FDC60 Series

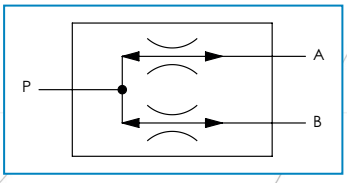
Flow Divider Combiner

The FDC60 Flow Divider-Combiner will divide a single flow into two separate flows which will always be in the same ratio to each other regardless of any pressure differential between the two lines. If the flow is reversed (e.g. return stroke of two cylinders) the return flows are held in the same ratio to each other and combined into a single flow, regardless of individual loads on the cylinders.
A common application is to keep two cylinders (or motors) in close unison when loads on them are unequal. The valves may also be used in series to operate more than two circuits.

Specifications

Maximum Rated Pressure:		Up to 310 bar, 4,500 psi
Maximum Rated Flow:		Up to 70 L/min, 18 US gpm
Ambient Temperature Range:		-30 to 100°C, -22 to 212°F
Fluid Temperature Range:		-30 to 100°C, -22 to 212°F
Compatible Fluids:		Mineral oils to ISO 11158. Other fluids consult sales office.
Accuracy:		+/- 2.0% of valve rated maximum flow
Porting:		BSPP, SAE, METRIC, NPTF
Material:	**Body materials:**	Grey cast iron & mild steel
	Internal Materials:	Hardened steel & high carbon spring steel
	Seals:	NBR
Fluid Cleanliness:		Must be better than DIN ISO4406: 20/18/15 (NAS 1638 class 9)
Weight:		2.1 kg, 4.6 lb
Mounting:		Three x 6.7mm through holes for bolt mounting

Symbol:



Make it BLUE®

Features

- Pressure compensated to keep the two split flows at the same ratio regardless of pressure variations between them.
- Pressure compensation in both forward (divide) and reverse (combine) flows.
- Flows from 5 to 70 L/min (1.3 - 18.5 US gpm).
- Unequal division of the two split flows available. From 50/50% to 90/10%.
- Maximum 12.5 bar (180 psi) pressure drop at valves rated maximum flow (see page 3).
- EN-GJL-250 cast iron body and zinc plated with clear trivalent end plugs. No aluminium makes it suitable for mining applications.

Sales Order Code

Please contact our technical sales to team to discuss any special order requirements and custom configuration.

TYPICAL CODE	DESCRIPTION	SEE TABLE	YOUR CODE
FDC60	FDC60 - Valve type	-	FDC60
10	Flow size	Table 1	
3	Porting	Table 2	
50/50	Split flow ratio*	Table 3	

** Division of split flows as a ratio*

Table 1: Flow size

CODE	FLOW RANGE L/MIN (MIN - MAX)	FLOW RANGE US GPM (MIN - MAX)
05	02 - 05	0.5 - 1.3
10	05 - 10	1.3 - 2.6
20	08 - 20	2.1 - 5.3
30	16 - 30	4.2 - 7.9
40	25 - 40	6.6 - 10.6
50	35 - 50	9.2 - 13.2
60	45 - 60	11.9 - 15.9
70**	55 - 70	14.5 - 18.5

***Code 70 (55-70 L/min) flow range will not function adequately at ratio's above 70/30*

Table 3: Split flow ratio****

CODE	FLOW RATIO	
	A PORT	B PORT
50/50	1/2	1/2
55/45	11/20	9/20
60/40	3/5	2/5
65/35	13/20	7/20
70/30	7/10	3/10
75/25	3/4	1/4
80/20	4/5	1/5
85/15	17/20	3/20
90/10	9/10	1/10

*****Other ratios available to special order*

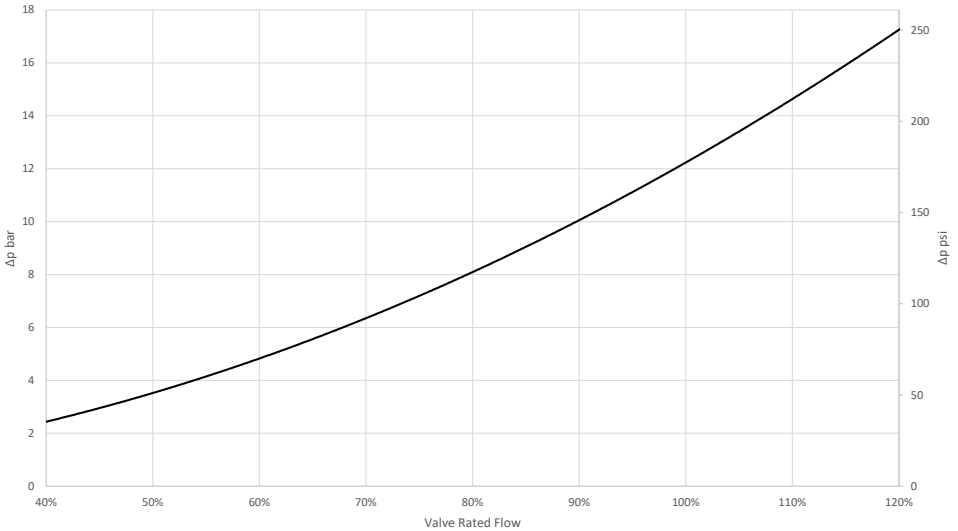
Table 2: Porting***

CODE	P PORT	A PORT	B PORT
1	M18 x 1.5	M18 x 1.5	M18 x 1.5
2	M22 x 1.5	M18 x 1.5	M18 x 1.5
3	3/8" BSPP	3/8" BSPP	3/8" BSPP
4	1/2" BSPP	3/8" BSPP	3/8" BSPP
5	1/2" BSPP	1/2" BSPP	1/2" BSPP
6	7/8"-14UN #10 SAE ORB	3/4" -16UN #8 SAE ORB	3/4" -16UN #8 SAE ORB
7	M27 x 1.5	M22 x 1.5	M22 x 1.5
8	1/2" NPTF	1/2" NPTF	1/2" NPTF

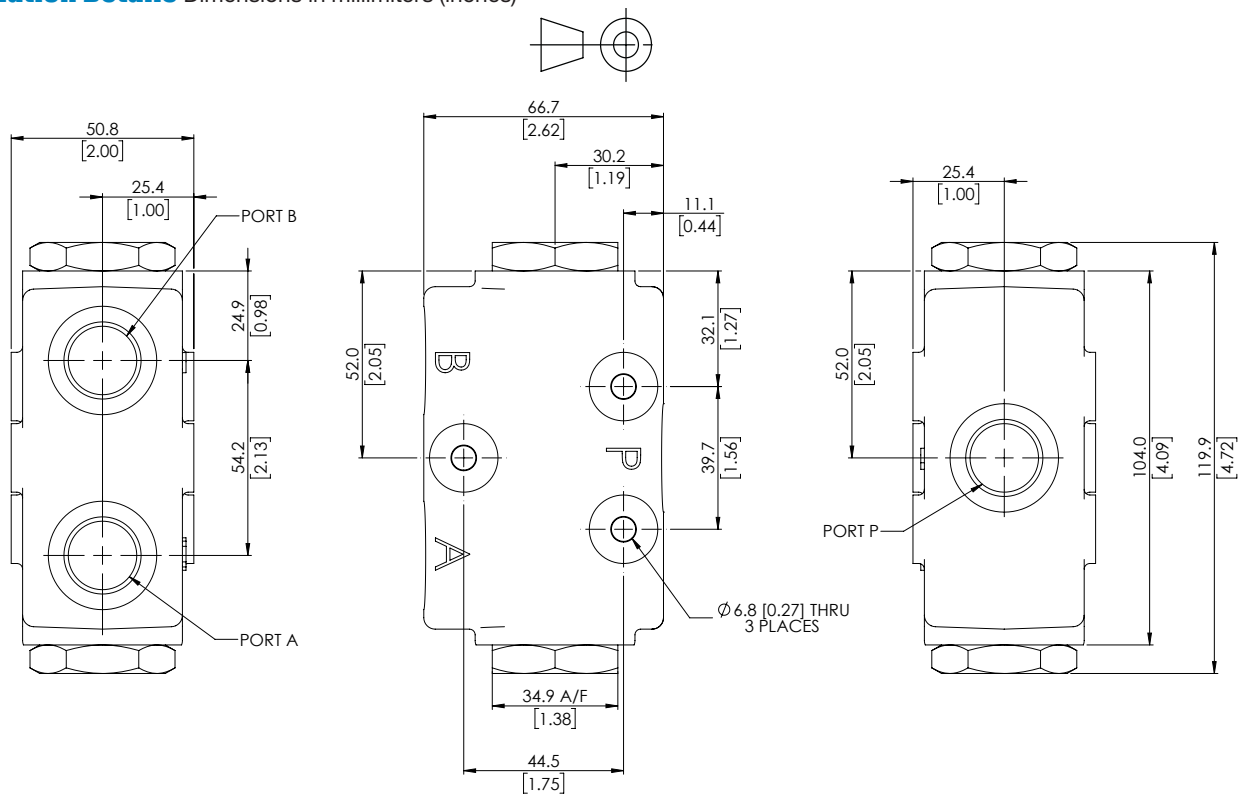
****Other threads available to special order*

Typical Pressure Drop

All test completed with ISO32 mineral oil at 40˚C (32cst)



Intallation Details Dimensions in millimeters (inches)



Valve Accuracy

The division accuracy is specified as a percentage of the valves rated maximum flow. The accuracy of +/-3% defines a maximum difference between the two split flows as 6% of the maximum flow. The same is true for both forward (divide) and reverse (combine) flows.

For a valve with rated flow size 10, the accuracy is calculated as +/-3% of its maximum flow 10 L/min (2.6 USgpm). This equates to a maximum allowable difference between the two split flows of 0.6 L/min (+/-0.3 L/min), or 0.16 USgpm (+/-0.08 USgpm).
If the flow to the same valve is reduced to 5 L/min (1.3 USgpm), the accuracy is still specified as +/-3% of its maximum rated flow (10 L/min, 2.6 USgpm).

For a valve with 50/50 split flow ratio, the two split flows are equal, and ½ of the total flow.
For a valve with 80/20 split flow ratio, the total flow is split with 80% going through A PORT & 20% going through B PORT. The accuracy of +/-3% is still calculated from the valves rated maximum flow & then added to give a maximum variation of the two split flows.

See table below for further examples.

Flow size code	Min/Max flow		Accuracy +/- 3% of Max. flow		Flow split @ 50/50						Flow split @ 80/20					
					Flow Port A / B		Maximum variation				Flow Port A / B		Maximum variation			
							l/min		US gpm				l/min		US gpm	
	l/min	US gpm	l/min	US gpm	l/min	US gpm	from	to	from	to	l/min	US gpm	from	to	from	to
5	2	0.5	+/-0.15	+/-0.04	1.0 / 1.0	0.25 / 0.25	0.85 / 1.15	1.15 / 0.85	0.21 / 0.29	0.29 / 0.21	1.6 / 0.4	0.40 / 0.10	1.45 / 0.55	1.75 / 0.25	0.36 / 0.14	0.44 / 0.06
	5	1.3			2.5 / 2.5	0.65 / 0.65	2.35 / 2.65	2.65 / 2.35	0.61 / 0.69	0.69 / 0.61	4.0 / 1.0	1.04 / 0.26	3.85 / 1.15	4.15 / 0.85	1.00 / 0.30	1.08 / 0.22
10	5	1.3	+/-0.3	+/-0.08	2.5 / 2.5	0.65 / 0.65	2.2 / 2.8	2.8 / 2.2	0.57 / 0.73	0.73 / 0.57	4.0 / 1.0	1.04 / 0.26	3.7 / 1.3	4.3 / 0.7	0.96 / 0.34	1.12 / 0.18
	10	2.6			5.0 / 5.0	1.30 / 1.30	4.7 / 5.3	5.3 / 4.7	1.22 / 1.38	1.38 / 1.22	8.0 / 2.0	2.08 / 0.52	7.7 / 2.3	8.3 / 1.7	2.00 / 0.60	2.16 / 0.44
20	8	2.1	+/-0.6	+/-0.16	4.0 / 4.0	1.05 / 1.05	3.4 / 4.6	4.6 / 3.4	0.89 / 1.21	1.21 / 0.89	6.4 / 1.6	1.68 / 0.42	5.8 / 2.2	7.0 / 1.0	1.52 / 0.58	1.84 / 0.26
	20	5.3			10.0 / 10.0	2.65 / 2.65	9.4 / 10.6	10.6 / 9.4	2.49 / 2.81	2.81 / 2.49	16.0 / 4.0	4.24 / 1.06	15.4 / 4.6	16.6 / 3.4	4.08 / 1.22	4.40 / 0.90
30	16	4.2	+/-0.9	+/-0.24	8.0 / 8.0	2.10 / 2.10	7.1 / 8.9	8.9 / 7.1	1.86 / 2.34	2.34 / 1.86	12.8 / 3.2	3.36 / 0.84	11.9 / 4.1	13.7 / 2.3	3.12 / 1.08	3.60 / 0.60
	30	7.9			15.0 / 15.0	3.95 / 3.95	14.1 / 15.9	15.9 / 14.1	3.71 / 4.19	4.19 / 3.71	24.0 / 6.0	6.32 / 1.58	23.1 / 6.9	24.9 / 5.1	6.08 / 1.82	6.56 / 1.34
40	25	6.6	+/-1.2	+/-0.32	12.5 / 12.5	3.30 / 3.30	11.3 / 13.7	13.7 / 11.3	2.98 / 3.62	3.62 / 2.98	20.0 / 5.0	5.28 / 1.32	18.8 / 6.2	21.2 / 3.8	4.96 / 1.64	5.60 / 1.00
	40	10.6			20.0 / 20.0	5.30 / 5.30	18.8 / 21.2	21.2 / 18.8	4.98 / 5.62	5.62 / 4.98	32.0 / 8.0	8.48 / 2.12	30.8 / 9.2	33.2 / 6.8	8.16 / 2.44	8.80 / 1.80
50	35	9.2	+/-1.5	+/-0.40	17.5 / 17.5	4.60 / 4.60	16.0 / 19.0	19.0 / 16.0	4.20 / 5.00	5.00 / 4.20	28.0 / 7.0	7.36 / 1.84	26.5 / 8.5	29.5 / 5.5	6.96 / 2.24	7.76 / 1.44
	50	13.2			25.0 / 25.0	6.60 / 6.60	23.5 / 26.5	26.5 / 23.5	6.20 / 7.00	7.00 / 6.20	40.0 / 10.0	10.56 / 2.64	38.5 / 11.5	41.5 / 8.5	10.16 / 3.04	10.96 / 2.24
60	45	11.9	+/-1.8	+/-0.48	22.5 / 22.5	5.95 / 5.95	20.7 /24.3	24.3 / 20.7	5.47 / 6.43	6.43 / 5.47	36.0 / 9.0	9.52 / 2.38	34.2 / 10.8	37.8 / 7.2	9.04 / 2.86	10.00 / 1.90
	60	15.9			30.0 / 30.0	7.95 / 7.95	28.2 / 31.8	31.8 / 28.2	7.47 / 8.43	8.43 / 7.47	48.0 / 12.0	12.72 / 3.18	46.2 / 13.8	49.8 / 10.2	12.24 / 3.66	13.20 / 2.70
70	55	14.5	+/-2.1	+/-0.56	27.5 / 27.5	7.25 / 7.25	25.4 / 29.6	29.6 / 25.4	6.69 / 7.81	7.81 / 6.69	44.0 / 11.0	11.60 / 2.90	41.9 / 13.1	46.1 / 8.9	11.04 / 3.46	12.16 / 2.34
	70	18.5			35.0 / 35.0	9.25 / 9.25	32.9 / 37.1	37.1 / 32.9	8.69 / 9.81	9.81 / 8.69	56.0 / 14.0	14.80 / 3.70	53.9 / 16.1	58.1 / 11.9	14.24 / 4.26	15.36 / 3.14