

Flow Divider

Bi-directional Series MTDA



- robust, simple and reliable
- easy to service
- flows can be split or merged with accuracy (divide/combine functions).
- the flow division ratio can be altered to suit customer requirements.

1 Description

1.1 General

Series MTDA units are flow dividing valves that operate automatically. They are intended for use with hydraulic fluids. They divide a flow, the total rate of which may be varied, up to 4 part-flows. When flow passes through a valve in the opposite direction, the part-flows are combined into one single flow (added). The dividing and combining functions are largely independent of the pressures of the divided flows and of the fluid viscosity. In order for the valve to work properly, a continuous flow is required at all ports. For example, if one actuator is no longer able to move, then the other part-flow will also be restricted. If the actuators served by the flow divider operate at different pressures, then the pressure of the total flow entering the valve will correspond to the higher of the two actuator pressures. Large pressure differences may give rise to significant heat generation, which must be taken into consideration when designing the system.

1.2 Application examples

- · Work access platforms
- Lifting platform
- Harvesters
- Municipal equipment

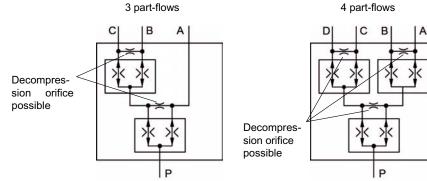
· Snow/ice clearing equipment

- Wood chippers
- Raod rollers
- Tail lifts

2 Symbols

2 part-flows

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Reference: 100-P-000052-EN-11



3 Technical data

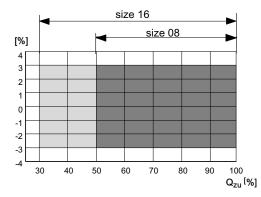
General characteristics	Unit	Description, value
Maximum operating pressure	bar	315
Oil temperature range	°C	-20 +80
Viscosity range	mm ² /s	10 300
Maximum admissible level of contamination of the hydraulic fluid		ISO 4406 code 20/18/15
Nitrile seals		NBR (Nitril-Butadin-Kautschuk)
Weight: MTDA08 MTDA16 MTDA.3F MTDA4F	kg	1,5 8 8,3 8,4

4 Performance graph

Values refer to an viscosity of 35 mm²/s.

4.1 Division accuracy [%]

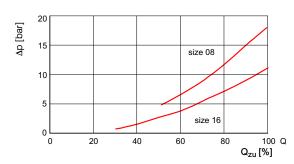
Division accuracy +/- 3% of the max. flow rate, based on control flow range of the respective flow divider (see chapter 6).



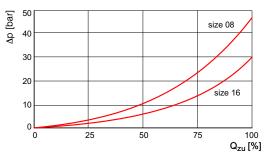
4.2 Pressure drop characteristics (△p)

Pressure drop v. flow rate





4.2.2 MTDA..3F / MTDA..4F



IMPORTANT :Q_{zu} = really inlet flow (0% = 0 l/min, 100% = maximum control flow) Higher division accuracy on enquiry.

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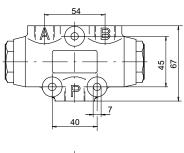
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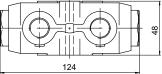
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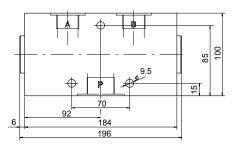
5 Dimensions

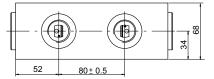
5.1 MTDA08





5.2 MTDA16

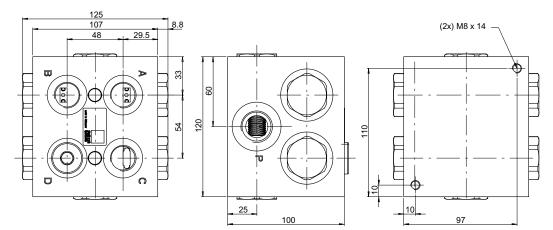




5.2.1 Port threads

Flow range	Me	etric	In	ch		
[l/min]	Port P	Port A + B	Port P	Port A + B		
004 025	M18 x 1,5	M18 x 1,5	G¾"	G¾"		
032 100	M22 x 1,5	M18 x 1,5	G½"	G¾"		
100 120	M27 X 2	M22 x 1,5	G¾"	G1⁄2"		
160 250	M33 x 2	M27 x 2	G1"	G¾"		

5.3 MTDA083F / MTDA084F



5.3.1 Port threads

Flow range	Metric						
[l/min]	Port P	Port A+B	Port C+D				
004 100	M27 x 2	M22 x 1,5	M22 x 1,5				

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6 Ordering code

6.1 MTDA08 / MTDA16

		0,8-0,0,4 M 3,0 /
Flow divider		
Bi-directional		
Port thread		
Nominal size 08 16		
Control flow range [l/min] MTDA08 004 = 2-4 025 = 12-24 006 = 3-6 032 = 16-33 008 = 4-8 050 = 25-56	2 120 = 40-120	
012 = 6-12 075 = 37-75 016 = 8-16 100 = 50-10	5 200 = 60-200	
Port threads Metric = M Inch = R		
Division ratio, see section 6.4 (no valid for Option (to be inserted by the factory)	division ratio 1:1)	

6.2 MTDA083F

			MTD	Α	08	3F	10	10	025] - [М
Flow	divider										
Bi-dir	ectional										
Port t	hread										
Nomi	nal Size	= 08									
Trippl	e flow divider	= 3F									
Divisi	on ratio A to B+C	1:1 = 10 1:1,5 = 15 etc. ¹⁾									
Divisi	on ratio B to C	1:1 = 10 1:1,5 = 15 etc. ¹⁾									
Contr	ol flow range [l/min	1]									
004	= 2-4	016 = 8-16 50	= 25-50								
006	= 3-6	025 = 12-25 75	= 37-75								
800	= 4-8	032 = 16-32 100	= 50-100								
012	= 6-12										
Port t	hread										
Metric	2	= M (other port threads on reques	t)								

1) With unequal division: For the division ratio A to B+C, the larger part-flow must be at outlet B+C. For the division ratio B to C, the larger part-flow must be at outlet C.

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6.3 MTDA084F

					MT	D	Α	08	4F	10	10	10	025	-	Μ
Flow	divider														
<u>Bi-dir</u>	ectional														
Port t	hread														
Nomi	nal Size	= 08													
Fourf	old flow divider	= 4F													
Divisi	on ratio A+B to C+D		10 15 etc. ¹⁾												
Divisi	on ratio A to B	1:1 = 1:1,5 =	10 15 etc. ¹⁾												
Divisi	on ratio C to D	1:1 = 1:1,5 =	10 15 etc. ¹⁾												
Contr 004 006 008 012	= 3-6)16 = 8-)25 = 12-)32 = 16-	-25	50 75 100	= 25-5 = 37-7 = 50-1	5									
Port t	hread														

Metric = M (other port threads on request)

 With unequal division: For the division ratio A+B to C+D, the larger part-flow must be at outlet C+D. For the division ratio A to B, the larger part-flow must be at outlet B. For the division ratio C to D, the larger part-flow must be at outlet D.

6.4 Unequal division on enquiry

In the case of unequal division, the division ratio is shown in the flow divider model code

e.g. 13 = 1:1,3 20 = 1:2 30 = 1:3

Ordering example:

Flow range: Q_{zu} 60 l/min with unequal division of 1 : 3 Flow divider: MTDA08-075M30

At an inlet flow rate of 60 l/min the unequal division prod. : 15 l/min at port A and 45 l/min at port B $\,$

6.5 Example for division accuracy

Flow range:	Q _{zu} 60 l/min, required division of
	QA/QB = 30 I/min (division 1 : 1)

Flow divider: MTDA08-075M

flow range 37...75 l/min max. flow rate 75 l/min

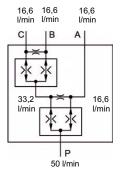
max. allowable deviation = 75 l/min x $\pm 3\%$ = $\pm 2,25$ l/min

resulting part- flow rate at Q_{zu} 60 l/min:

Port A - Q_{min} = 27,75 l/min / Q_{max} = 32,25 l/min Port B - Q_{min} = 27,75 l/min / Q_{max} = 32,25 l/min

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6.6 Example Division MTDA083F2010050



A = 16,6 l/min B = 16,6 l/min C = 16,6 l/min

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7 End-stop synchronisation of parallel-connected cylinders

When one of the two cylinders reaches its end-stop, the flow to the other cylinder drops to approx. 5 - 10% of its nominal rate. This pressure-dependent leakage flow enables the other cylinder to slowly re-synchronise itself. To enable full-speed re-synchronisation of the lagging cylinder, each actuator line from the flow divider must be equipped with a pressure relief valve.

8 Installation attitude and mounting

To prevent the weight of the spool causing division inaccuracies, the valve must be installed so that the spool axis is horizontal. When mounting the valve, make sure that the body is not subjected to any distorting forces. Do not use tapered-thread pipe fittings.

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