FDC140 Series

High Flow Divider Combiner

The FDC140 series hydraulic valve offers high flow, high pressure, dividing and combining with an excellent split flow accuracy under varying loads.

The FDC140 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.

For example, access and lifting platforms, car ramps, tail lifts on municipal and other heavy vehicles, continuous track such as snow clearing vehicles, road rollers and harvesters.

Specifications

Maximum Rated Pressure:	420 bar, 6000 psi
Maximum Total Flow:	Up to 140 L/min, 37 US gpm
Ambient Temperature Range:	-30 to 100 °C, -22 to 212 °F
Fluid Temperature Range:	-30 to 100 °C, -22 to 212 °F
Hydraulic Fluid:	Mineral & Synthetic oils. For other fluid types contact sales
Accuracy/ Tolerances:	+/- 1.5% of valve rated maximum flow (see page 3)
Porting:	BSPP, SAE
Materials:	**Body materials:** SG iron & carbon steel **Internal Materials:** Steel (hardened & unalloyed) **Seals:** NBR
Fluid cleanliness:	Minimum ISO 4406 class 20/18/15 (NAS 1638 class 9)
Weight:	6.1 kg, 13.4 lb
Mounting:	Three x 9mm through holes for bolt mounting (see page 2)

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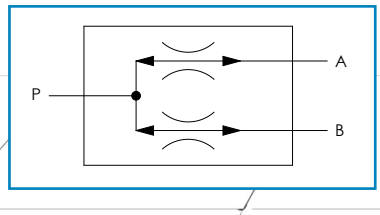
Features

- 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 55 to 140 L/min (14.5 - 37.0 US gpm).
- +/-1.5% accuracy between the two split flows, based on valve rated maximum flow (see page 3).
- A loading difference above 250 bar (3500 psi) between the two split flows may result in reduced performance
- Unequal division of the two split flows available. From 50/50% to 90/10%.
- Maximum 14 bar (200 psi) pressure drop at valves rated maximum flow (see page 3)
- The body is black polyester powder coated EN-GJS-500-7 iron. End plugs are zinc plated with clear trivalent passivation.

Symbol:



Ordering Codes

TYPICAL CODE	DESCRIPTION	SEE TABLE	YOUR CODE
FDC140	FDC140 - Valve Type		
100	Valve rated flow size	Table 1	
1	Porting	Table 2	
50/50	Split flow ratio *	Table 3	

* Division of split flows as a ratio

Table 1: Valve rated flow size

CODE	FLOW RANGE L/MIN (MIN - MAX)	FLOW RANGE US GPM (MIN - MAX)
80	55 - 80	14.5 - 21.1
100	70 - 100	18.5 - 26.4
120	85 - 120	22.5 - 31.7
140	100 - 140	26.4 - 37.0

Table 3: Split flow ratio

CODE	FRACTION OF P PORT FLOW	
	A PORT	B PORT
50/50	1/2	1/2
67/33	2/3	1/3
75/25	3/4	1/4
80/20	4/5	1/5
83/17	5/6	1/6
86/14	6/7	1/7
88/13	7/8	1/8
89/11	8/9	1/9
90/10	9/10	1/10

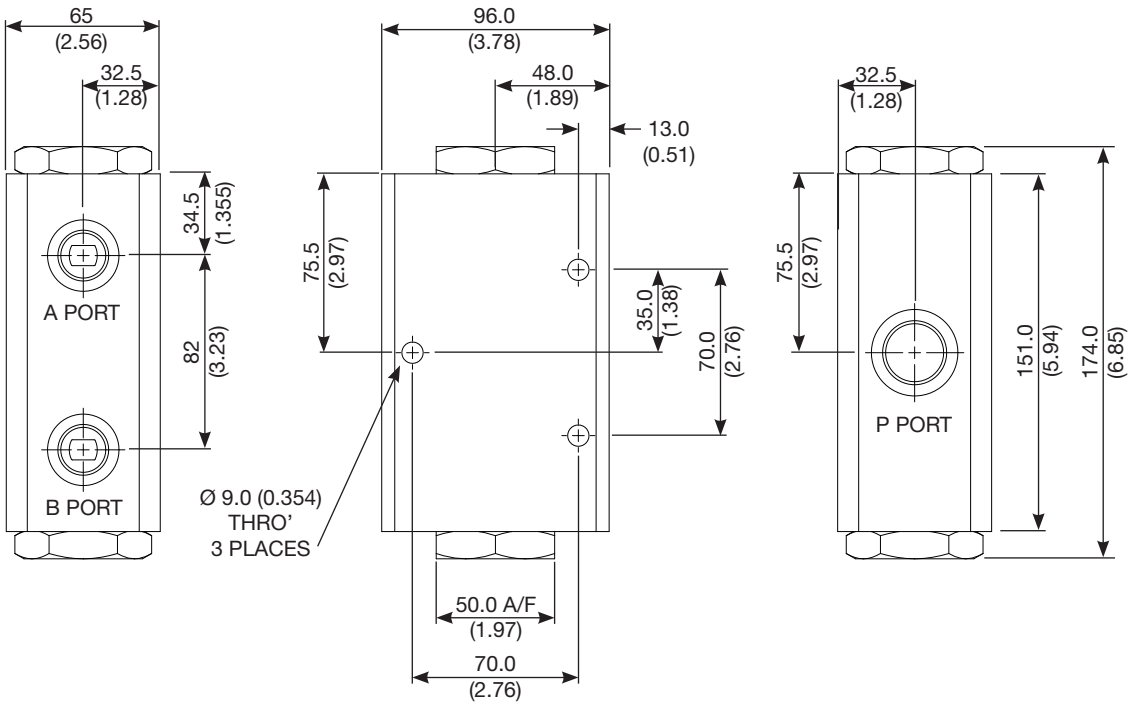
Table 2: Porting **

CODE	P PORT	A PORT	B PORT
1	3/4”BSPP	1/2”BSPP	1/2”BSPP
2	1”BSPP	3/4”BSPP	3/4”BSPP
3	1-1/16” -12UN #12 SAE ORB	3/4” -16UN #8 SAE ORB	3/4” -16UN #8 SAE ORB
4	1-5/16” -12UN #16 SAE ORB	1-16” -12UN #12 SAE ORB	1-16” -12UN #12 SAE ORB

** Metric & other threads available to special order

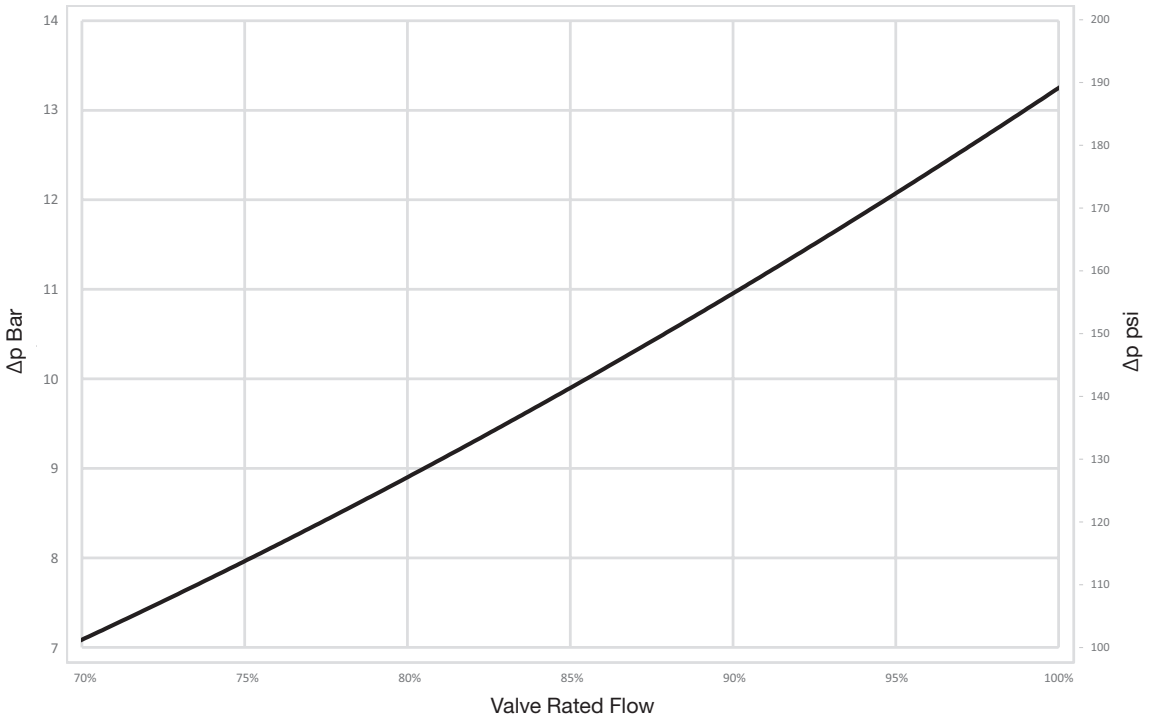
Installation Details

Dimensions in millimetres (Inches)



Typical Pressure Drop

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



Valve Accuracy

Division Accuracy.
The accuracy is specified as a percentage of the valves rated maximum flow. The accuracy of +/-1.5% defines a maximum difference between the two split flows as 3% of the maximum flow. The same is true for both forward (divide) and reverse (combine) flows.

For a valve with rated flow size 100, the accuracy is calculated as +/-1.5% of its maximum flow of 100 L/min (26.4 US gpm). This equates to a maximum allowable difference between the two split flows of 3.0 l/min (+/-1.5 L/min), or 0.8 US gpm (+/-0.4 US gpm).

If the flow to the same valve is reduced to 70 L/min (18.5 US gpm), the accuracy is still specified as +/-1.5% of its maximum flow (100 L/min, 26.4 US gpm).

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 +/-1.5% calculated from the valves rated maximum flow is 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 +/- 1.5% of Max. flow	Flow split @ 50/50			Flow split @ 80/20		
			Flow Port A / B	Maximum variation from	Maximum variation to	Flow Port A / B	Maximum variation from	Maximum variation to
	l/min	*l/min*	*l/min*	*l/min*	*l/min*	*l/min*	*l/min*	*l/min*
80	55	+/-1.2	27.5 / 27.5	26.3 / 28.7	28.7 / 26.3	44.0 / 11.0	42.8 / 12.2	45.2 / 9.8
	80		40.0 / 40.0	38.8 / 41.2	41.2 / 38.8	64.0 / 16.0	62.8 / 17.2	65.2 / 14.8
100	70	+/-1.5	35.0 / 35.0	33.5 / 36.5	36.5 / 33.5	56.0 / 14.0	54.5 / 15.5	57.5 / 12.5
	100		50.0 / 50.0	48.5 / 51.5	51.5 / 48.5	80.0 / 20.0	78.5 / 21.5	81.5 / 18.5
120	85	+/-1.8	42.5 / 42.5	40.7 / 44.3	44.3 / 40.7	68.0 / 17.0	66.2 / 18.8	69.8 / 15.2
	120		60.0 / 60.0	58.2 / 61.8	61.8 / 58.2	96.0 / 24.0	94.2 / 25.8	97.8 / 22.2
140	100	+/-2.1	50.0 / 50.0	47.9 / 52.1	52.1 / 47.9	80.0 / 20.0	77.9 / 22.1	82.1 / 17.9
	140		70.0 / 70.0	67.9 / 72.1	72.1 / 67.9	112.0 / 28.0	109.9 / 30.1	114.1 / 25.9

Flow size code	Min. Max. flow	Accuracy +/- 1.5% of Max. flow	Flow split @ 50/50			Flow split @ 80/20		
			Flow Port A / B	Maximum variation from	Maximum variation to	Flow Port A / B	Maximum variation from	Maximum variation to
	US gpm	*US gpm*	*US gpm*	*US gpm*	*US gpm*	*US gpm*	*US gpm*	*US gpm*
80	14.5	+/-0.3	7.25 / 7.25	6.95 / 7.55	7.55 / 6.95	11.6 / 2.9	11.3 / 3.2	11.9 / 2.6
	21.1		10.55 / 10.55	10.25 / 10.85	10.85 / 10.25	16.9 / 4.2	16.6 / 4.5	17.2 / 3.9
100	18.5	+/-0.4	9.25 / 9.25	8.85 / 9.65	9.65 /8.85	14.8 / 3.7	14.4 / 4.1	15.2 / 3.3
	26.4		13.2 / 13.2	12.8 / 13.6	13.6 / 12.8	21.1 / 5.3	20.7 / 5.7	21.5 / 4.9
120	22.5	+/-0.5	11.25 / 11.25	10.75 / 11.75	11.75 / 10.75	18.0 / 4.5	17.5 / 5.0	18.5 / 4.0
	31.7		15.85 / 15.85	15.35 / 16.35	16.35 / 15.35	25.35 / 6.35	24.85 / 6.85	25.85 / 5.85
140	26.4	+/-0.6	13.2 / 13.2	12.6 / 13.8	13.8 / 12.6	21.1 / 5.3	20.5 / 5.9	21.07 / 4.7
	37.0		18.5 / 18.5	17.9 / 19.1	19.1 / 17.9	29.6 / 7.4	29.0 / 8.0	30.2 / 6.8

Webtec reserve the right to make improvements and changes to the specification without notice