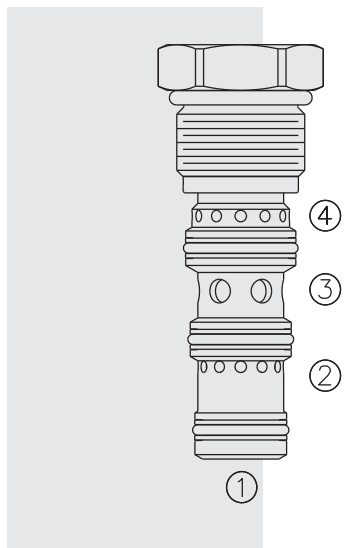
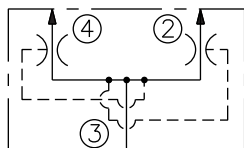


FD50-44 Flow Divider/Combiner . . . Heavy Duty,



ISO SYMBOL



DESCRIPTION

A heavy duty, multifunction, screw-in, cartridge-style, spool-type flow divider/combiner for use in high pressure applications.

OPERATION

In the dividing mode, the **FD50-44** will divert input flow from port 3 to ports 2 and 4, based on the ratio specified. This valve provides a highly accurate, pressure compensated division of inlet flow or combination of return flow regardless of system operating pressure. When the flow direction is reversed, the valve will combine flows from ports 2 and 4 to port 3.

FEATURES

- Choice of flow ranges.
- Quiet, modulated response.
- Wide operating flow range.
- Accurate division or combination of flow.
- Optional corrosion-resistant plating.
- Industry common cavity.

RATINGS

Operating Pressure: 345 bar (5000 psi)

Burst Pressure: 1034 bar (15000 psi) at maximum inlet flow

Flow Range Options:

- Model Code **99**: 50:50 ratio; rated @ 2.0-7.0 lpm (0.5-1.8 gpm) input
- Model Code **11**: 50:50 ratio; rated @ 2.5-9.5 lpm (0.7-2.5 gpm) input
- Model Code **22**: 50:50 ratio; rated @ 4-19 lpm (1.0-5.0 gpm) input
- Model Code **44**: 50:50 ratio; rated @ 7.5-38 lpm (2.0-10.0 gpm) input

Synchronizing Flow: Approximately 10% of maximum inlet flow rate

Flow Accuracy: 5% of inlet flow at maximum flow rate;
10% of inlet flow at minimum flow rate

Temperature: -40 to 100°C (-40 to 212°F) with Buna N seals; -26 to 204°C (-15 to 400°F) with fluorocarbon seals; -54 to 107°C (-65 to 224°F) with polyurethane or urethane seals.

Filtration: See page 9.010.1

Fluids: Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

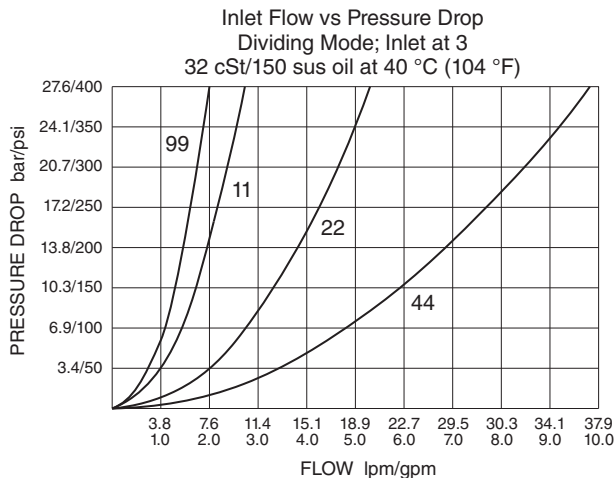
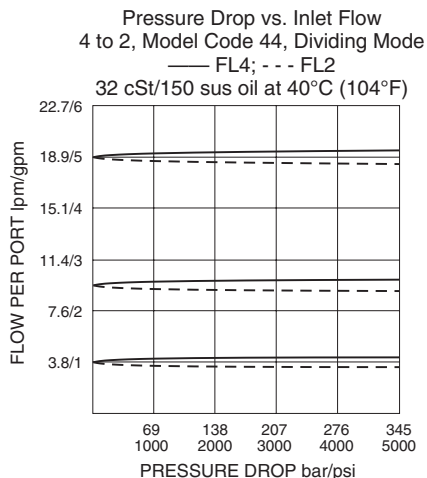
Installation: No restrictions; See page 9.020.1

Cavity: VC10-4; See page 9.110.1

Cavity Tool: CT10-4X; See page 8.600.1

Seal Kit: SK10-4U-000 (urethane); See page 8.650.1

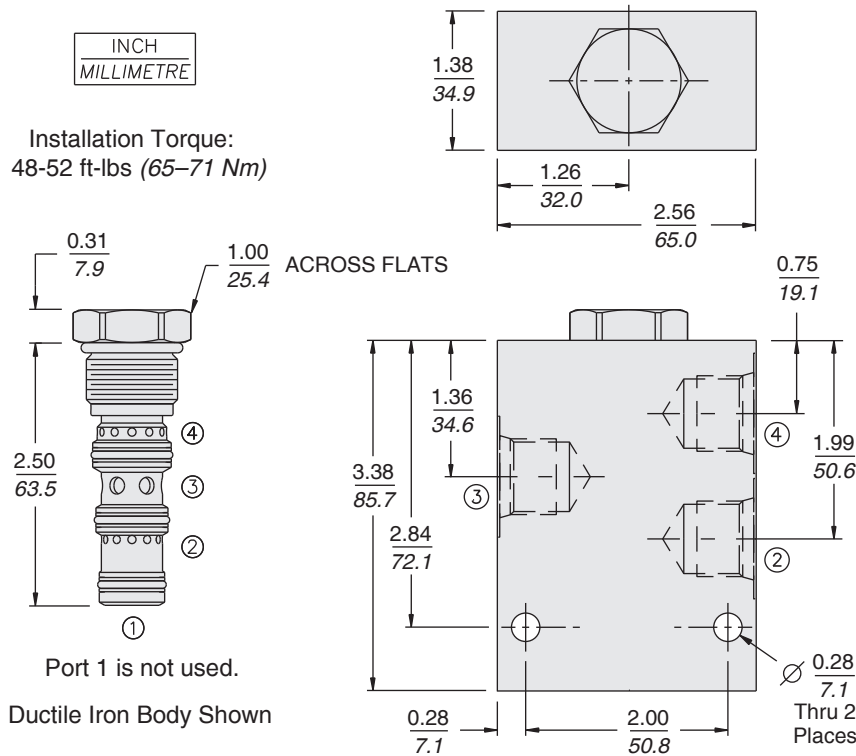
PERFORMANCE (Cartridge Only)



Multifunction

FD50-44

DIMENSIONS



FD50-44 Dividing/Combining Ratios			
Spool 1	Spool 2	% out Port 2	% out Port 4
4	3	43%	57%
	2	33%	67%
	1	20%	80%
	0	0-100%	0-100%
3	2	40%	60%
	1	25%	75%
	0	0-100%	0-100%
2	1	33%	67%
	0	0-100%	0-100%

MATERIALS

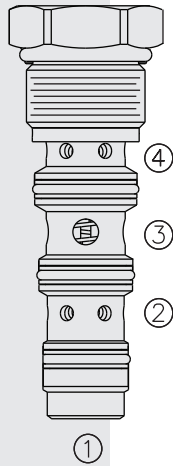
Cartridge: Weight: 0.11 kg. (0.25 lbs.)
Steel with hardened work surfaces.
Zinc-plated exposed surfaces.

Special FD-Type Ported Body:
Ductile iron, required for operation over 207 bar (3000 psi). Aluminum bodies are available for lower pressure operation.
See page 8.010.1

TO ORDER

FD50-44 -		Dividing/Combining Ratio
Special FD-Type Ductile Iron Ported Bodies		
Cartridge Only	0	99 50:50 ratio; rated @ 2-7 lpm (0.5 - 1.8 gpm)
SAE 8 (all ports)	8TD	11 50:50 ratio; rated @ 2.5-9.5 lpm (0.7-2.5 gpm) input
SAE 8 port 3;		22 50:50 ratio; rated @ 4-19 lpm (1.0-5.0 gpm) input
SAE 6 ports 2 & 4	8DD	44 50:50 ratio; rated @ 7.5-38 lpm (2.0-10.0 gpm) input
3/8 in. BSP* (all ports)	3BD	
*BSP Body; U.K. Mfr. Only		
		Seals
		N Buna N (Std.)
		V Fluorocarbon
		P Polyurethane (for operation over 241 bar/3500 psi)
		U Urethane

FD50-45 Flow Divider/Combiner . . . Heavy Duty,



Note: This new FD50-45 flow divider incorporates the features of the older FDxx-40, FDxx-41 and FDxx-42 flow dividers in one product. It is designed to supersede the older models. OEMs are encouraged to consider this newer, more robust and versatile model for new applications.

DESCRIPTION

A heavy duty, multifunction, screw-in, cartridge-style, spool-type flow divider/combiner.

OPERATION

In the dividing mode, the **FD50-45** will divert input flow from port 3 to ports 2 and 4, based on the ratio specified, regardless of operating pressure. When the flow direction is reversed the valve will combine flows from 2 and 4 to port 3. Synchronizing flow is provided in both the dividing and combining modes at “bottomed” conditions in cylinder applications and at “stalled” conditions in motor applications.

FEATURES

- Hardened parts for long life.
- Quiet, modulated response.
- Wide operating flow range.
- Synchronizing in dividing and combining modes.
- Floating cage — high installation torque.
- Industry common cavity.

RATINGS

Operating Pressure: 345 bar (5000 psi)

Burst Pressure: 1103 bar (16000 psi)

Flow Options:

- Input Flow: 4 - 19 lpm (1 - 5 gpm); Ratio: 50:50; Model Code: 22
- Input Flow: 5.5 - 26.7 lpm (1.5 - 7 gpm); Ratio: 50:50; Model Code: 33
- Input Flow: 9.5 - 38 lpm (2.5 - 10 gpm); Ratio: 50:50; Model Code: 44
- Input Flow: 11.5 - 41.5 lpm (3 - 11 gpm); Ratio: 50:50; Model Code: 55
- Input Flow: 15 - 45 lpm (4 - 12 gpm); Ratio: 50:50; Model Code: 66
- Input Flow: 19 - 57 lpm (5 - 15 gpm); Ratio: 50:50; Model Code: 88

Synchronizing Flow: Approximately 10% of maximum inlet flow

Flow Accuracy: 10% of inlet flow for Models 22, 33, 44, 55 and 66; 15% of inlet flow for Model 88.

Temperature: -40 to 100°C (-40 to 212°F) for Buna N seals; -26 to 204°C (-15 to 400°F) for fluorocarbon seals; -54 to 107°C (-65 to 225°F) for polyurethane and urethane seals.

Filtration: See page 9.010.1

Fluids: Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

Installation: No restrictions; See page 9.020.1

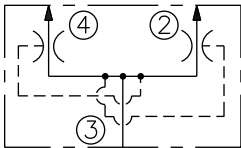
Note: Standard 10 size 4-way bodies can be used with this product with Port 1 plugged. See page 8.010.1 for special flow divider bodies.

Cavity: VC10-4; See page 9.110.1

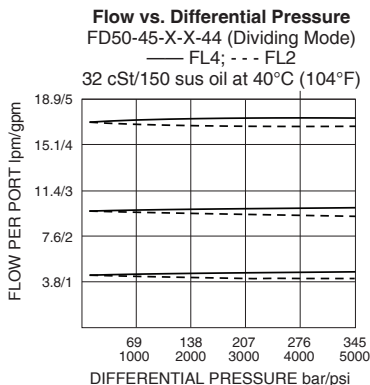
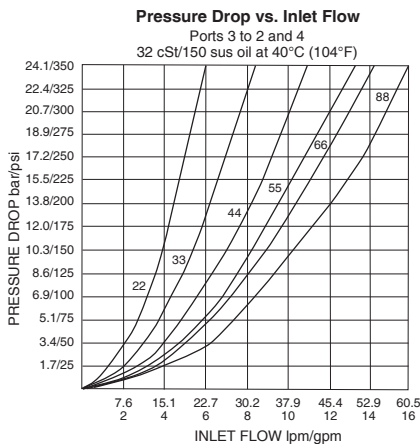
Cavity Tool: CT10-4X; See page 8.600.1

Seal Kit: SK10-4X-MMM; SK10-2U-000 (urethane). See page 8.650.1

ISO SYMBOL



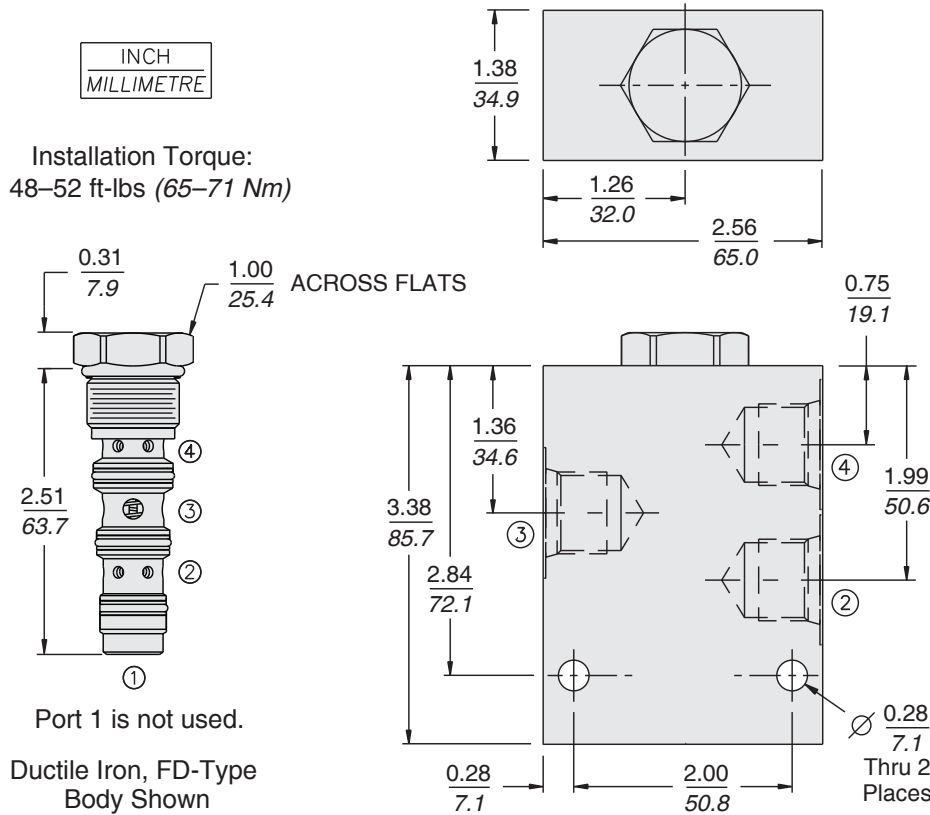
PERFORMANCE (Cartridge Only)



Multifunction

FD50-45

DIMENSIONS



MATERIALS

Cartridge: Weight: 0.11 kg. (0.24 lbs.)
Steel with hardened work surfaces.
Zinc-plated exposed surfaces.

Ported Body: Ductile iron required for operation over 207 bar (3000 psi). Aluminum bodies are available for lower pressure operation. FD-type bodies recommended but a standard 4-way body may also be used with Port 1 plugged. See page 8.010.1.

TO ORDER

FD50-45 -

Ported Bodies

Cartridge Only **0**

SAE 6 (all ports) **6TD**

SAE 8 (all ports) **8TD**

SAE 8 port 3;
SAE 6 ports 2 & 4 **8DD**

1/4 in. BSP* (all ports) **2BD**

3/8 in. BSP* (all ports) **3BD**

*BSP Body; U.K. Mfr. Only

Dividing/Combining Ratio

22 50:50 rated @ 4-19 lpm
(1-5 gpm) input

33 50:50 rated @ 5.5-26.5 lpm
(1.5-7 gpm) input

44 50:50 rated @ 9.5-38 lpm
(2.5-10 gpm) input

55 50:50 rated @ 11.5-41.5 lpm
(3-11 gpm) input

66 50:50 rated @ 15-45 lpm
(4-12 gpm) input

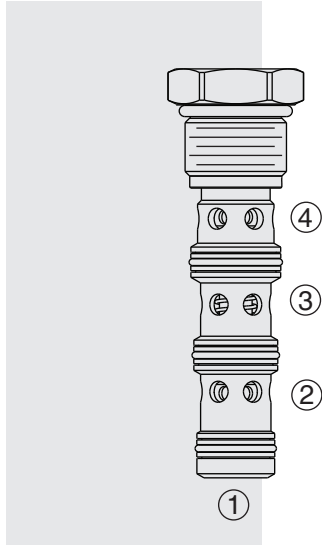
88 50:50 rated @ 19-57 lpm
(5-15 gpm) input

Seals

N Buna N (Std.)
V Fluorocarbon
P Polyurethane*
U Urethane*

* Required for operation over 240 bar (3500 psi); FD50 option.

FD52-45 Flow Divider/Combiner . . . Heavy Duty,



Note: This new FD52-45 flow divider incorporates the features of the older FDxx-40, FDxx-41 and FDxx-42 flow dividers in one product. It is designed to supersede the older models. OEM's are encouraged to consider this newer, more robust and versatile model for new applications.

DESCRIPTION

A heavy duty, multifunction, screw-in, cartridge-style, spool-type flow divider/combiner valve. It provides pressure-compensated proportional division of inlet flow or combination of two return flows, regardless of system operating pressure conditions. The valve provides synchronizing flow in dividing and combining modes.

OPERATION

In the dividing mode, the **FD52-45** will divert input flow from port 3 to ports 2 and 4, based on the ratio specified, regardless of operating pressure. When the flow direction is reversed, the valve will combine flows from 2 and 4 to port 3. Synchronizing flow is provided in both the dividing and combining modes at "bottomed" conditions in cylinder applications and at "stalled" conditions in motor applications.

FEATURES

- Hardened parts for long life.
- Wide operating flow range.
- Synchronizing in dividing and combining modes.
- Floating cage — high installation torque.
- Quiet, modulated response.
- Industry common cavity.

RATINGS

Operating Pressure: 345 bar (5000 psi)

Flow Options (Ratio 50:50)

Input Flow: 15-60 lpm (4-16 gpm); Model Code: 44

Input Flow: 23-90 lpm (6-24 gpm); Model Code: 66

Input Flow: 50-106 lpm (8-28 gpm); Model Code: 88

Flow Accuracy:

10% of inlet flow for Models 44 and 66; 15% of inlet flow for Model 88.

Temperature: -40 to 100°C (-40 to 212°F) for Buna N seals; -26 to 204C (-15 to 400F) for fluorocarbon seals; -54 to 107°C (-65 to 225°F) for polyurethane seals.

Filtration: See page 9.010.1

Fluids: Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

Installation: No restrictions; See page 9.020.1

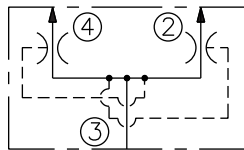
Note: Standard 12 size 4-way bodies can be used with this product with Port 1 plugged. See page 8.012.1 for special flow divider bodies.

Cavity: VC12-4; See page 9.112.1

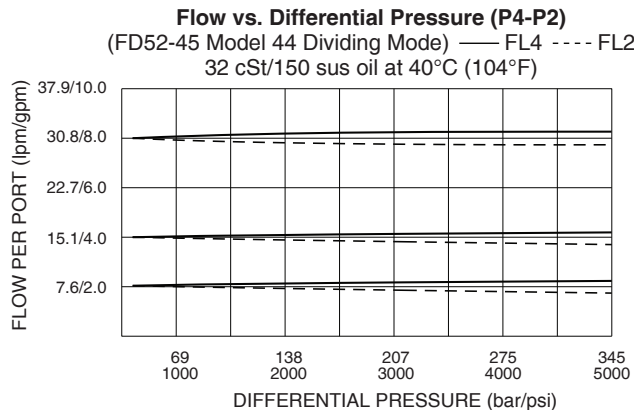
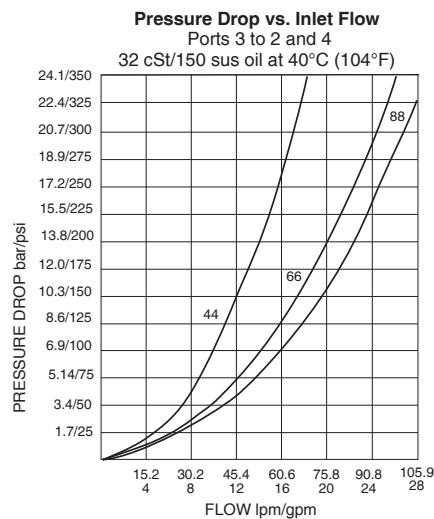
Cavity Tool: CT12-4X; See page 8.600.1

Seal Kit: SK12-4X-MMM; See page 8.650.1

ISO SYMBOL



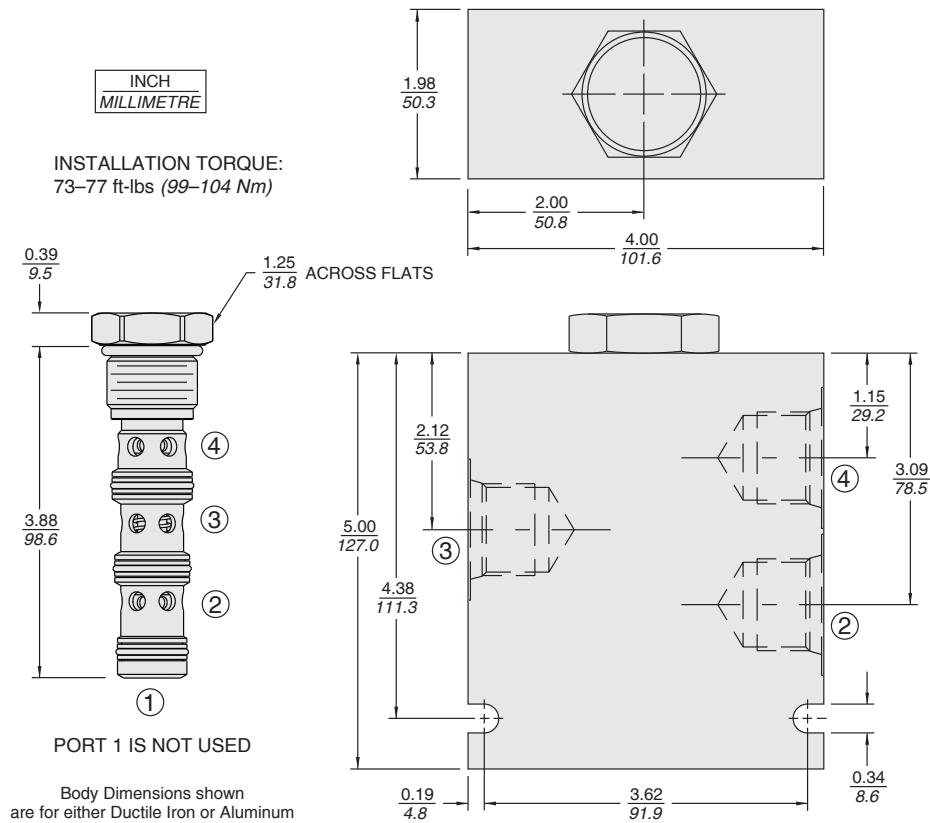
PERFORMANCE (Cartridge Only)



Multifunction

FD52-45

DIMENSIONS



MATERIALS

Cartridge: Weight: 0.24 kg. (0.53 lbs.) Steel with hardened work surfaces. Zinc-plated exposed surfaces. Buna N O-rings and polyester elastomer back-ups standard.

Ported Body: Ductile iron body required for operation over 207 bar (3000 psi). Aluminum bodies are available for lower pressure operation. FD-type bodies recommended but a standard 4-way body may also be used with Port 1 plugged. See page 8.012.1.

TO ORDER

FD52-45 -

Ported Bodies

Cartridge Only **0**
SAE 8 **8TD**
SAE 10 **10TD**
SAE 12 **12TD**
1/2 in. BSP* **4BD**
3/4 in. BSP* **6BD**

*BSP Body; U.K. Mfr. Only

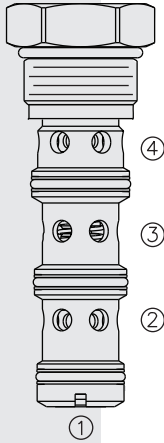
Flow Options (50/50 Ratio)

44 15-60 lpm (4-16 gpm)
66 23-90 lpm (6-24 gpm)
88 30-106 lpm (8-28 gpm)

Seals

N Buna N (Std.)
V Fluorocarbon
P Polyurethane (Required for operation over 240 bar/3500 psi)

FD56-45 Flow Divider/Combiner . . . Heavy Duty,



Note: This new FD56-45 flow divider incorporates the features of the older FDxx-40, FDxx-41 and FDxx-42 flow dividers in one product. It is designed to supersede the older models. OEMs are encouraged to consider this newer, more robust and versatile model for new applications.

DESCRIPTION

A heavy duty, multifunction, screw-in, cartridge-style, spool-type flow divider/combiner. It provides pressure-compensated proportional division of inlet flow or combining of two return flows regardless of system operating pressure.

OPERATION

In the dividing mode, the **FD56-45** will divert input flow from 3 to 2 and 4, based on the ratio specified, regardless of operating pressure. When the flow direction is reversed the valve will combine flows from 2 and 4 to port 3. Synchronizing flow is provided in both the dividing and combining modes at "bottomed" conditions in cylinder applications and at stalled conditions in motor applications.

FEATURES

- Hardened parts for long life.
- Quiet, modulated response.
- Wide operating flow range.
- Industry common cavity.
- Synchronizing in dividing and combining modes.
- Floating cage — High installation torque.

RATINGS

Operating Pressure: 345 bar (5000 psi) 420 bar (6090 psi) (10% duty cycle)

Pressure Drop: 24 bar (350 psi) at max inlet flow

Flow Options, Dividing/Combing (Ratio: 50:50)

- Input Flow: 25-98 lpm (6.5-26 gpm) Model Code: 44
- Input Flow: 32-128 lpm (8.5-34 gpm) Model Code: 66
- Input Flow: 57-167 lpm (15-44 gpm) Model Code: 88
- Input Flow: 68-197 lpm (18-52 gpm) Model Code: 99

Flow Accuracy: 10% of maximum rated flow for Models 44 & 66; 15% for 88 & 99

Synchronizing Flow: Approximately 10% of maximum inlet flow

Temperature: -40 to 100°C (-40 to 212°F) with Buna N seals; -26 to 204°C (-15 to 400°F) with fluorocarbon seals; -54 to 107°C (-65 to 224°F) with polyurethane or urethane seals.

Filtration: See page 9.010.1

Fluids: Mineral-based or synthetics with lubricating properties at viscosities of 7.4 to 420 cSt (50 to 2000 sus); See Temperature and Oil Viscosity, page 9.060.1

Installation: No restrictions; See page 9.020.1

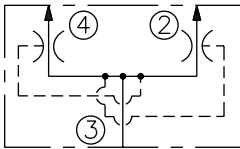
Note: Standard 16 size 4-way bodies can be used with this product with Port 1 plugged. See page 8.016.1 for special flow divider bodies.

Cavity: VC16-4; See page 9.116.1. HVC16-4 for applications with pressure excursions up to 420 bar (6090 psi)

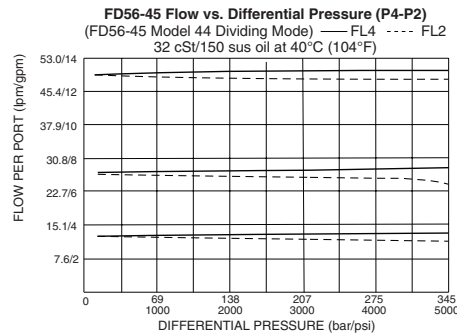
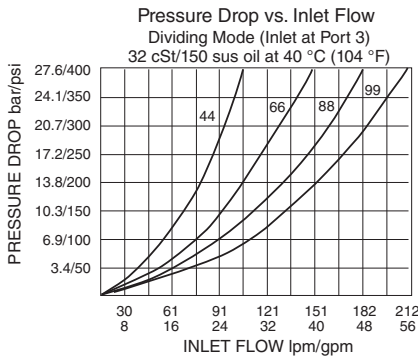
Cavity Tool: CT16-4X; See page 8.600.1

Seal Kit: SK16-4X-MMM (X= seal option for Buna N, fluorocarbon and polyurethane; See page 8.650.1. SK16-4U-000 for urethane seals.

ISO SYMBOL



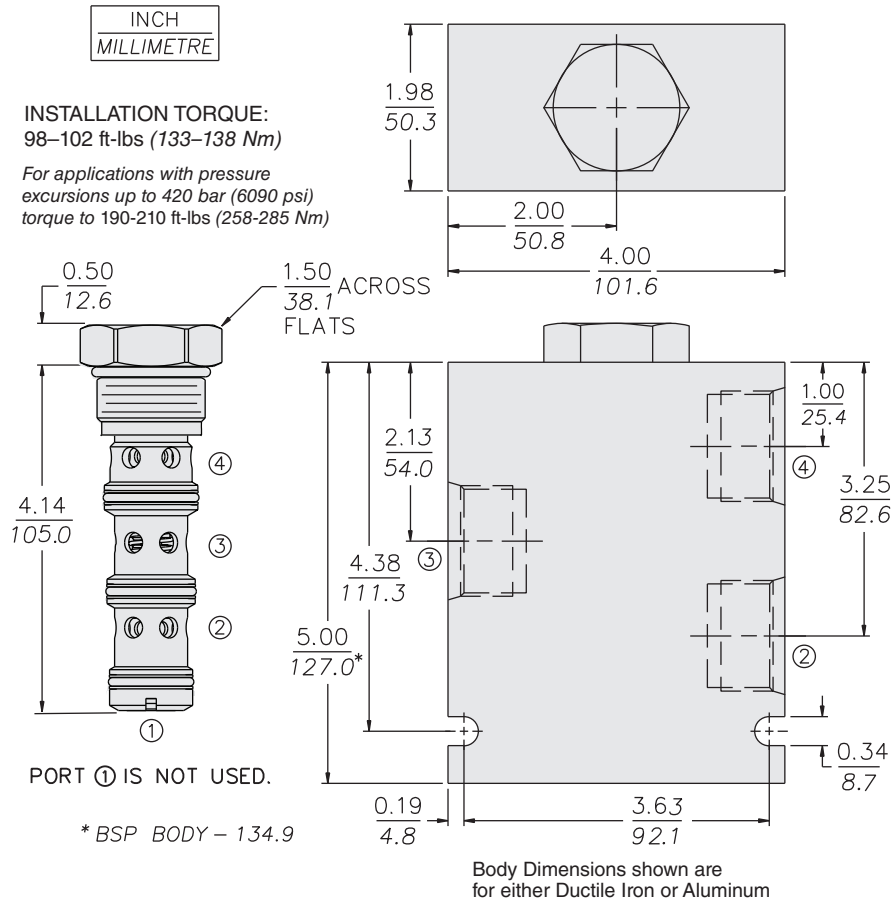
PERFORMANCE (Cartridge Only)



Multifunction

FD56-45

DIMENSIONS



MATERIALS

Cartridge: Weight: 0.38 kg (0.83 lbs)
Steel with hardened work surfaces.
Zinc-plated exposed surfaces.
Buna N O-rings and polyester elastomer back-ups standard.

Ported Body: Ductile iron body required for operation over 207 bar (3000 psi). Aluminum bodies are available for lower pressure operation. FD-type bodies recommended but a standard 4-way body may also be used with Port 1 plugged. See page 8.016.1.

TO ORDER

FD56-45 -

Ported Bodies
Cartridge Only **0**
SAE 12 (all ports) **12T**
SAE 16 (all ports) **16T**
SAE 16 (all ports) **16TD**
1 in. BSP* (all ports) **8B**
*BSP Body; U.K. Mfr. Only

Dividing/Combining Ratio
44 50:50 rated @ 25-98 lpm (6.5-26 gpm) input
66 50:50 rated @ 32-128 lpm (8.5-34 gpm) input
88 50:50 rated @ 57-167 lpm (15-44 gpm) input
99 50:50 rated @ 68-197 lpm (18-52 gpm) input

Seals
N Buna N (Std.)
V Fluorocarbon
P Polyurethane (Required for operation over 240 bar/3500 psi)
U Urethane (Required for applications with pressure excursions up to 420 bar/6090 psi)