>/min).



#### PRESSURE DROP VS. FLOW



#### TO ORDER

ZCBBC - \* \* \*

CONTROL  
L = Standard Screw Adjustment

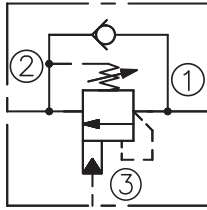
Seal Kits  
N = Buna N  
V = Viton

Spring Range  
H=70-280bar Preset 210bar Check: 1.7bar  
I=28-105bar Preset 70bar Check: 1.7bar  
A=70-280bar Preset 210bar Check: 0.3bar  
B=28-105bar Preset 70bar Check: 0.3bar

# Counterbalance Valves

## ZCBBBD

### SYMBOL



### SPECIFICATIONS

MAX. Setting:	350bar
MAX. Recommended Load Pressure at MAX. Setting:	270bar
Flow:	40L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	4.5:1
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	45-50Nm

### OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

### FEATURES

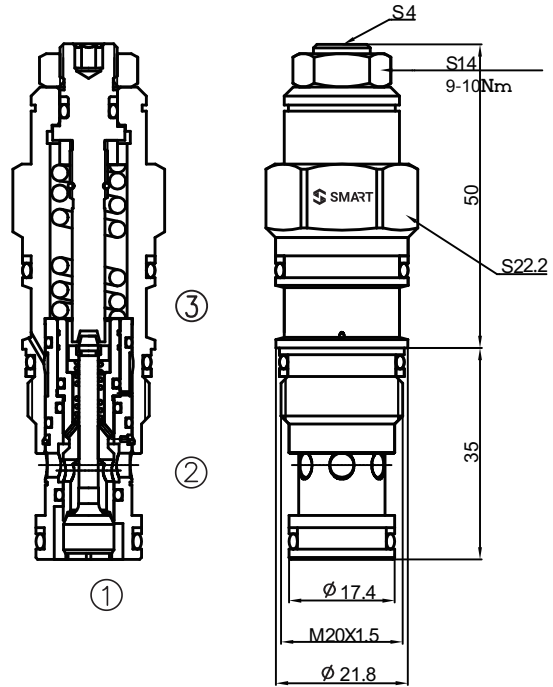
Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

Full clockwise setting is less than 14 bar.

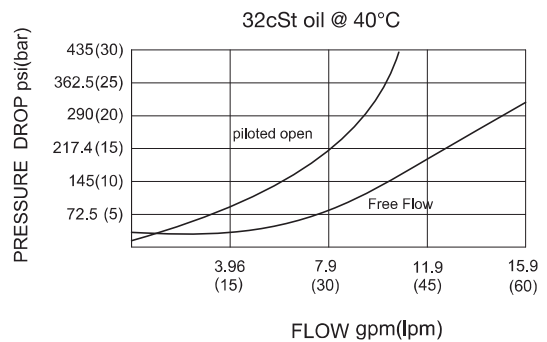
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min(2 in<sup>3</sup>/min).



### PRESSURE DROP VS. FLOW



### TO ORDER

ZCBBBD - \* \* \*

CONTROL  
L=Standard Screw Adjustment

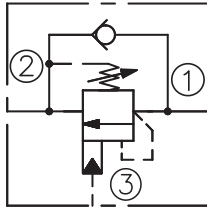
Seal Kits  
N= Buna N  
V= Viton

Spring Range  
C=140-350bar Preset 210bar Check;0.3bar  
D=70-175bar Preset 140bar Check;0.3bar  
J=140-350bar Preset 210bar Check;1.7bar  
K=70-175bar Preset 140bar Check;1.7bar

# Counterbalance Valves

## ZCBCA

### SYMBOL



### SPECIFICATIONS

MAX. Setting:	280bar
MAX. Recommended Load Pressure at MAX. Setting:	215bar
Flow:	60L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	3:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	45-50Nm

### OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

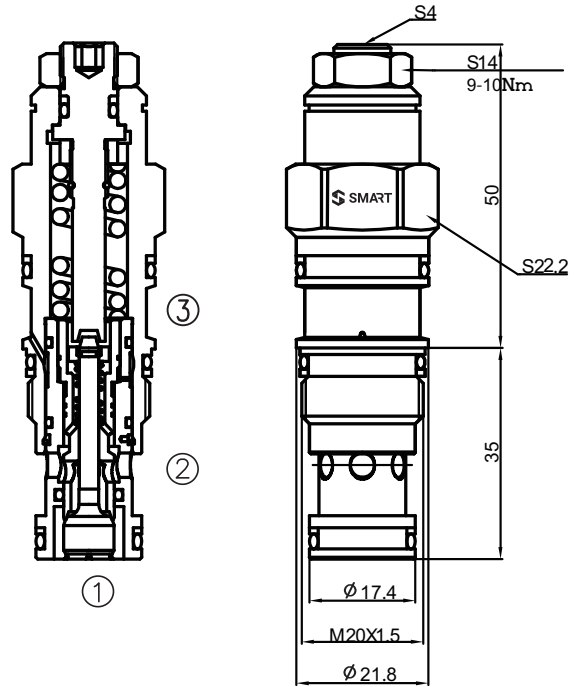
### FEATURES

Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

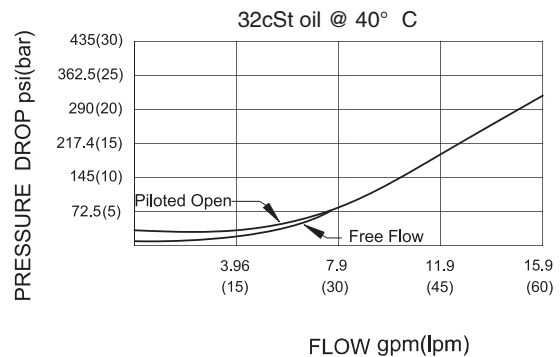
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min (2 in<sup>3</sup>/min).



### PRESSURE DROP VS. FLOW



### TO ORDER

ZCBCA - \* \* \*

CONTROL  
L=Standard Screw Adjustment

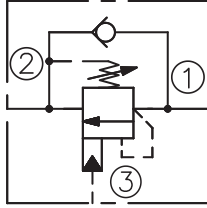
Seal Kits  
N= Buna N  
V= Viton

Spring Range  
H=70-280bar Preset 210bar Check:1.7bar  
I=28-105bar Preset 70bar Check:1.7bar  
A=70-280bar Preset 210bar Check:0.3bar  
B=28-105bar Preset 70bar Check:0.3bar

# Counterbalance Valves

## ZCBCG

### SYMBOL



### SPECIFICATIONS

MAX. Setting:	350bar
MAX. Recommended Load Pressure at MAX. Setting:	270bar
Flow:	60L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	4.5:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	45-50Nm

### OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

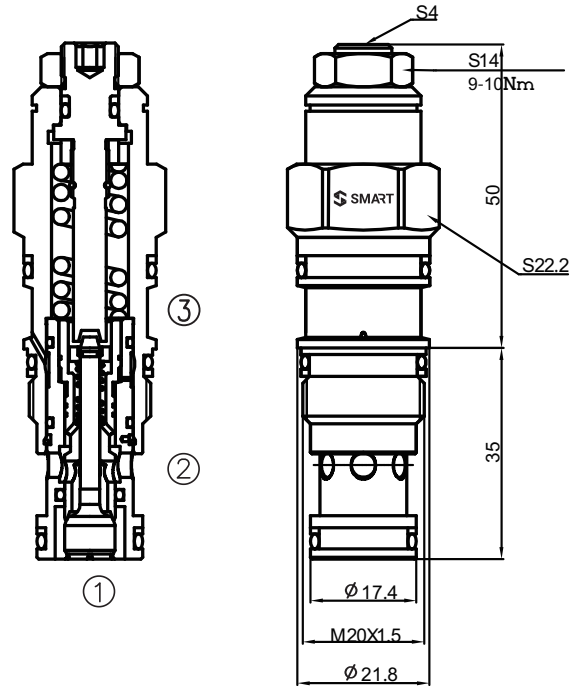
### FEATURES

Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

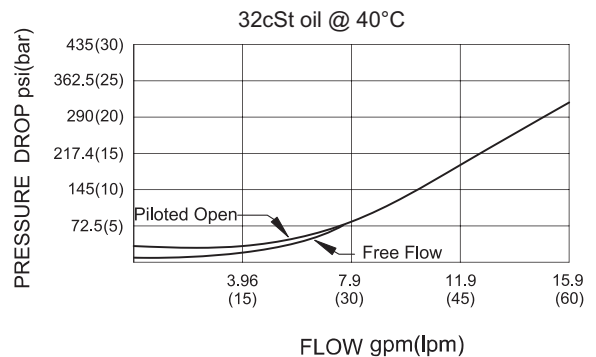
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min (2 in<sup>3</sup>/min).



### PRESSURE DROP VS. FLOW



### TO ORDER

ZCBCG - \* \* \*

CONTROL  
L=Standard Screw Adjustment

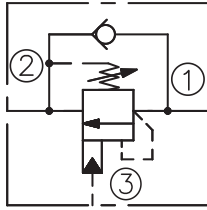
Seal Kits  
N= Buna N  
V= Viton

Spring Range  
J=140-350bar Preset 210bar Check:1.7bar  
K=70-175bar Preset 140bar Check:1.7bar  
C=140-350bar Preset 210bar Check:0.3bar  
D=70-175bar Preset 140bar Check:0.3bar

# Counterbalance Valves

## ZCBCH

### SYMBOL



### SPECIFICATIONS

MAX. Setting:	350bar
MAX. Recommended Load Pressure at MAX. Setting:	270bar
Flow:	60L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	10:1
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-11A See page G-4
Installation Torque:	45-50Nm

### OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

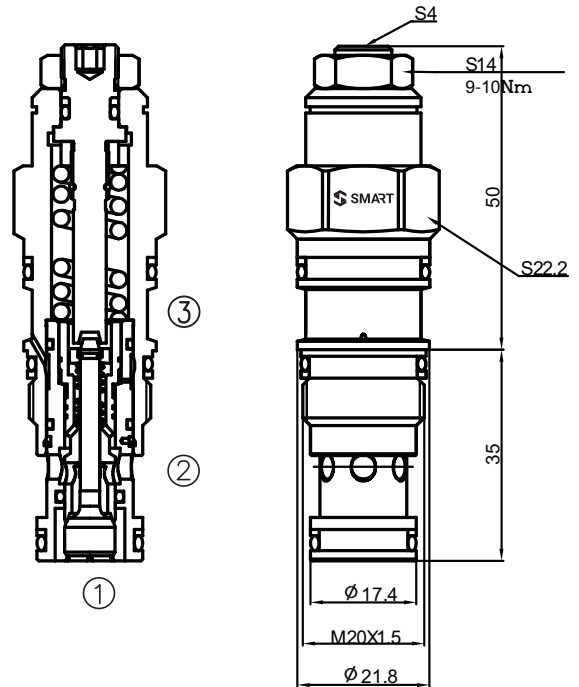
### FEATURES

Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

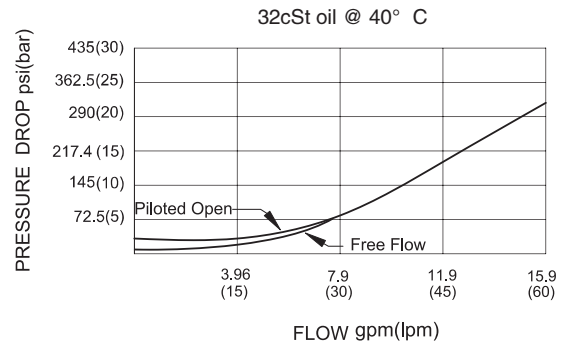
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min (2 in<sup>3</sup>/min).



### PRESSURE DROP VS. FLOW



### TO ORDER

ZCBCH - \* \* \*

CONTROL  
L=Standard Screw Adjustment

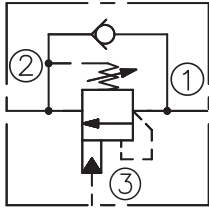
Seal Kits  
N= Buna N  
V= Viton

Spring Range  
C=140-350bar Preset 210bar Check;0.3bar  
D=70-175bar Preset 140bar Check;0.3bar  
J=140-350bar Preset 210bar Check;1.7bar  
K=70-175bar Preset 140bar Check;1.7bar

# Counterbalance Valves

## Z1CE30F

### SYMBOL



### SPECIFICATIONS

MAX. Setting:	350bar
MAX. Recommended Load Pressure at MAX. Setting:	270bar
Flow:	30L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	5:1
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	DANFOSS-A6610 See page G-15
Installation Torque:	45Nm

### OPERATION

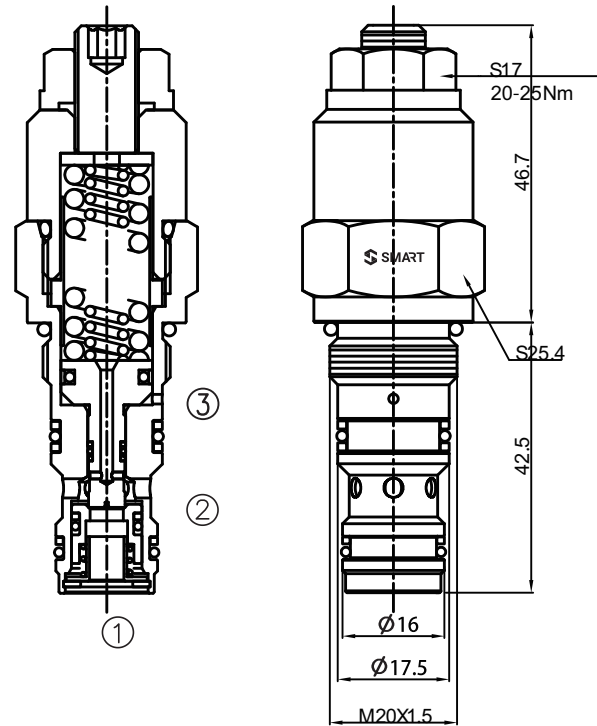
Counterbalance valves with pilot assist are meant to control an overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at a rate determined by the pilot ratio.

### FEATURES

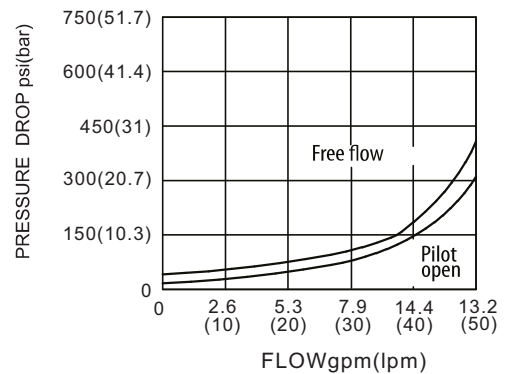
Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.



### PRESSURE DROP VS. FLOW



### TO ORDER

Z1CE30F - \* \* 5

Spring Range  
20=70-120bar Preset 100bar  
35=70-175bar Preset 140bar

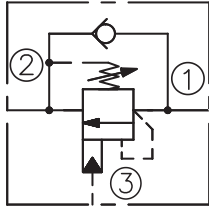
Pilot Ratio  
5=5:1

Seal Kits  
S= Buna N  
SV= Viton

## Counterbalance Valves

### ZCBDD

#### SYMBOL



#### SPECIFICATIONS

MAX. Setting:	350bar
MAX. Recommended Load Pressure at MAX. Setting:	270bar
Flow:	76L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	4.5:1
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A See page G-4
Installation Torque:	60-70Nm

#### OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

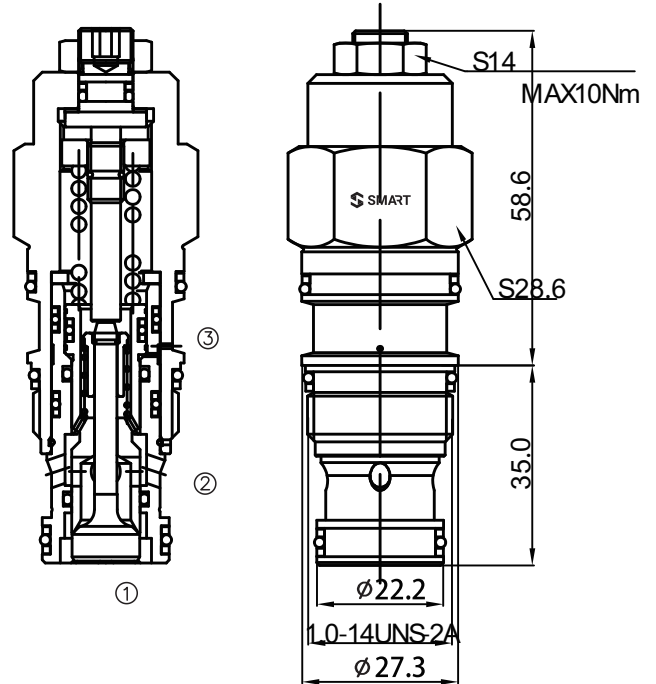
#### FEATURES

Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

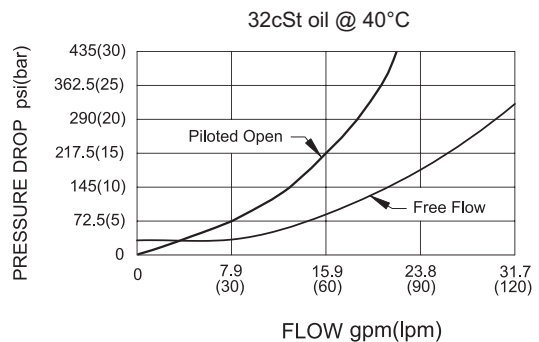
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min (2 in<sup>3</sup>/min).



#### PRESSURE DROP VS. FLOW



#### TO ORDER

ZCBDD - \* \* \*

CONTROL  
L=Standard Screw Adjustment

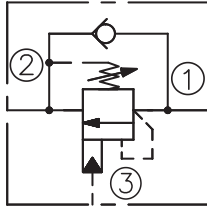
Seal Kits  
N= Buna N  
V= Viton

Spring Range  
J=140-350bar Preset 210bar Check:1.7bar  
K=70-175bar Preset 140bar Check:1.7bar  
C=140-350bar Preset 210bar Check:0.3bar  
D=70-175bar Preset 140bar Check:0.3bar

# Counterbalance Valves

## ZCBEA

### SYMBOL



### SPECIFICATIONS

MAX. Setting:	280bar
MAX. Recommended Load Pressure at MAX. Setting:	215bar
Flow:	120L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	3:1
Temperature:	-30°C~+100°C ( Standard buna seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A See page G-4
Installation Torque:	60-70Nm

### OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

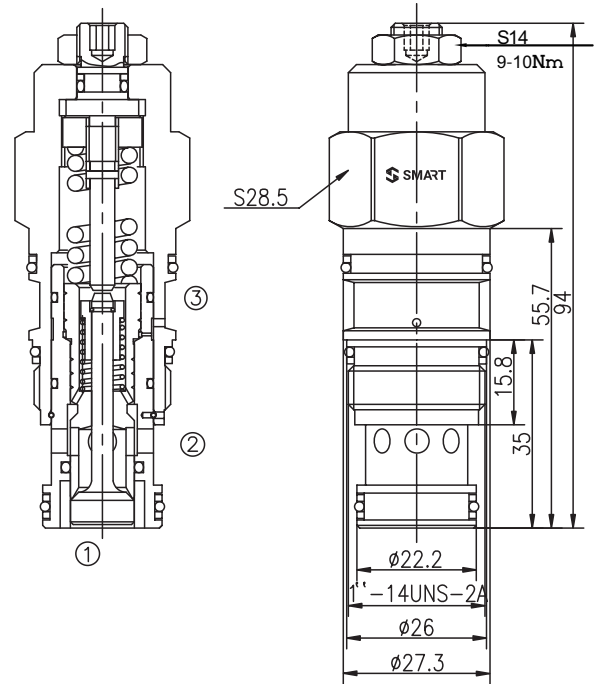
### FEATURES

Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

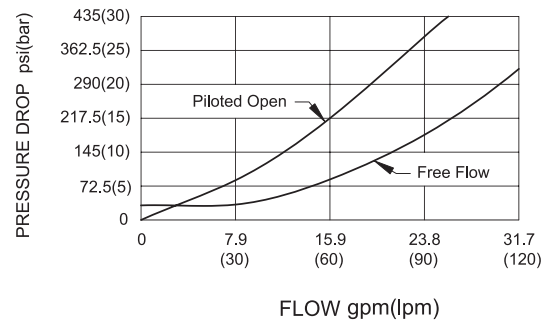
Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min (2 in<sup>3</sup>/min).



### PRESSURE DROP VS. FLOW

32cSt oil @ 40°C



### TO ORDER

ZCBEA - \* \* \*

CONTROL  
L=Standard Screw Adjustment

Seal Kits  
N= Buna N  
V= Viton

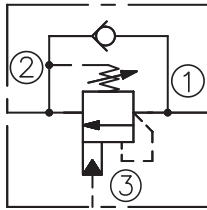
Spring Range  
H=70-280bar Preset 210bar Check:1.7bar  
I=28-105bar Preset 70bar Check:1.7bar  
A=70-280bar Preset 210bar Check:0.3bar  
B=28-105bar Preset 70bar Check:0.3bar

D

## Counterbalance Valves

### ZCBEG

#### SYMBOL



#### SPECIFICATIONS

MAX. Setting:	350bar
MAX. Recommended Load Pressure at MAX. Setting:	270bar
Flow:	120L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	4.5:1
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A See page G-4
Installation Torque:	60-70Nm

#### OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

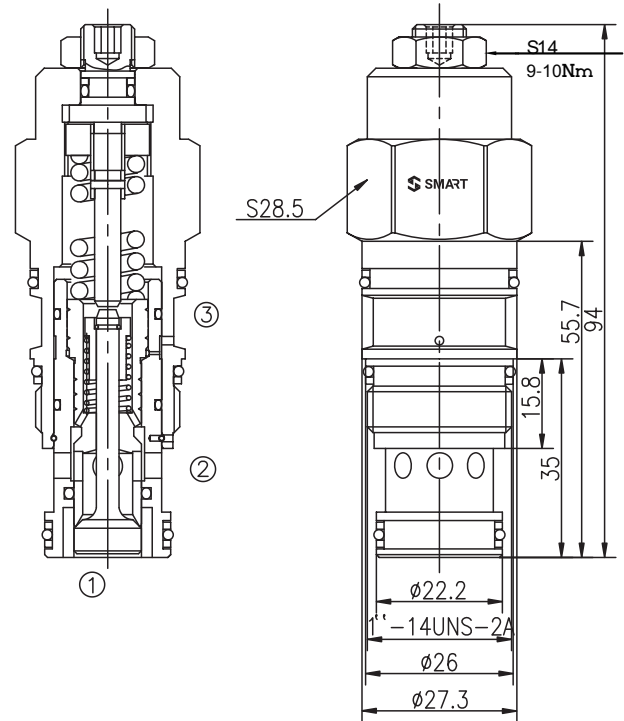
#### FEATURES

Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

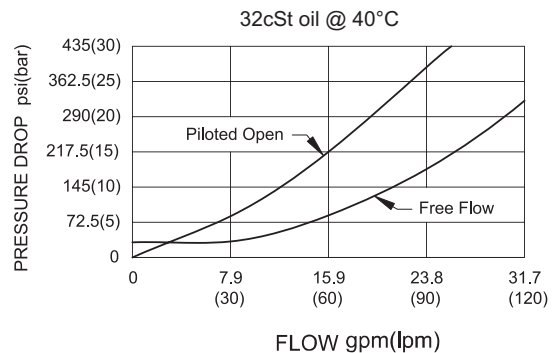
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min (2 in<sup>3</sup>/min).



#### PRESSURE DROP VS. FLOW



#### TO ORDER

ZCBEG - \* \* \*

CONTROL  
L = Standard Screw Adjustment

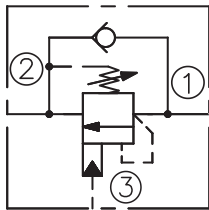
Seal Kits  
N = Buna N  
V = Viton

Spring Range  
J=140-350bar Preset 210bar Check:1.7bar  
K=70-175bar Preset 140bar Check:1.7bar  
C=140-350bar Preset 210bar Check:0.3bar  
D=70-175bar Preset 140bar Check:0.3bar

# Counterbalance Valves

## ZCBEH

### SYMBOL



### SPECIFICATIONS

MAX. Setting:	350bar
MAX. Recommended Load Pressure at MAX. Setting:	270bar
Flow:	120L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	10:1
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A See page G-4
Installation Torque:	60-70Nm

### OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

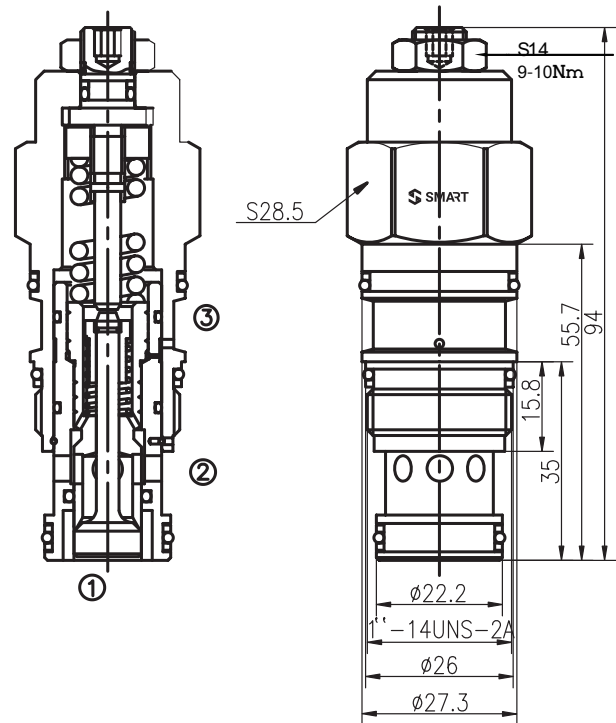
### FEATURES

Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

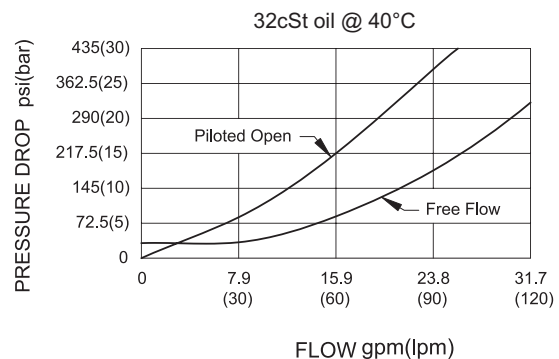
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min (2 in<sup>3</sup>/min).



### PRESSURE DROP VS. FLOW



### TO ORDER

ZCBEH - \* \* \*

CONTROL  
L = Standard Screw Adjustment

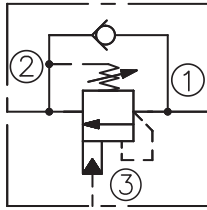
Seal Kits  
N = Buna N  
V = Viton

Spring Range  
J=140-350bar Preset 210bar Check:1.7bar  
K=70-175bar Preset 140bar Check:1.7bar  
C=140-350bar Preset 210bar Check:0.3bar  
D=70-175bar Preset 140bar Check:0.3bar

# Counterbalance Valves

## ZCBGA

### SYMBOL



### SPECIFICATIONS

MAX. Setting:	280bar
MAX. Recommended Load Pressure at MAX. Setting:	215bar
Flow:	240L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	3:1
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-17A See page G-5
Installation Torque:	200-215Nm

### OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

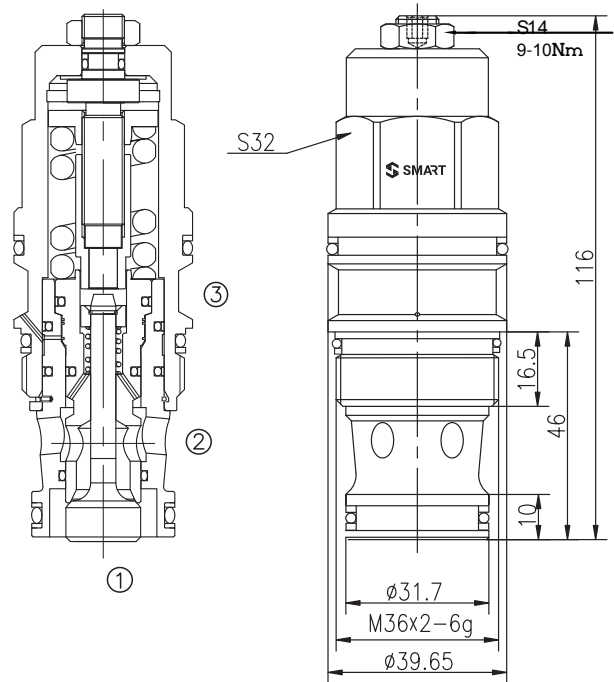
### FEATURES

Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

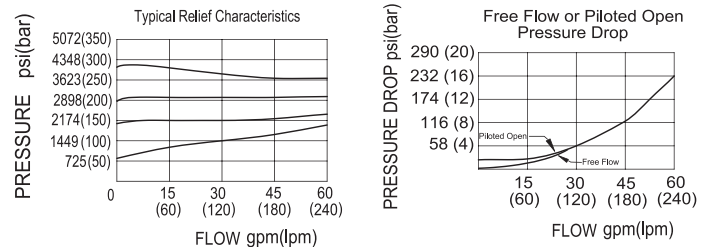
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min (2 in<sup>3</sup>/min).



### PRESSURE DROP VS. FLOW



### TO ORDER

ZCBGA - \* \* \*

CONTROL  
L = Standard Screw Adjustment

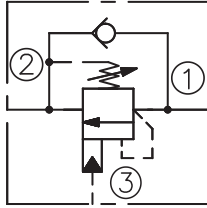
Seal Kits  
N = Buna N  
V = Viton

Spring Range  
H=70-280bar Preset 210bar Check:1.7bar  
I=28-105bar Preset 70bar Check:1.7bar  
A=70-280bar Preset 210bar Check:0.3bar  
B=28-105bar Preset 70bar Check:0.3bar

# Counterbalance Valves

## ZCBGG

### SYMBOL



### SPECIFICATIONS

MAX. Setting:	350bar
MAX. Recommended Load Pressure at MAX. Setting:	270bar
Flow:	240L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	4.5:1
Temperature:	-30°C~+100°C
	( Standard buna seals )
Filtration:	See page Z-1
Cavity:	SUN T-17A See page G-5
Installation Torque:	200-215Nm

### OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

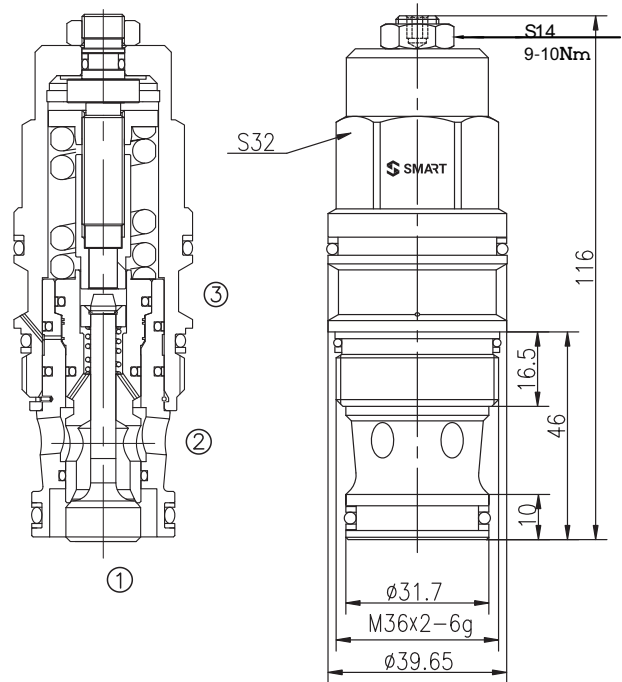
### FEATURES

Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

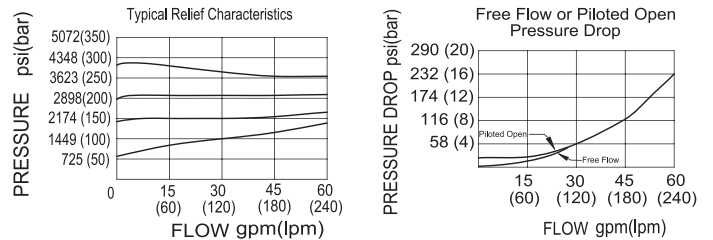
Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min (2 in<sup>3</sup>/min).



D

### PRESSURE DROP VS. FLOW



### TO ORDER

ZCBGG - \* \* \*

CONTROL  
L = Standard Screw Adjustment

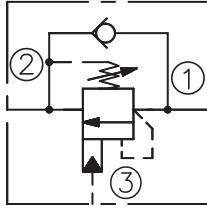
Seal Kits  
N = Buna N  
V = Viton

Spring Range  
J=140-350bar Preset 210bar Check:1.7bar  
K=70-175bar Preset 140bar Check:1.7bar  
C=140-350bar Preset 210bar Check:0.3bar  
D=70-175bar Preset 140bar Check:0.3bar

## Counterbalance Valves

### ZCBGH

#### SYMBOL



#### SPECIFICATIONS

MAX. Setting:	350bar
MAX. Recommended Load Pressure at MAX. Setting:	270bar
Flow:	240L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	10:1
Temperature:	-30°C~+100°C
	( Standard buna seals )
Filtration:	See page Z-1
Cavity:	SUN T-17A See page G-5
Installation Torque:	200-215Nm

#### OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

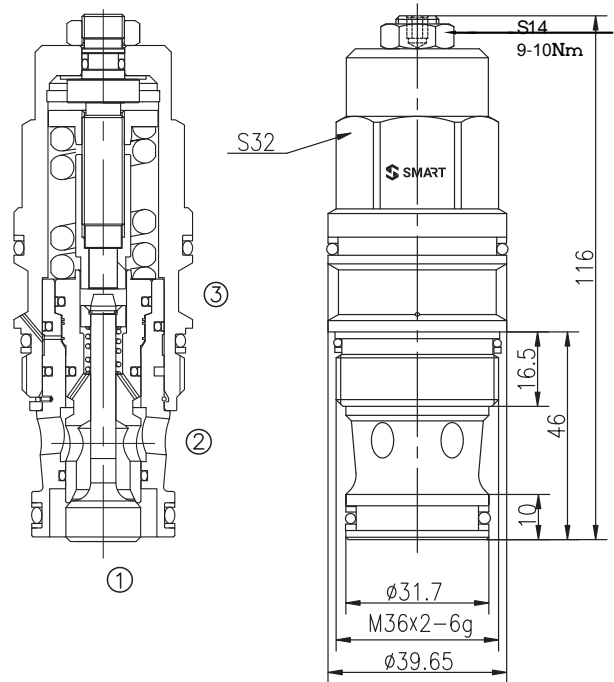
#### FEATURES

Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

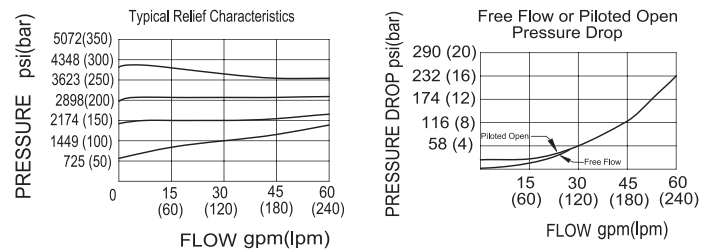
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min (2 in<sup>3</sup>/min).



#### PRESSURE DROP VS. FLOW



#### TO ORDER

ZCBGH - \* \* \*

CONTROL  
L = Standard Screw Adjustment

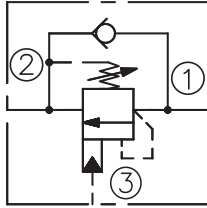
Seal Kits  
N = Buna N  
V = Viton

Spring Range  
J=140-350bar Preset 210bar Check:1.7bar  
K=70-175bar Preset 140bar Check:1.7bar  
C=140-350bar Preset 210bar Check:0.3bar  
D=70-175bar Preset 140bar Check:0.3bar

## Counterbalance Valves

### ZCBIG

#### SYMBOL



#### SPECIFICATIONS

MAX. Setting:	350bar
MAX. Recommended Load Pressure at MAX. Setting:	270bar
Flow:	480L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	4.5:1
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-19A See page G-6
Installation Torque:	465-500Nm

#### OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

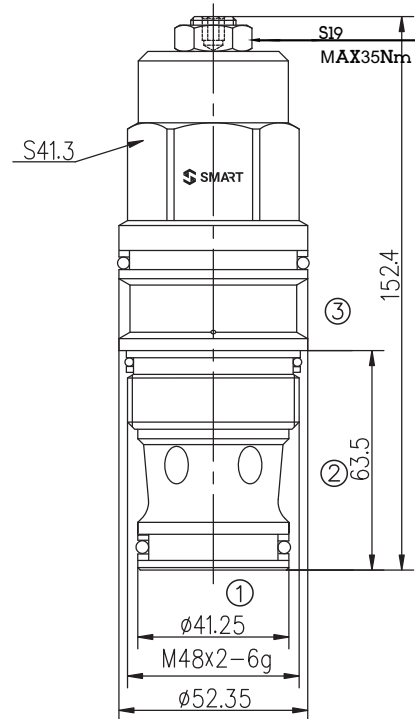
#### FEATURES

Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

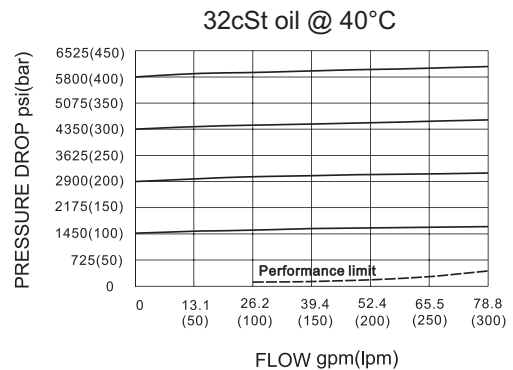
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min (2 in<sup>3</sup>/min).



#### PRESSURE DROP VS. FLOW



#### TO ORDER

ZCBIG - \* \* \*

CONTROL  
L = Standard Screw Adjustment

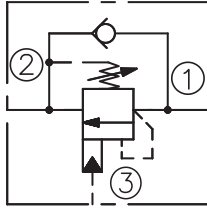
Seal Kits  
N = Buna N  
V = Viton

Spring Range  
J=140-350bar Preset 210bar Check:1.7bar  
K=70-175bar Preset 140bar Check:1.7bar  
C=140-350bar Preset 210bar Check:0.3bar  
D=70-175bar Preset 140bar Check:0.3bar

## Counterbalance Valves

### ZCBIH

#### SYMBOL



#### SPECIFICATIONS

MAX. Setting:	350bar
MAX. Recommended Load Pressure at MAX. Setting:	270bar
Flow:	480L/min
Internal Leakage:	5 drops/min
Pilot Ratio:	10:1
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-19A See page G-6
Installation Torque:	465-500Nm

#### OPERATION

Counterbalance valves with pilot assist are meant for control on overrunning load. The check valve allows free flow from port ② to port ① while a direct-acting, pilot-assisted relief valve controls flow from port ① to port ②. Pilot assist at port ③ lowers the effective setting of the relief valve at rate determined by the pilot ratio.

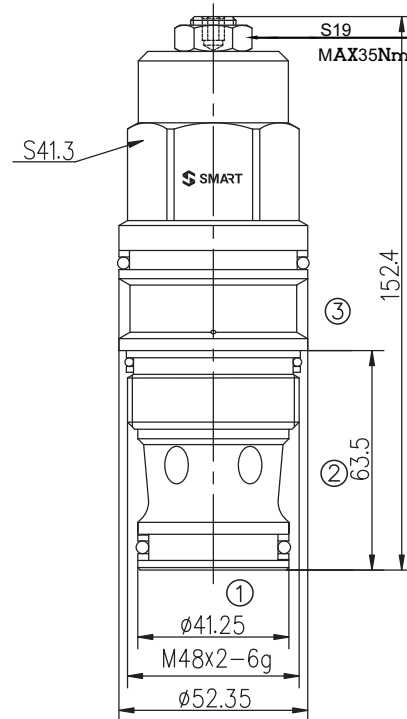
#### FEATURES

Counterbalance valves should be set at least 1.3 times the maximum load induced pressure.

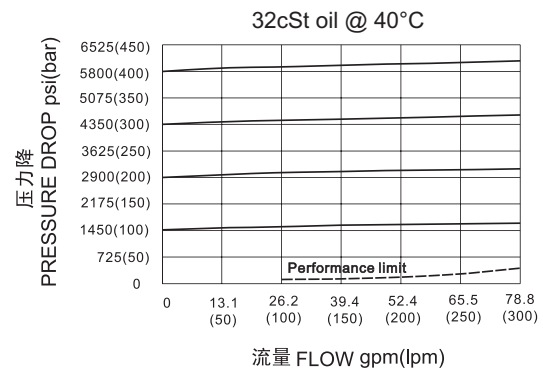
Backpressure at port ② adds to the effective relief setting at a ratio of 1 plus the pilot ratio times the backpressure.

Reseat exceeds 85% of set pressure when the valve is standard set. Setting lower than the standard set pressure may result in lower reseal percentages.

Factory pressure setting established at 30cc/min (2 in<sup>3</sup>/min).



#### PRESSURE DROP VS. FLOW



#### TO ORDER

ZCBIH - \* \* \*

CONTROL  
L = Standard Screw Adjustment

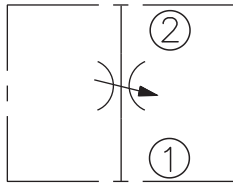
Seal Kits  
N = Buna N  
V = Viton

Spring Range  
J=140-350bar Preset 210bar Check:1.7bar  
K=70-175bar Preset 140bar Check:1.7bar  
C=140-350bar Preset 210bar Check:0.3bar  
D=70-175bar Preset 140bar Check:0.3bar

# Adjustable Restriction Valves

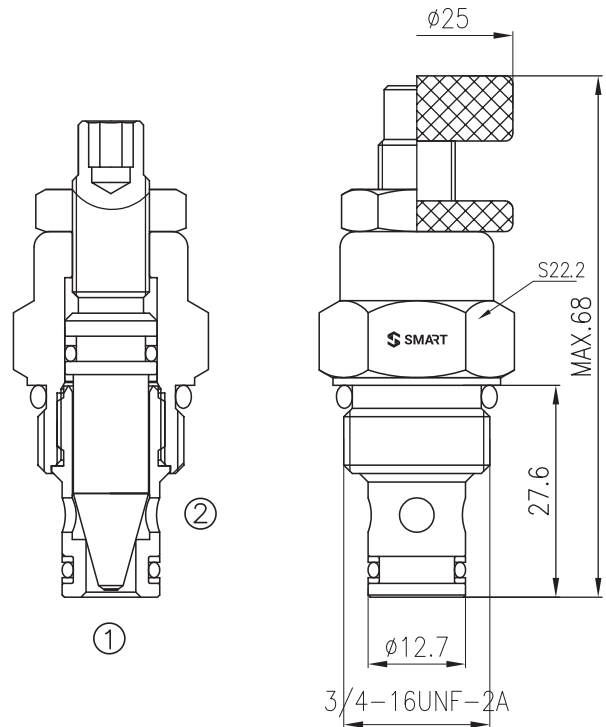
## ZNV08-20

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	≤0.3cc/min max. at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5-27.1Nm

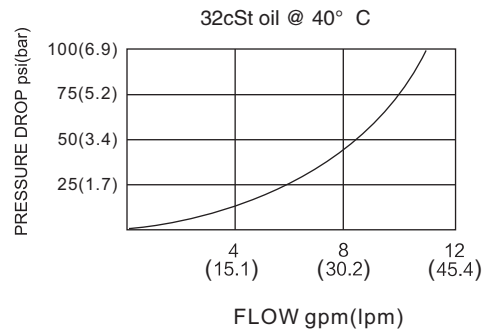


E

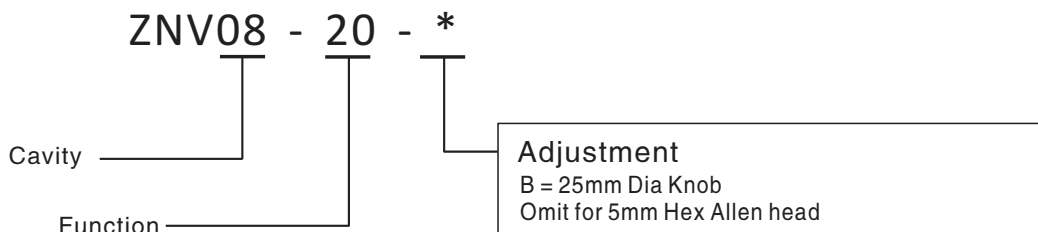
### OPERATION

The valve varies flow restriction by adjusting needle in or out and will shut off when fully closed. These valves will meter flow in either direction.

### PRESSURE DROP VS. FLOW



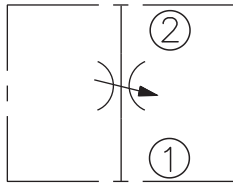
### TO ORDER



# Adjustable Restriction Valves

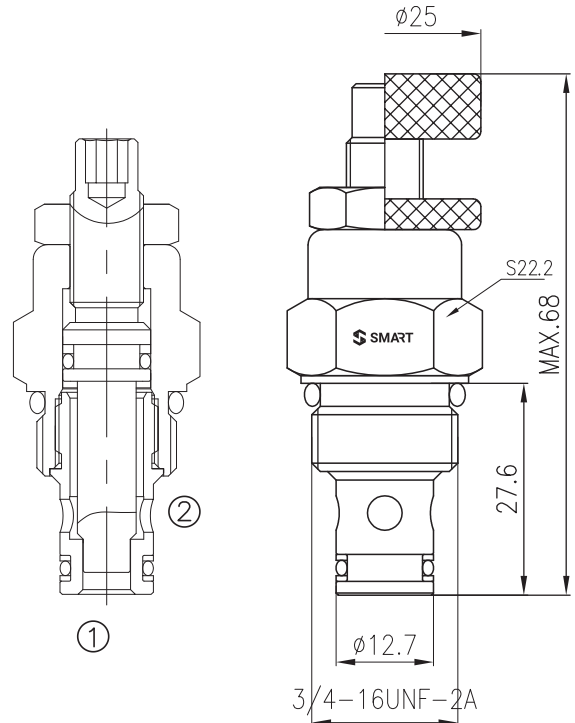
## ZNV-08W

### SYMBOL



### SPECIFICATIONS

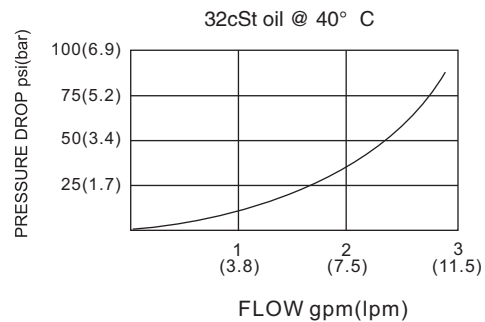
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	≤0.3cc/min max. at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



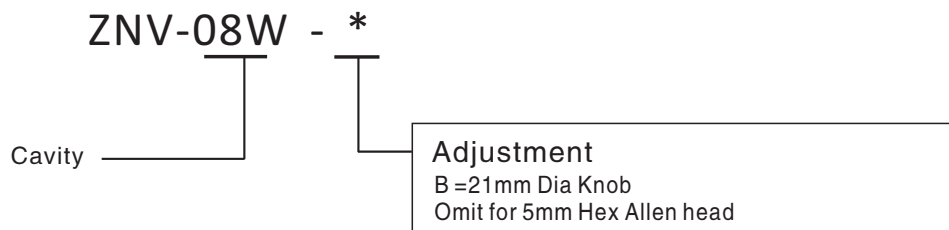
### OPERATION

The valve varies flow restriction by adjusting needle in or out and will shut off when fully closed. These valves will meter flow in either direction.

### PRESSURE DROP VS. FLOW



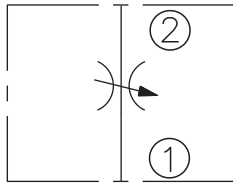
### TO ORDER



# Adjustable Restriction Valves

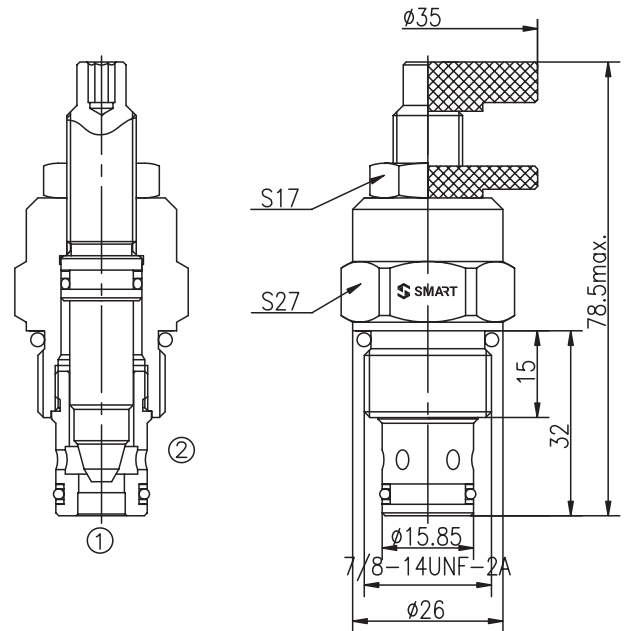
## ZNV10-20

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	≤0.3cc/min max. at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm

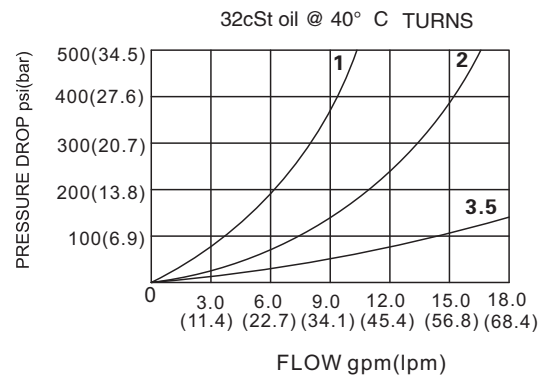


E

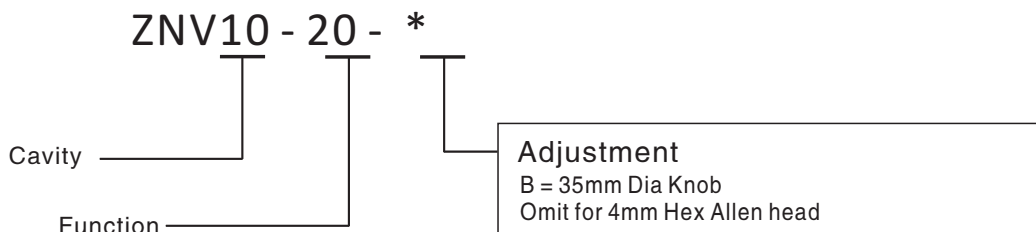
### OPERATION

The valve varies flow restriction by adjusting needle in or out and will shut off when fully closed. These valves will meter flow in either direction.

### PRESSURE DROP VS. FLOW



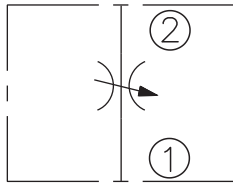
### TO ORDER



# Adjustable Restriction Valves

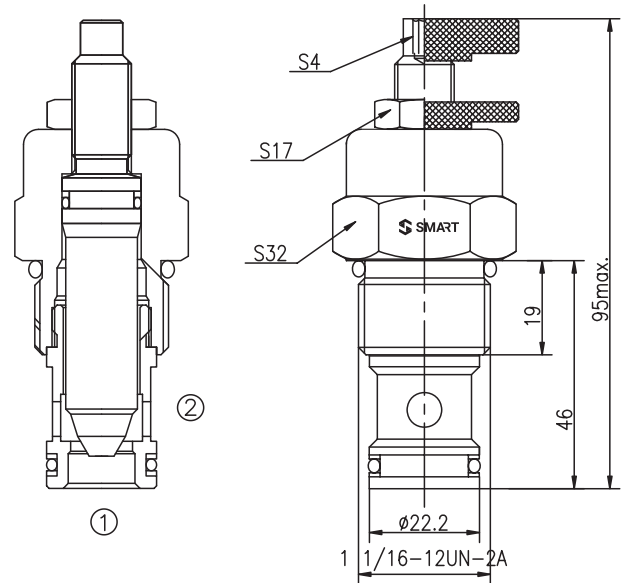
## ZNV12-20

### SYMBOL



### SPECIFICATIONS

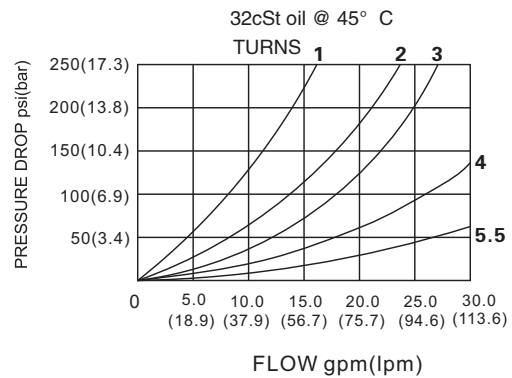
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	≤0.3cc/min max. at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	12-2 See page G-3
Installation Torque:	45-50Nm



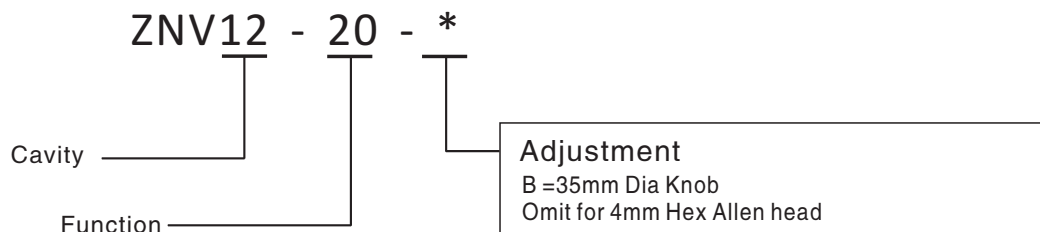
### OPERATION

The valve varies flow restriction by adjusting needle in or out and will shut off when fully closed. These valves will meter flow in either direction.

### PRESSURE DROP VS. FLOW



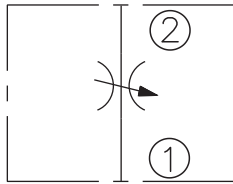
### TO ORDER



# Adjustable Restriction Valves

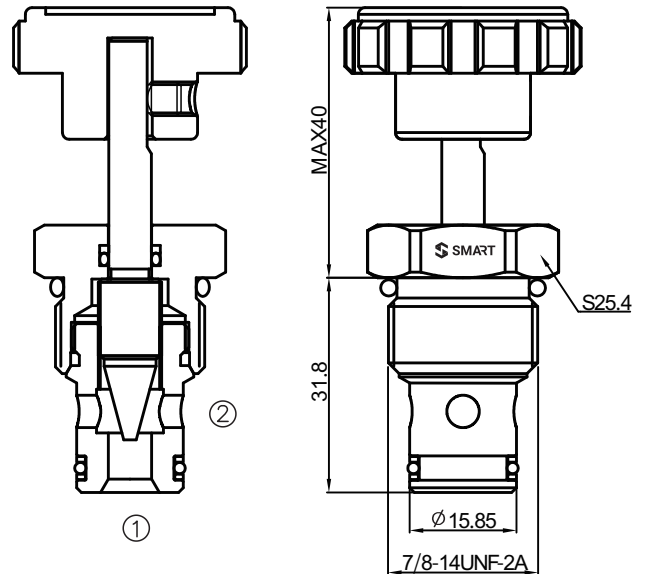
## ZNV10-21

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	240bar
Flow:	57 lpm nominal at 11 bar at full open 9 turns
Internal Leakage:	≤0.05cc/min max. at 240bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



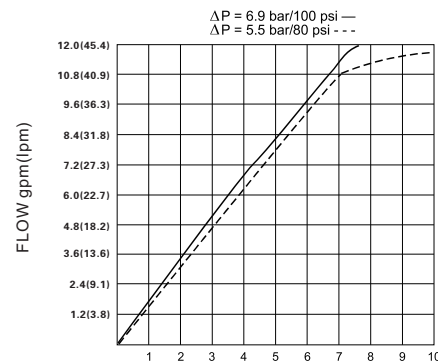
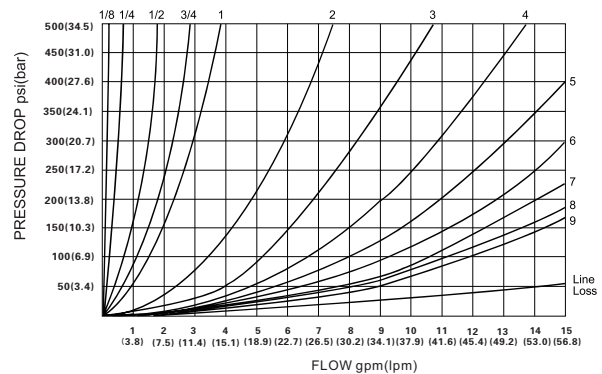
E

### OPERATION

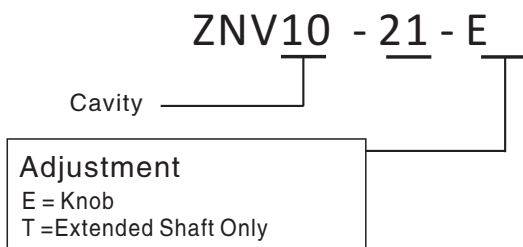
The ZNV10-21 increases its orifice value from fully closed to fully open with adjustment rotation in the counterclockwise direction. Effective adjustment is linear to eight turns.

Note: This is intended as a low-effort adjustment suitable for operation through linkage. It may be unsuitable in environments where vibration is present.

### PRESSURE DROP VS. FLOW

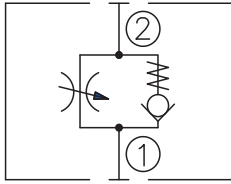


### TO ORDER



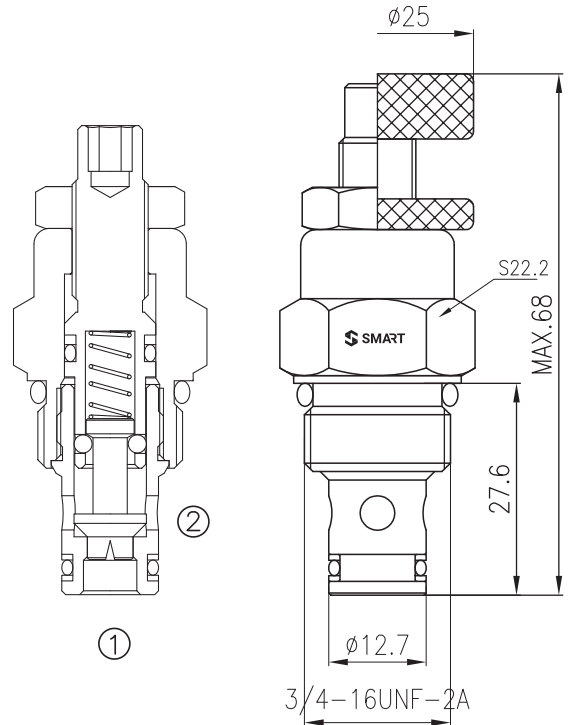
## ZFC-08

### SYMBOL



### SPECIFICATIONS

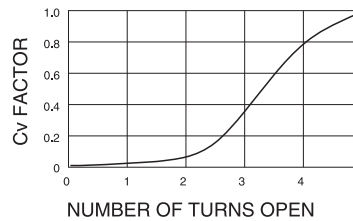
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	≤0.3cc/min max. at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



### OPERATION

The valve varies flow restriction by adjusting needle in or out. Flow is metered from ② to ①. Free reverse flow is from ① to ②.

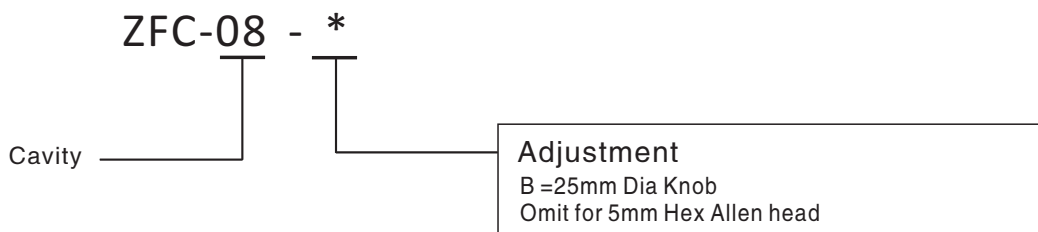
### PRESSURE DROP VS. FLOW



$$\text{FLOW IN GPM} = \frac{Cv \sqrt{P1 - P2}}{\sqrt{Gf}}$$

Cv = Flow Coefficient  
 P1 = Inlet Pressure (psi)  
 P2 = Outlet Pressure (psi)  
 Gf = specific gravity of medium at operating temperature in F°

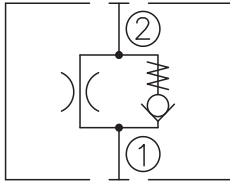
### TO ORDER



# Restriction Valves With Reverse Flow Check

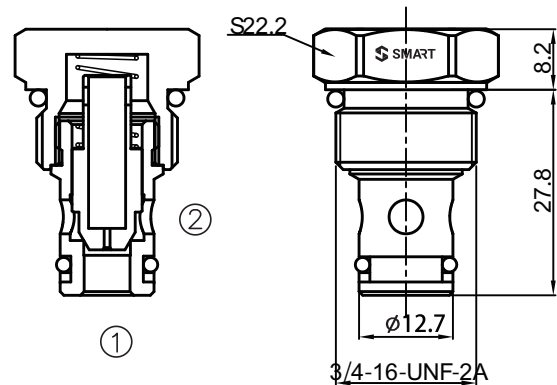
## ZZFC-08

### SYMBOL



### SPECIFICATIONS

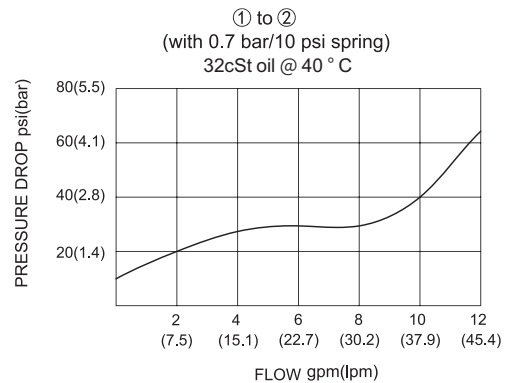
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS.FLOW graph
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



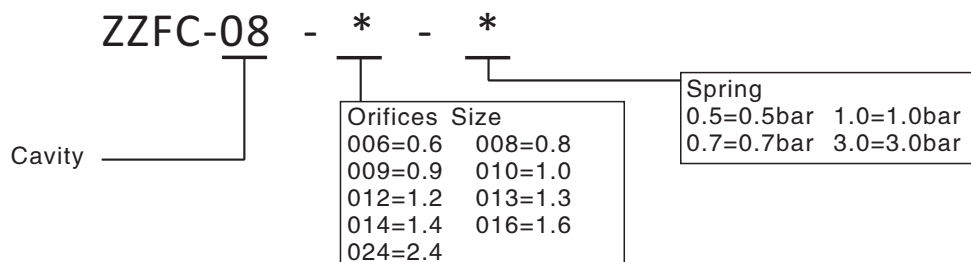
### OPERATION

Flow is metered from ② to ①. Free reverse flow is from ① to ②.

### PRESSURE DROP VS.FLOW

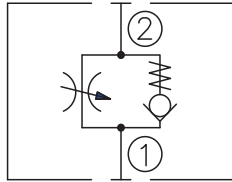


### TO ORDER



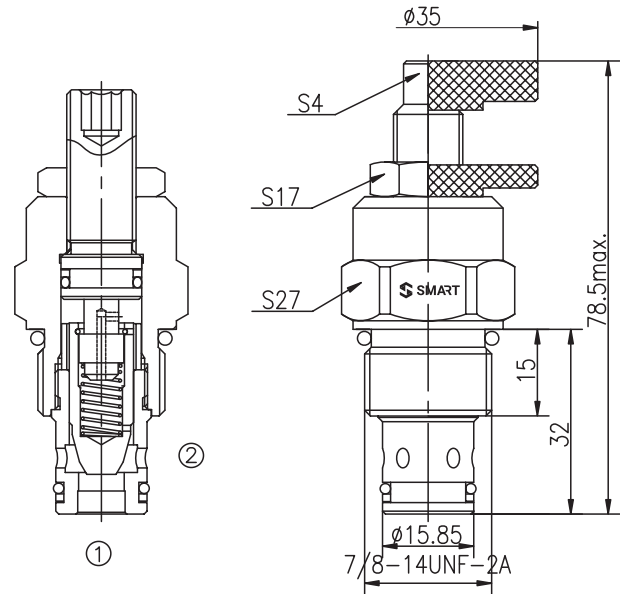
## ZFC-10

### SYMBOL



### SPECIFICATIONS

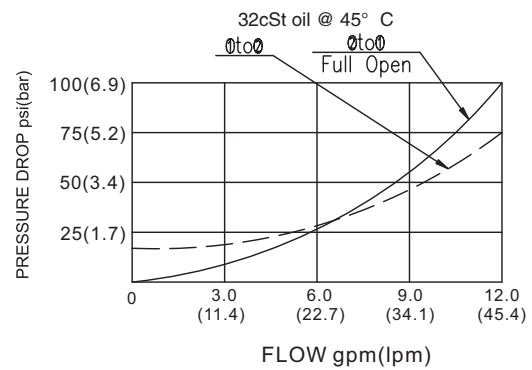
MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	≤0.3cc/min max. at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



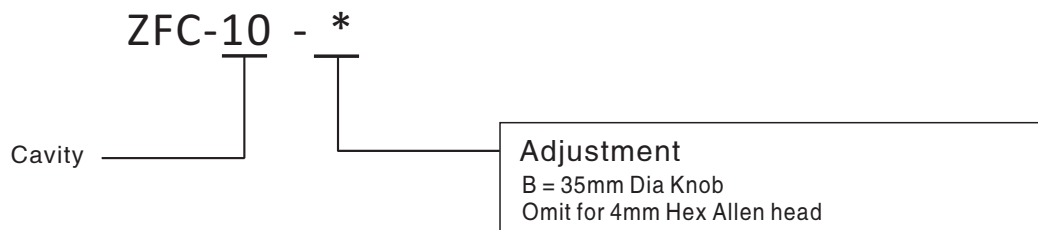
### OPERATION

The valve varies flow restriction by adjusting needle in or out. Flow is metered from ② to ①. Free reverse flow is from ① to ②.

### PRESSURE DROP VS. FLOW

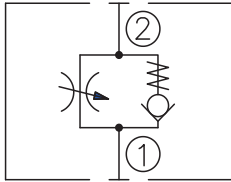


### TO ORDER



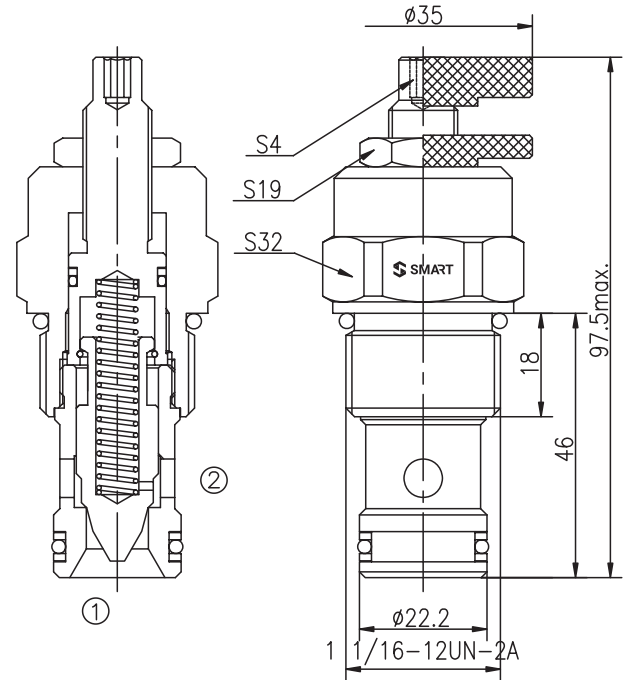
# ZFC-12

## SYMBOL



## SPECIFICATIONS

MAX. Operating Pressure:	250bar
Flow:	See PRESSURE DROP VS. FLOW graph
Internal Leakage:	≤0.3cc/min max. at 250bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	12-2 See page G-3
Installation Torque:	45-50Nm

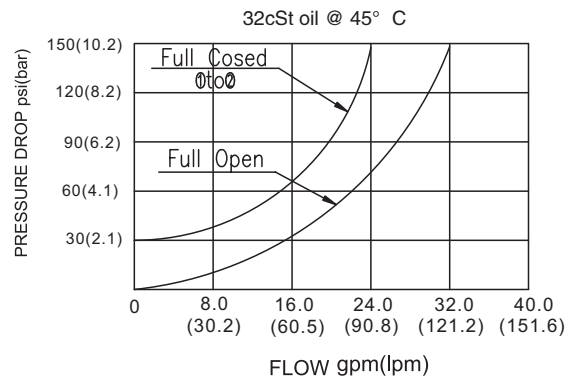


E

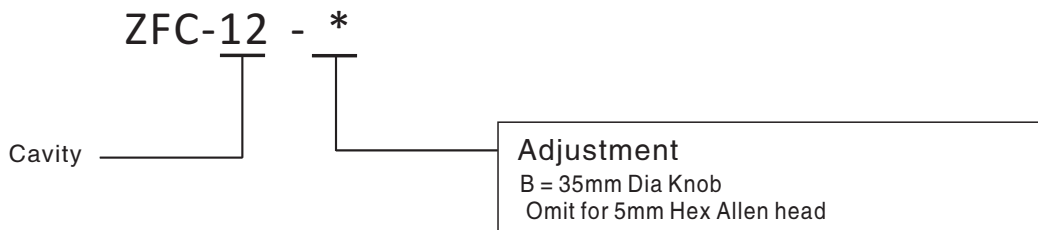
## OPERATION

The valve varies flow restriction by adjusting needle in or out. Flow is metered from ② to ①. Free reverse flow is from ① to ②.

## PRESSURE DROP VS. FLOW

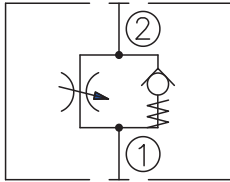


## TO ORDER



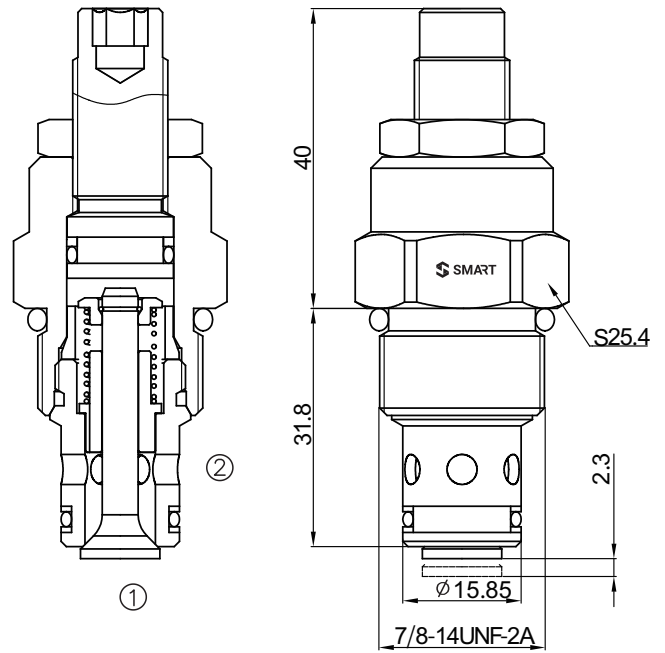
## ZFC10-21

### SYMBOL



### SPECIFICATIONS

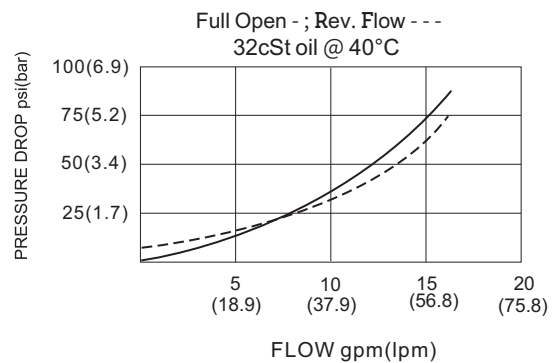
MAX. Operating Pressure:	240bar
Flow:	57 lpm nominal at 5.5 bar at full open 2.0 turns
Internal Leakage:	≤0.5cc/min max. at 240bar
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



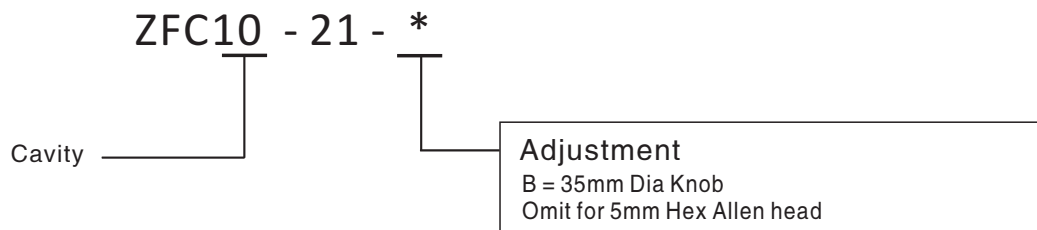
### OPERATION

The valve varies flow restriction by adjusting needle in or out. Flow is metered from ① to ②. Free reverse flow is from ② to ①.

### PRESSURE DROP VS. FLOW

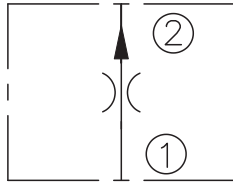


### TO ORDER



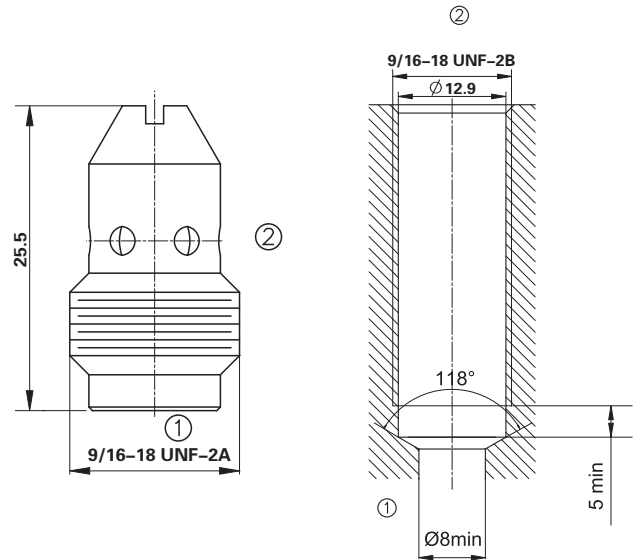
**ZIFC-6T**

**SYMBOL**



**SPECIFICATIONS**

MAX.Operating Pressure:	210bar
Flow Setting:	1l/min min 10l/min max.
Flow Maintenance Accuracy:	Nominal flow ± 15%
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1

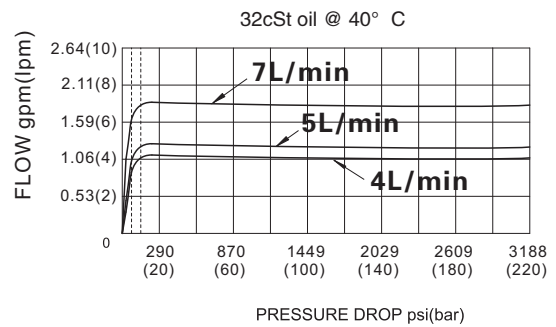


E

**OPERATION**

The valve maintains a constant flow rate out of ② regardless of load pressure changes in the circuit downstream of ②. The fixed control orifice is factory preset to customer flow specification. Reverse flow (② to ①) returns through the control orifice and is non-compensated.

**PRESSURE DROP VS.FLOW**



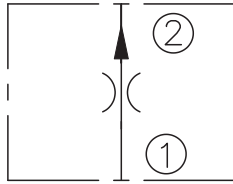
**TO ORDER**

ZIFC-6T - \*\*

Flow Setting	
1=1L/min	2=2L/min
3=3L/min	4=4L/min
5=5L/min	6=6L/min
7=7L/min	8=8L/min
9=9L/min	10=10L/min

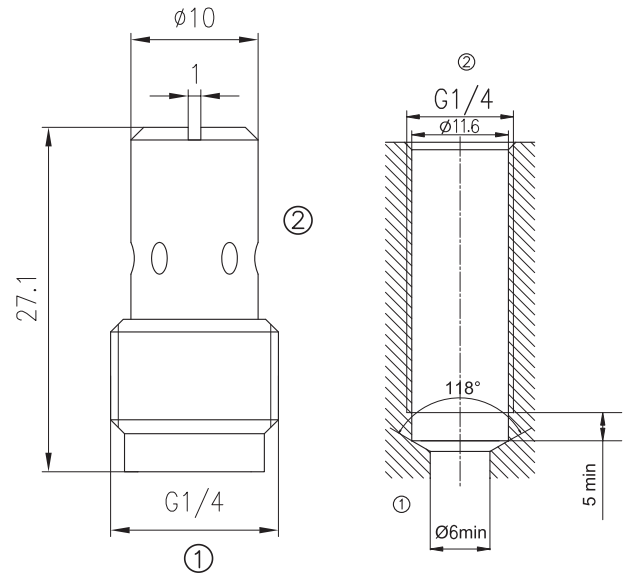
# ZIFC-G14

## SYMBOL



## SPECIFICATIONS

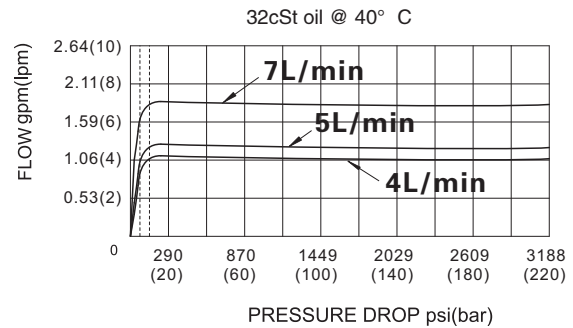
MAX.Operating Pressure:	210bar
Flow Setting:	1l/min min 10l/min max.
Flow Maintenance Accuracy:	Nominal flow $\pm 15\%$
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1



## OPERATION

The valve maintains a constant flow rate out of ② regardless of load pressure changes in the circuit downstream of ②. The fixed control orifice is factory preset to customer flow specification. Reverse flow (② to ①) returns through the control orifice and is non-compensated.

## PRESSURE DROP VS.FLOW



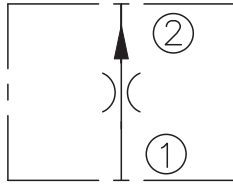
## TO ORDER

ZIFC-G14 - \*\*

Flow Setting	
1=1L/min	2=2L/min
3=3L/min	4=4L/min
5=5L/min	6=6L/min
7=7L/min	8=8L/min
9=9L/min	10=10L/min

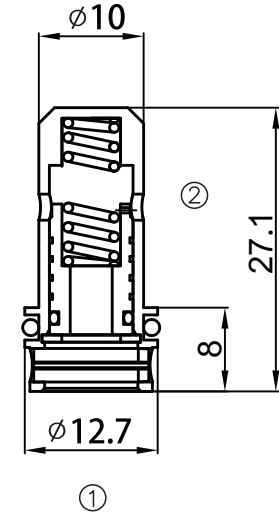
**ZIFC-Φ12.7A**

**SYMBOL**



**SPECIFICATIONS**

MAX.Operating Pressure:	210bar
Flow Setting:	1l/min min 10l/min max.
Flow Maintenance Accuracy:	Nominal flow ± 15%
Temperature:	-30℃~+100℃ ( Standard bana seals )
Filtration:	See page Z-1

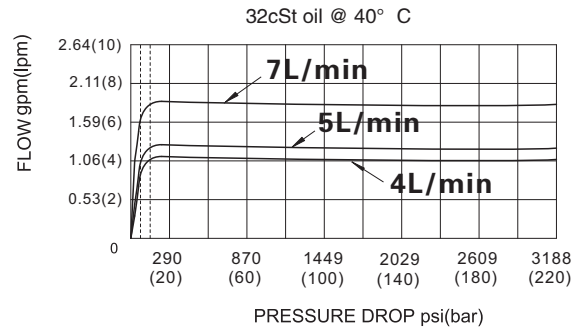


E

**OPERATION**

The valve maintains a constant flow rate out of ② regardless of load pressure changes in the circuit downstream of ②. The fixed control orifice is factory preset to customer flow specification. Reverse flow (② to ①) returns through the control orifice and is non-compensated.

**PRESSURE DROP VS.FLOW**



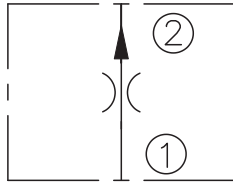
**TO ORDER**

ZIFC-Φ12.7A - \*\*

Flow Setting	
1=1L/min	2=2L/min
3=3L/min	4=4L/min
5=5L/min	6=6L/min
7=7L/min	8=8L/min
9=9L/min	10=10L/min

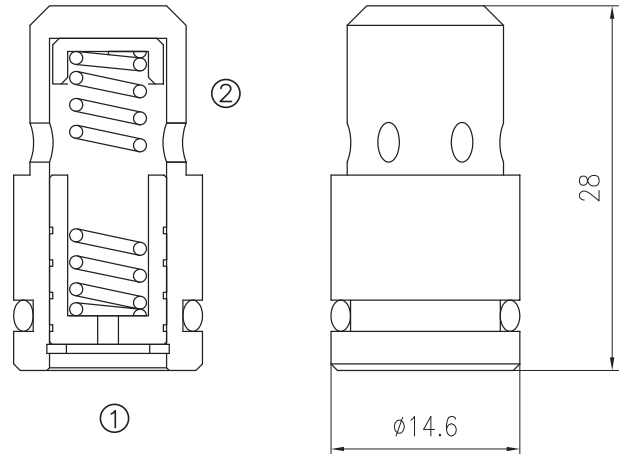
**ZIFC-Φ14.6**

**SYMBOL**



**SPECIFICATIONS**

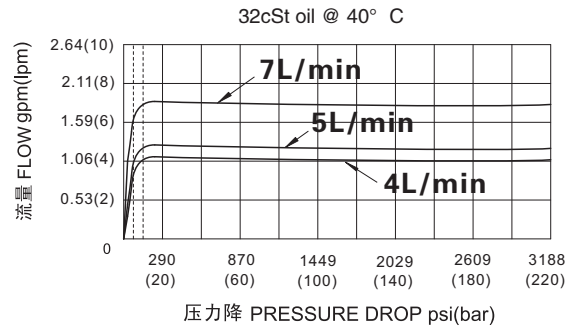
MAX.Operating Pressure:	210bar
Flow Setting:	1l/min min 10l/min max.
Flow Maintenance Accuracy:	Nominal flow ± 15%
Temperature:	-30℃~+100℃ ( Standard bana seals )
Filtration:	See page Z-1



**OPERATION**

The valve maintains a constant flow rate out of ② regardless of load pressure changes in the circuit downstream of ②. The fixed control orifice is factory preset to customer flow specification. Reverse flow (② to ①) returns through the control orifice and is non-compensated.

**PRESSURE DROP VS.FLOW**



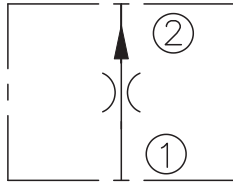
**TO ORDER**

ZIFC-Φ14.6 - \*\*

Flow Setting	
1=1L/min	2=2L/min
3=3L/min	4=4L/min
5=5L/min	6=6L/min
7=7L/min	8=8L/min
9=9L/min	10=10L/min

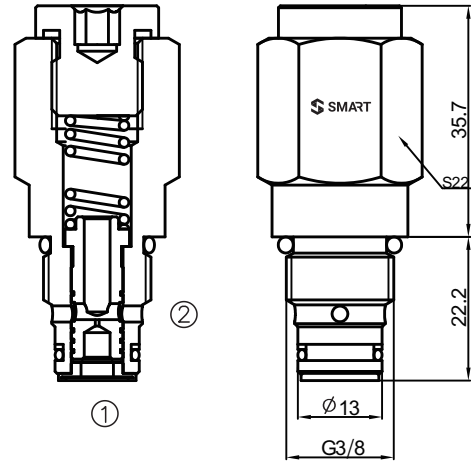
# ZFR04-02

## SYMBOL



## SPECIFICATIONS

MAX.Operating Pressure:	240bar
Flow Rating:	0.4l/min min 4.0l/min max.
Flow Maintenance Accuracy:	0.4to1.8 L/min setting $\pm 15\%$ ; 1.9to4.0L/min $\pm 10\%$
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	T04-2G See page G-17
Installation Torque:	20-25Nm

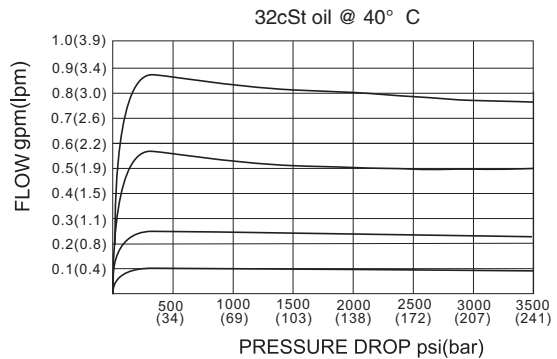


## OPERATION

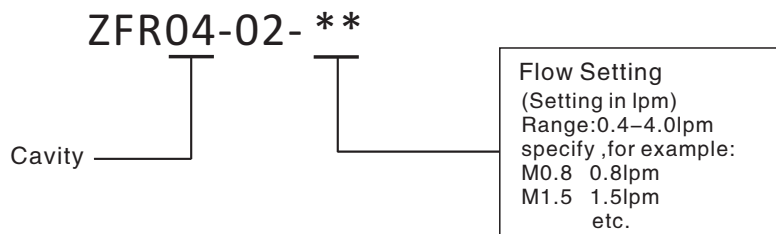
The valve maintains a constant flow rate out of ② regardless of load pressure changes in the circuit downstream of ②. The fixed control orifice is factory preset to customer flow specification.

The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice greater than 5.5bar, with accurate flow maintenance from 7.6to250bar. Reverse flow (②to①) returns through the control orifice and is non-compensated.

## PRESSURE DROP VS. FLOW

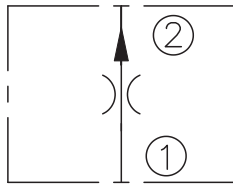


## TO ORDER



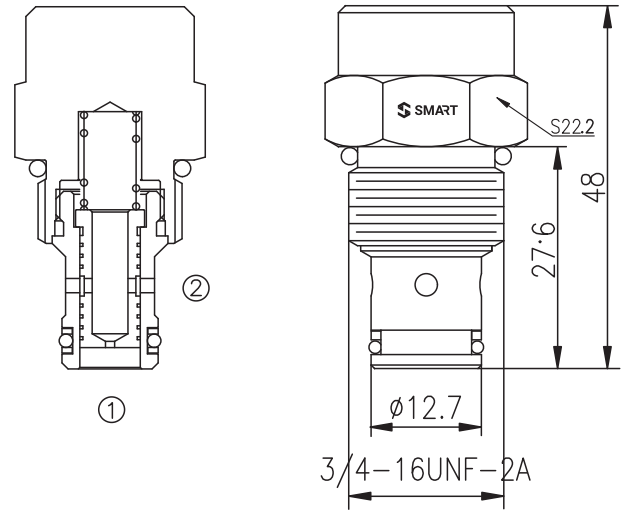
**ZFR-08**

**SYMBOL**



**SPECIFICATIONS**

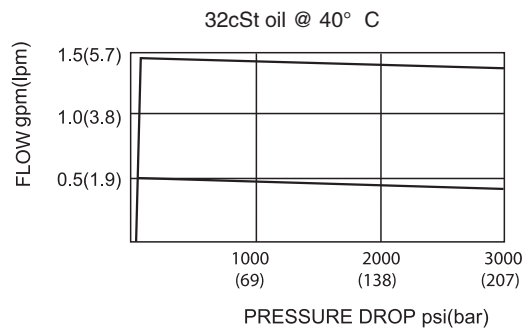
MAX.Operating Pressure:	250bar
Flow Setting:	0.4l/min min 7.5l/min max.
Flow Maintenance Accuracy:	0.2 to1.8 L/min.setting ± 15%;1.9to7.5L/min ± 10%
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



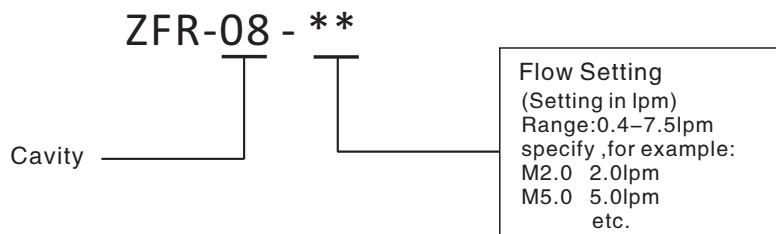
**OPERATION**

The valve maintains a constant flow rate out of ② regardless of load pressure changes in the circuit downstream of ②. The fixed control orifice is factory preset to customer flow specification.  
The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice greater than 5.5bar, with accurate flow maintenance from 7.6to250bar. Reverse flow (②to①) returns through the control orifice and is non-compensated.

**PRESSURE DROP VS.FLOW**

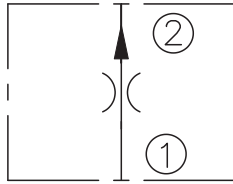


**TO ORDER**



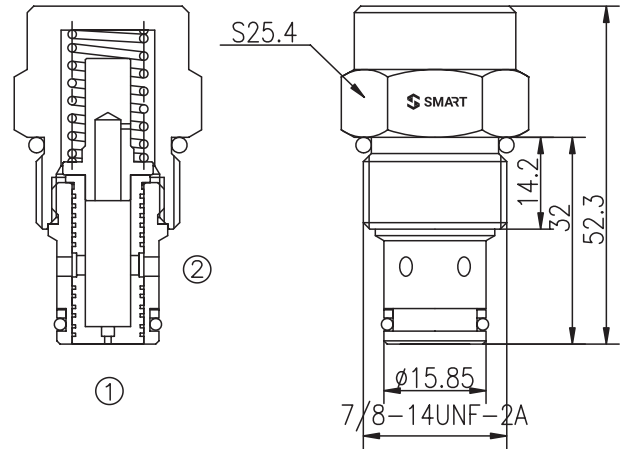
# ZFR-10

## SYMBOL



## SPECIFICATIONS

MAX.Operating Pressure:	250bar
Flow Setting:	0.4l/min min 22.7l/min max.
Flow Maintenance Accuracy:	
	0.37 to 1.85 L/min.setting ± 20%
	1.89 to 5.63L/min.setting ± 15%
	5.68 to 22.7L/min.setting ± 10%
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	33.9-36.7Nm



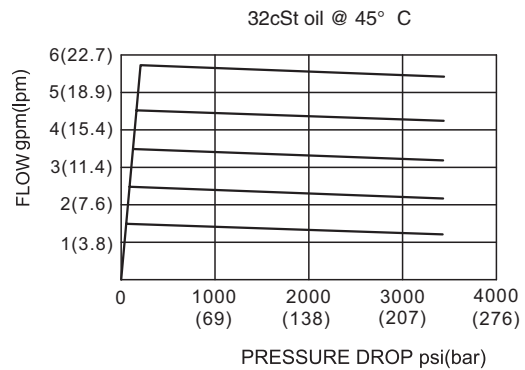
E

## OPERATION

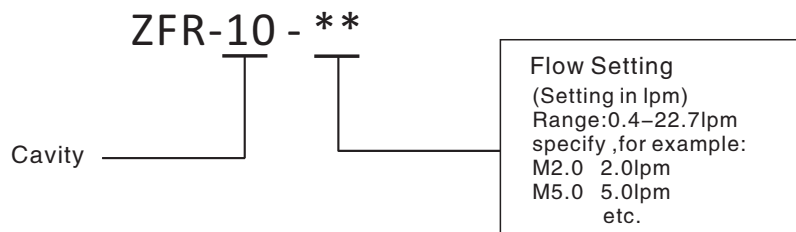
The valve maintains a constant flow rate out of ② regardless of load pressure changes in the circuit downstream of ②. The fixed control orifice is factory preset to customer flow specification.

The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice greater than 5.5bar, with accurate flow maintenance from 7.6to250bar. Reverse flow (②to①) returns through the control orifice and is non-compensated.

## PRESSURE DROP VS.FLOW



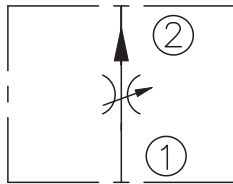
## TO ORDER



# Regulator Pressure-compensated Valves

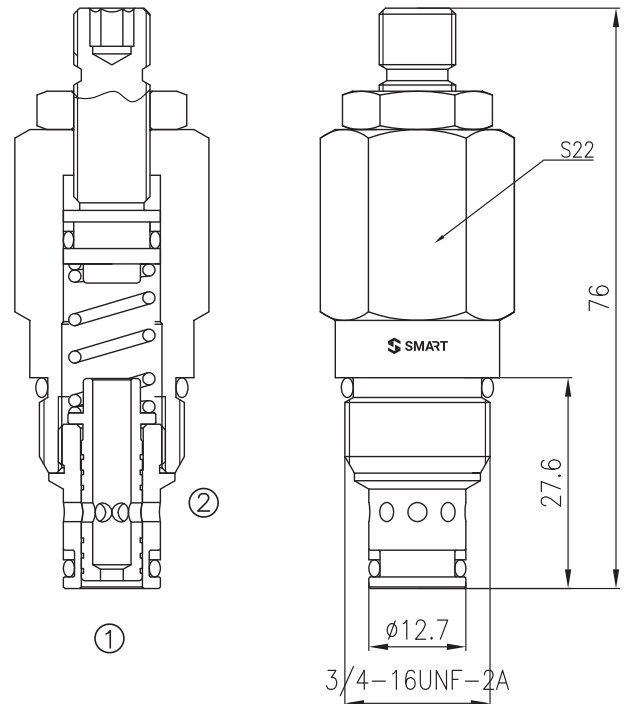
## ZFRA-08

### SYMBOL



### SPECIFICATIONS

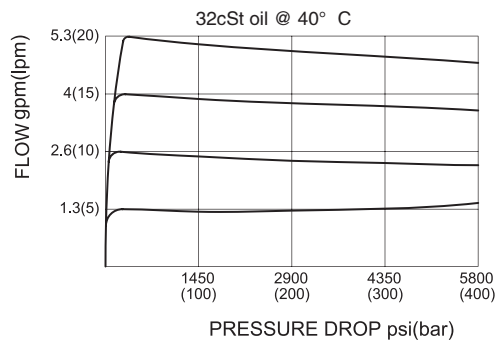
MAX. Operating Pressure:	240bar
Flow Setting:	0-20l/min
Flow Maintenance Accuracy:	± 10%
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-2 See page G-1
Installation Torque:	24.5- 27.1Nm



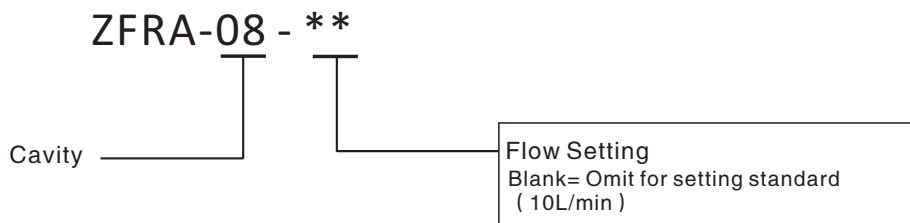
### OPERATION

The valve maintains a constant flow within specified accuracies from ① to ② regardless of downstream load pressure. When flow produces a minimum predetermined pressure differential across the compensator spool control orifice, the spool shifts against the spring force to throttle the flow and maintain the flow setting. Reverse flow is not regulated.

### PRESSURE DROP VS. FLOW



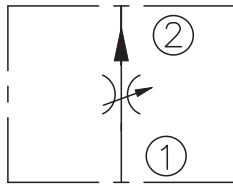
### TO ORDER



# Regulator Pressure-compensated Valves

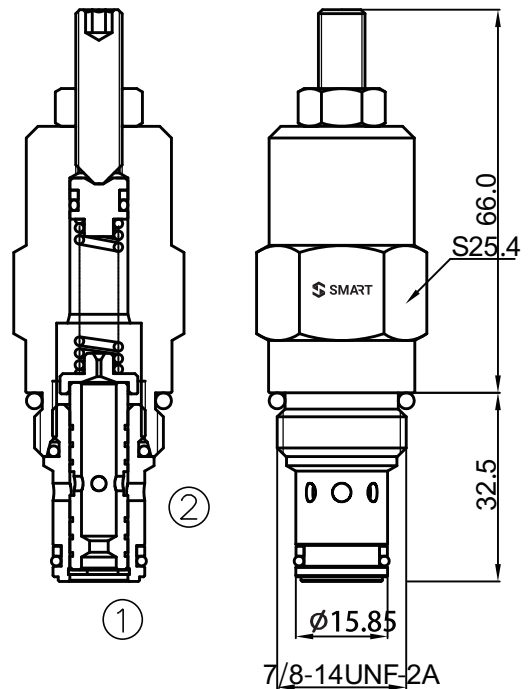
## ZFRA-10

### SYMBOL



### SPECIFICATIONS

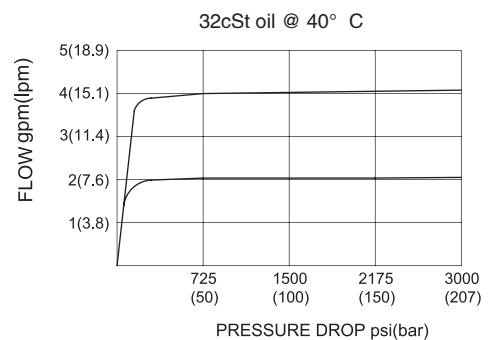
MAX. Operating Pressure:	240bar
Flow Setting:	3-26l/min
Flow Maintenance Accuracy:	± 15%
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	32-35Nm



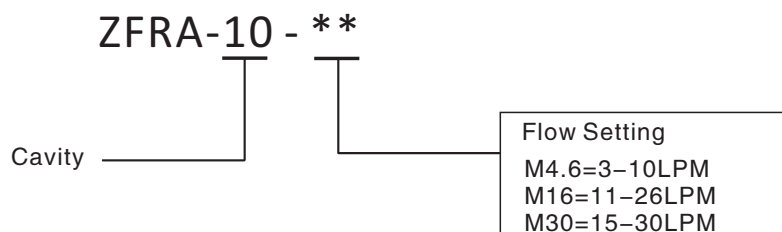
### OPERATION

The valve maintains a constant flow within specified accuracies from ① to ② regardless of downstream load pressure. When flow produces a minimum predetermined pressure differential across the compensator spool control orifice, the spool shifts against the spring force to throttle the flow and maintain the flow setting. Reverse flow is not regulated.

### PRESSURE DROP VS. FLOW



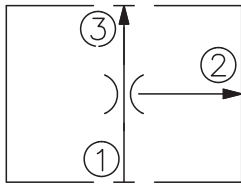
### TO ORDER



# Regulator Pressure-compensated Valves

## ZFR08-30F

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure: 207bar

Flow Rate :  
7.6lpm(2.0gpm)max.regulated;11.4lpm(3.0gpm)max.input .  
Inlet pressure at ① begins to rise over the compensating differential when bypass flow exceeds 7.5lpm(2gpm).

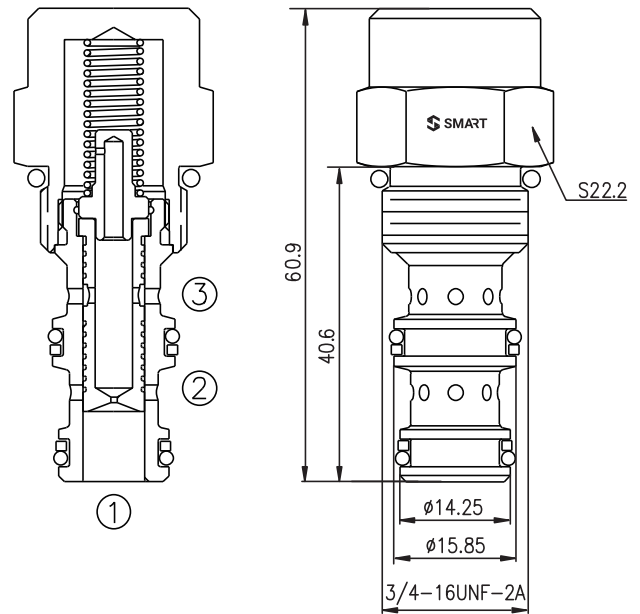
Standard Compensator Bias Spring:  
6.5bar(95psi) differential

Temperature: -30°C~+100°C  
( Standard bana seals )

Filtration: See page Z-1

Cavity: 08-3 See page G-1

Installation Torque: 24.5-27.1Nm

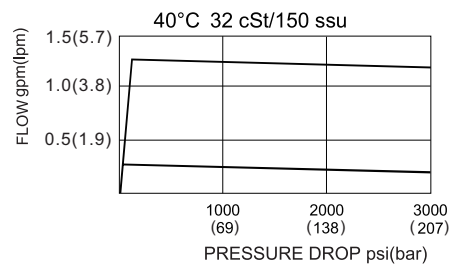


### OPERATION

The valve maintains a constant flow rate from ③ regardless of load pressure changes in the system downstream of ③, or in the bypass leg at ②. The valve's spool maintains a constant differential pressure of 6.5bar across a fixed internal orifice, thereby regulating the hydraulic flow rate from ① to ③.

The valve is a priority type regulator, delivering the pump flow to ③ first, then bypassing excess to ②. All ports may be fully pressurized. Flow out of priority port ③ may vary based on input flow amount, particularly with lower temperatures and increased fluid viscosities. Settings may need to be established through correlation study. Consult factory.

### PRESSURE DROP VS. FLOW



### TO ORDER

ZFR08 - 30F - \*

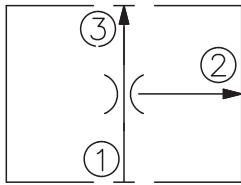
Cavity

Priority Flow setting	Setting in : lpm	Setting in : gpm
	Range: 0.4 to 7.6 lpm	Range: 0.1 to 2.0 gpm
	Specify, for example:	Specify, for example:
	M1.8=1.8 lpm	1.3=1.3 gpm
	M5.0=5.0 lpm	2.0=2.0 gpm
	etc.	etc.

# Regulator Pressure-compensated Valves

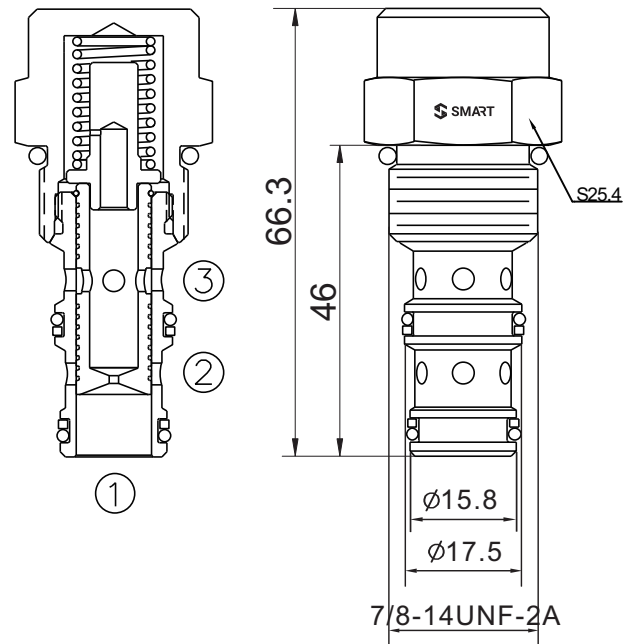
## ZFR10-30F

### 机能符号 SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Flow Rate :	22.7lpm(6.0gpm)max.regulated;37.8lpm(10gpm)max.input . Inlet pressure at ① begins to rise over the compensating differential when bypass flow exceeds 23lpm(6gpm).
Standard Compensator Bias Spring:	6.5bar(95psi) differential
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	MAX33.9Nm

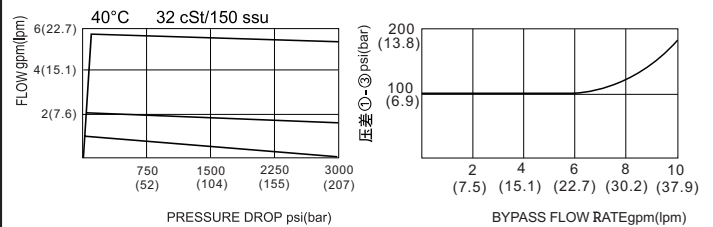


### OPERATION

The valve maintains a constant flow rate from ③ regardless of load pressure changes in the system downstream of ③, or in the bypass leg at ②. The valve's spool maintains a constant differential pressure of 6.5bar across a fixed internal orifice, thereby regulating the hydraulic flow rate from ① to ③.

The valve is a priority type regulator, delivering the pump flow to ③ first, then bypassing excess to ②. All ports may be fully pressurized. Flow out of priority port ③ may vary based on input flow amount, particularly with lower temperatures and increased fluid viscosities. Settings may need to be established through correlation study. Consult factory.

### PRESSURE DROP VS.FLOW



### TO ORDER

ZFR10 - 30F - \*

Cavity

Priority Flow setting

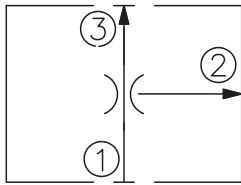
Setting in : lpm  
Range:0.4to 7.6lpm  
Specify, for example:  
M1.8=1.8lpm  
M5.0=5.0lpm  
etc.

Setting in : gpm  
Range:0.1to2.0 gpm  
Specify, for example:  
1.3=1.3gpm  
2.0=2.0gpm  
etc.

# Regulator Pressure-compensated Valves

## ZFR12-30F

### SYMBOL



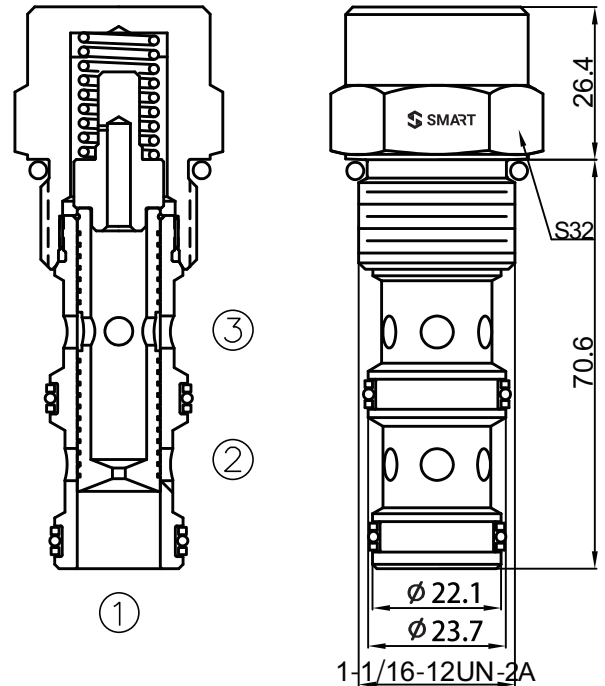
### SPECIFICATIONS

MAX. Operating Pressure:	240bar
Flow Rate:	49.2lpm(13.0gpm)max.regulated; 94.6lpm(25gpm)max. input .
Standard Compensator Bias Spring:	6.5bar(95psi) differential
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	12-3 See pageG-18
Installation Torque:	MAX40.6Nm

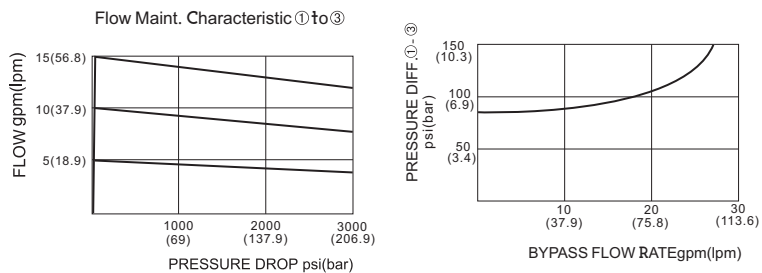
### OPERATION

The valve maintains a constant flow rate from ③ regardless of load pressure changes in the system downstream of ③, or in the bypass leg at ②. The valve's spool maintains a constant differential pressure of 6.5bar across a fixed internal orifice, thereby regulating the hydraulic flow rate from ① to ③.

The valve is a priority type regulator, delivering the pump flow to ③ first, then bypassing excess to ②. All ports may be fully pressurized. Flow out of priority port ③ may vary based on input flow amount, particularly with lower temperatures and increased fluid viscosities. Settings may need to be established through correlation study. Consult factory.



### PRESSURE DROP VS. FLOW



### TO ORDER

ZFR12 - 30F - \*

Cavity

Priority Flow setting

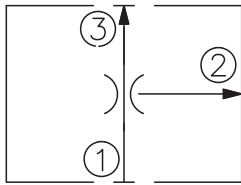
Setting in : lpm  
 Range: 0.4 to 7.6 lpm  
 Specify, for example:  
 M4.0 = 4.0 lpm  
 M8.0 = 8.0 lpm  
 etc.

Setting in : gpm  
 Range: 0.1 to 2.0 gpm  
 Specify, for example:  
 1.5 = 1.5 gpm  
 5.0 = 5.0 gpm  
 etc.

# Regulator Pressure-compensated Valves

## ZFR1-16

### SYMBOL



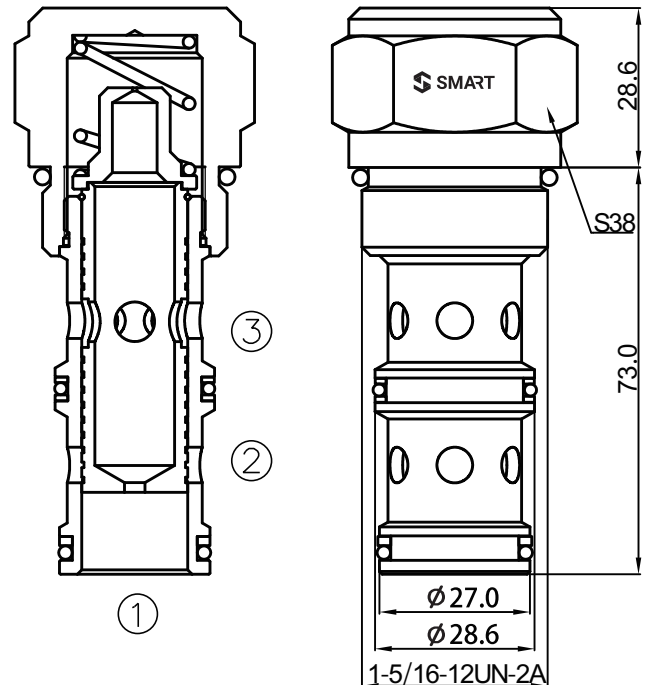
### SPECIFICATIONS

MAX. Operating Pressure:	210bar
Flow Rate :	114lpm(30gpm)max.regulated; 151lpm(40gpm)max. input .
Standard Compensator Bias Spring:	5.5bar(80psi) differential
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	16-3 See page G-20
Installation Torque:	108-122Nm

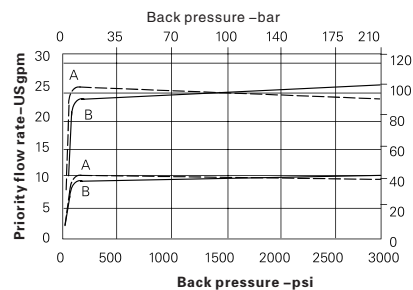
### OPERATION

The valve maintains a constant flow rate from ③ regardless of load pressure changes in the system downstream of ③, or in the bypass leg at ②. The valve's spool maintains a constant differential pressure of 5.5bar across a fixed internal orifice, thereby regulating the hydraulic flow rate from ① to ③.

The valve is a priority type regulator, delivering the pump flow to ③ first, then bypassing excess to ②. All ports may be fully pressurized. Flow out of priority port ③ may vary based on input flow amount, particularly with lower temperatures and increased fluid viscosities. Settings may need to be established through correlation study. Consult factory.



### PRESSURE DROP VS. FLOW



### TO ORDER

ZFR1 - 16 - \*

Cavity

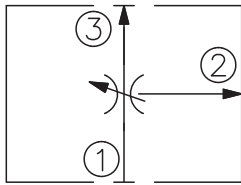
Priority Flow setting  
 Setting in: lpm  
 Range: 1.9 to 114 lpm  
 Specify, for example:  
 21=21 lpm  
 30=30 lpm  
 etc.

Setting in: gpm  
 Range: 0.5 to 30 gpm  
 Specify, for example:  
 S5=5 gpm  
 S10=10 gpm  
 etc.

# Regulator Pressure-compensated Valves

## ZPFR-10

### SYMBOL



### SPECIFICATIONS

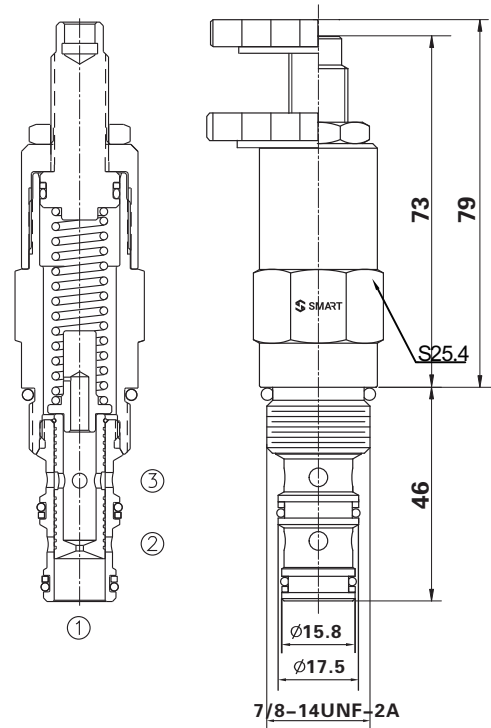
MAX. Operating Pressure:	207bar
Flow:	See PRESSURE DROP VS. FLOW graph
Flow Setting:	low range: 1.9 to 9.5 lpm (0.5 to 2.5gpm) specify in 1.9 lpm(0.5gpm) increments high range: 11.4 to 22.7lpm(3.0to 6.0gpm) Specify in 3.8 lpm (1gpm) increments
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	45-50Nm

### OPERATION

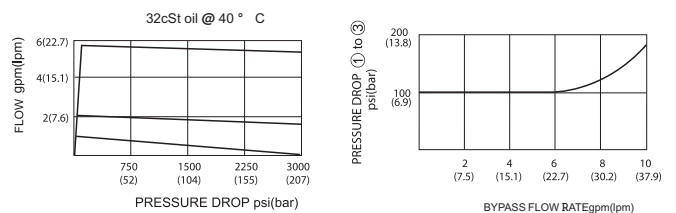
The valve maintains a constant flow rate from ③ regardless of load pressure changes in the system downstream of ③, or in the bypass leg at ②. The valve will pressure-compensate once a minimum pressure drop (determined by spring adjustment setting) is achieved from ① to ③. This valve will range from approximately 4.8 to 13.8bar (70to 200psi). Bypass port ③ may be fully pressurized.

The cartridge may be adjusted to ± 25% of nominal setting. At nominal setting, pressure drop is approximately 9bar(130psi).

Flow out of priority port ③ may vary based on input flow amount, particularly with lower temperatures and increased fluid viscosities.



### PRESSURE DROP VS. FLOW



### TO ORDER

**ZPFR-10 - \* / \***

Cavity

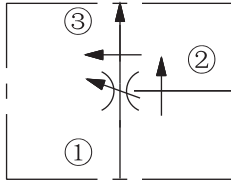
Adjustment  
B = Plastic Knob  
Omit for 3/16" Hex Allen head

<p>Flow setting</p> <p>0.5=1.42 to 2.37lpm</p> <p>1.0=2.84 to 4.73lpm</p> <p>2.0=5.68 to 9.46lpm</p> <p>3.0=8.52 to 14.1lpm</p>	<p>4.0=11.35 to 18.93lpm</p> <p>5.0=14.19 to 23.66lpm</p> <p>6.0=17.03 to 28.93lpm</p>
---	--

# Regulator Pressure-compensated Valves

## ZFR10-39

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	240bar
Input Flow:	Priority+Bypass:Nominal 0~38LPM;The most 57LPM
Flow Rate:	3-ported regulated flow:0~38LPM 2-ported regulated flow:0~34LPM
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	45-50Nm

### OPERATION

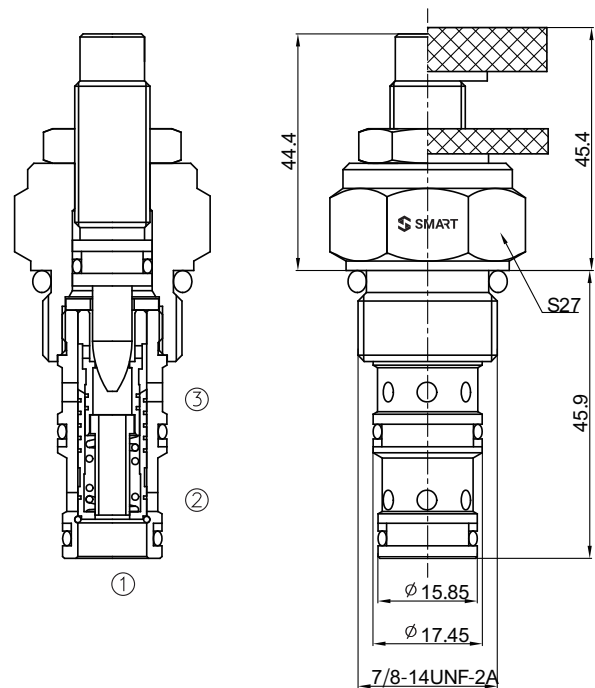
The valve maintains a constant flow ③ regardless of load pressure changes in the system downstream of ③, or in the bypass leg at ②. Reverse flow (③ to ①) bypasses the control orifice. Bypass port ② may be fully pressurized. The regulated flow increases from closed to fully open, with counter-clockwise rotation of the knob.

### TO ORDER

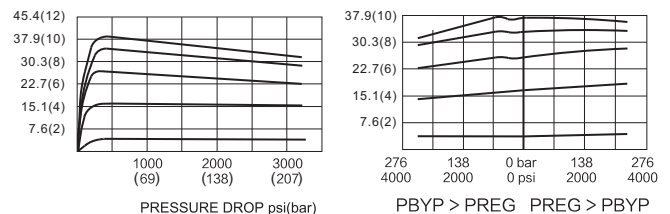
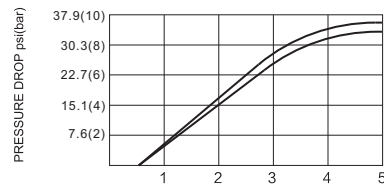
ZFR10 - 39- \*\*

Cavity

Adjustment  
B = Plastic Knob  
Omit for S6" Hex Allen head



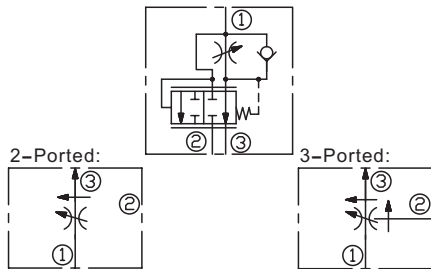
### PRESSURE DROP VS. FLOW



# Regulator Pressure-compensated Valves

## ZFR10-3A

### SYMBOL

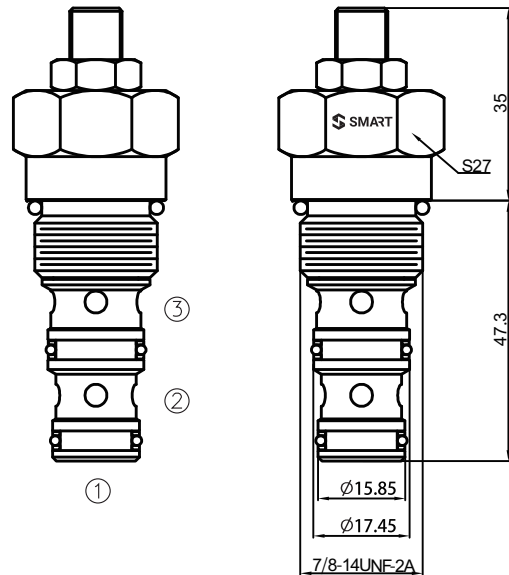


### SPECIFICATIONS

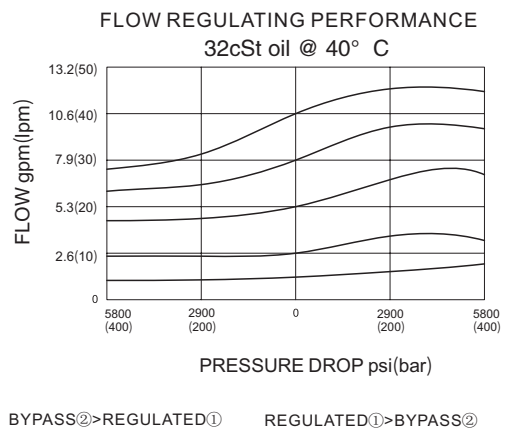
MAX. Operating Pressure:	420bar
Flow:	See PRESSURE DROP VS. FLOW graph
Flow Setting:	
	3–ported regulated flow: 2–45LPM
	2–ported regulated flow: 2–40LPM
	1–ported inlet flow: 10–90 lpm
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	45–50Nm

### OPERATION

The valve maintains a constant flow ③ regardless of load pressure changes in the system downstream of ③ or in the bypass leg at ②. Reverse flow (③ to ①) bypasses the control orifice. Bypass port ② may be fully pressurized. The regulated flow increases from closed to fully open, with counter-clockwise rotation of the knob.



### PRESSURE DROP VS. FLOW



### TO ORDER

ZFR10-3A - \*\*

Cavity

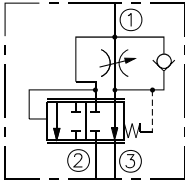
Adjustment  
B = Plastic Knob  
Blank = Omit for 5' Hex Allen head

# Regulator Pressure-compensated Valves

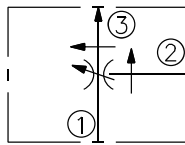
## ZFR12-33

### SYMBOL

USASI/ISO:



3-Ported:



### SPECIFICATIONS

MAX. Operating Pressure:	240bar
Input Flow:	Priority+Bypass:Nominal 76LPM;The most 114LPM
Flow Setting:	3–ported regulated flow:0–68LPM 2–ported regulated flow:0–45LPM
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	12-3 See page G-18
Installation Torque:	45-50Nm

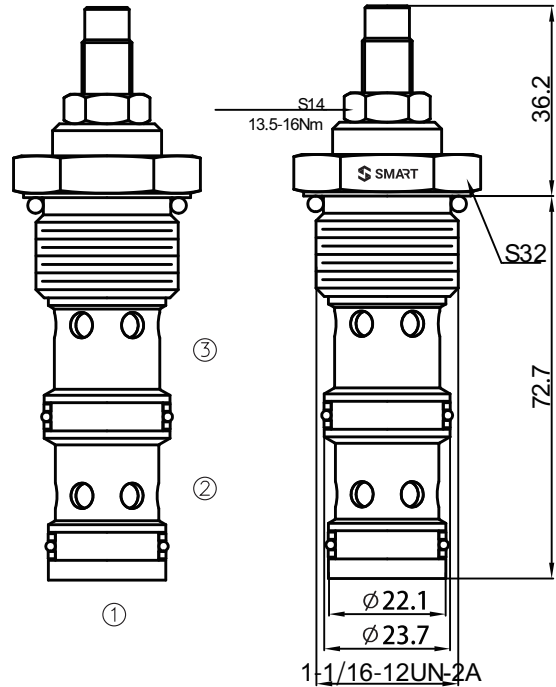
### OPERATION

The valve maintains a constant flow ③ regardless of load pressure changes in the system downstream of ③, or in the bypass leg at ②. Reverse flow (③ to ①) bypasses the control orifice. Bypass port ② may be fully pressurized. The regulated flow increases from closed to fully open, with counter-clockwise rotation of the knob.

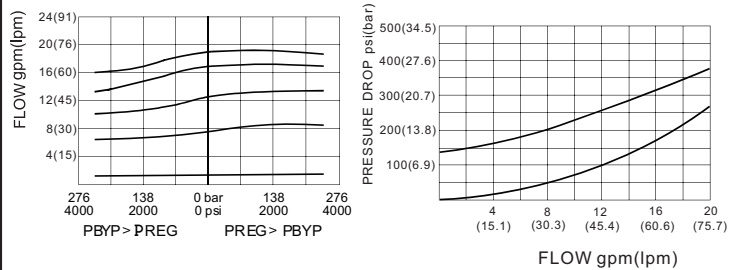
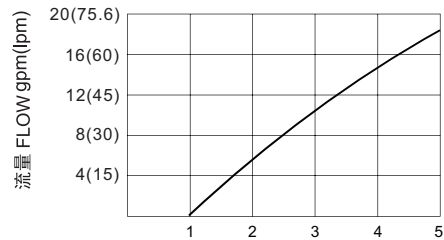
### TO ORDER

ZFR12 - 33- \*\*  
Cavity

Adjustment  
B = Plastic Knob  
Omit for 3/16" Hex Allen head



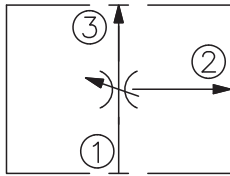
### PRESSURE DROP VS. FLOW



# Regulator Pressure-compensated Valves

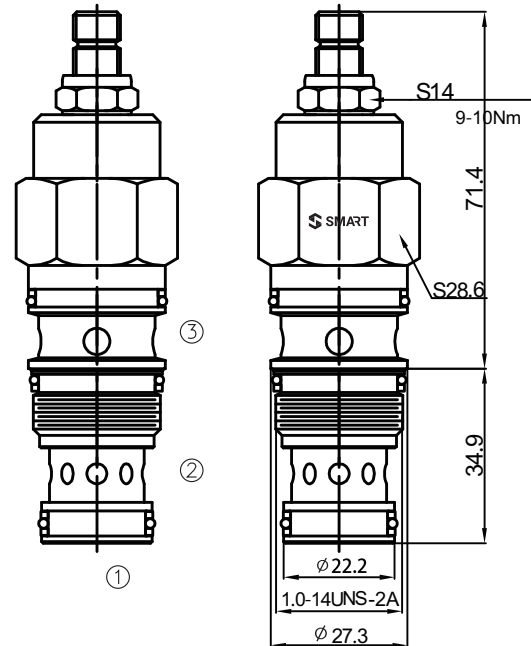
## ZFRDA

### SYMBOL



### SPECIFICATIONS

MAX.Operating Pressure:	ports ①&② 350bar port ③: 210bar
Max.Input Flow:	120L/min
Flow Setting:	0.4–45lpm
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-2A See page G-4
Installation Torque:	60–70Nm



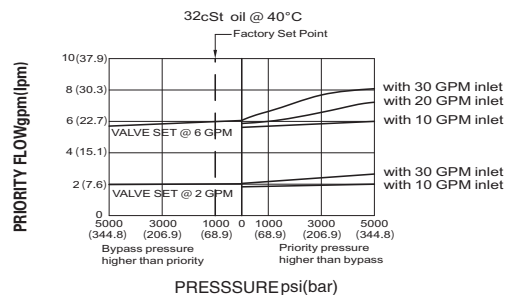
### OPERATION

The valve maintains a constant flow rate from ③ regardless of load pressure changes in the system downstream of ③, or in the bypass leg at ②. The valve will pressure-compensate once a minimum pressure drop (determined by spring adjustment setting) is achieved from ① to ③. Bypass port ② may be fully pressurized.

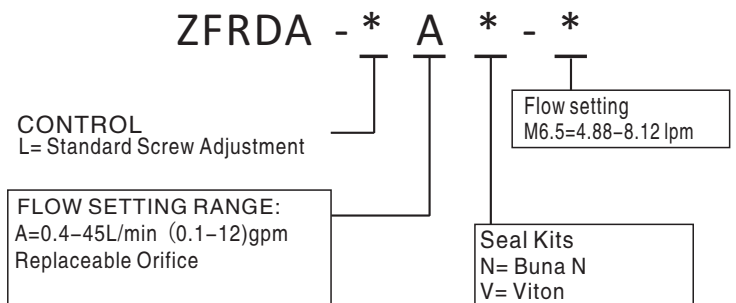
The cartridge may be adjusted to  $\pm 25\%$  of nominal setting.

Flow out of priority port ③ may vary based on input flow amount, particularly with lower temperatures and increased fluid viscosities.

### PRESSURE DROP VS. FLOW



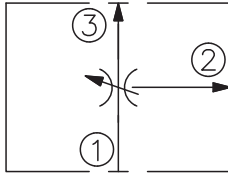
### TO ORDER



# Regulator Pressure-compensated Valves

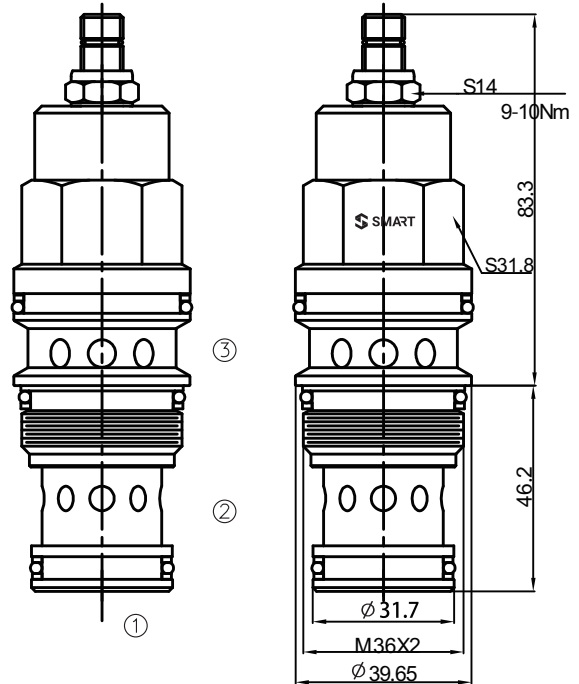
## ZFREA

### SYMBOL



### SPECIFICATIONS

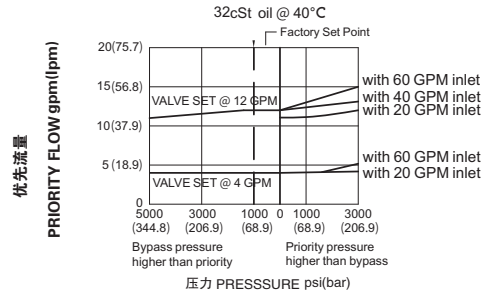
MAX.Operating Pressure:	ports①&②:350bar
	port③:210bar
Max.Input Flow:	240L/min
Flow Setting:	0.8–95lpm
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	SUN T-17A See page G-5
Installation Torque:	200–215Nm



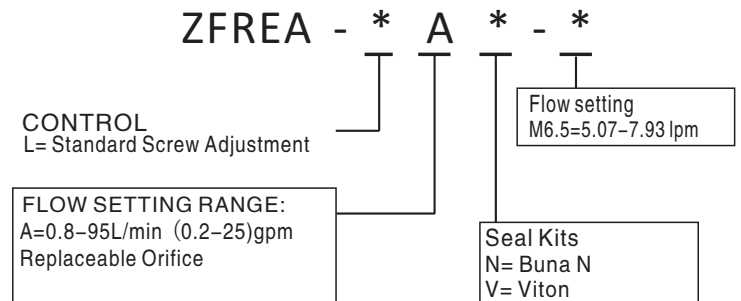
### OPERATION

The valve maintains a constant flow rate from ③ regardless of load pressure changes in the system downstream of ③, or in the bypass leg at ②. The valve will pressure-compensate once a minimum pressure drop (determined by spring adjustment setting) is achieved from ① to ③. Bypass port ② may be fully pressurized. The cartridge may be adjusted to  $\pm 22\%$  of nominal setting. Flow out of priority port ③ may vary based on input flow amount, particularly with lower temperatures and increased fluid viscosities.

### PRESSURE DROP VS. FLOW



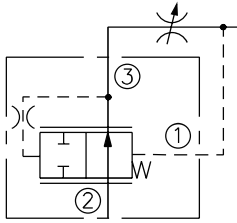
### TO ORDER



# Pressure Compensator Valves

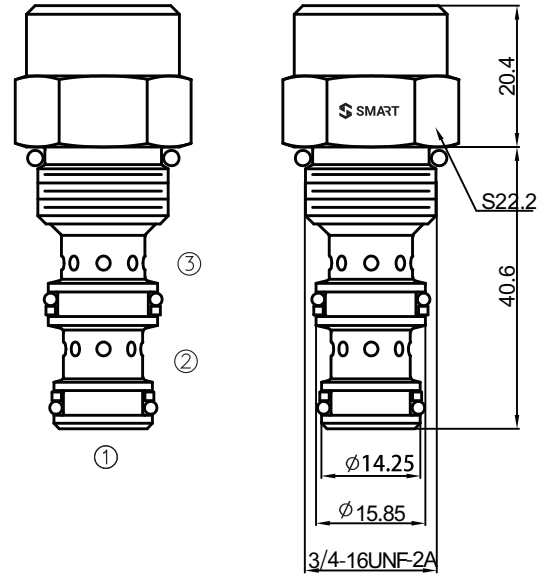
## ZEC08-32

### SYMBOL



### SPECIFICATIONS

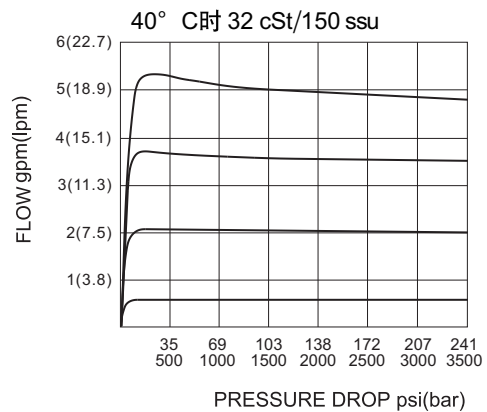
Operating Pressure: (Inlet)	240bar
Flow Rate:	Range from 5.7lpm to 30.3lpm
Maximum Internal Leakage:	
	When ports 2 and 3 are blocked at 240 bar, port 1 is 20 ml/min
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	08-3 See page G-1
Installation Torque:	24.5-27.1Nm



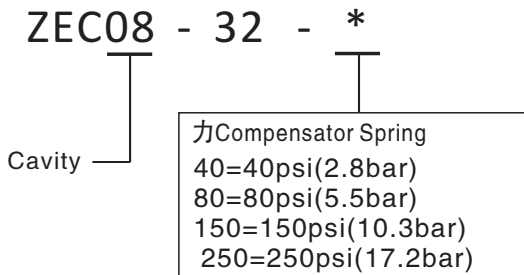
### OPERATION

With inlet flow at ②, the ZEC08-32 will deliver required flow at ③, in response to load differential pressure sensed at ①.

### PRESSURE DROP VS. FLOW



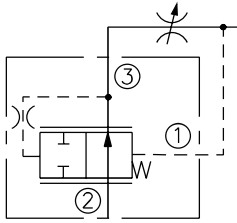
### TO ORDER



# Pressure Compensator Valves

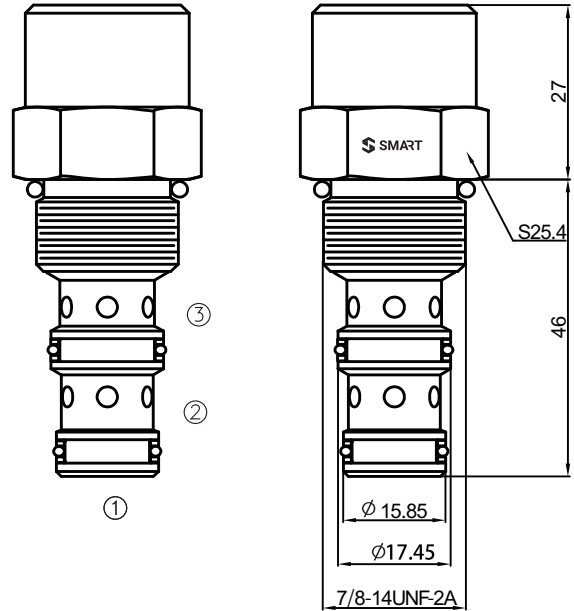
## ZEC10-32

### SYMBOL



### SPECIFICATIONS

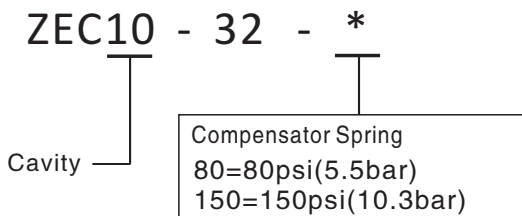
Operating Pressure: 入口(Inlet)	207bar
Maximum Regulated Flow:	
150 psi Compensation pressure:	38.1 lpm ( 10.0 gpm )
80 psi Compensation pressure:	28.0 lpm ( 7.5 gpm )
Flow Maintenance:	
	See Performance Chart
Temperature:	-30°C~+100°C
	( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-3 See page G-2
Installation Torque:	MAX33.9Nm



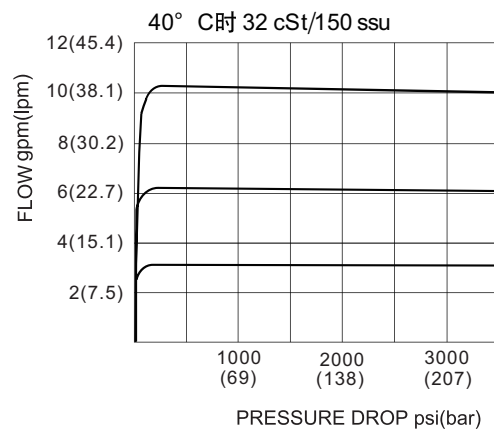
### OPERATION

With inlet flow at ② , the ZEC10-32 will deliver required flow at ③ , in response to load differential pressure sensed at ①.

### TO ORDER



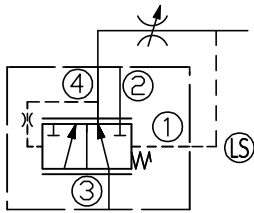
### PRESSURE DROP VS.FLOW



# Pressure Compensator Valves

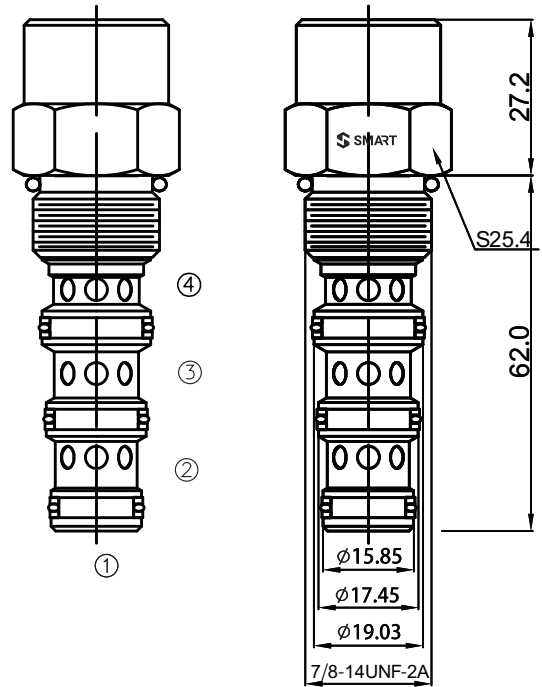
## ZEC10-42

### SYMBOL



### SPECIFICATIONS

MAX. Operating Pressure:	240bar
Input Flow Rate :	45.4Lpm
Maximum Regulated Flow:	37.9lpm with 10.3bar compensator spring 30.2lpm with 5.5bar compensator spring
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-4 See page G-2
Installation Torque:	32-35Nm

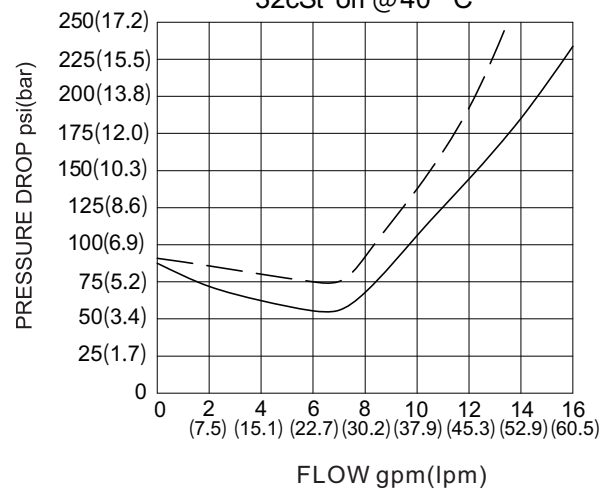


### OPERATION

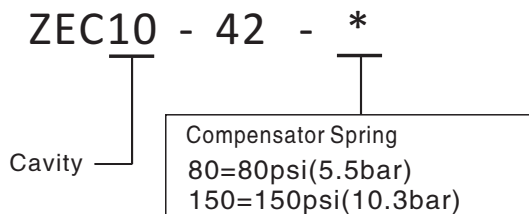
With inlet flow at port ③ , the valve will deliver required priority flow at port ④ , regardless of load pressure. Excessive flow exits at port ② and port ① is the load sense port. All ports may be fully pressurized.

### PRESSURE DROP VS. FLOW

③to ② ; port ④ closed; port ② no load  
 — 150 Spring    - - - 80 Spring  
 32cSt oil @ 40 ° C



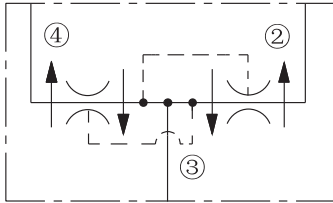
### TO ORDER



## Flow Divider/Combiner Valves

### ZFD50-45

#### SYMBOL

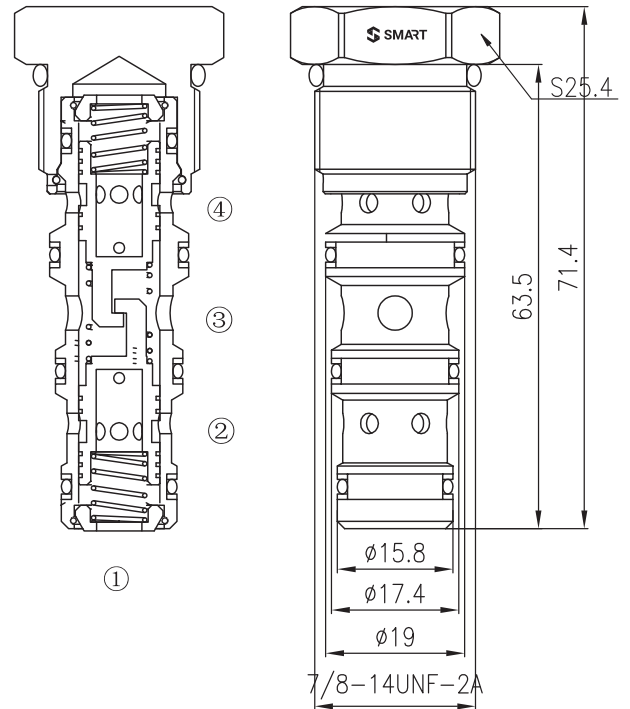


#### SPECIFICATIONS

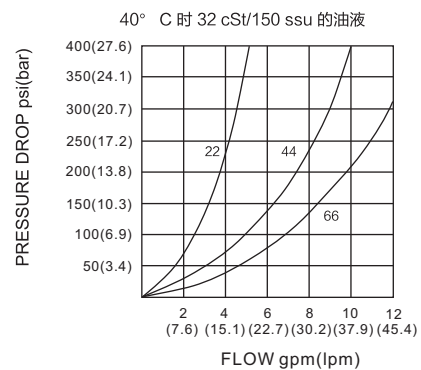
MAX. Operating Pressure:	345bar
Flow:	See PRESSURE DROP VS. FLOW graph
Flow Maintenance Accuracy:	10% from 25–100% of max. rated flow
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-4 See page G-2
Installation Torque:	45-50Nm

#### OPERATION

In the dividing mode, the valve will divert input flow from port ③ to port ② and ④, based on the ratio specified, regardless of operating pressure. The valve will combine input flow from ② and ④.



#### PRESSURE DROP VS. FLOW



#### TO ORDER

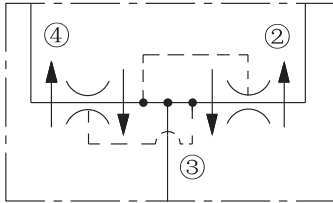
ZFD50 -45- \*\*

Flow Options  
 22=input Flow: 15.1lpm;Ratio:50:50  
 33=input Flow: 22.7lpm;Ratio:50:50  
 44=input Flow: 34.1lpm;Ratio:50:50  
 66=input Flow: 45.4lpm;Ratio:50:50

## Flow Divider/Combiner Valves

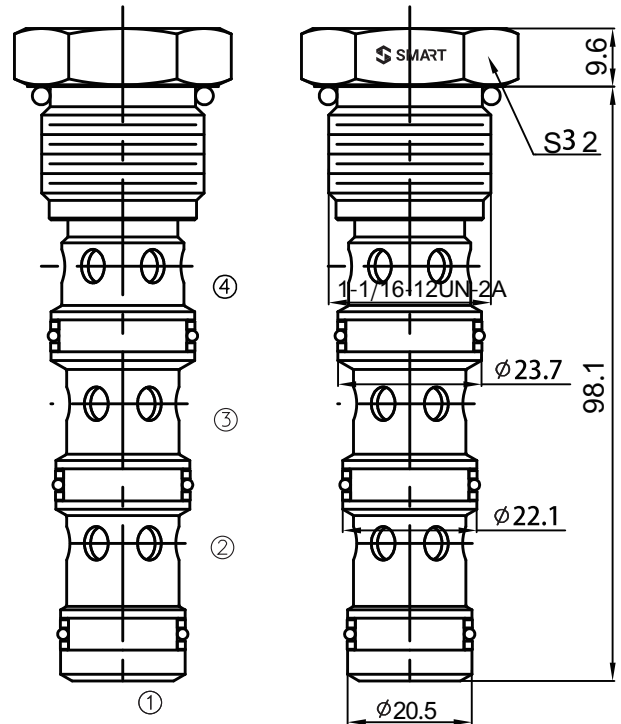
### ZFD52-45

#### SYMBOL



#### SPECIFICATIONS

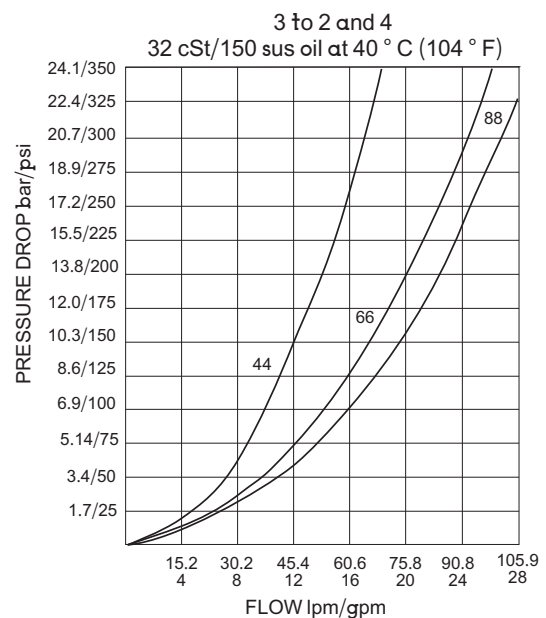
MAX. Operating Pressure:	345bar
Flow:	See PRESSURE DROP VS.FLOW graph
Flow Maintenance Accuracy:	10% of inlet flow for models 44 and 66 15% of inlet flow for models 88
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	12-4 See page G-19
Installation Torque:	99-104Nm



#### OPERATION

In the dividing mode, the valve will divert input flow from port ③ to port ② and ④, based on the ratio specified, regardless of operating pressure. The valve will combine input flow from ② and ④.

#### PRESSURE DROP VS. FLOW



#### TO ORDER

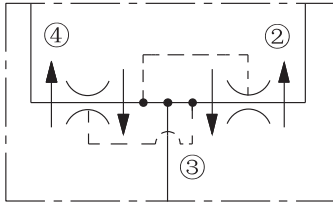
ZFD52-45- \*\*

Flow Options (Ratio:50:50)  
44=input Flow: 15-60lpm;  
66=input Flow: 23-90lpm;  
88=input Flow: 30-106lpm;

## Flow Divider/Combiner Valves

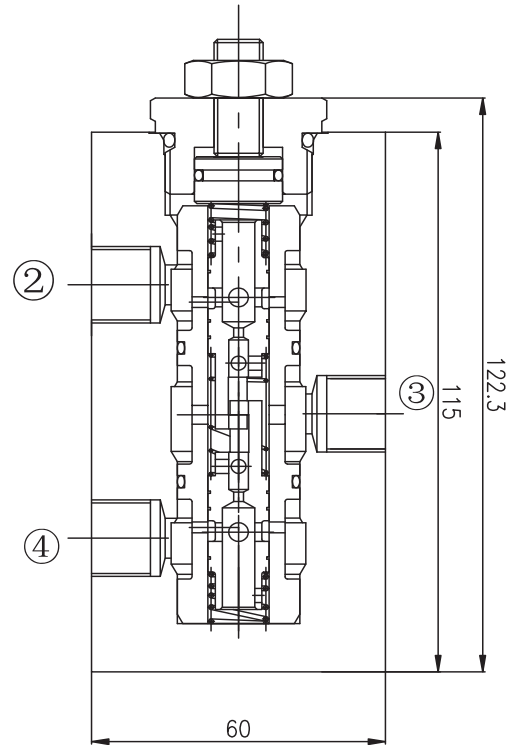
### ZFD06-00

#### SYMBOL



#### SPECIFICATIONS

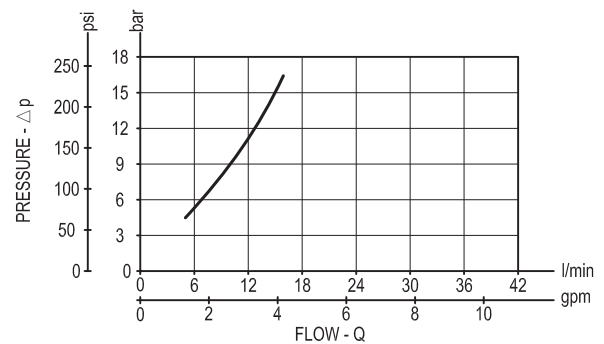
MAX.Operating Pressure:	250bar
Flow:	5–15L/min
Flow Maintenance Accuracy:	10% from 25–100% of max.rated flow
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Port size:	G3/8 and M18X1.5



#### OPERATION

In the dividing mode, the valve will divert input flow from port ③ to port ② and ④, based on the ratio specified, regardless of operating pressure. The valve will combine input flow from ② and ④.

#### PRESSURE DROP VS. FLOW



#### TO ORDER

ZFD06-00- \*\*

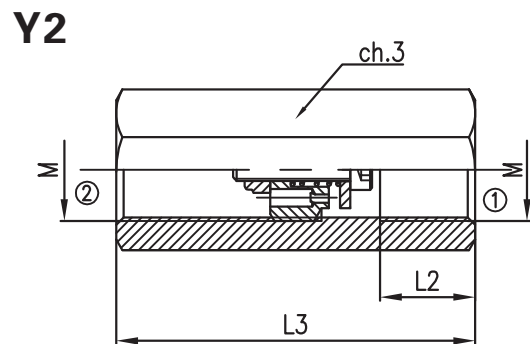
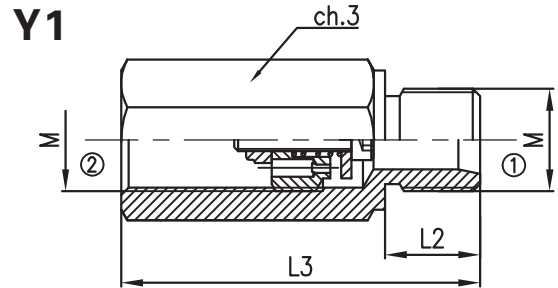
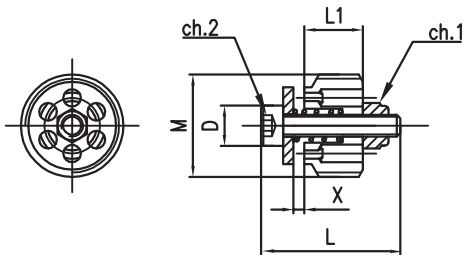
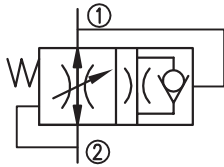
Port size

G38=②③④ Port G3/8

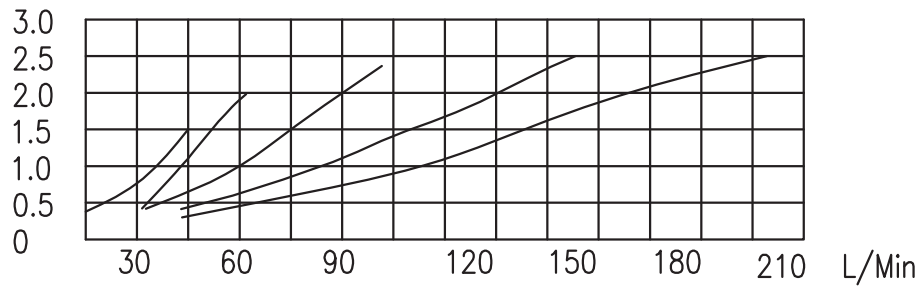
M18=②③④ Port M18X1.5

VUBA\*\*/X.\*

SYMBOL

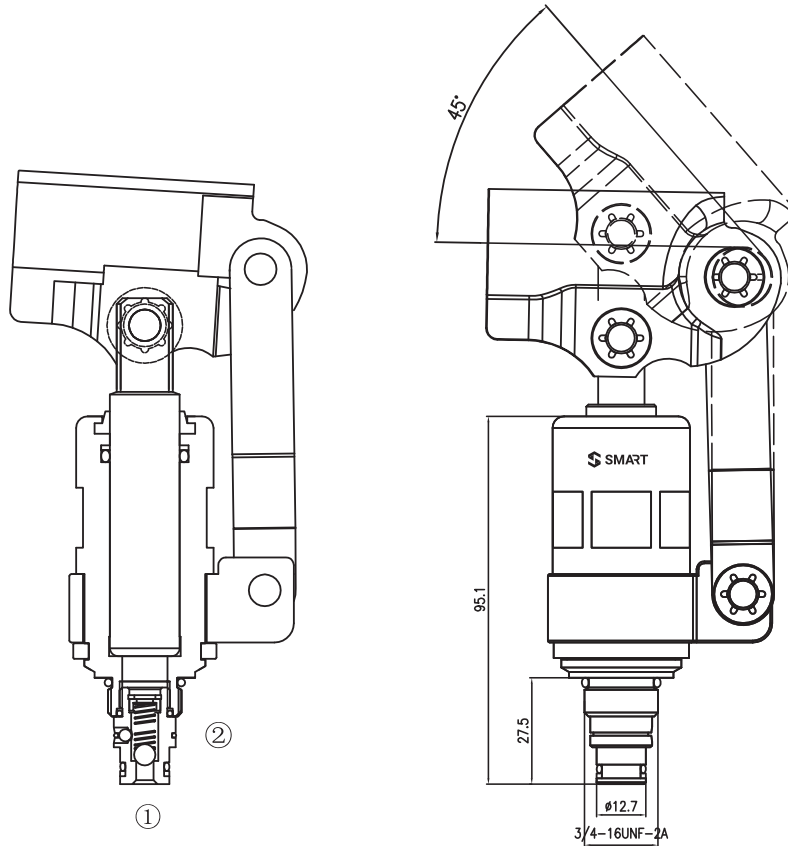


CODE	M	Max. flow L/min	Max. press. bar	L	L1	L2	L3	D	Ch. 1	Ch. 2	Ch. 3	Torque (±15%)	
VUBA140	G1/4	25 (4~25)	350	19	8.5	13	49	10.5	5.5	2.5	19	8	
VUBA380	G3/8	50 (6~50)		23	11	14	56	12.7	5.5	2.5	22	12	
VUBA120	G1/2	80 (16~80)		29	13	15	70	15	7	3	27	18	
VUBA340	G3/4	150 (25~160)		34	18	18	76	18	7	3	32	23	
VUBA100	G1	180 (40~180)		40	20	22	82	26	8	4	38	28	
VUBA1215	M12X1.5	15		19	8.5			10	5.5	2.5			4
VUBA1415	M14X1.5	25 (4~25)		23	11			11.5	5.5	2.5			8
VUBA1615	M16X1.5	50 (6~50)		23	11			12.7	5.5	2.5			12
VUBA2215	M22X1.5	80 (16~80)		29	13			15	7	3			18

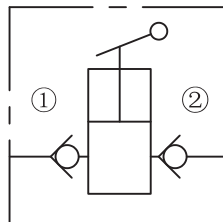


# Hand Pump

## ZHP-08



F

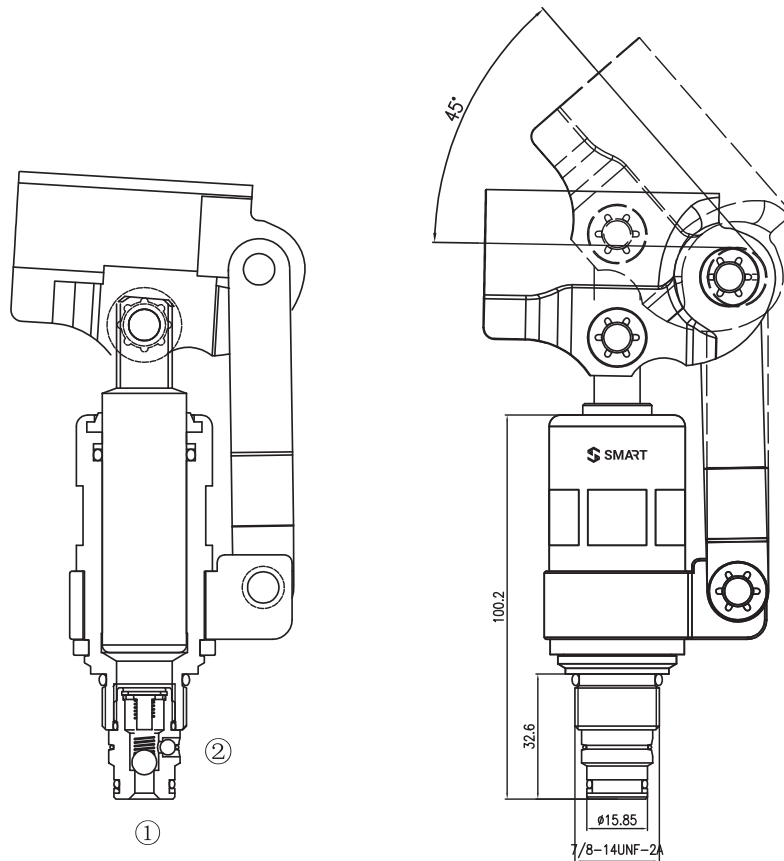
SPECIFICATIONS		<b>SYMBOL</b>  
MAX.Operating Pressure:	250bar	
Displacement:	6cc per stroke	
Temperature:	-30°C~+100°C ( Standard bana seals )	
Filtration:	See page Z-1	
Cavity:	08-2 See page G-1	
Installation Torque:	24.7-27.1Nm	

### OPERATION

When the operator is pushed, the valve delivers a nominal flow of 6cc to the ② port.  
 When the operator is pulled, the valve suctions fluid from the ① port.

# Hand Pump

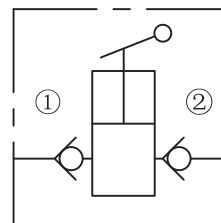
## ZHP-10



### SPECIFICATIONS

MAX.Operating Pressure:	207bar
Displacement:	8.8cc per stroke
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	10-2 See page G-2
Installation Torque:	35-40.7Nm

### SYMBOL

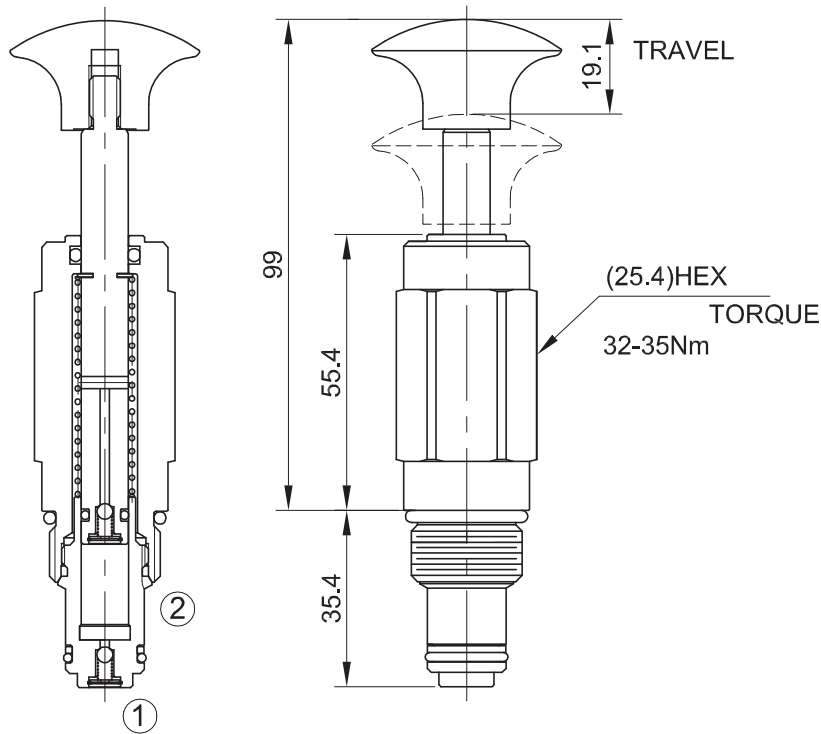


### OPERATION

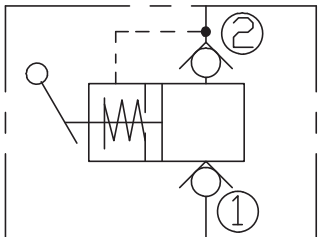
When the operator is pushed, the valve delivers a nominal flow of 8.8cc to the ② port.  
 When the operator is pulled, the valve suctions fluid from the ① port.

# Hand Pump

## ZHP5-10



F

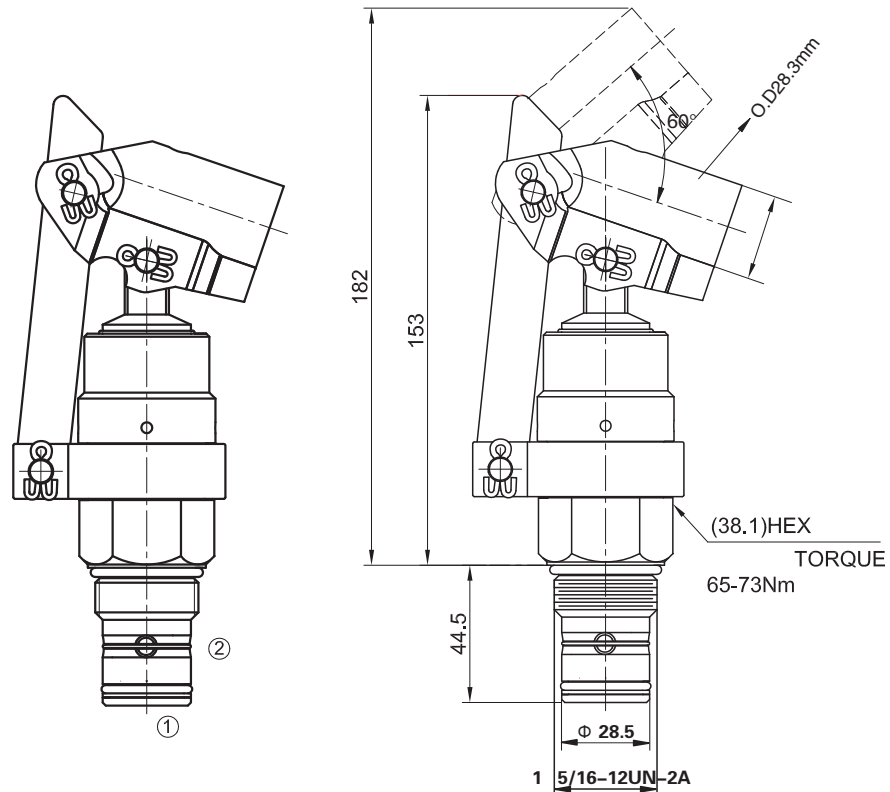
SPECIFICATIONS	SYMBOL
MAX.Operating Pressure:	
Port ① to 207bar(①207bar)	
Port ② to 69bar(②69bar)	
Displacement: 1.36cc per stroke	
Temperature: -30°C~+100°C	
( Standard bana seals )	
Filtration: See page Z-1	
Cavity: 10-2 See page G-2	
Installation Torque: 35-40.7Nm	

### OPERATION

When the operator is pushed,the valve dilivers a nominal flow of 1.36cc to the ① port.  
 When the operator is pulled,the valve suctions fluid from the ② port.

# Hand Pump

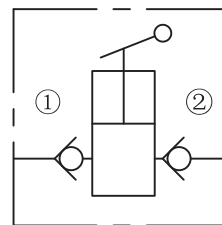
## ZHP-16



### SPECIFICATIONS

System Pressure:	207bar
Pressure Generated by ZHP-16 :	96bar MAX.
Displacement:	21.3cc per stroke
Temperature:	-30°C~+100°C ( Standard bana seals )
Filtration:	See page Z-1
Cavity:	16-2 See page G-3
Installation Torque:	67-73Nm

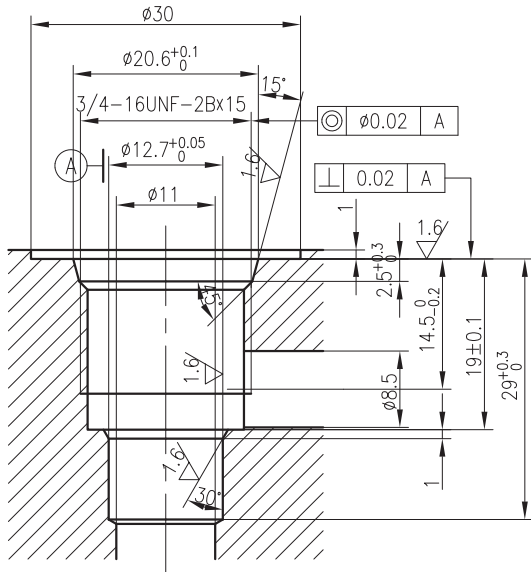
### SYMBOL



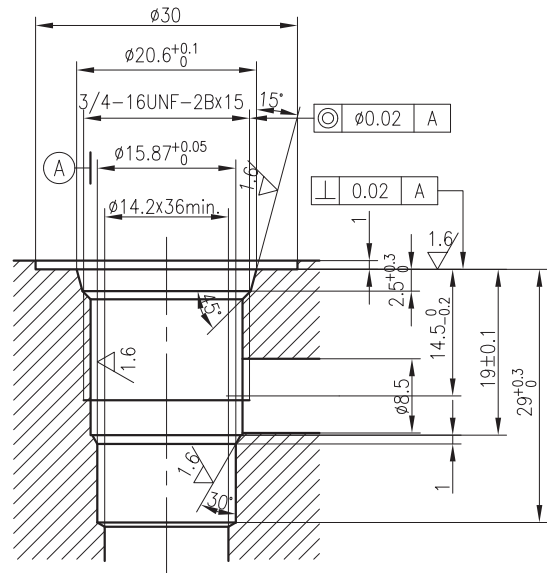
### OPERATION

When the operator is pushed, the valve suction fluid flow to the ② port.  
 When the operator is pulled, the valve suction fluid from the ① port.  
 The hand pump provides hydraulic flow to 21.3cc, per stroke, at pressure to 96bar.

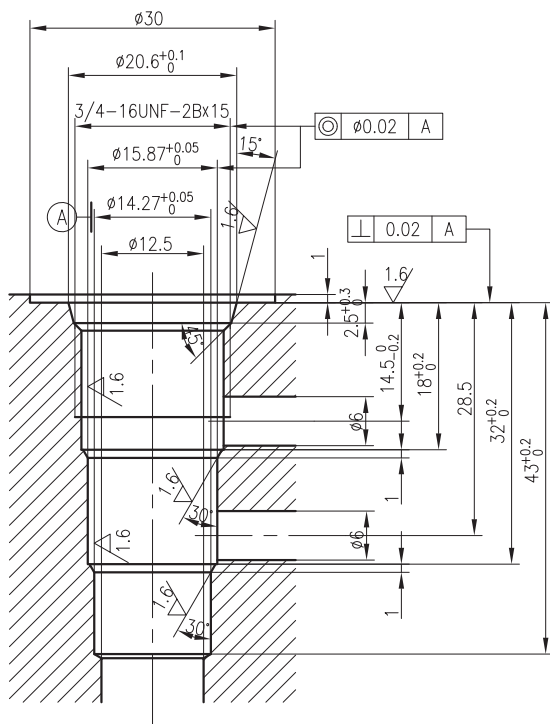
# Cavity



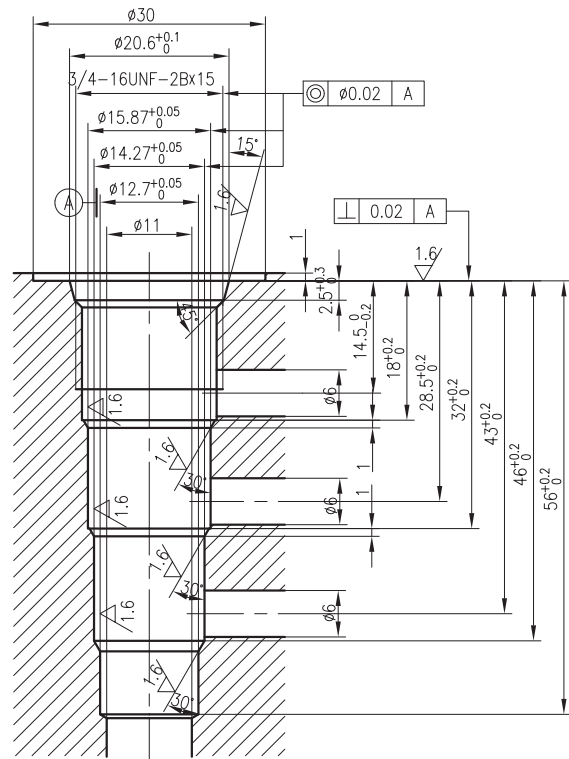
CAVITY:08-2



CAVITY:08S-2



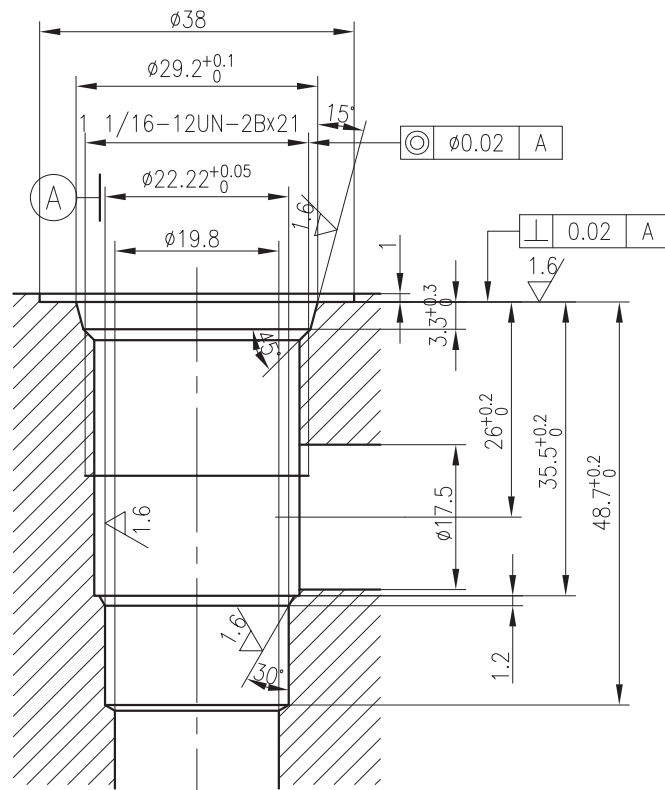
CAVITY:08-3



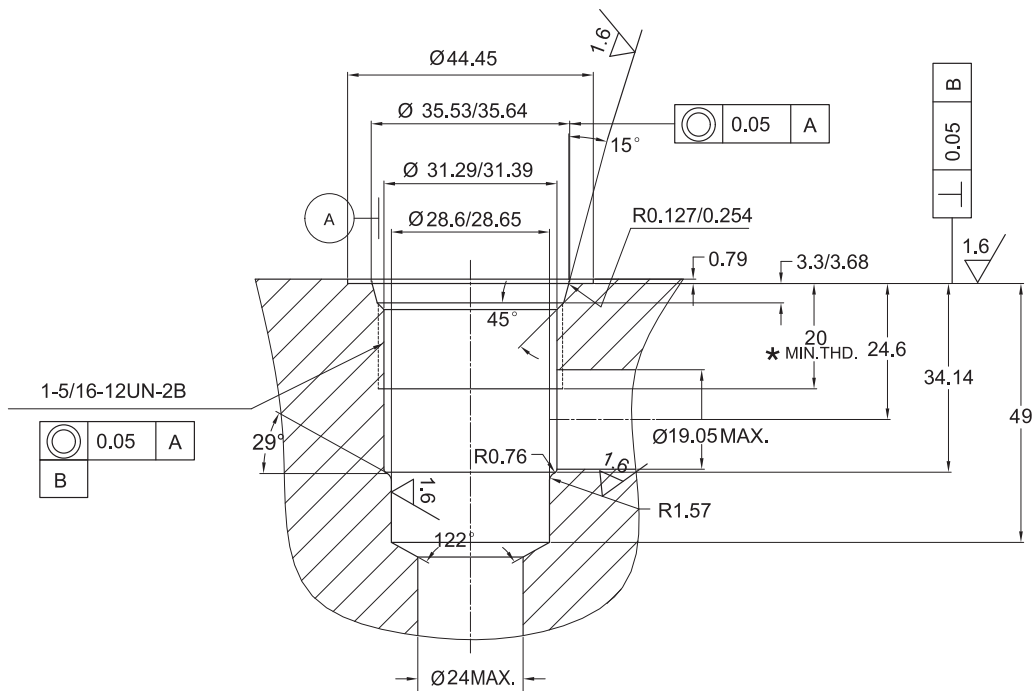
CAVITY:08-4

G



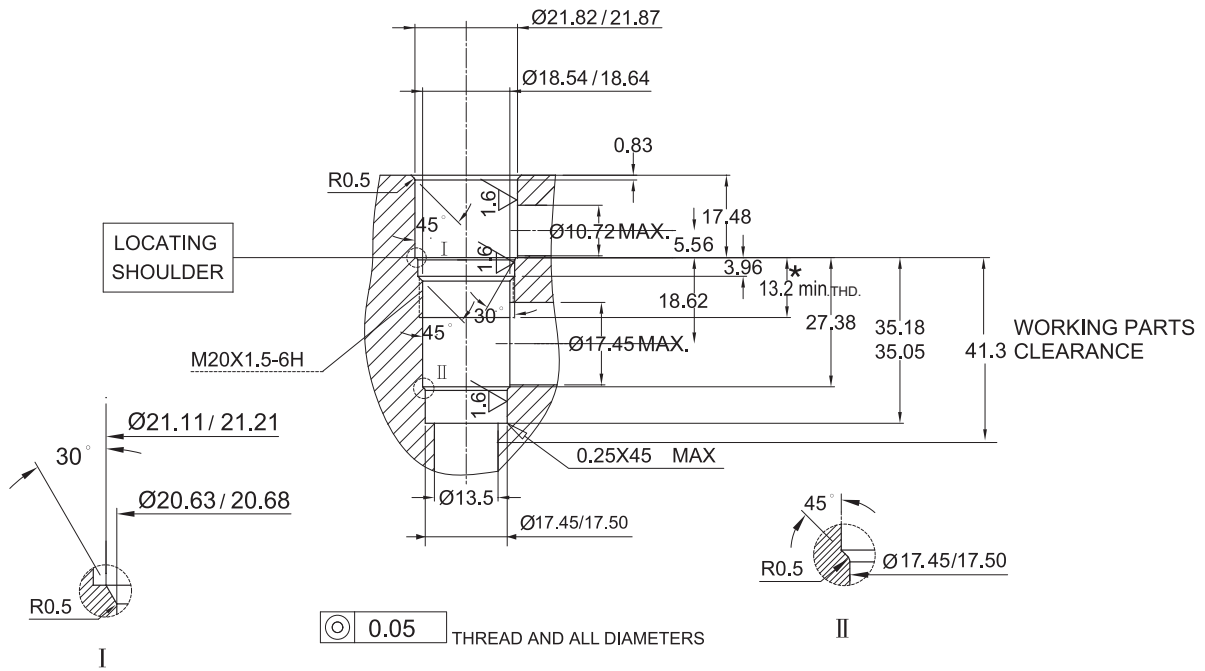


CAVITY:12-2



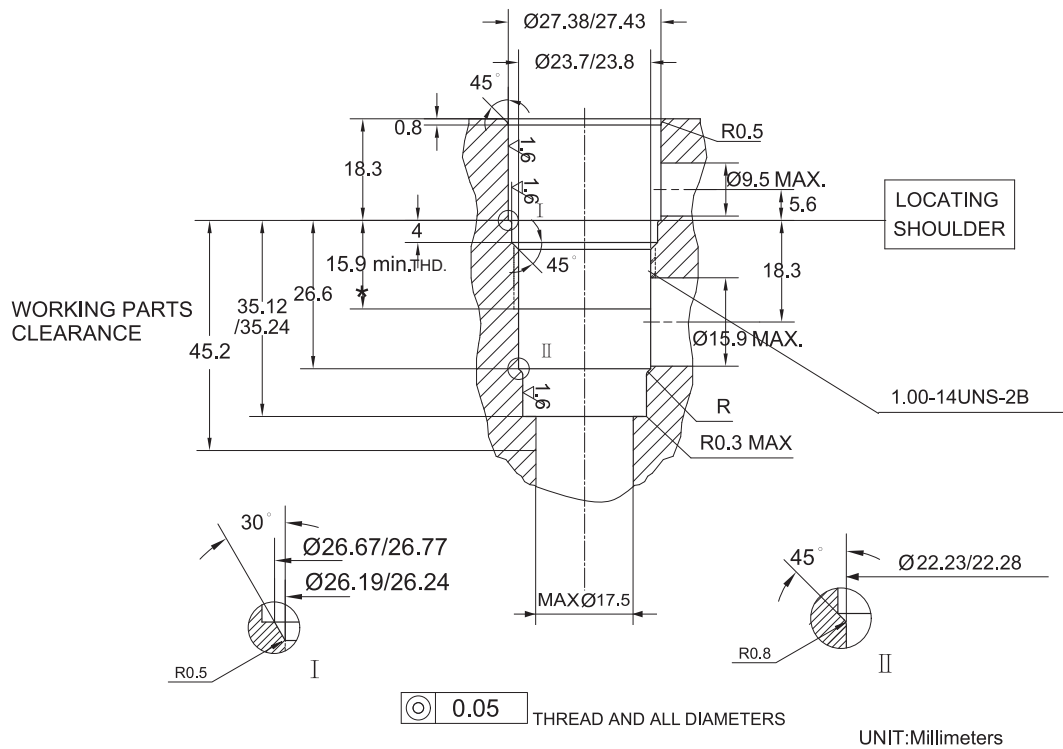
UNIT:Millimeters

CAVITY:16-2



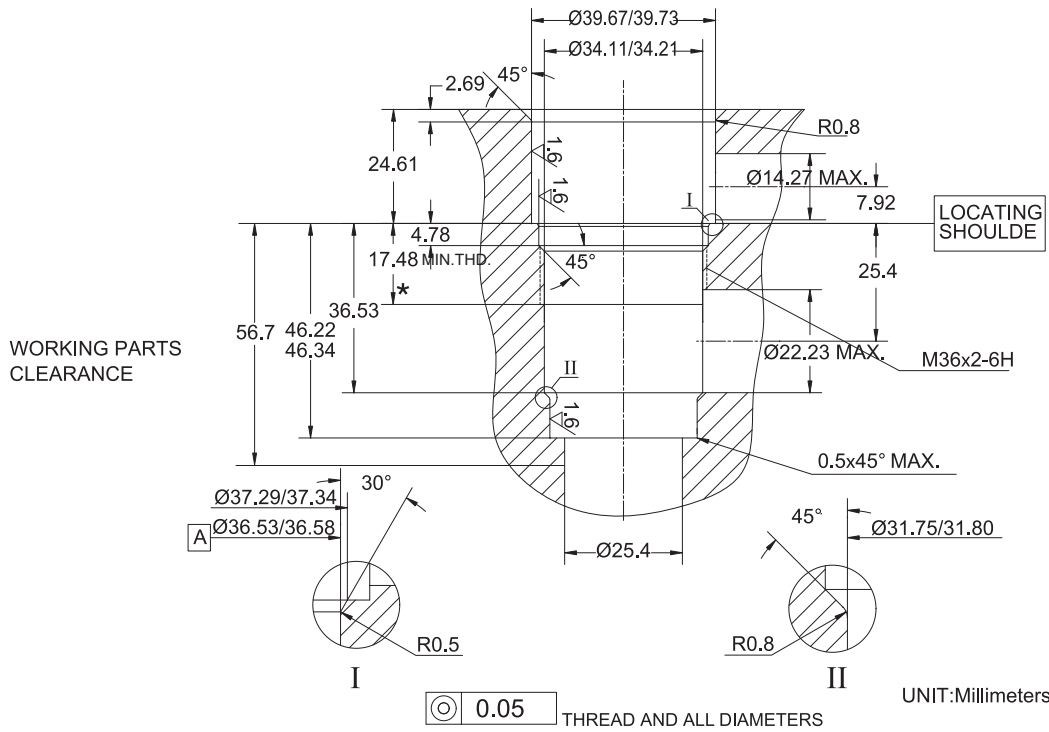
UNIT: Millimeters

CAVITY: SUN T-11A

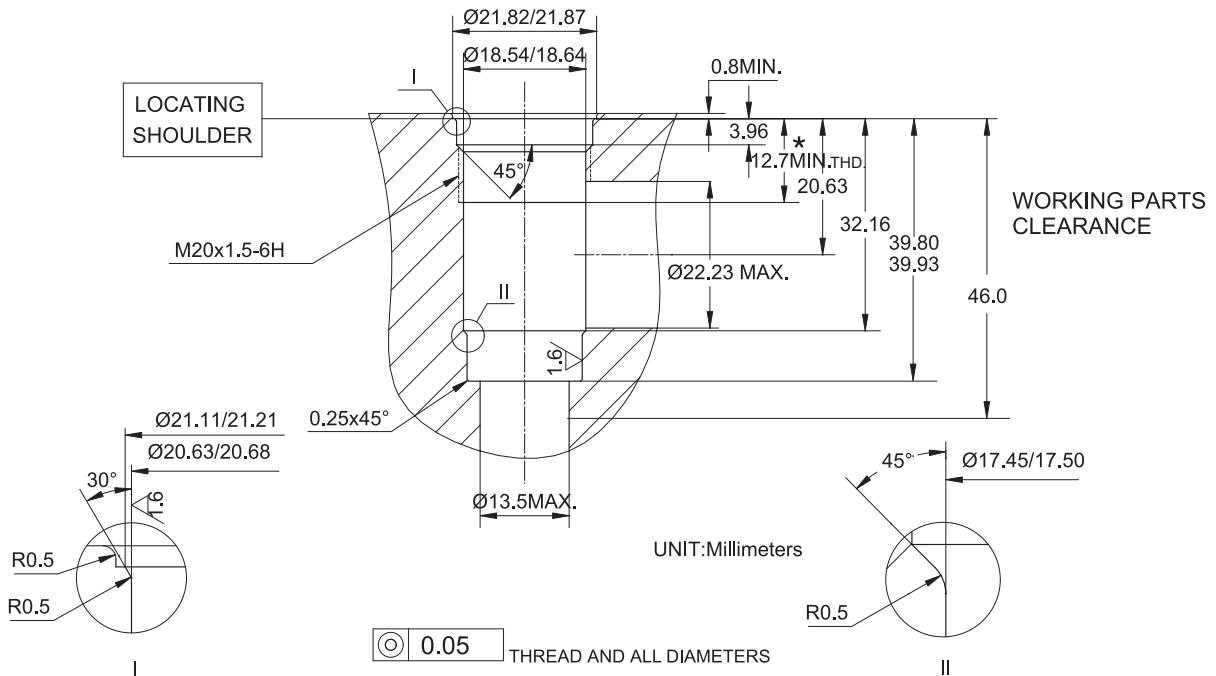


UNIT: Millimeters

CAVITY: SUN T-2A

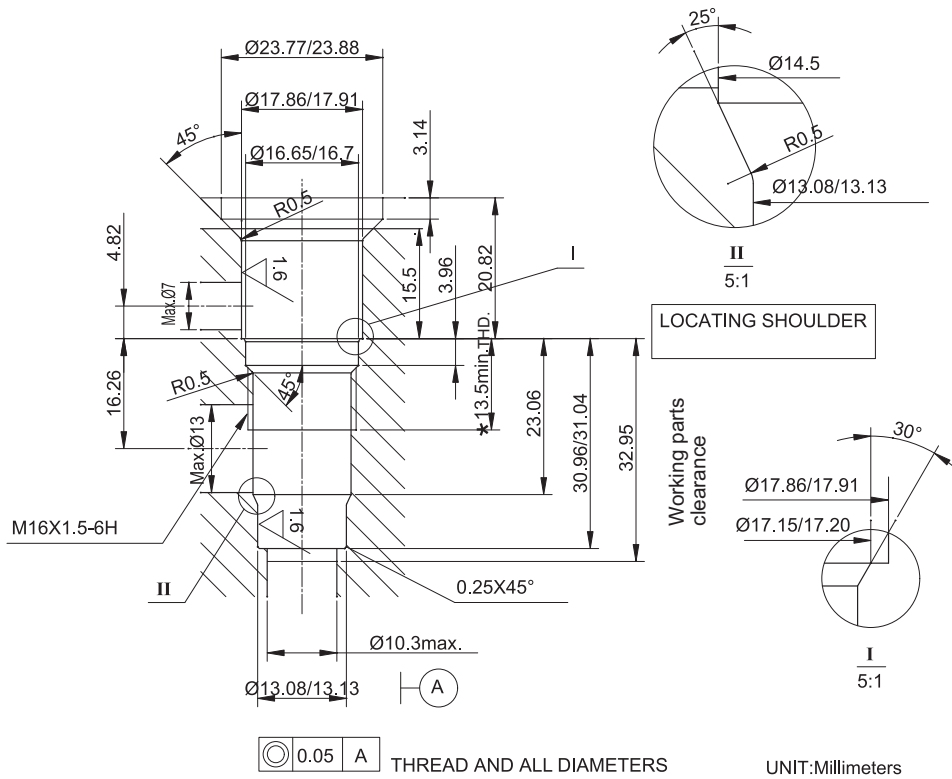


CAVITY: SUN T-17A

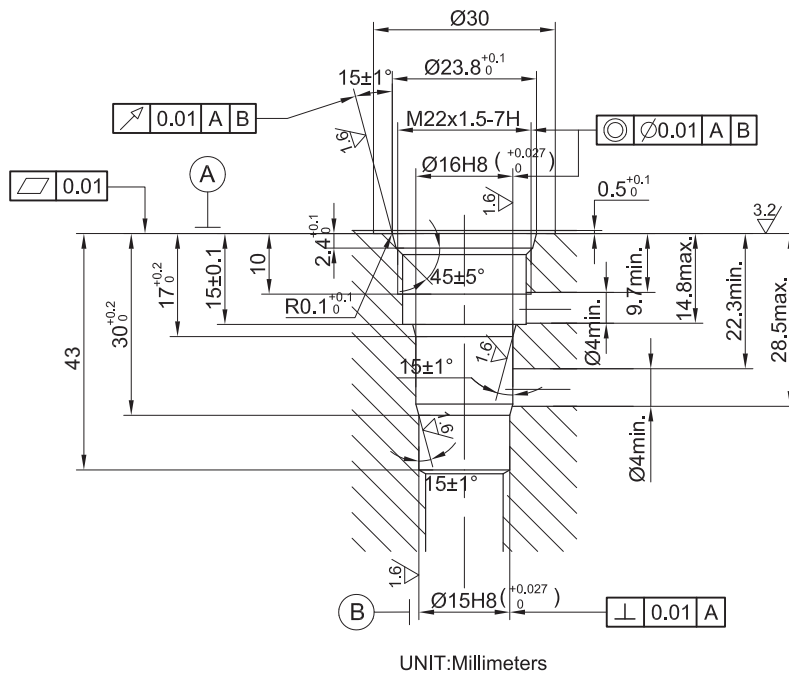


CAVITY: SUN T-10A





CAVITY: SUN T-163A

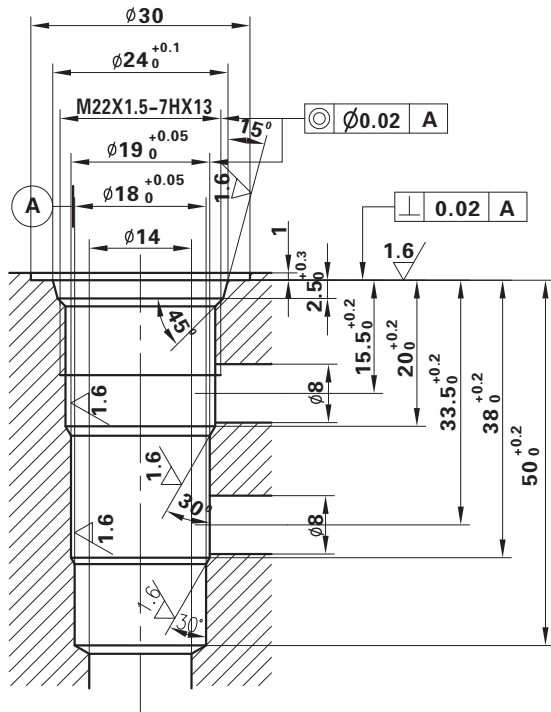


CAVITY: T06A-3

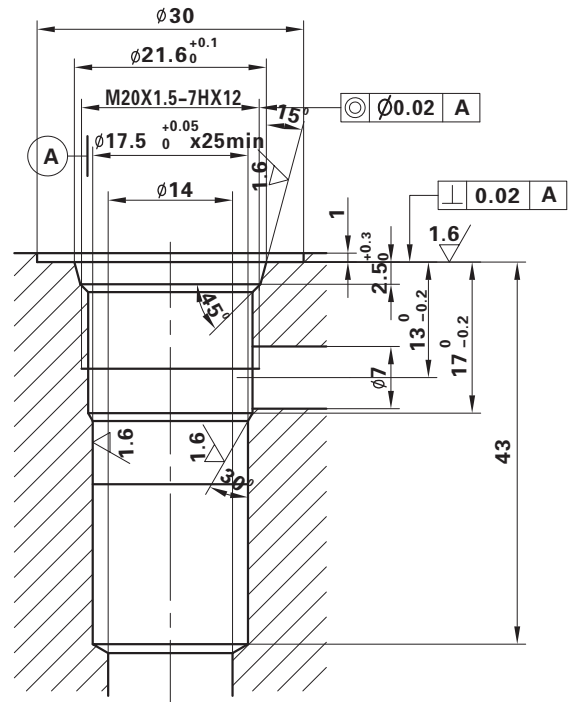
G



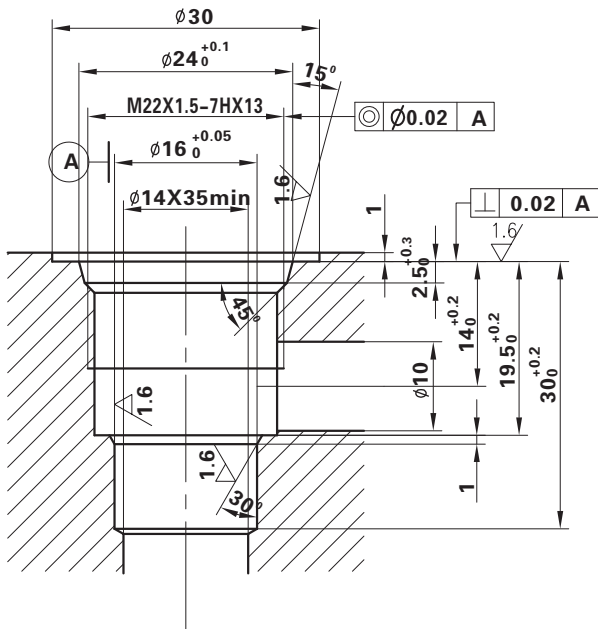




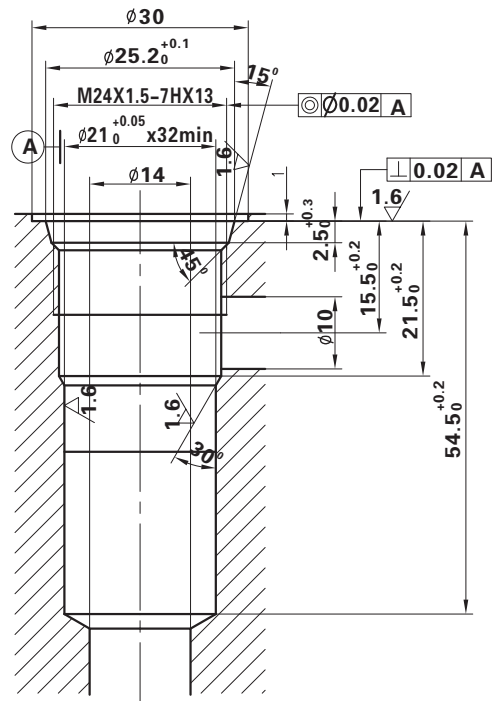
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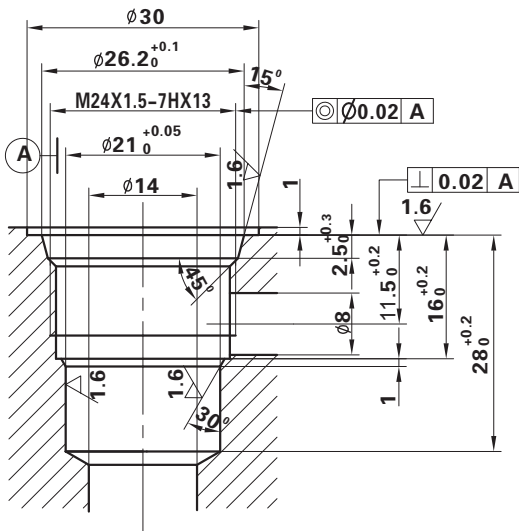
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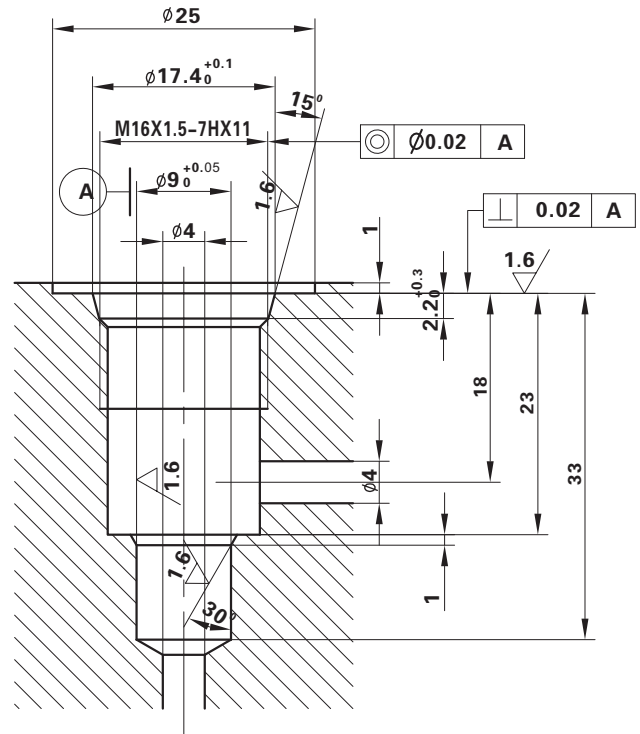
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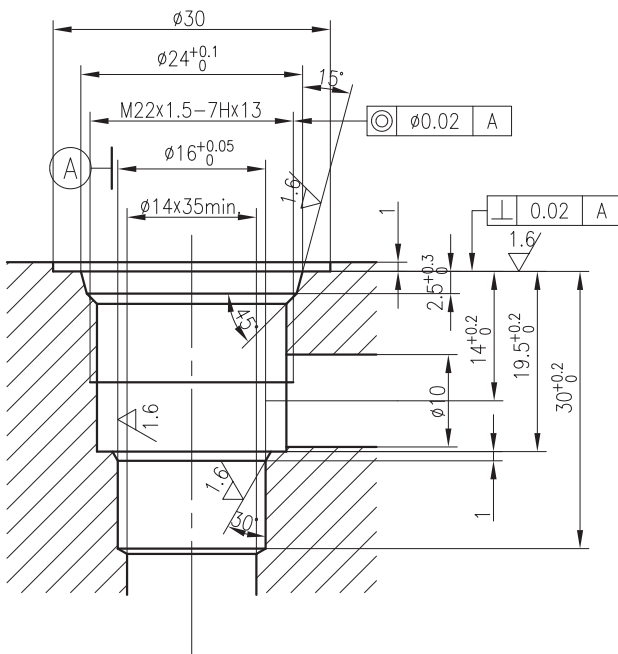
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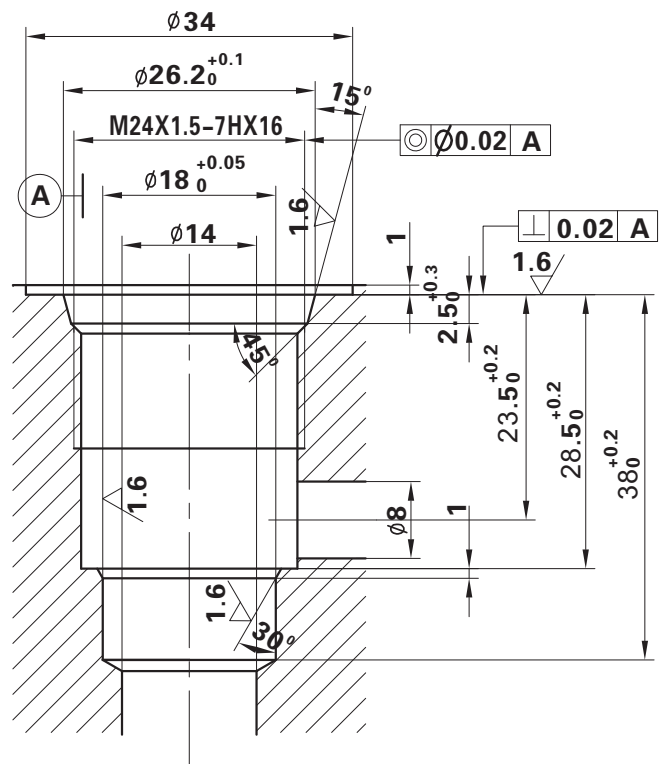
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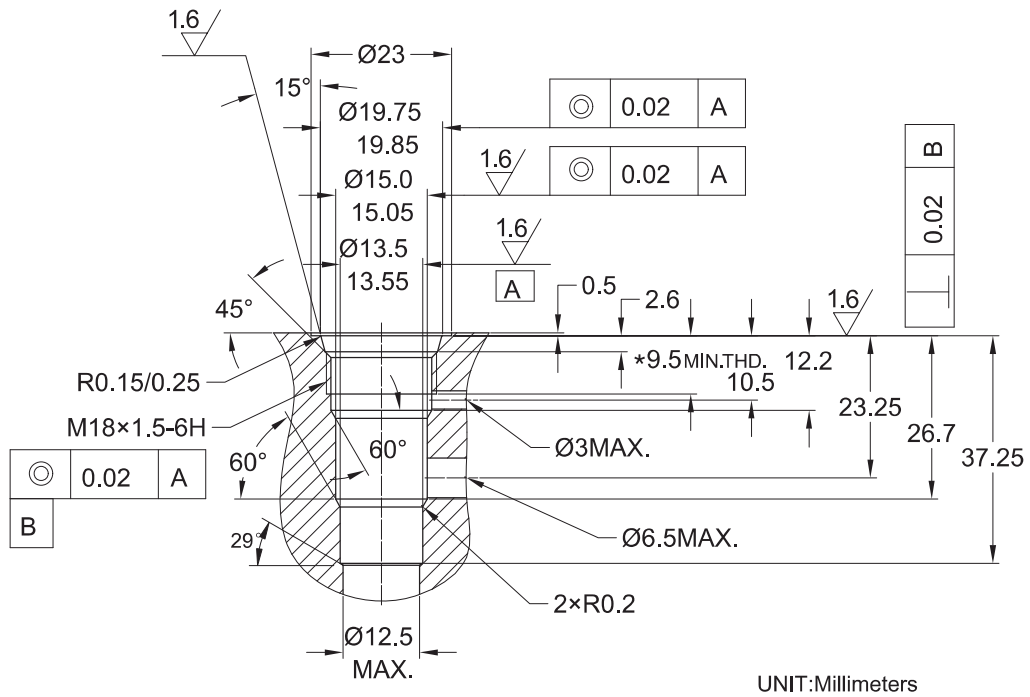
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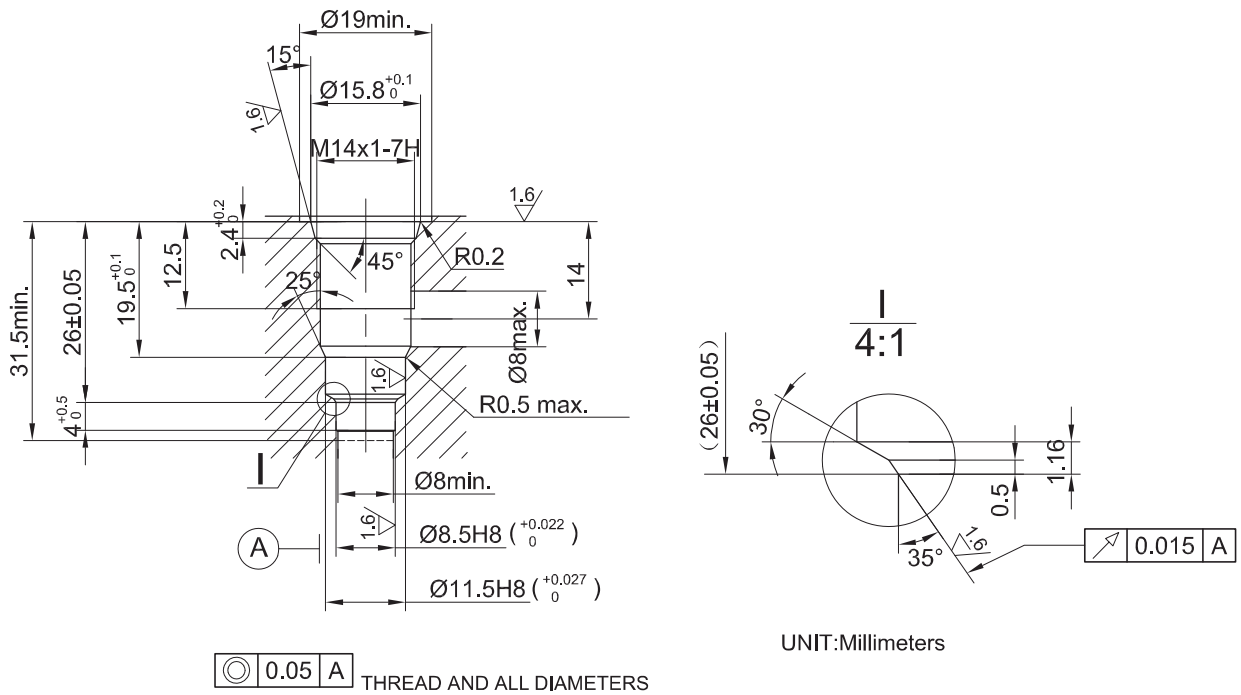
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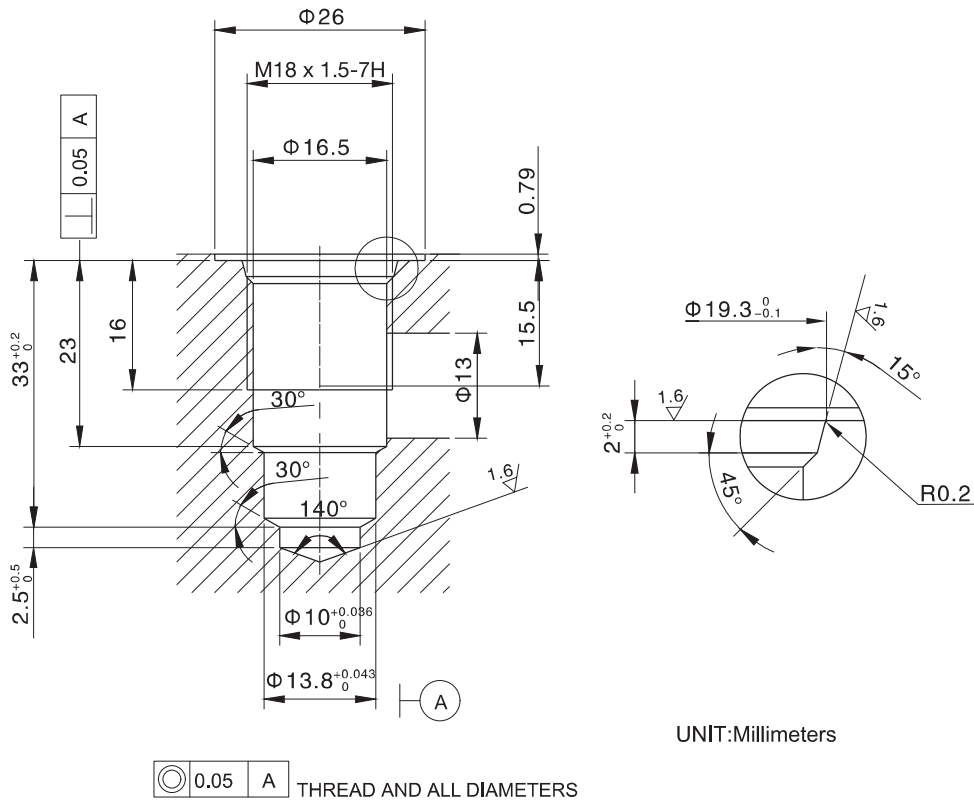
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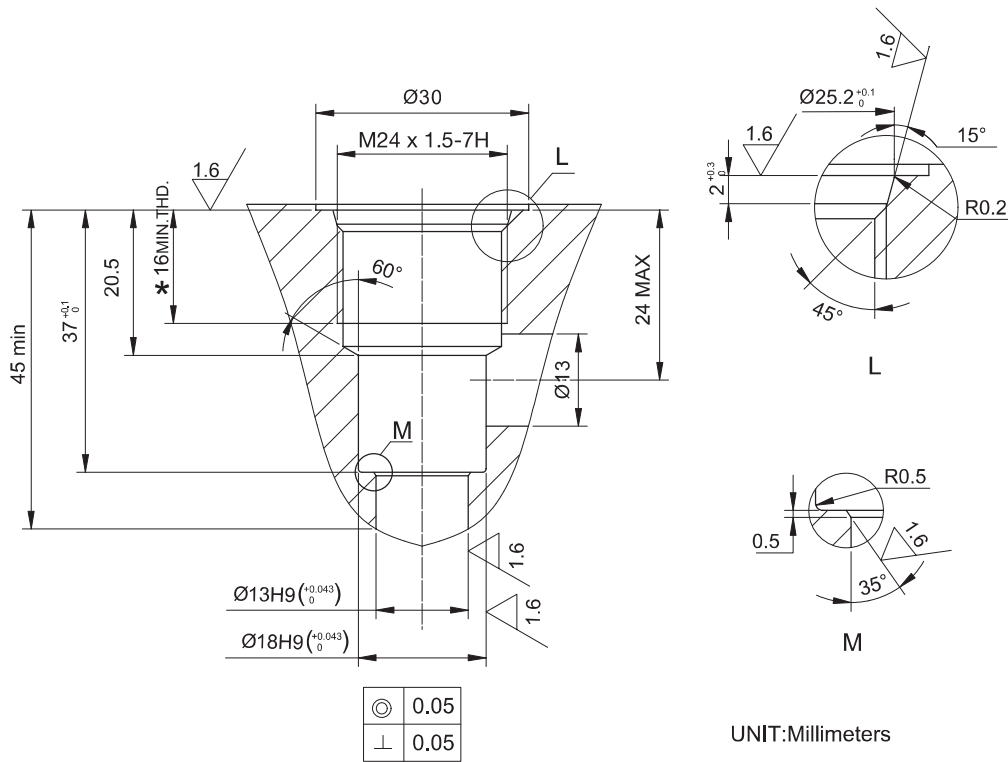
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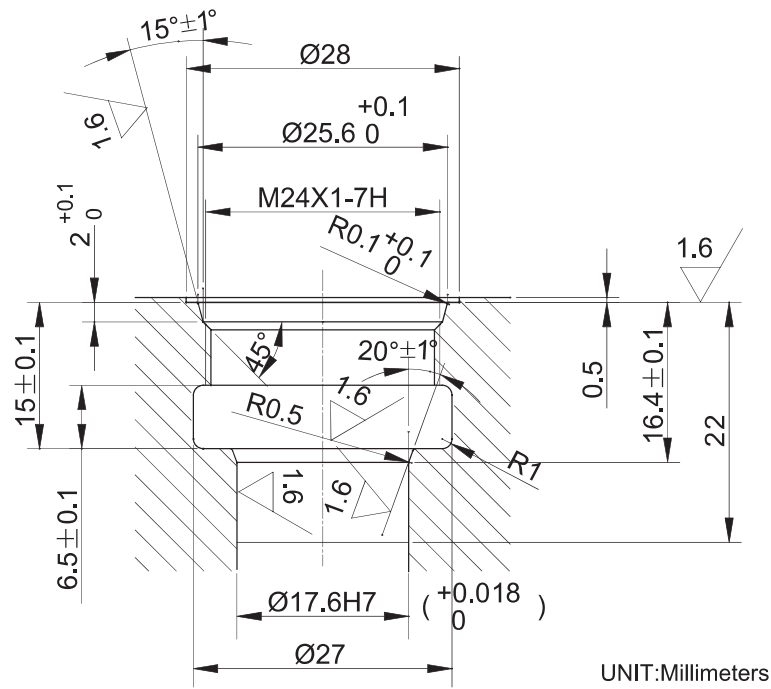
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CAVITY: Rexroth-730

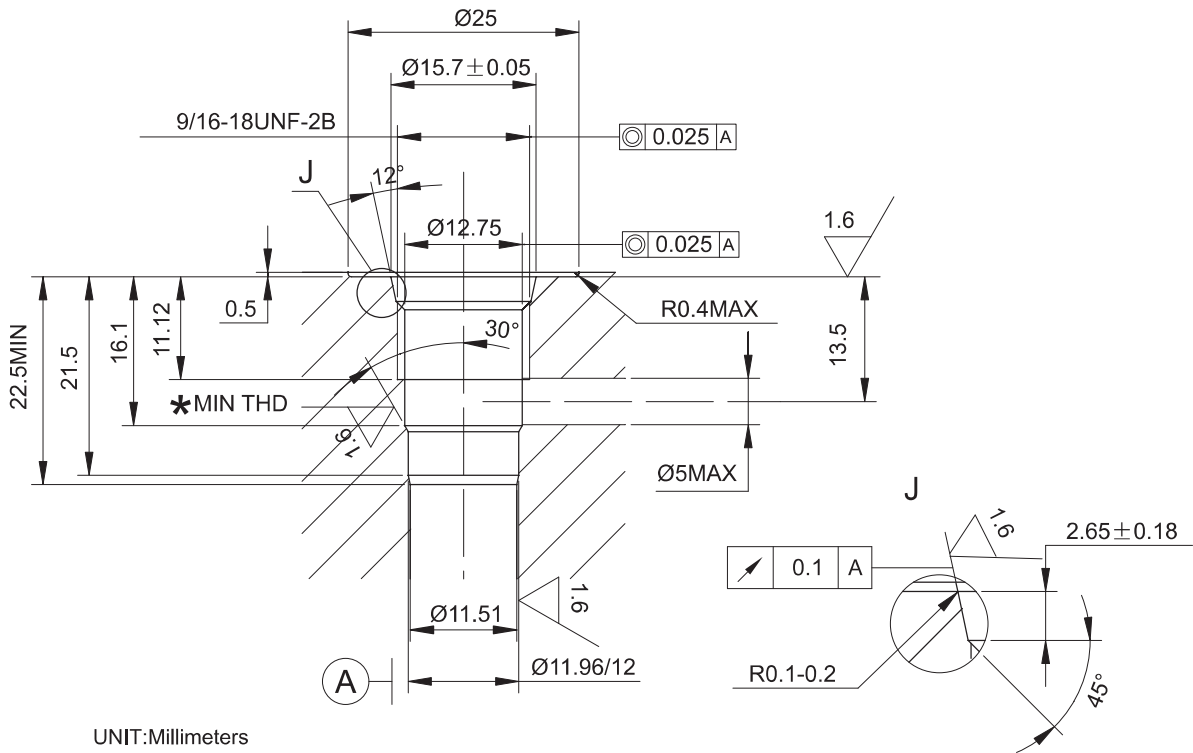


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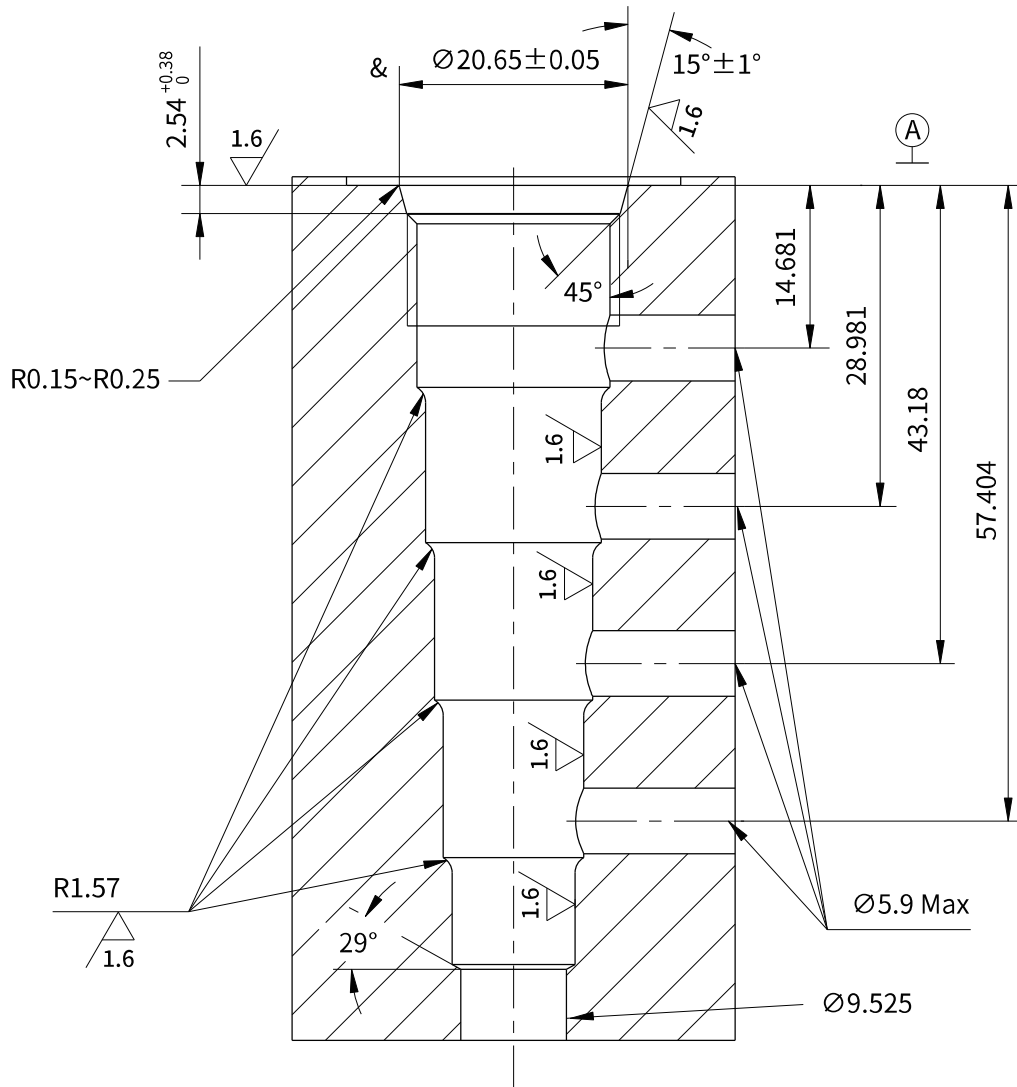
⊙ 0.05 A THREAD AND ALL DIAMETERS

CAVITY:Rexroth-FB



CAVITY:HYDAC FC06-2





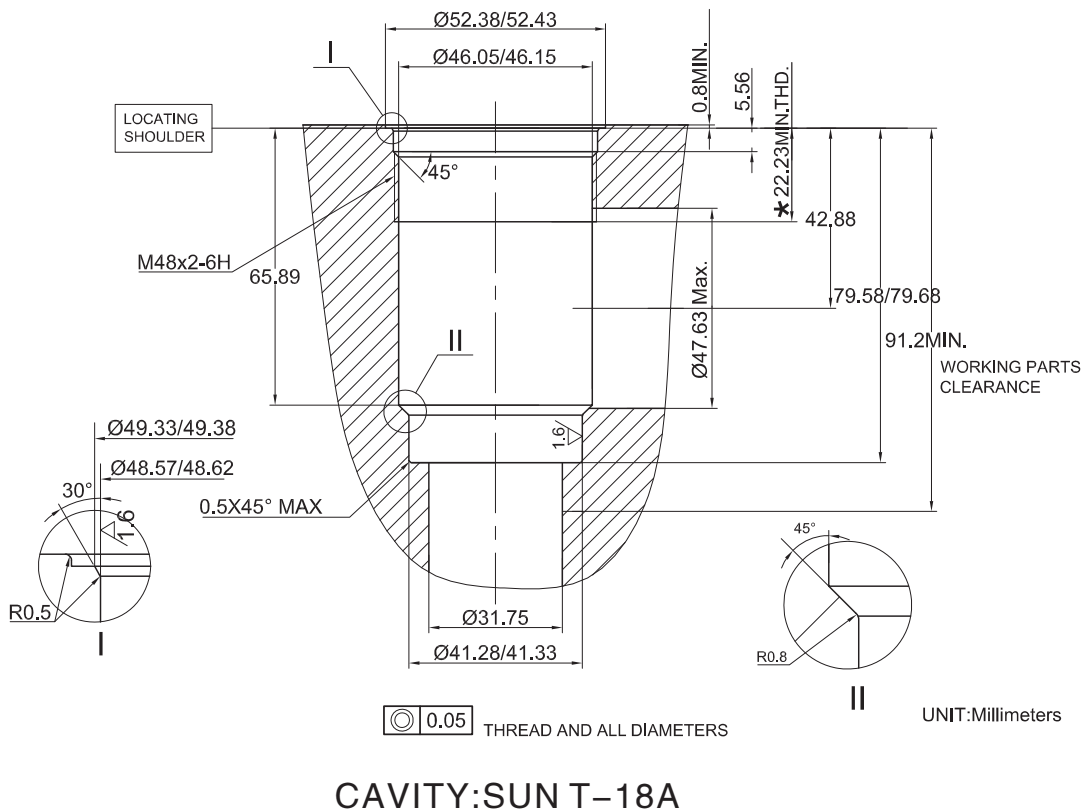
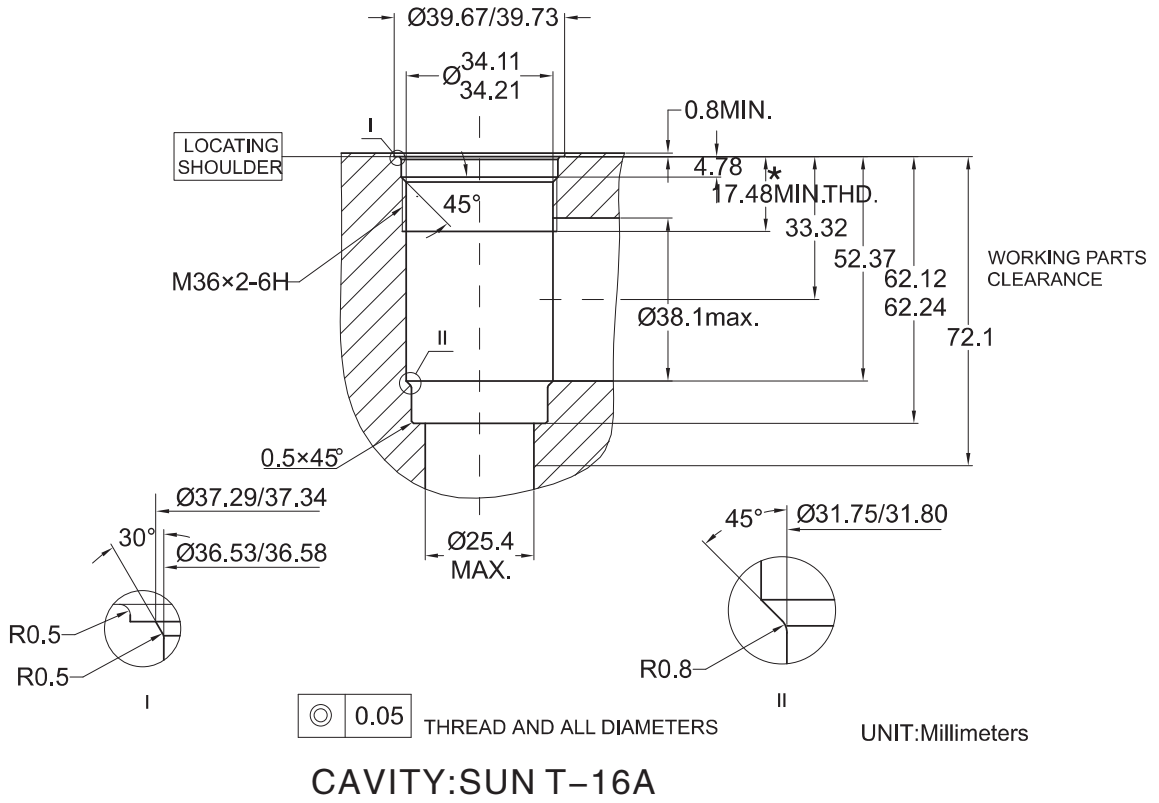
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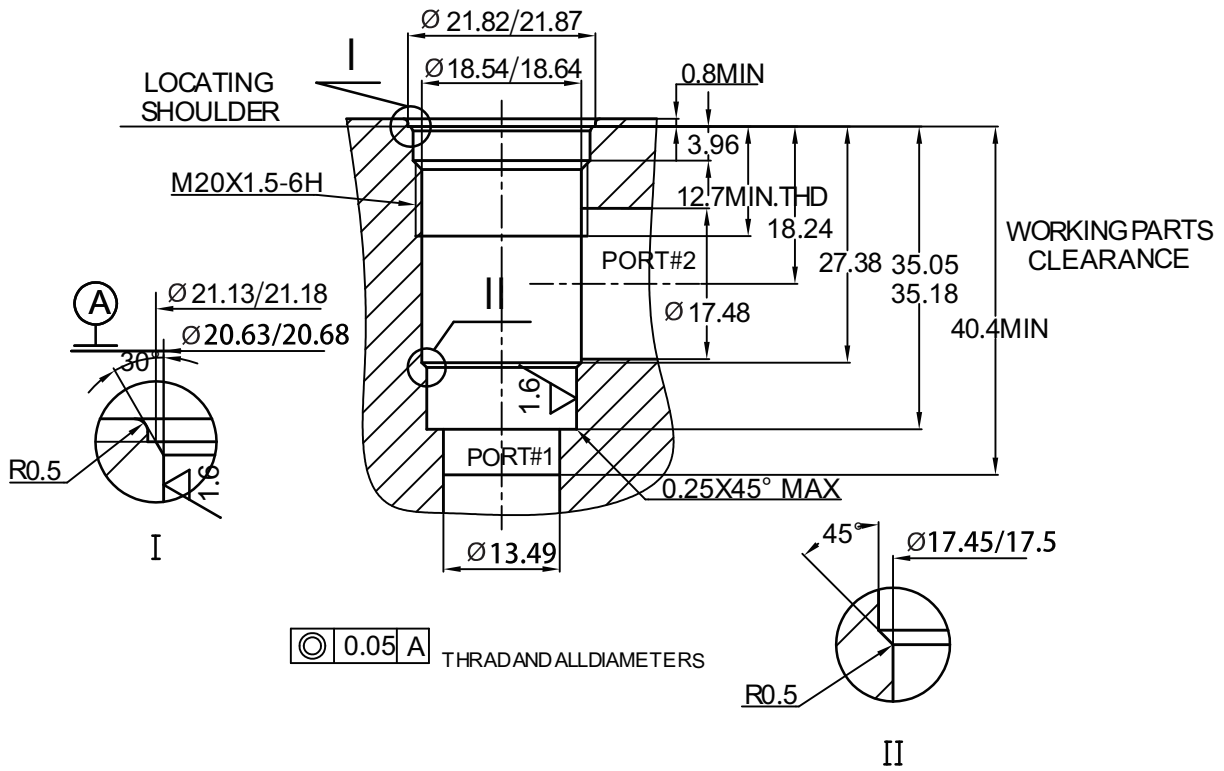




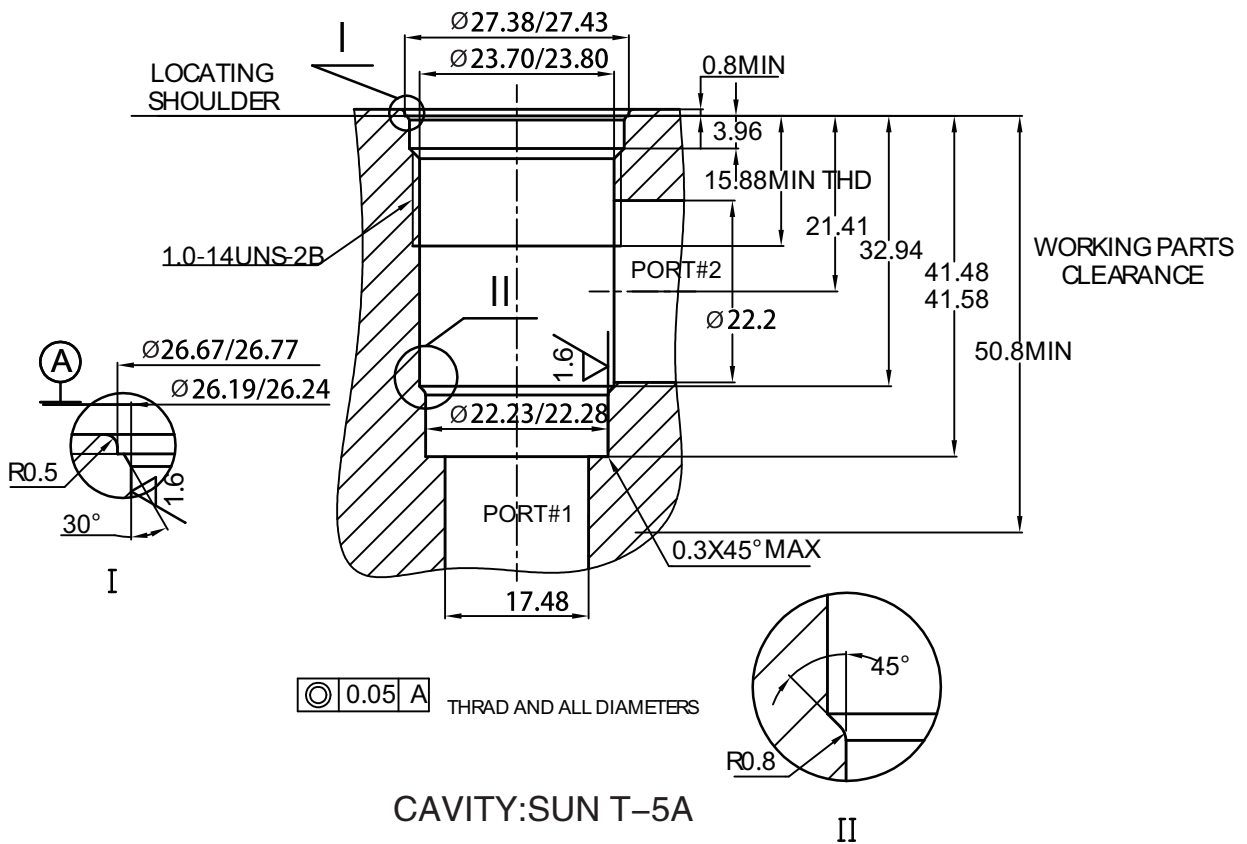








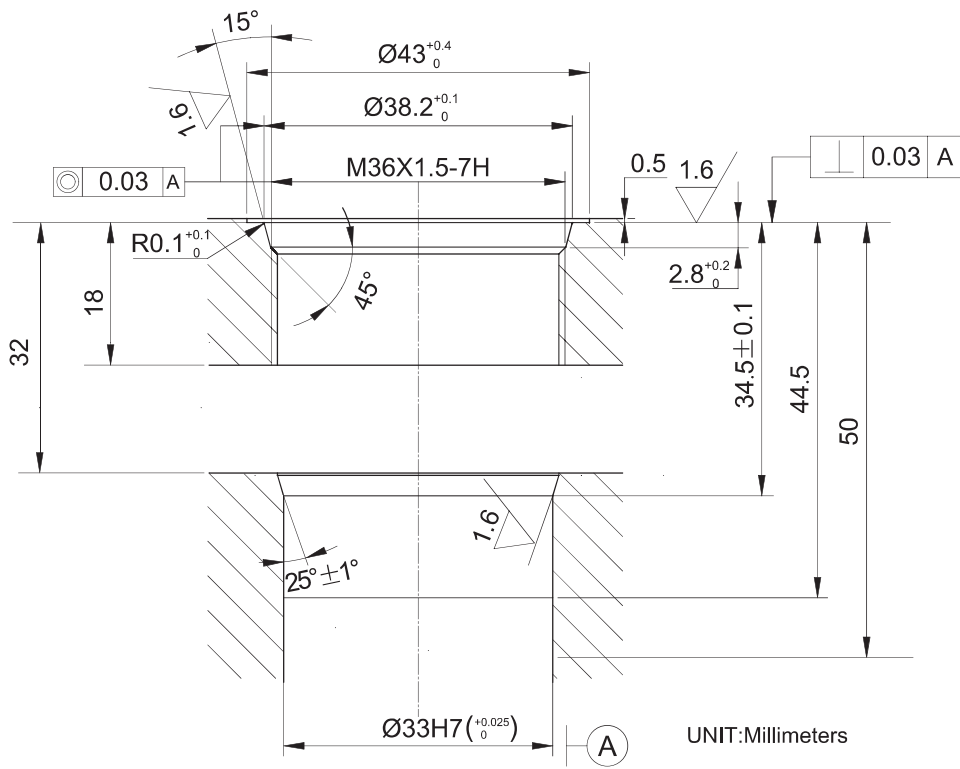
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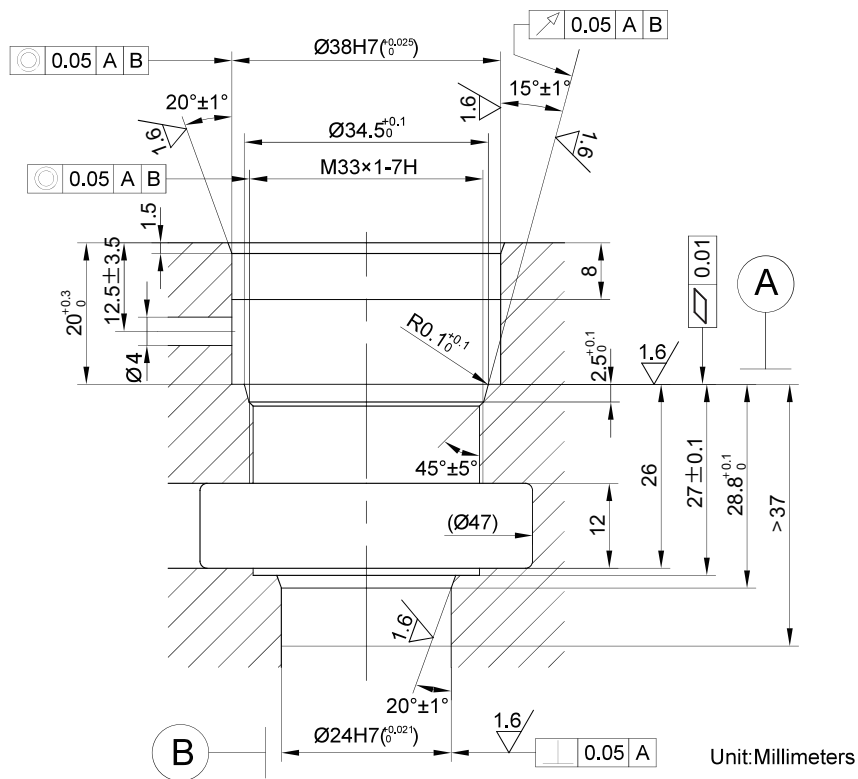
CAVITY: SUN T-5A

G



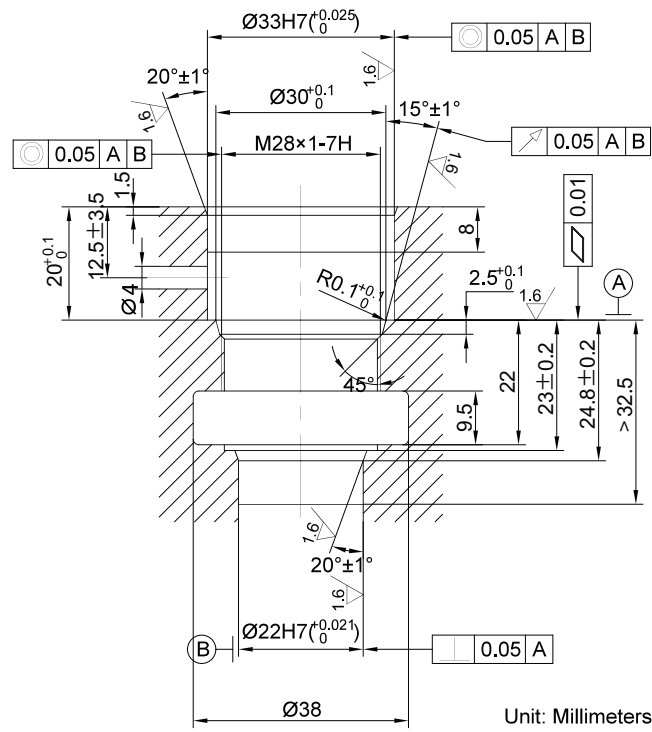


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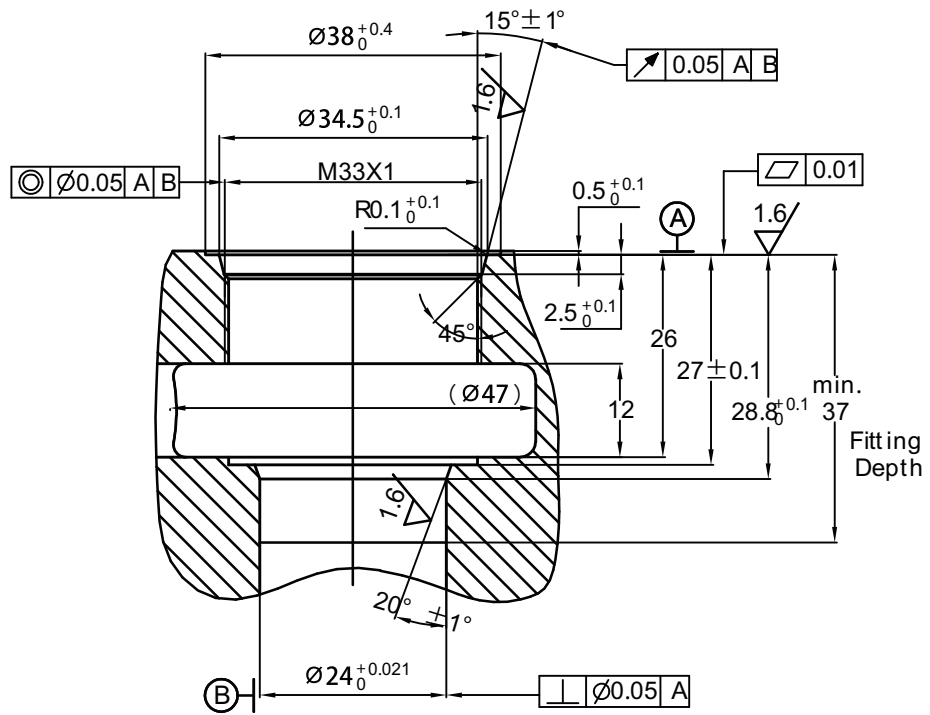


CAVITY:Rexroth-HK

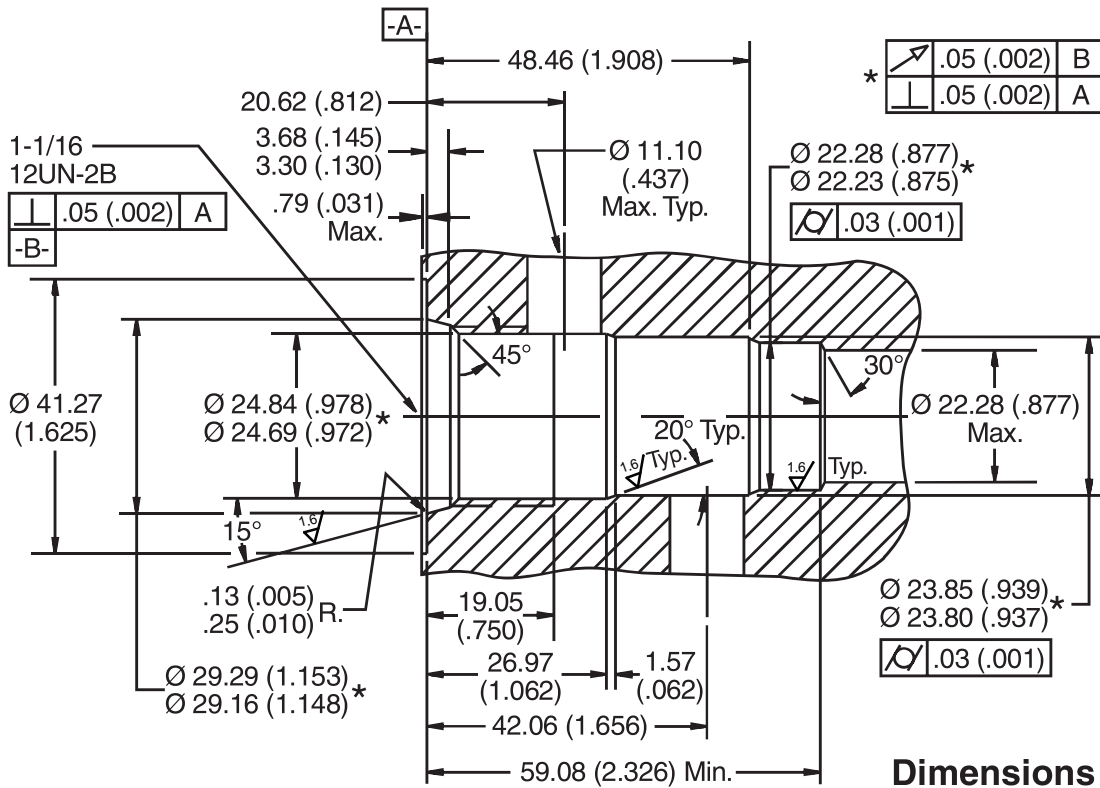
G



CAVITY:Rexroth-HC



CAVITY:Rexroth-FK



*		.05 (.002)	B
		.05 (.002)	A

$\varnothing$ 22.28 (.877)*		.03 (.001)
$\varnothing$ 22.23 (.875)*		

$\varnothing$ 23.85 (.939)*		.03 (.001)
$\varnothing$ 23.80 (.937)*		

**Dimensions**  
Millimeters (Inches)

CAVITY:PAKER C12-3

G