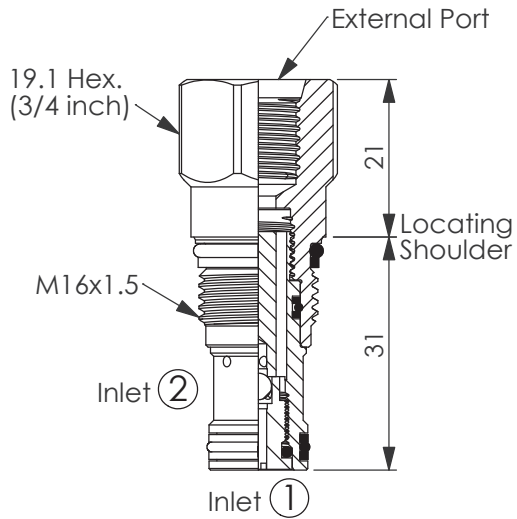




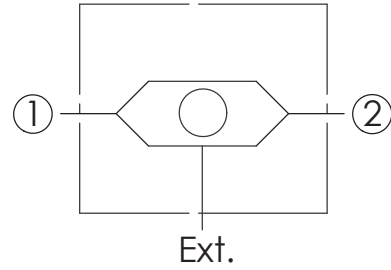
## ZAWORY LOGICZNE ZAWORY ALTERNATYWNE PRZEŁĄCZNIKI OBIEGU

## SHUTTLE VALVE (Single ball shuttle valve with Signal at External Port)

Ordering Code: **LS-162A-X-Y-Z**

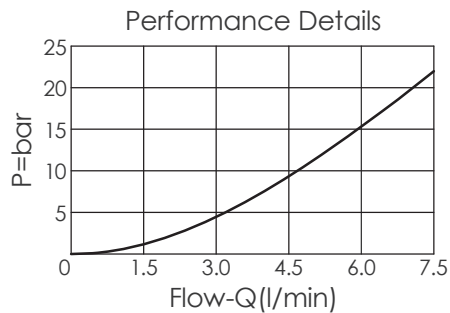


UNIT:mm



### TECHNICAL DATA

Max. pressure:	350	bar
Rated flow:	4.7	l/min
Cavity-Tooling:	162A-2	
Installation torque:	27-33	Nm
Weight:	0.06	kg



**X**

### OPERATION

**20** Signal at External Port

Maximum Leakage (0.3 cc/min.)

**Y**

### SPRING

**N**

Non-Spring

**Z**

### OPTION

**G02**

External G1/4" Port

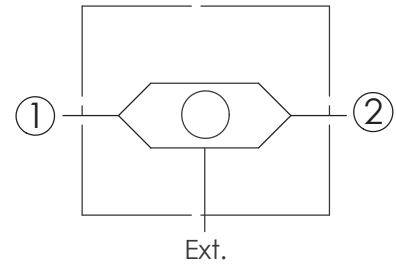
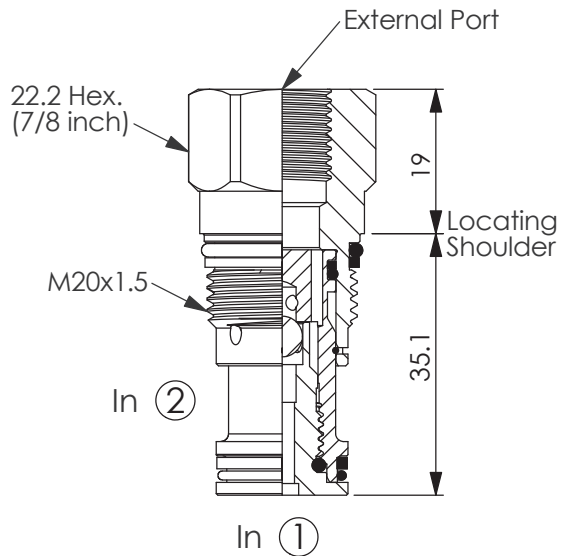
**S04**

External SAE-4 Port  
(7/16"-20UNF-2B)

## SHUTTLE VALVE

(Single ball shuttle valve with Signal at External Port)

Ordering Code: **LS-13A-X-Y-Z**

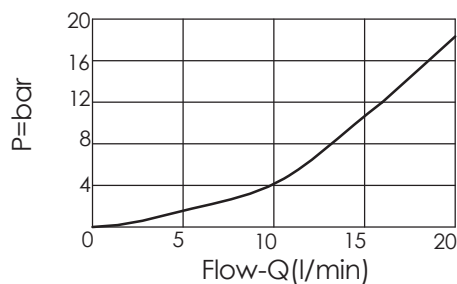


### TECHNICAL DATA

Max. pressure:	350	bar
Rated flow:	10	l/min
Cavity-Tooling:	13A-2	
Installation torque:	40-50	Nm
Weight:	0.1	kg

UNIT:mm

Typical Pressure Drop



### X OPERATION

**20** Signal at External Port

### Y SPRING

**Y**

**N** Non-Spring

**N**

### Z OPTION

**G02** External G1/4" Port

**S04** External SAE-4 Port  
(7/16"-20UNF-2B)

## SHUTTLE VALVE

(Single ball shuttle valve with signal at port 2)

Ordering Code: **LS-162A-X-Y-Z**

19.1 Hex. (3/4 inch)

External Port

21

Locating Shoulder

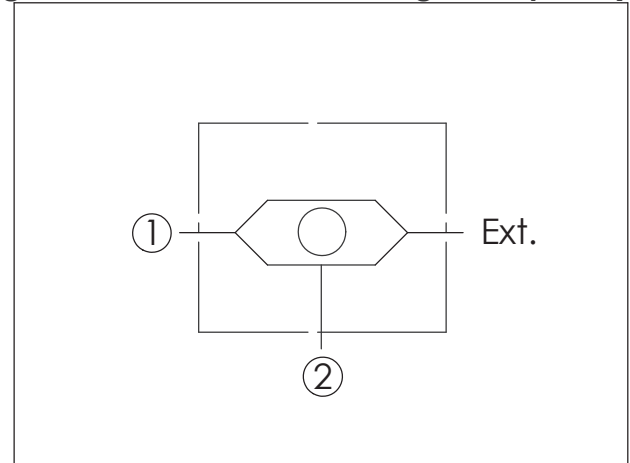
M16x1.5

Outlet ②

31

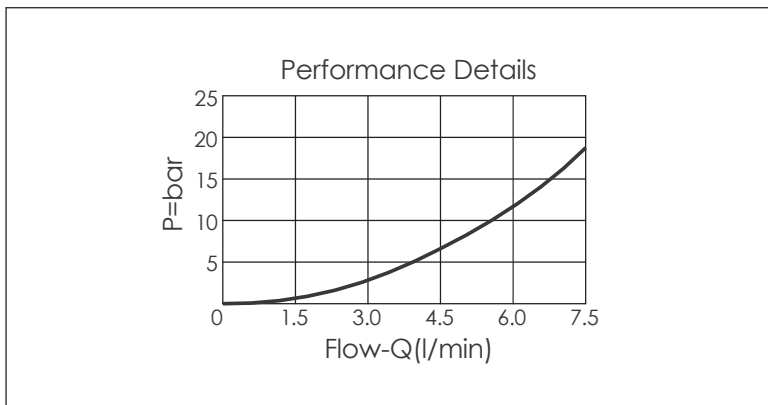
Inlet ①

UNIT:mm



### TECHNICAL DATA

Max. pressure:	350	bar
Rated flow:	4.7	l/min
Cavity-Tooling:	162A-2	
Installation torque:	27-33	Nm
Weight:	0.06	kg



X	OPERATION	
22	Signal at Port 2	
Maximum Leakage (0.3 cc/min.)		

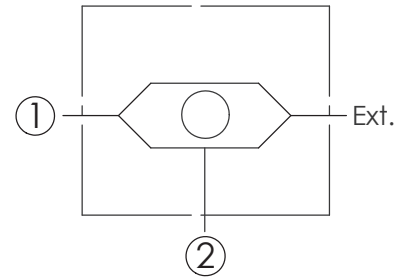
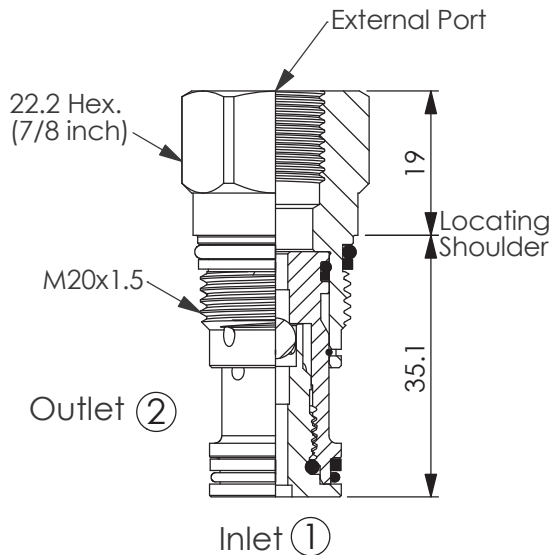
Y	SPRING	
N	Non-Spring	

Z	OPTION	
G02	External G1/4" Port	
S04	External SAE-4 Port (7/16"-20UNF-2B)	

## SHUTTLE VALVE

(Single Ball Shuttle Valve with Signal at Port 2)

Ordering Code: **LS-13A-X-Y-Z**

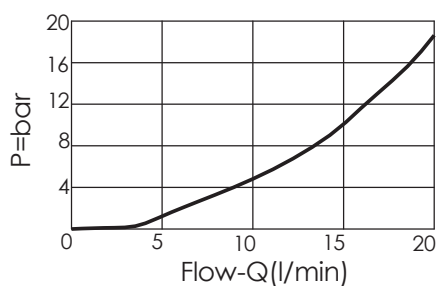


### TECHNICAL DATA

Max. pressure:	350	bar
Rated flow:	10	l/min
Cavity-Tooling:	13A-2	
Installation torque:	40-50	Nm
Weight:	0.1	kg

UNIT:mm

Typical Pressure Drop



### X OPERATION

**22** Signal at Port 2

### Y SPRING

**Y**

**N** Non-Spring

**N**

### Z OPTION

**G02** External G1/4" Port

**S04** External SAE-4 Port (7/16"-20UNF-2B)

## SHUTTLE VALVE

(Single ball shuttle valve with signal at port 2)

Ordering Code: **LS-163A-X-Y-Z**

19.05 Hex. (3/4 inch)

In ③

M16x1.5

Out ②

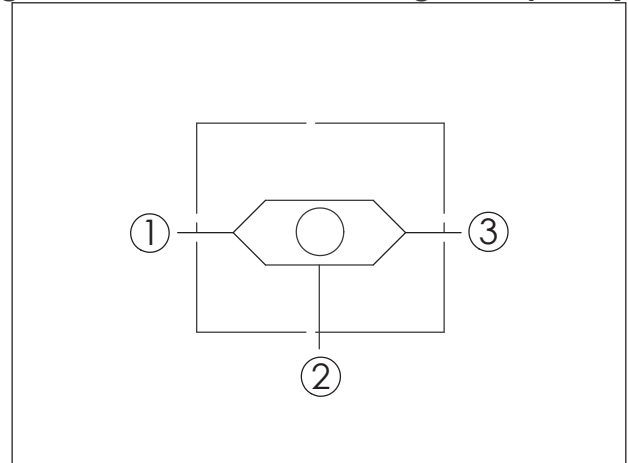
In ①

32

31

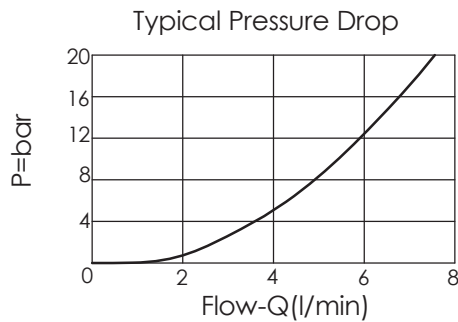
Locating Shoulder

UNIT:mm



### TECHNICAL DATA

Max. pressure:	350	bar
Rated flow:	4.7	l/min
Cavity-Tooling:	163A-3	
Installation torque:	40-50	Nm
Weight:	0.09	kg



**X**

### OPERATION

**30**

Signal at Port 2  
(Standard)

**Y**

### SPRING

**N**

Non-Spring

**Z**

### OPTION

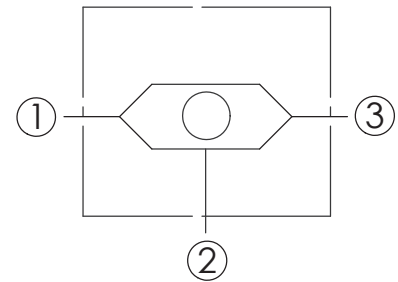
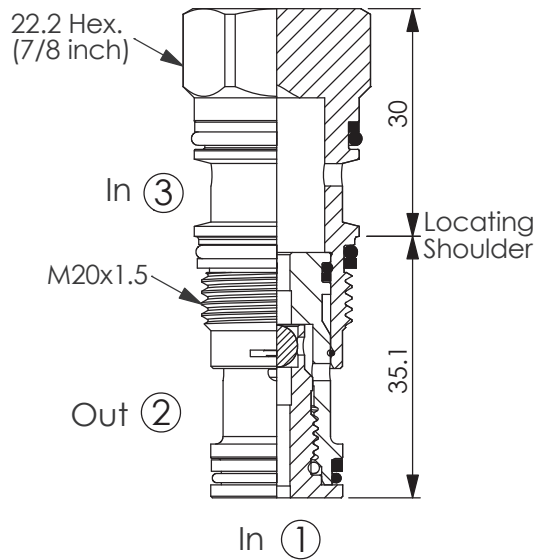
**N**

Non-adjustable

## SHUTTLE VALVE

(Single ball shuttle valve with signal at port 2)

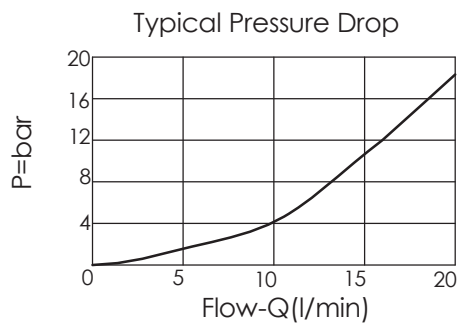
Ordering Code: **LS-11A-X-Y-Z**



### TECHNICAL DATA

Max. pressure:	350	bar
Rated flow:	10	l/min
Cavity-Tooling:	11A-3	
Installation torque:	40-50	Nm
Weight:	0.1	kg

UNIT:mm



### X OPERATION

**30** Signal at Port 2 (Standard)

### Y SPRING

**N** Non-Spring

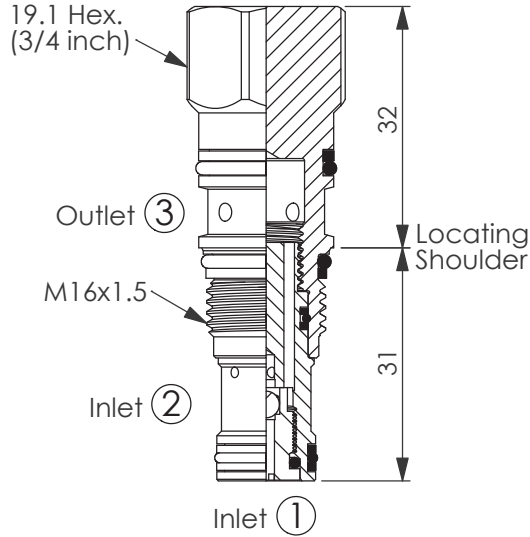
### Z OPTION

**N** Non-adjustable

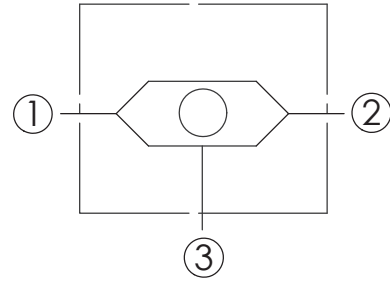
## SHUTTLE VALVE

(Single ball shuttle valve with signal at port 3)

Ordering Code: **LS-163A-X-Y-Z**

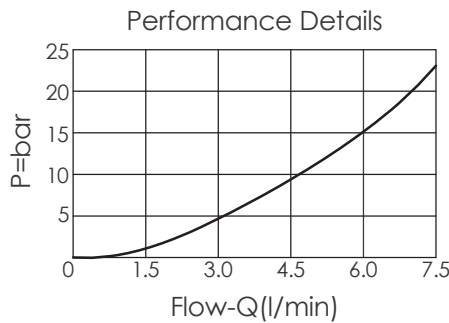


UNIT:mm



### TECHNICAL DATA

Max. pressure:	350	bar
Rated flow:	4.7	l/min
Cavity-Tooling:	163A-3	
Installation torque:	27-33	Nm
Weight:	0.08	kg



**X**

### OPERATION

**33**

Signal at Port 3

Maximum Leakage (0.3 cc/min.)

**Y**

### SPRING

**N**

Non-Spring

**Z**

### OPTION

**N**

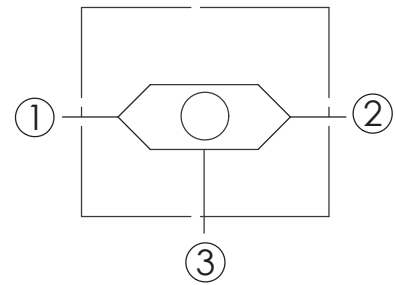
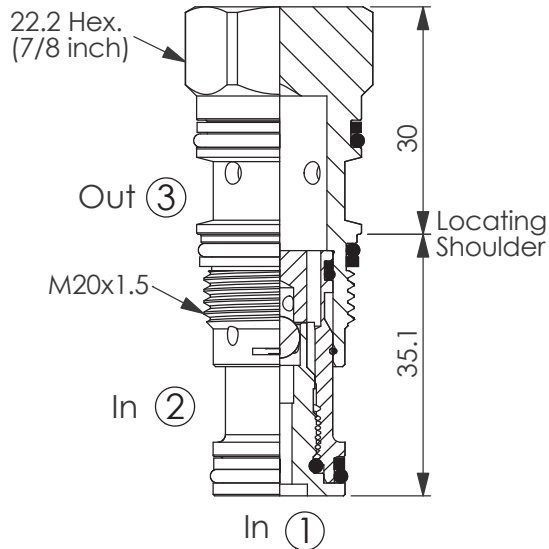
Non-adjustable



## SHUTTLE VALVE

(Single ball shuttle valve with signal at port 3)

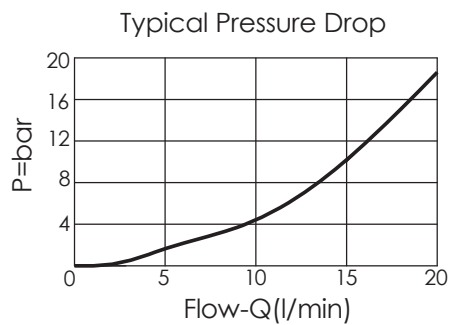
Ordering Code: **LS-11A-X-Y-Z**



### TECHNICAL DATA

Max. pressure:	350	bar
Rated flow:	10	l/min
Cavity-Tooling:	11A-3	
Installation torque:	40-50	Nm
Weight:	0.11	kg

UNIT:mm



### X OPERATION

**33** Signal at Port 3

### Y SPRING

**N** Non-Spring

### Z OPTION

**N** Non-adjustable

## SHUTTLE VALVE (Single ball shuttle valve with signal at port 2)

Ordering Code: **LS-08W-X-Y-Z**

22.2 Hex. (7/8 inch)

3/4"-16UNF

In ③

Out ②

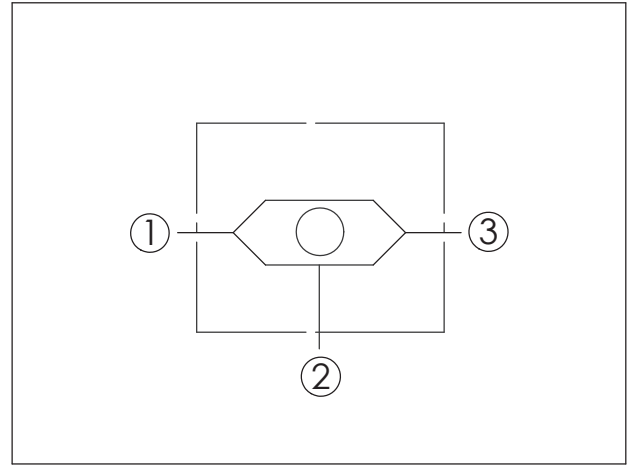
In ①

8

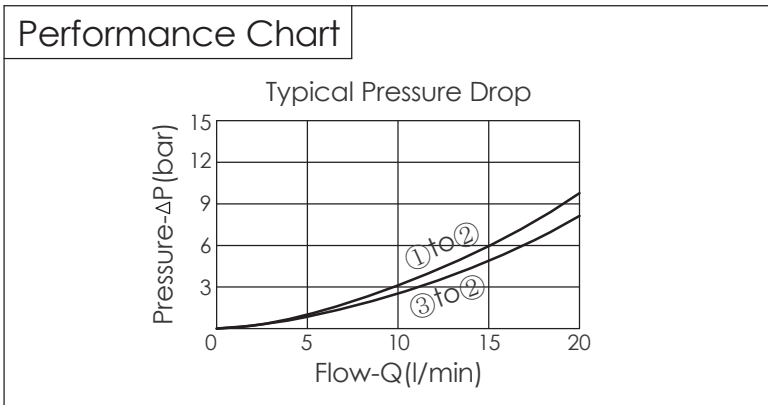
Locating Shoulder

42.5

UNIT:mm



TECHNICAL DATA		
Max. pressure:	240	bar
Rated flow:	20	l/min
(Refer To Performance Chart)		
Cavity-Tooling:	08W-3	
Installation torque:	25-35	Nm
Weight:	0.07	kg



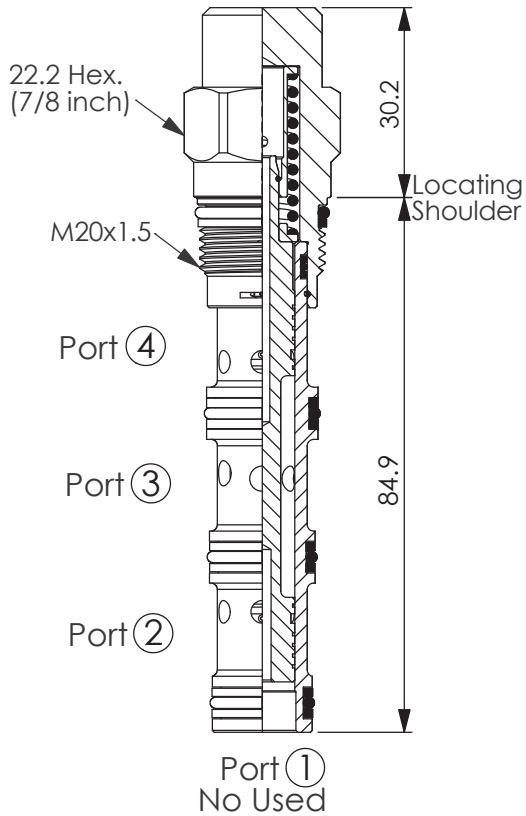
X	OPERATION	
30	Signal at Port 2 (Standard)	

Y	SPRING	
N	Non-Spring	

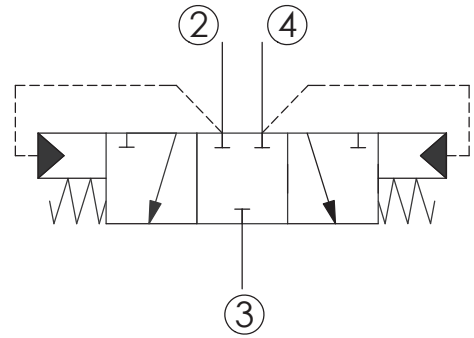
Z	OPTION	
N	Non-adjustable	

## SHUTTLE VALVE (Low Side, 3-Position, Hot Oil Shuttle Valve)

Ordering Code: **DS-31A-X-Y-Z**

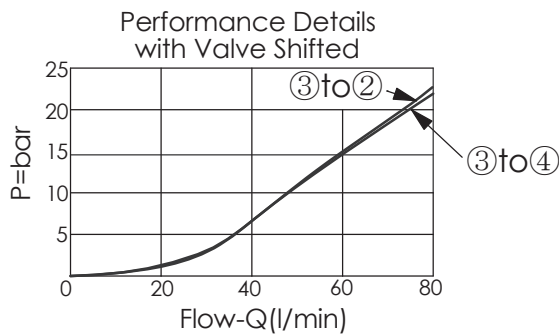


UNIT:mm



### TECHNICAL DATA

Max. pressure:	350	bar
Rated flow:	40	l/min
Cavity-Tooling:	31A-4	
Installation torque:	40-50	Nm
Weight:	0.17	kg



### X OPERATION

**4L** 4 Port Low Side(Hot Oil)

Pilot Flow (0.38 l/min.)

**Y**

### SPRING

Shifting Pressure

**140**

14.0 bar

**Z**

### OPTION

**N**

Non-adjustable

## SHUTTLE VALVE (Low Side, 3-Position, Hot Oil Shuttle Valve)

Ordering Code: **DS-32A-X-Y-Z**

28.5 Hex.  
(1 1/8 inch)

1.00-14UNS-2A

Locating Shoulder

34

92.1

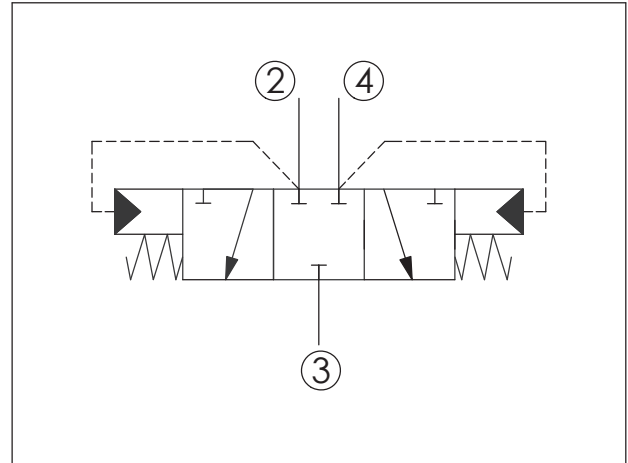
Port ④

Port ③

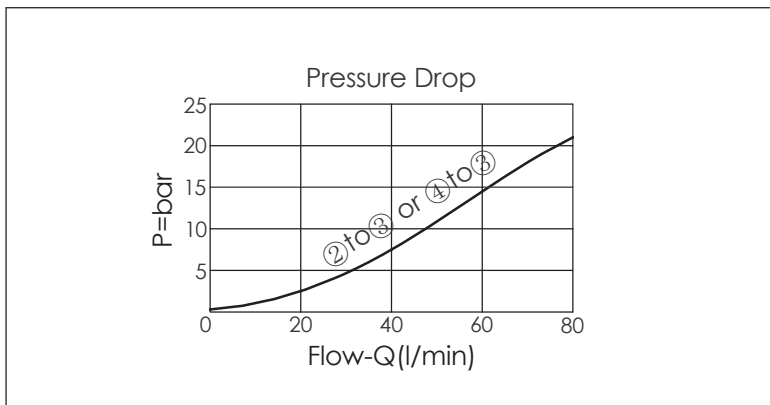
Port ②

Port ①  
No Used

UNIT:mm



TECHNICAL DATA		
Max. pressure:	350	bar
Rated flow:	80	l/min
Cavity-Tooling:	32A-4	
Installation torque:	60-70	Nm
Weight:	0.32	kg

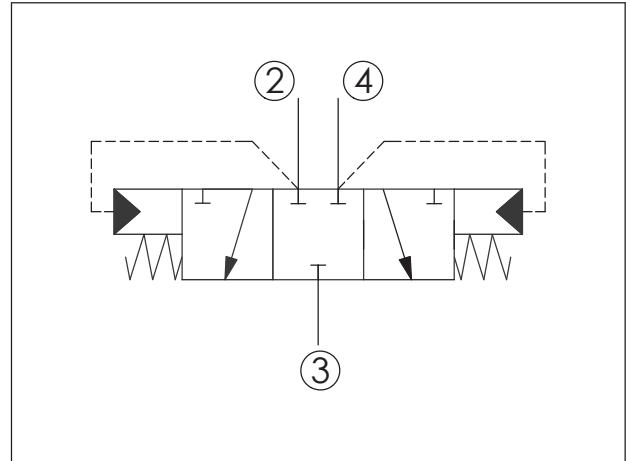
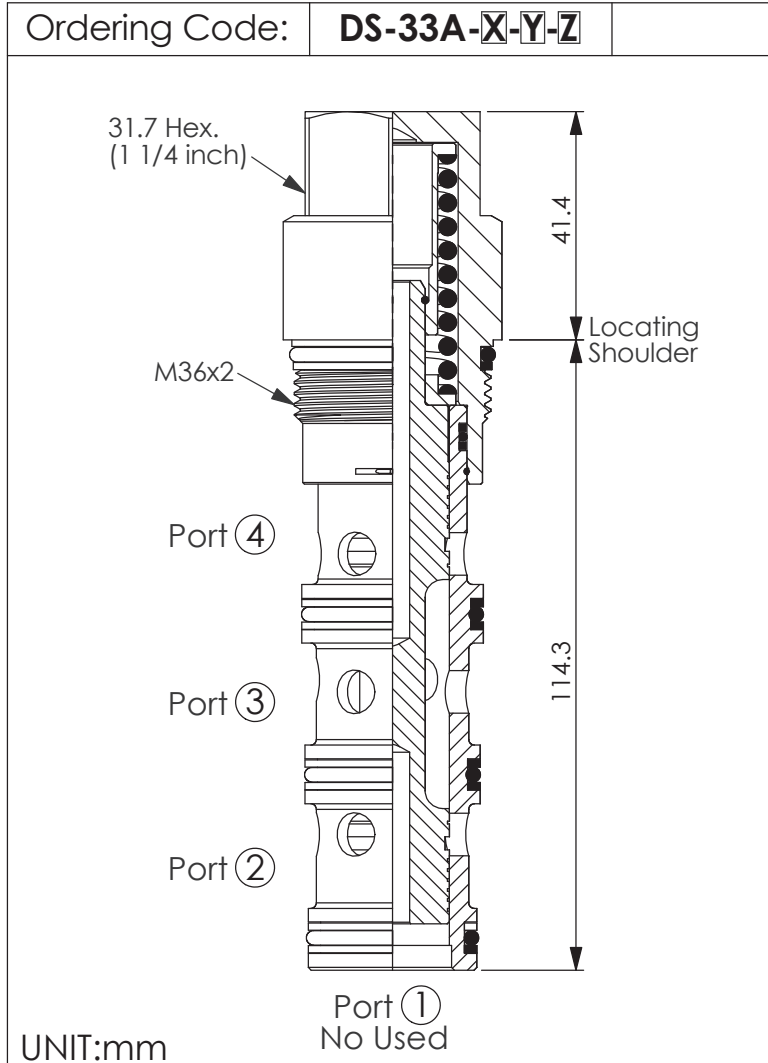


X	OPERATION
<b>4L</b>	4 Port Low Side(Hot Oil)
Pilot Flow (0.38 l/min.)	

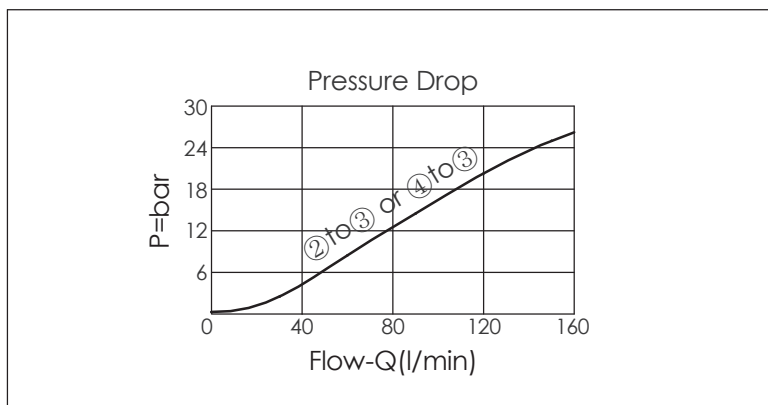
Y	SPRING
	Shifting Pressure
<b>140</b>	14.0 bar

Z	OPTION
<b>N</b>	Non-adjustable

## SHUTTLE VALVE (Low Side, 3-Position, Hot Oil Shuttle Valve)



TECHNICAL DATA		
Max. pressure:	350	bar
Rated flow:	160	l/min
Cavity-Tooling:	33A-4	
Installation torque:	200-215	Nm
Weight:	0.75	kg

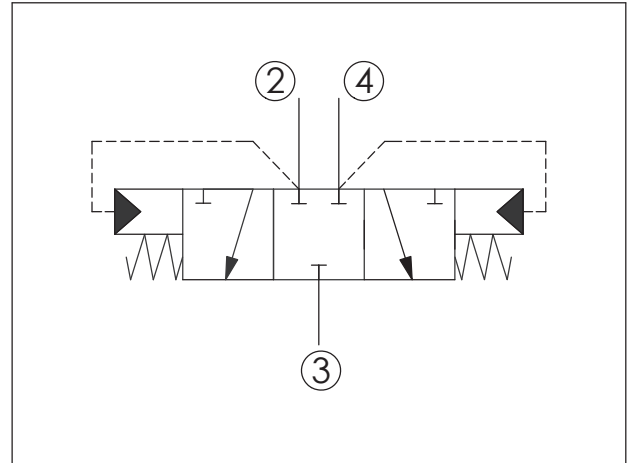
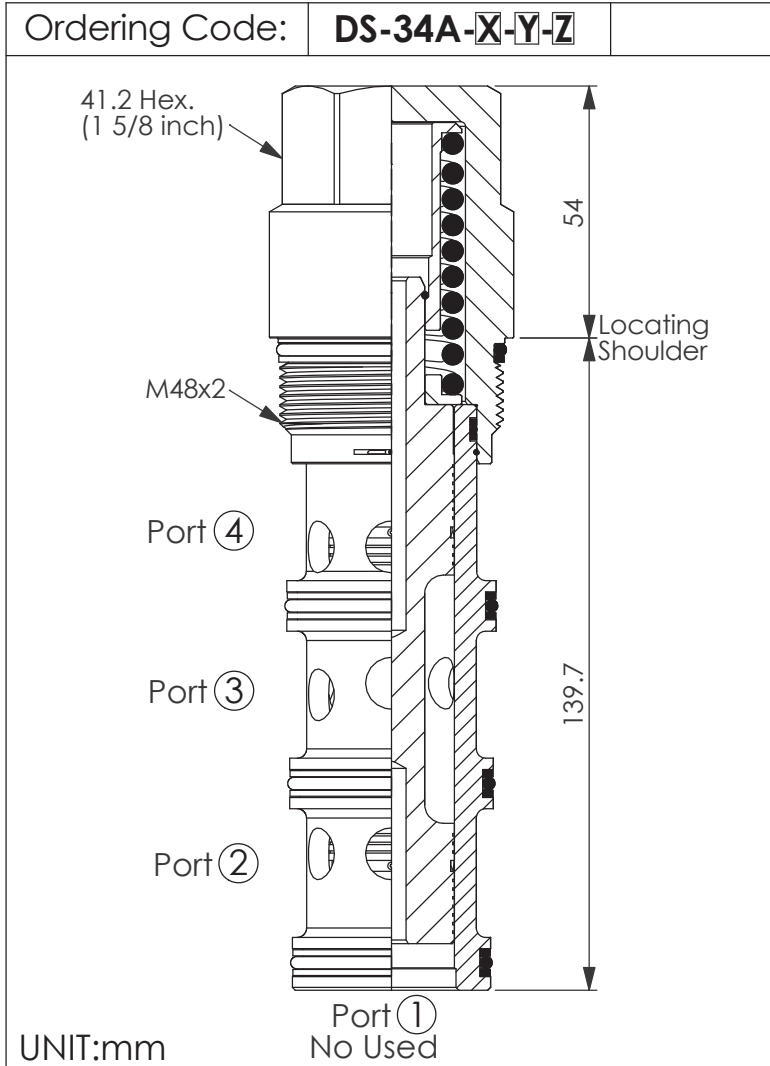


X	OPERATION	
<b>4L</b>	4 Port Low Side(Hot Oil)	
Pilot Flow (0.75 l/min.)		

Y	SPRING	
	Shifting Pressure	
<b>140</b>	14.0 bar	

Z	OPTION	
<b>N</b>	Non-adjustable	

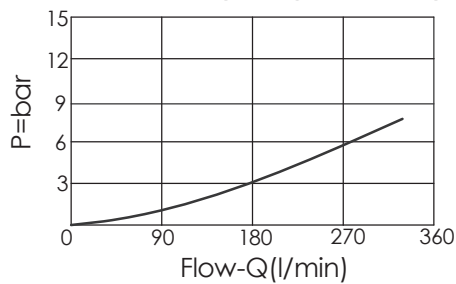
## SHUTTLE VALVE (Low Side, 3-Position, Hot Oil Shuttle Valve)



### TECHNICAL DATA

Max. pressure:	350	bar
Rated flow:	320	l/min
Cavity-Tooling:	34A-4	
Installation torque:	465-500	Nm
Weight:	1.65	kg

Performance Details with Valve Shifted  
Flow From Port ② or ④ To Port ③



**X**

### OPERATION

**4L** 4 Port Low Side(Hot Oil)

Pilot Flow (0.75 l/min.)

**Y**

### SPRING

Shifting Pressure

**140**

14.0 bar

**Z**

### OPTION

**N**

Non-adjustable

## SHUTTLE VALVE (High Side Shuttle Valve, Spring Offset, 2-Position)

Ordering Code: **DS-32A-X-Y-Z**

28.5 Hex.  
(1 1/8 inch)

1.00-14UNS-2A

Locating Shoulder

41.3

92.1

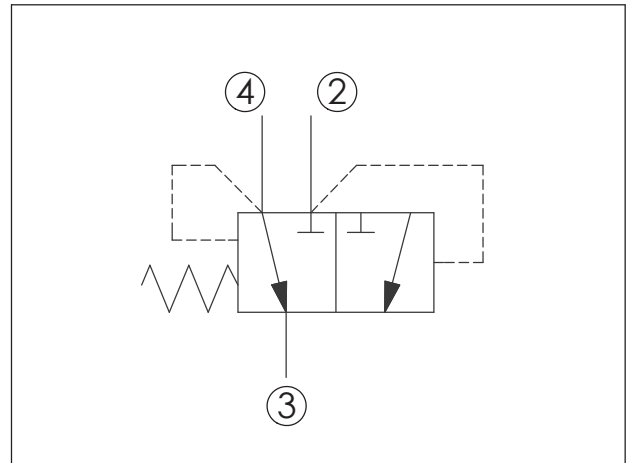
Port ④

Port ③

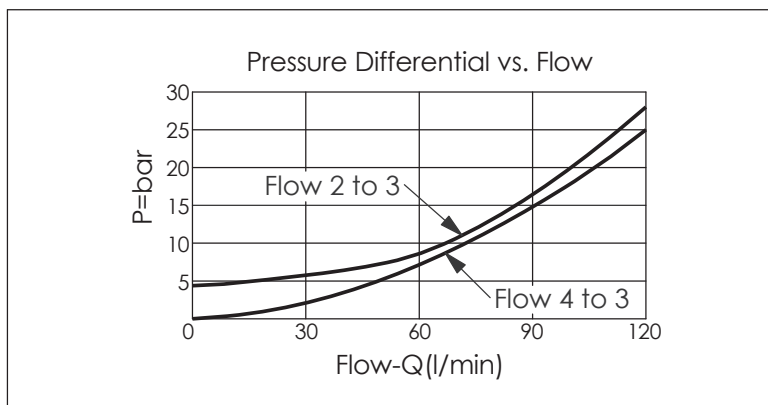
Port ②

Port ①

UNIT:mm



TECHNICAL DATA		
Max. pressure:	350	bar
Rated flow:	120	l/min
Cavity-Tooling:	32A-4	
Installation torque:	60-70	Nm
Weight:	0.33	kg



X	OPERATION	
4S	4 Port High Side Shuttle Valve Spring Offset	

Y	SPRING	
	Shifting Pressure	
20	2.0 bar	
50	5.0 bar	

Z	OPTION	
N	Non-adjustable	

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