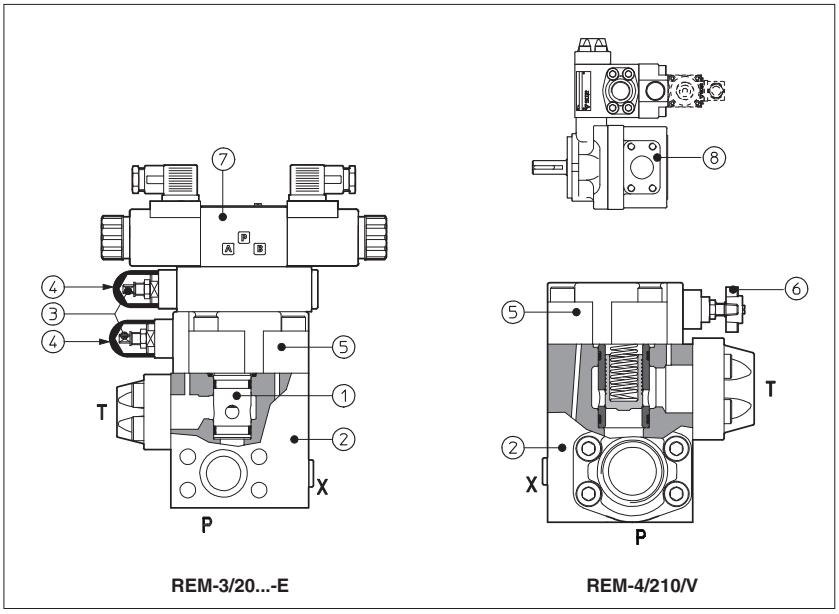
Pressure relief valves type REM

two stage, flange mounting SAE 3/4", 1", 1¼"



REM-3/20...-E **REM-4/210/V**

REM are two stage pressure relief valves with balanced poppet and SAE flange connection, designed to operate in oil hydraulic systems.
They can be directly mounted with SAE flange attachments on the pumps outlet ports ⑧ and, in particular, on the PFE pumps (see tab. A005, A007).
In standard versions the piloting pressure of the poppet ① of the main stage ② is regulated by means of a grub screw ③ protected by cap ④ in the cover ⑤.
Optional versions with setting adjustment by handwheel ⑥ instead of the grub screw are available on request.
Clockwise rotation increases the pressure.
REM can be equipped with a venting solenoid valve ⑦ type:
- DHI for AC and DC supply, with **cURus** certified solenoids
- DHE for AC and DC supply, high performances, with **cURus** certified solenoids

Mounting surface:
SAE flange connection: **3/4", 1", 1¼"**
Max flow: **200, 400** and **600 l/min respectively**
Pressure up to **350 bar** (depending on models)

1 MODEL CODE

REM	-	4	/	20	210	/	100/100	/	V	-	I	X	24DC	**	/	*

REM = pressure relief valve SAE flange mounting

Size:
3 = SAE 3/4"
4 = SAE 1"
5 = SAE 1¼"

Setting pressure and venting option (1):
- = one setting pressure without option
10 = one setting pressure with venting, with de-energized solenoid
11 = one setting pressure with venting, with energized solenoid
20 = two setting pressure with venting, with de-energized solenoid
21 = two setting pressure with venting, with energized solenoid
22 = two setting pressure without venting
32 = three setting pressure without venting

Pressure range:
50 = 4÷50 bar;
100 = 6÷100 bar;
210 = 7÷210 bar;
350 = 8÷350 bar (only for REM-3)

Pressure range of second/third setting **(1)**:
50 = 4÷50 bar;
100 = 6÷100 bar;
210 = 7÷210 bar;
350 = 8÷350 bar (only for REM-3)

Options **(2)**:
WP = prolonged manual override protected by rubber cap (1)
V = regulating by handwheel instead of a grub screw protected by cap

Pilot valve **(1)**:
-I = DHI for AC and DC supply with **cURus** certified solenoids
-E = DHE for AC and DC supply, high performances with **cURus** certified solenoids

X = without connector **(1):**
See section 7 for available connectors, to be ordered separately
-00 = solenoid valve without coils (for -I)
-00-AC = AC solenoid valve without coils (for -E)
-00-DC = DC solenoid valve without coils (for -E)

Voltage code, see section 7

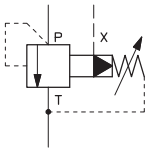
Series number

Seals material, see section 4:
- = NBR
PE = FKM
BT = HNBR

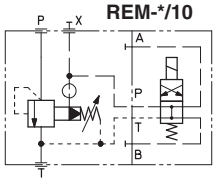
(1) Only for REM with solenoid valve for venting and/or for the selection of the setting pressure
(2) For handwheel features, see technical table K150

2 HYDRAULIC CHARACTERISTICS

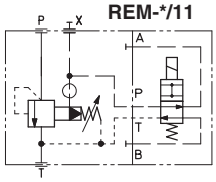
REM



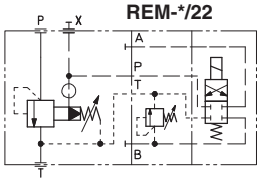
REM-*/10

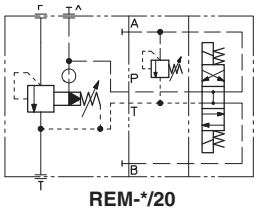


REM-*/11

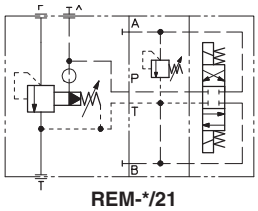


REM-*/22





REM-*/20



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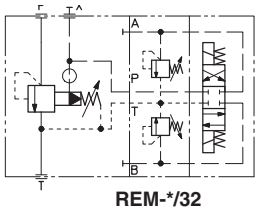


REM-*/32

Valve model		**REM-3**	**REM-4**	**REM-5**
Max flow	[l/min]	200	400	600
Pressure range	[bar]	4-50; 6-100; 7-210; 8-350	4÷50; 6÷100; 7÷210	
Max pressure	[bar]	ports P, X = 350 Port T = 210 (without pilot solenoid valve) For version with pilot solenoid valve, see technical tables E010 and E015		

3 MAIN CHARACTERISTICS, SEALS AND FLUIDS - for other fluids not included in above table, consult our technical office

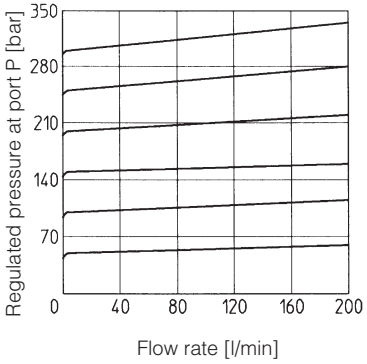
Assembly position	Any position		
Ambient temperature	Standard execution = -30°C ÷ +70°C /PE option = -20°C ÷ +70°C /BT option = -40°C ÷ +70°C		
Seals, recommended fluid temperature	NBR seals (standard) = -20°C ÷ +60°C, with HFC hydraulic fluids = -20°C ÷ +50°C FKM seals (/PE option) = -20°C ÷ +80°C HNBR seals (/BT option) = -40°C ÷ +60°C, with HFC hydraulic fluids = -40°C ÷ +50°C		
Recommended viscosity	15÷100 mm²/s - max allowed range 2,8 ÷ 500 mm²/s		
Fluid contamination class	ISO 4406 class 21/19/16 NAS 1638 class 10, in line filters of 25 μm (β10 ≥75 recommended)		
Hydraulic fluid	**Suitable seals type**	**Classification**	**Ref. Standard**
Mineral oils	NBR, FKM, HNBR	HL, HLP, HLPD, HVLP, HVLPD	DIN 51524
Flame resistant without water	FKM	HFDU, HFDR	ISO 12922
Flame resistant with water	NBR, HNBR	HFC	

3.1 Coils characteristics (for ARAM with pilot solenoid valve)

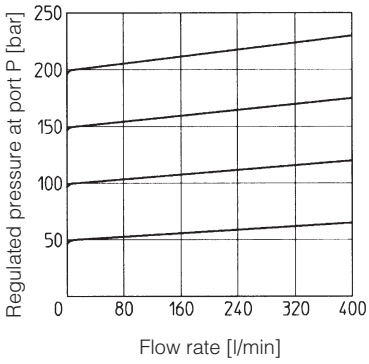
Insulation class	DHI pilot	**H** (180°C)	Due to the occuring surface temperatures of the solenoid coils, the European standards EN ISO 13732-1 and EN ISO 4413 must be taken into account
	DHE pilot	**H** (180°C) for DC coils **F** (155°C) for AC coils	
Protection degree to DIN EN 60529		**IP 65** (with connectors 666, 667, 669 or E-SD correctly assembled)	
Relative duty factor		100%	
Supply voltage and frequency		See electric feature 8	
Supply voltage tolerance		± 10%	
Certification		**cURus** North American standard	

4 REGULATED PRESSURE VERSUS FLOW DIAGRAMS based on fluid viscosity of 25 mm²/s at 40°

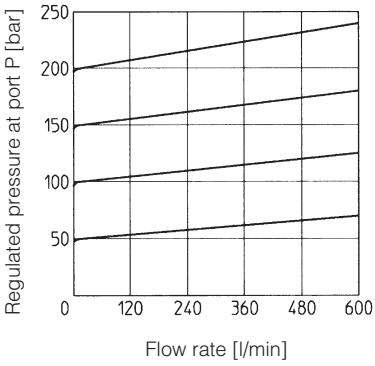
REM-3



REM-4

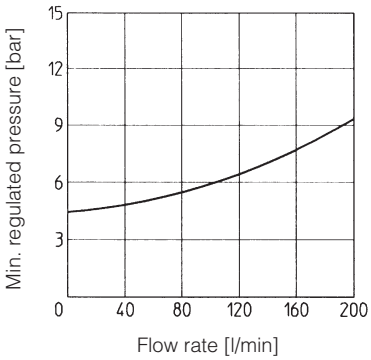


REM-5

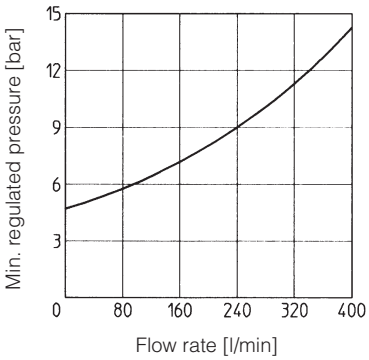


5 MINIMUM PRESSURE VERSUS FLOW DIAGRAMS based on fluid viscosity of 25 mm²/s at 40° C

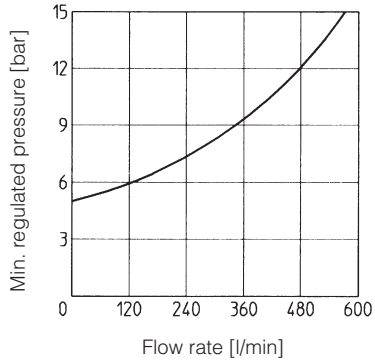
REM-3



REM-4



REM-5



6 ELECTRIC CONNECTORS ACCORDING TO DIN 43650 FOR REM WITH SOLENOID VALVE

The connectors must be ordered separately

Code of connector	Function
666	Connector IP-65, suitable for direct connection to electric supply source
667	As 666 connector IP-65 but with built-in signal led, suitable for direct connection to electric supply source

For other available connectors, see tab. E010 and K500.

7 ELECTRIC FEATURES FOR AGAM WITH SOLENOID VALVE

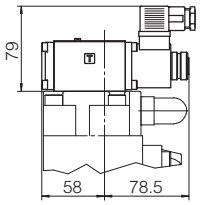
Solenoid valve type	External supply nominal voltage ± 10% (1)		**Voltage code**	Type of connector	Power consumption **(3)** DHI	DHE	Code of spare coil DHI	Colour of coil label DHI	Code of spare coil DHE
DHI DHE	DC	12 DC 24 DC 110 DC 220 DC	**12 DC** **24 DC** **110 DC** **220 DC**	666 or 667	33 W	30 W	COU-12DC COU-24DC COU-110DC COU-220DC	green red black black	COE-12DC COE-24DC COE-110DC COE-220DC
	AC	110/50 AC **(2)** 115/60 AC 120/60 AC 230/50 AC **(2)** 230/60 AC	**110/50/60 AC** **115/60 AC (5)** **120/60 AC (6)** **230/50/60 AC** **230/60 AC**	666 or 667	60 VA - 60 VA 60 VA 60 VA	58 VA 80 VA - 58 VA 80 VA	COI-110/50/60AC - COI-120/60AC COI-230/50/60AC COI-230/60AC	yellow - white light blue silver	COE-110/50/60AC COE-115/60AC - COE-230/50/60AC COE-230/60AC

(1) For other supply voltages available on request see technical tables E010, E015.
(2) Coil can be supplied also with 60 Hz of voltage frequency: in this case the performances are reduced by 10 ÷ 15% and the power consumption is 55 VA (DHI) and 58 VA
(3) Average values based on tests performed at nominal hydraulic condition and ambient/coil temperature of 20°C.
(4) When solenoid is energized, the inrush current is approx 3 times the holding current.
(5) Only for DHE
(6) Only for DHI

8 DIMENSIONS [mm]

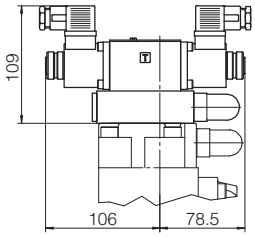
REM-3

REM-3/10/-IX**
REM-3/11/-IX**



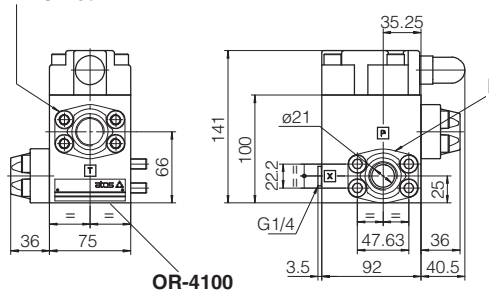
Mass: 8,1 Kg

REM-3/20/-IX**
REM-3/21/-IX**



Mass: 9,2 Kg

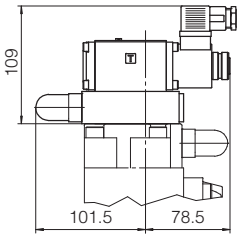
Flange type WFD-20



Flange type WFD-20

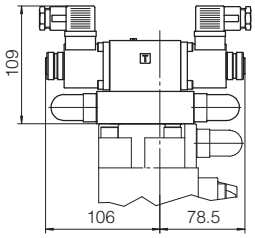
Mass: 6,6 Kg

REM-3/22/-IX**



Mass: 8,9 Kg

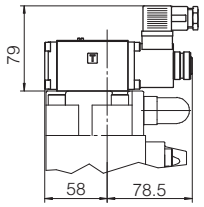
REM-3/32/-IX**



Mass: 9,3 Kg

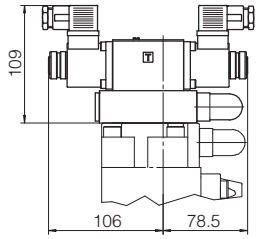
REM-4

REM-4/10/-IX**
REM-4/11/-IX**



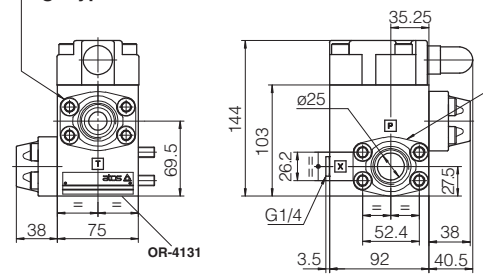
Mass: 8,3 Kg

REM-4/20/-IX**
REM-4/21/-IX**



Mass: 9,4 Kg

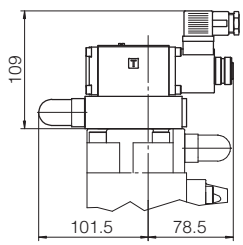
Flange type WFD-25



Flange type WFD-25

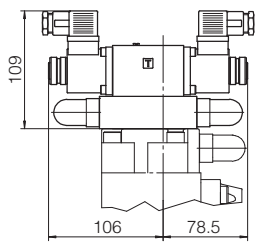
Mass: 6,8 Kg

REM-4/22/-IX**



Mass: 9,1 Kg

REM-4/32/-IX**

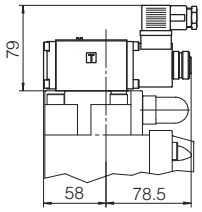


Mass: 9,5 Kg

Overall dimensions refer to valves with connectors type 666.

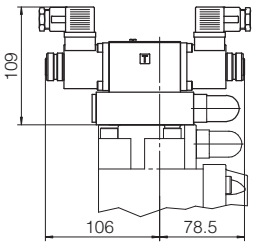
REM-5

REM-5/10/-IX**
REM-5/11/-IX**



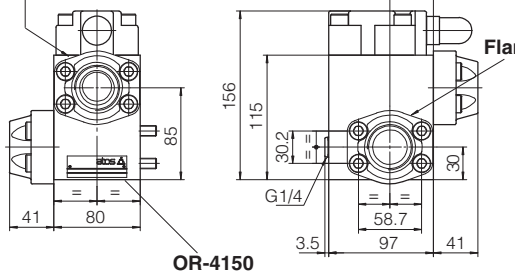
Mass: 9,7 Kg

REM-5/20/-IX**
REM-5/21/-IX**



Mass: 10,8 Kg

Flange type WFD-32

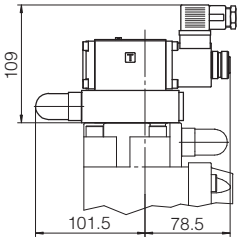


Flange type WFD-32

OR-4150

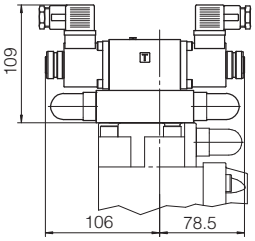
Mass: 8,2 Kg

REM-5/22/-IX**



Mass: 10,5 Kg

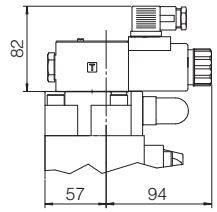
REM-5/32/-IX**



Mass: 10,9 Kg

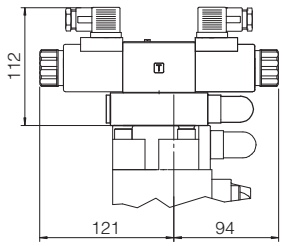
REM-3

REM-3/10/-EX**
REM-3/11/-EX**



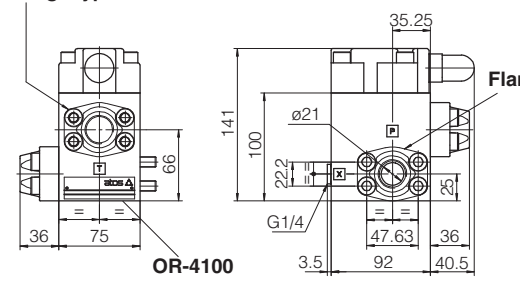
Mass: 8,1 Kg

REM-3/20/-EX**
REM-3/21/-EX**



Mass: 9,2 Kg

Flange type WFD-20

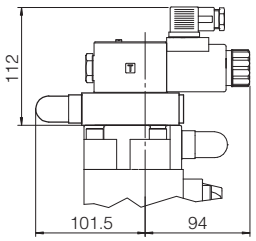


Flange type WFD-20

OR-4100

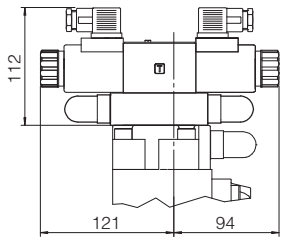
Mass: 6,6 Kg

REM-3/22/-EX**



Mass: 8,9 Kg

REM-3/32/-EX**

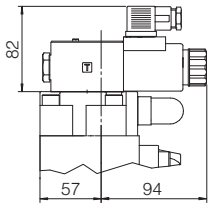


Mass: 9,3 Kg

9 DIMENSIONS [mm]

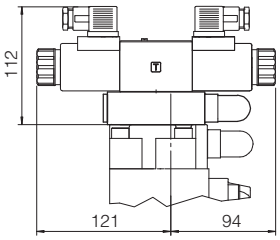
REM-4

REM-4/10/-EX**
REM-4/11/-EX**



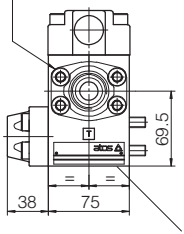
Mass: 8,3 Kg

REM-4/20/-EX**
REM-4/21/-EX**

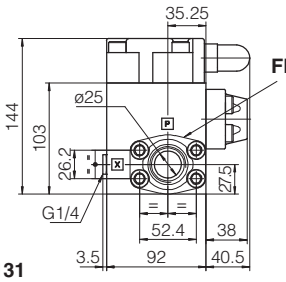


Mass: 9,4 Kg

Flange type WFD-25



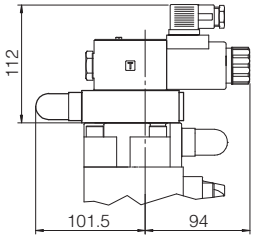
OR-4131



Flange type WFD-25

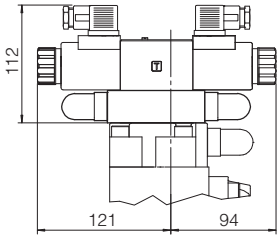
Mass: 6,8 Kg

REM-4/22/-EX**



Mass: 9,1 Kg

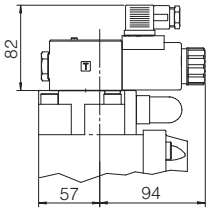
REM-4/32/-EX**



Mass: 9,5 Kg

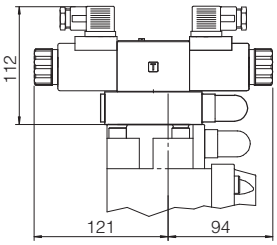
REM-5

REM-5/10/-EX**
REM-5/11/-EX**



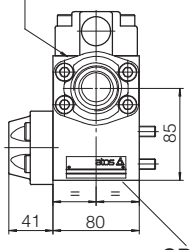
Mass: 9,7 Kg

REM-5/20/-EX**
REM-5/21/-EX**

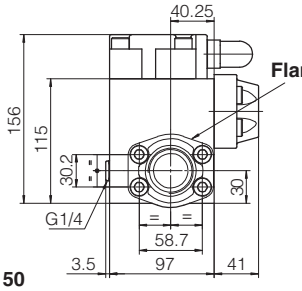


Mass: 10,8 Kg

Flange type WFD-32



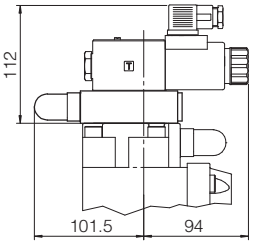
OR-4150



Flange type WFD-32

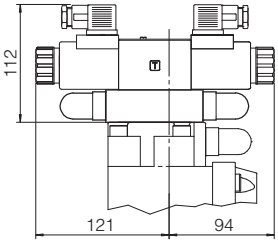
Mass: 8,2 Kg

REM-5/22/-EX**



Mass: 10,5 Kg

REM-5/32/-EX**

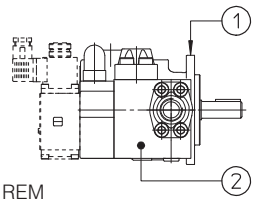


Mass: 10,9 Kg

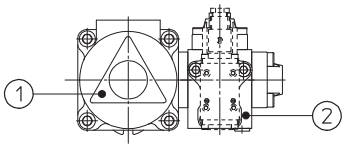
Overall dimensions refer to valves with connectors type 666

10 ASSEMBLY EXAMPLE OF A REM VALVE ON A PFE PUMP

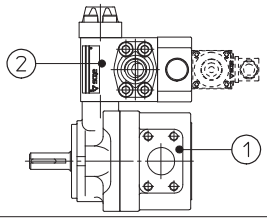
LATERAL VIEW OF PUMP



REAR VIEW OF PUMP



TOP VIEW OF PUMP



① Pump type PFE
② Relief valve type REM