# **1.5DRE**

# Aluminium gear flow dividers

**Technical Catalogue** 



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### GEAR FLOW DIVIDERS "E" SERIES Aluminium Body

# **General Features**

# **GEAR DIVIDERS**

A flow divider is composed by two or more modular elements (stages) with driving gears mechanically linked by an internal coupling sleeve, that causes them to turn at the same speed. Unlike multiple pumps, in which the input power is mechanical (shaft connected to a motor), in a flow divider the input power is hydraulic, i.e. a flow under pressure supplies the modular elements, which are connected to the hydraulic circuits serving the users.

The portion of flow elaborated by each element is determined by its nominal flow rate. Therefore, unlike standard static dividers with variable ports, the flow dividers do not cause dissipation and are much more precise. The use of flow dividers reduces the number of pumps necessary as well as the associated individual mechanical power takeoffs and complex mechanical couplers (with greater losses). The total input power is always equal to the sum of the powers supplied by all elements plus a small power loss, usually negligible.

Therefore, if in a period of time the power required by a hydraulic circuit is equal to zero (inactive drained circuit), the power supplied by the element feeding that circuit becomes available for the other elements, which may use it in their own circuits, also operating at higher pressures than the intake pressure.

#### **Typical applications**

#### Flow dividers

Supply of two or more independent hydraulic circuits by means of a single pump, with an overall flow rate equal to the sum of the flow rates.

Examples of this kind of application:

- lifting platforms and bridges;
- hydraulic bending presses and shearing machines;
- hoisting of freight containers;
- lubrication systems;
- hydraulic opening / closing of gates;
- automatic hydraulically-driven machines;
- actuation of formwork for construction;
- wood processing machinery;
- · conveyance of trolleys driven by hydraulic cylinders or motors;
- equipment for the food industry;
- military installations.

#### Pressure amplifiers

If one line requires higher operating or peak pressure than the others, a flow divider becomes a better solution than a pressure upgrade of all the lines.

With a two-element flow divider the flow can be discharged from the outlet of the first element so that the pressure in the second element becomes higher than the pressure on the main pump.

#### Examples of this kind of application:

- presses with fast movements
- machine tools



# **GEAR FLOW DIVIDERS "E" SERIES**

### Aluminium Body

### **TECHNICAL DATA**

- Minimum operating fluid viscosity	12 mm <sup>2</sup> / sec
- Max starting viscosity	800 mm <sup>2</sup> / sec
- Suggested fluid viscosity range	17 - 65 mm <sup>2</sup> / sec
- Fluid operating temperature range	-20 to 80 °C
- Fluid operating temperature range with FPM seals (Viton)	-15 to 110°C
- Fluid operating temperature range with HNBR seals*	-30 to 110°C
- Hydraulic fluid	mineral oil

\*Available on request

#### FILTRATION INDEX RECOMMENDED

Working pressure	>200 bar/2900 psi	<200 bar/2900 psi
Contamination class NAS 1638	9	10
Contamination class ISO 4406	19/18/15	20/19/16
Achieved with filter $\beta_x$ =75	15 µm	25 µm

For different TECHNICAL DATA, please contact our sales department.

### WORKING CONDITIONS

#### Max flow for each inlet section

When the inlet flow exceed the 40 l/min (1.5DRE) - 80 l/min (2DRE), please contact our sales department.

When the flow divider is used as pressure intensifier, the pressure between sections can be higher.

P<sub>1</sub> Max continuous pressure

P2 Max peak pressure

	Diapla	oomont	N	lax outle	t pressur	e	Max o	Max outlet Δp Speed		Speed Flow per section		/ per tion	Flow per section	
1.5DRE - Type	Dispia	cement	P <sub>1</sub>	P <sub>2</sub>	P <sub>1</sub>	P <sub>2</sub>	betv sec	veen tions	min.	max.	min.	max.	min.	max.
	cm³/ rev	cu.in./ rev	bar	bar	psi	psi	bar psi		min-1		l/min		gpm	
1.5DRE - 2.8	2.8	0.17	250	270	3625	3915	50	725	1200	4500	3.54	13.26	0.93	3.49
1.5DRE - 3.5	3.5	0.21	250	270	3625	3915	50	725	1200	4500	4.42	16.58	1.16	4.36
1.5DRE - 4.1	4.1	0.25	250	270	3625	3915	50	725	1200	4000	5.18	17.26	1.36	4.54
1.5DRE - 5.2	5.2	0.32	230	250	3335	3625	50	725	1200	4000	6.57	21.89	1.73	5.76
1.5DRE - 6.2	6.2	0.38	230	250	3335	3625	50	725	1200	3400	7.83	22.19	2.06	5.84
1.5DRE - 7.6	7.6	0.46	200	220	2900	3190	50	725	1200	3400	9.60	27.20	2.53	7.16
1.5DRE - 9.3	9.3	0.57	180	200	2610	2900	50	725	1200	3000	11.75	29.37	3.09	7.73
1.5DRE - 11	11	0.67	170	190	2465	2755	50	725	1200	3000	13.89	34.74	3.66	9.14

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# **General Features**

P<sub>1</sub> Max continuous pressure

P2 Max peak pressure

	Diapla	omont	M	Max. Outlet Pressure Max. Outlet Δp Speed Flow per section		Speed		v per tion	Flow per section					
2DRE - Type	Displat	Jemeni	p <sub>1</sub>	p <sub>2</sub>	p <sub>1</sub>	p <sub>2</sub>	bet sec	ween ctions	min.	max.	min.	max.	min.	max.
	cm <sup>3</sup> / cu.in./ rev rev		bar	bar	psi	psi	bar	psi	min <sup>-1</sup>		l/min		gpm	
2DRE - 8,3	8.20	0.50	250	280	3625	4060	50	725	1200	3600	10.36	31.07	2.73	8.18
2DRE - 10,5	10.60	0.65	250	280	3625	4060	50	725	1200	3500	13.39	39.05	3.52	10.28
2DRE - 11,3	11.50	0.68	250	280	3625	4060	50	725	1200	3500	14.53	42.37	3.82	11.15
2DRE - 12,5	12.70	0.77	250	280	3625	4060	50	725	1200	3400	16.04	45.45	4.22	11.96
2DRE - 13,8	13.80	0.84	250	280	3625	4060	50	725	1200	3400	17.43	49.39	4.59	13.00
2DRE - 16	16.60	1.01	250	280	3625	4060	50	725	1100	3200	19.22	55.92	5.06	14.71
2DRE - 19	19.40	1.15	220	240	3190	3480	50	725	1100	3200	22.46	65.35	5.91	17.20
2DRE - 22,5	22.90	1.37	220	240	3190	3480	50	725	1100	3000	26.52	72.32	6.98	19.03
2DRE - 26	25.80	1.58	200	220	2900	3190	50	725	1100	2850	29.87	77.40	7.86	20.37
2DRE - 30	30.10	1.84	200	220	2900	3190	50	725	1100	2700	34.85	85.55	9.71	22.51

### **GUIDELINE FOR THE COMBINATION OF THE ELEMENTS**

In flow dividers with many inlets, as they are all communicating it is even possible to use only one of them, by plugging the other ones. We suggest to make configurations with one inlet every 80 I/min (for 2DRE) and 40 I/min (for 1.5DRE) of flow elaborated.

For division error less than 4% a maximum level of differencial pressure of 50 bar between elements is suggested.

Number of elements	Number of inlets
2	1
3	1
4	2
5	2
6	3



# **General Features**

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### **DISPLACEMENT SELECTION**

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In order to equalize the flow, it needs to maintain the speed within the suggested speed range, with a  $\Delta p$  max of 50 bar (725 *psi*) between the different stages. Keeping these conditions, we can assure a flow deviation, within  $\pm 2\%$  on the different stages.



- n = number of section
- V<sub>1,2...n</sub> = displacement sections [cm<sup>3</sup>/rev]
- Q<sub>1,2...n</sub> = flow sections [l/min]
- P<sub>1,2...n</sub> = pressure sections [bar]
- N = speed [rpm]
- $Q_0 = Q_1 + Q_2 + \dots + Q_n$  pump flow [I/min]
  - $P_0Q_0 = P_1Q_1 + P_2Q_2 + \dots + P_nQ_n$

$$V_i = \frac{1000Q_i}{N}$$



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**Final revised edition** - February 2019 The data in this catalogue refers to the standard product.

The policy of Salami S.p.A. consists of a continuous improvement of its products. It reserves the right to change the specifications of the different products whenever necessary and without giving prior information. *If any doubts, please contact our sales department.* 





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## ASSEMBLING DIMENSIONS

BASIC RELEASE









Turne	Dime	nsion A	Dimension C		
туре	mm	in	mm	in	
1.5DRE - 2.8	47.9	1.89	23.95	0.94	
1.5DRE - 3.5	49.9	1.96	24.95	0.98	
1.5DRE - 4.1	51.6	2.03	25.8	1.02	
1.5DRE - 5.2	54.7	2.15	27.35	1.08	
1.5DRE - 6.2	57.5	2.26	28.75	1.13	
1.5DRE - 7.6	61.5	2.42	30.75	1.21	
1.5DRE - 9.3	66.3	2.61	33.15	1.31	
1.5DRE - 11	71.1	2.80	35.55	1.40	





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# **1.5DRE**

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VALVES

# VA

Overload valve (setting 70 bar - *1015 psi*)





Overload valve allow the actuators to realign at the end of each cycle, discharging the overflow in the inlet line of the divider, for this reason they are setting at 70 bar.







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### ASSEMBLING DIMENSIONS-1.5DRE-VA

RELEASE WITH VALVES/INTERNAL BY PASS







46 [ 1.811 ]







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# **1.5DRE**

# GEAR FLOW DIVIDERS "E" SERIES

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### THREADED PORTS







code G Threaded ports GAS (BSPP)

TYPE		INLET			OUTLET	
	А	В	С	А	В	С
From 2.8 to 6.2	C1/2	15	17	G3/8	13 (0.51")	13
From 7.6 to 11	G 1/2	(0.59")	(0.67")	G1/2	15 (0.59")	(0.51")



Threaded ports SAE (ODT)

OUTLET TYPE INLET Α в С Y κ Α в С Y Κ 3/4 -16 9/16 - 18 From 2.8 to 6.2 14.5 (0.57") 13 *(0.51")* 13 (0.51") 25 (0.98") 30 (1.18") 2.5 UNF UNF (0.10") (SAE 8) (SAE6) 2.5 (0.10") 7/8 -14 3/4" 16 From 7.6 2.5 14.5 16.7 20 34 15 30 UNF UNF (0.79") (0.10") to 11 (0.66") (1.34") (0.57") (0.59") (1.18") (SAE10) (SAE8)

1800-0 1800-6

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# **1.5DRE-How to order**





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#### GEAR FLOW DIVIDERS "E" SERIES Aluminium Body



(3VA70), end plate pre-arranged for valve VA (2VA70). 1.5DRE-VA/G-0/2.8IO/3VA70/2.8IO/3VA70/2.8O/2VA70

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