MANNESMANN REXROTH

Variable Displacement Pump A7VO

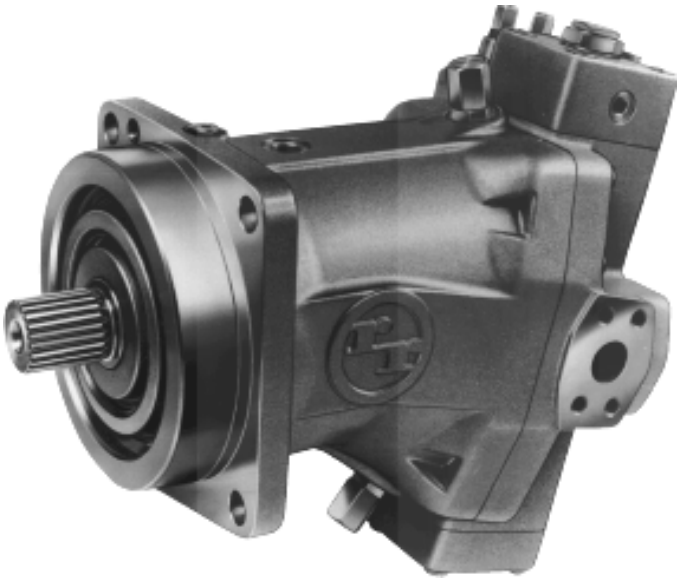
Series 6, for open loop circuits
Axial tapered piston - bent axis design

Sizes 250-1000 | Nominal pressure 350 bar Peak pressure 400

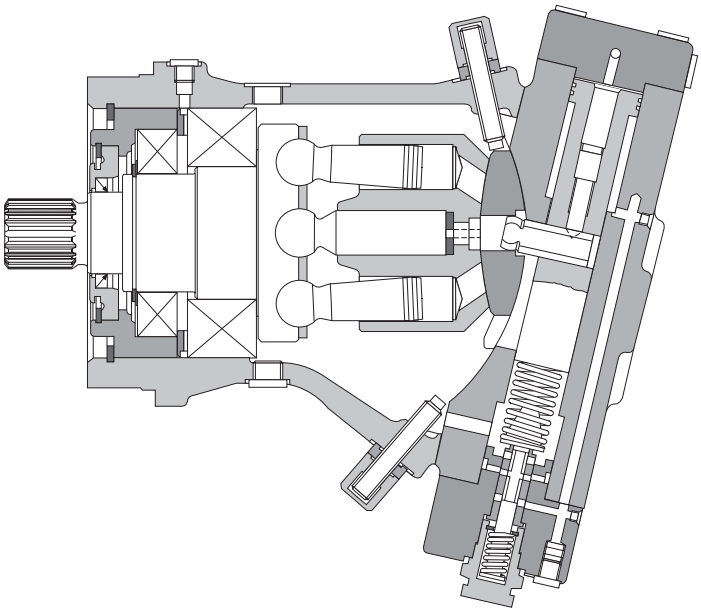
RE 92203/03.92

Replaces RE 98 037

High pressure range **A7VO**



Variable displacement pump with axial tapered piston rotary group of bent axis design, for open loop circuit hydraulic drives. The pump is suitable for both mobile and industrial applications. The robust taper roller drive shaft bearings are designed to give long service life.
Flow is proportional to drive speed and displacement and may be smoothly adjusted between
V_{gmin} and V_{gmax}.
Pressure control is supplied as standard.



Ordering Code

= preferred program (short delivery time)
(preferred types see page 20)

	A7V		O			/	63		–																

Fluid

Mineral oil (no short code)		
HF-fluids With shaft bearing " L"only. Reduced techn.data see page 4	E	

Axial piston unit

Bent axis design, variable Nominal pressue 350 bar, peak pressure 400	A7V	

Drive shaft bearings

Mechanical bearings (no short code)		
Long-life bearings	L	

Operational mode

Pump, open loop circuit	O	

Size

	250	355	500	1000
Displacement V_g (cm^3)				

Control devices

								250	355	500	1000	
Power control	LR		D					●	●	●	❍	LRD
	LR			G				●	●	●	❍	LRG
	LR		D		H1			●	●	●	❍	LRDH1
	LR			G	H1			●	●	●	❍	LRGH1
	LR		D		H2			●	●	●	❍	LRDH2
	LR			G	H2			●	●	●	❍	LRGH2
	LR		D		H3			●	●	●	❍	LRDH3
	LR			G	H3			●	●	●	❍	LRGH3
	LR		D			N1		●	●	●	❍	LRDN1
	LR			G		N1		●	●	●	❍	LRGN1
	LR		D			N2		●	●	●	❍	LRDN2
	LR			G		N2		●	●	●	❍	LRGN2
	LR		D			N3		●	●	●	❍	LRDN3
	LR			G		N3		●	●	●	❍	LRGN3
Pressure control	DR							●	●	●	❍	DR
	DR			G				●	●	●	❍	DRG
Hydraulic control, dependent on pressure	HD	1	D					●	●	●	❍	HD1D
	HD	1		G				●	●	●	❍	HD1G
	HD	2	D					●	●	●	❍	HD2D
	HD	2		G				●	●	●	❍	HD2G
	HD	3	D					●	●	●	❍	HD3D
	HD	3		G				●	●	●	❍	HD3G
Hydraulic control with electrical proportional valve	EP	1	D					●	●	●	❍	EP1D
	EP	1		G				●	●	●	❍	EP1G
	EP	2	D					●	●	●	❍	EP2D
	EP	2		G				●	●	●	❍	EP2G

Integrated pressure control (fixed)
Pressure control, remote controlled
Hydraulic stroke limiting basic setting V_{gmin}
1 = Δp 10 bar; 2 = Δp 25bar; 3 = Δp 35bar
Hydraulic stroke limiting basic setting V_{gmax}

Pressure control, remote controlled
Integrated pressure control (fixed)
Pilot pressure increase Δp =10 bar (1); 25 bar (2); 35 bar (3)

Control voltage 12V (1)
Control voltage 24 V (2)
Pressure control, remote controlled
Integrated pressure control (fixed)

Fluid

Axial piston unit

Drive shaft bearings

Operational mode

Size

Control devices

Series

		63

Direction of rotation

Viewed on shaft end	clockwise	R
	anti-clockwise	L

Seals

NBR (Nitrile caoutchouc to DIN ISO 1629) with shaft seal FPM	P
FPM (Fluoride caoutchouc to DIN ISO 1629)	V

Shaft ends

Splined shaft DIN 5480		Z
Parallel with key DIN 6885		P

Mounting flange

	250	355	500	1000	
ISO - 4 hole	●	-	-	-	B
ISO - 8 hole	-	●	●	❍	H

Connection for service lines

Pressure port A(B) Suction port S	SAE at back, (metric thread) SAE at back, (metric thread)	01
Pressure port A(B) Suction port S	SAE on side, opposite, (metric thread)	02

Display for swivel angle

No swivel angle display (no short code)	
With optical swivel angle display	V
With electrical swivel angle display	E

For models with integrated pressure control please state setting in clear text on order.

Maximum and minimum displacements are set to limits $V_{g\,max}$ and $V_{g\,min}$ =0.
If a different setting is desired, please state in clear text.
The setting screws are protected against subsequent adjustment by means of cover nuts installed in the factory.

● = available
❍ = in preparation

Technical data

Fluid

For extensive information on the selection of fluids and for application conditions, please consult our data sheets RE 90 220 (mineral oil), RE 90 221(eccologically acceptable fluids) and RE 90 223 (HF fluids).
With HF fluids and eccologically acceptable fluids you may have to consider reduced operating data . Please consult us.

Operating viscosity range
We recommend that the operating viscosity (at operating temperaure), for both efficiency and life of the unit, be chosen within the optimum range of:

$\nu_{opt.}$ = operating viscosity 16 ... 36 mm²/s

referred to tank temperature (open loop circuit).

Viscosity limits
The following viscosity limits apply:
ν_{min} = 10 mm²/s
short term at max. leakage oil temperature of 90°C.
ν_{max} = 1000 mm²/s
short term on cold start.

Temperature range (see selection diagram)
t_{min} = -25°C
t_{max} = 90°C

Filtration
In order to ensure correct functioning of the unit, a minimum level of cleanliness to
9 to NAS 1638 bzw.
6 to SAE, ASTM, AIA
18/15 to ISO/DIS 4406 is required.
This is, e.g. possible by using filter elements, type ... D020 ... (see RE 31278).
Hence the following degree of separation is produced :

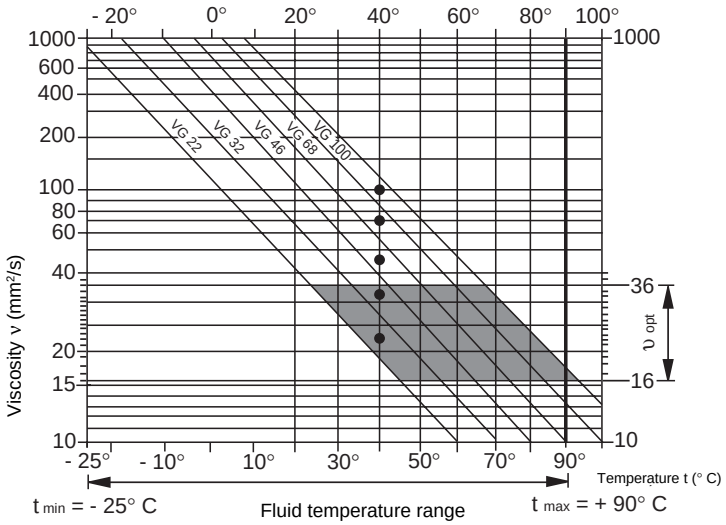
$\beta_{20} \geq 100$

Notes on the selection of the Hydraulic Fluid
In order to select the correct fluid, it is necessary to know the operating temperature in the circuit (closed loop) in relation to the ambient temperature.
The hydraulic fluid should be selected so that within the operating temperature range, the operating viscosity lies within the optimum range (V_{opt}) (see shaded section of the selection diagram). We recommend that the highest possible viscosity range should be chosen in each case.
Example: At an ambient temperature of X°C, the operating temperature is 60°C. Within the operating viscosity range (V_{opt}; shaded area), this corresponds to viscosity ranges VG 46 or VG 68. VG 68 should be selected.
Important: The leakage oil (case drain oil) temperature is influenced by pressure and pump speed and is always higher than the circuit temperature. However, at no point in the circuit may the temperature exceed 90°C.
If it is not possible to comply with the above conditions because of extreme operating parameters or high ambient temperatures, we recommend that the housing is flushed via port U.

Long-life bearings
For long service life and HF fluids.

The external dimensions of the axial piston pump with long life bearings are the same as those for the standard unit.
Long-life bearings may be subsequently built into existing axial piston pumps.
It is recommended that the bearings are flushed via port U.

Selection diagram



Technical data

(Valid for mineral oil operation; for water based fluids see RE 90 223, for eccologically acceptable fluids see RE 90 221)

Input operating pressure range

Absolute pressure at port S (suction port)

$p_{abs\ min}$ ——— 0,8 bar

$p_{abs\ max}$ ——— 30 bar

Output operating pressure range

Pressure at ports A or B

Nominal pressure p_N ——— 350 bar

Peak pressure p_{max} ——— 400 bar

(Pressure data to DIN 24312)

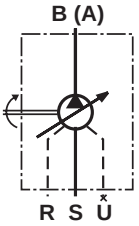
With oscillating loads above 315 bar, we recommend the use of a splined shaft (DIN 5480).

Direction of flow

Clockwise **S** to **B**

Anti-clockwise **S** to **A**

Symbol



Ports

B (A)	Service lines
S	Suction port
R	Case drain fluid
U	Flushing port

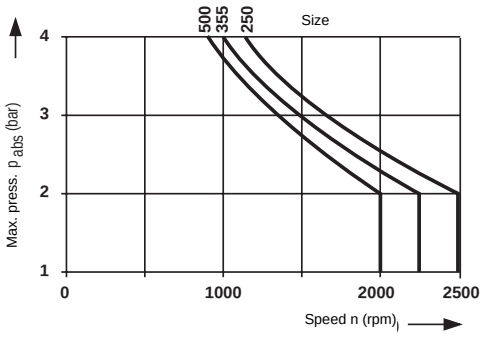
Case drain fluid

The maximum and permissible case drain pressures (housing pressure) are dependent on the shaft seals used. In addition, the permissible case drain pressure is dependent on the speed (see diagram). For max. speed see tabulated values.

The housing pressure must be equal to or greater than the external pressure on the shaft seal.

Max. case drain pressure (housing pressure)

p_{max} ——— 4 bar abs.

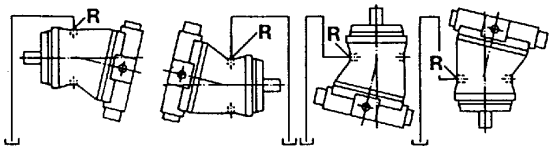


Installation position

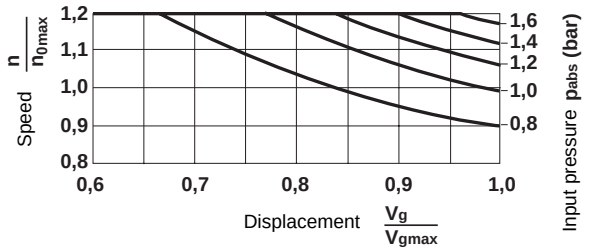
Optional. The pump housing must be filled with fluid prior to commissioning, and must remain full whenever it is operating. The drain line must be arranged so that the pump does not empty itself when the pump is stationary, i.e. the end of the drain line must be under the minimum oil level in the tank.

For filling the housing and when connecting the drain line, the highest drain port R should always be used. R_1 or R_2 must be connected.

For detailed designing informations, please consult our data sheet RE 90270.



Determination of input pressure p_{abs} at suction port S or reduction of displacement with increasing speed.

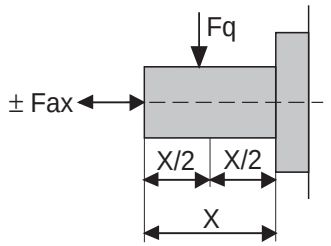


Technical data

Tabulated values (theoretical values, without considering η_{mh} and η_v; approximate values)

Size		**Size**		**250**	**355**	**500**
Displacement		$V_{g\,max}$	cm^3	250	355	500
		$V_{g\,min}$	cm^3	0	0	0
Max. speed [1])	at $V_{g\,max}$	$n_{o\,max1}$	rpm	1500	1320	1200
Max. speed (speed limit) with increase of input pressure p_{abs} at suction port S (see diagram)	at $V_g < V_{g\,max}$	$n_{o\,max\,zul.}$	rpm	1800	1580	1440
Max. flow [2])	at $n_{o\,max1}$ ($V_{g\,max}$)	$Q_{o\,max1}$	L /min	364	455	582
Max. power (Δp = 350 bar)	at $Q_{o\,max1}$	$P_{o\,max1}$	kW	212	265	340
Max. torque at $V_{g\,max}$	in continuous operation (Δp = 350 bar)	T_n	Nm	1391	1976	2783
Moment of inertia about drive axis		J	kgm^2	0,061	0,102	0,178
Approx. weight		m	kg	102	173	234
Permissible loading of drive shaft: [3])						
Max. axial force (at 1 bar)		+ $F_{ax\,max}$	N	4000	5000	6250
		- $F_{ax\,max}$	N	1200	1500	1900
Max. radial force (at 1 bar)		$F_{q\,max}$	N	1200	1500	1900

Forces



[1]) The values shown are valid for an absolute pressure (p_{abs}) of 1 bar
[2]) 3% flow losses included
[3]) With combined loads (axial and radial forces) and higher operating pressures, please consult us.

Flow

$$Q\ [L/min] = \frac{V_g \cdot n \cdot \eta_v}{1000}$$

Drive torque

$$M\ [Nm] = \frac{1{,}59 \cdot V_g \cdot \Delta p}{100 \cdot \eta_{mh}} = M_k \cdot \Delta p$$

Drive power

$$P\ [kW] = \frac{M \cdot n}{9549} = \frac{Q \cdot \Delta p}{600\ \eta_t}$$

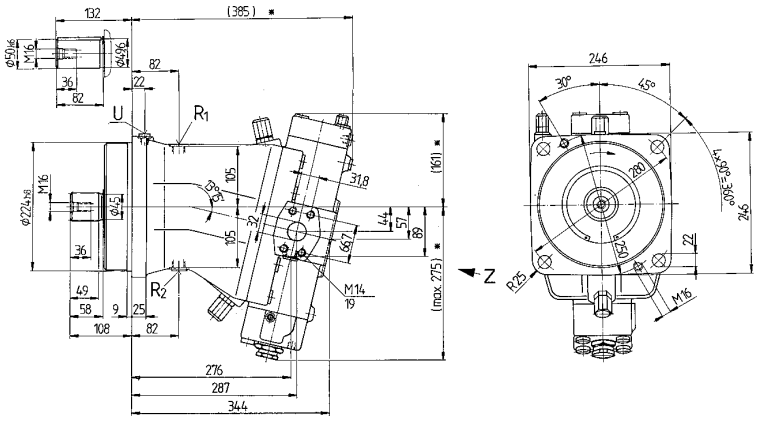
V_g = geometric displacement [cm^3] per rev.
Δp = differential pressure [bar]
n = speed [rpm]
η_v = volumetric efficiency
η_{mh} = mechanical-hydraulic efficiency
η_t = total efficiency ($\eta_t = \eta_v \cdot \eta_{mh}$)

Unit dimensions, size 250

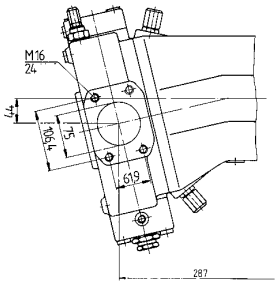
(not including control)

Ports **A/B on sides opposite each other 02**; clockwise direction of rotation

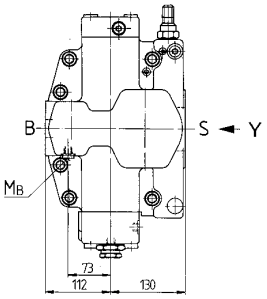
Splined shaft
W50x2x24x9g
DIN 5480



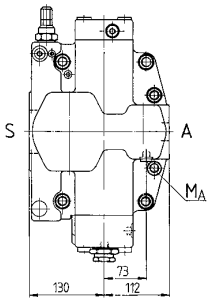
View Y



View Z clockwise

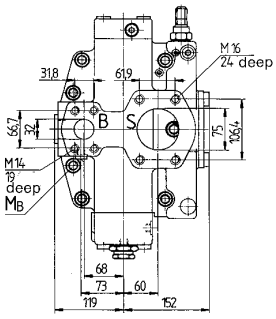


View Z anti-clockwise

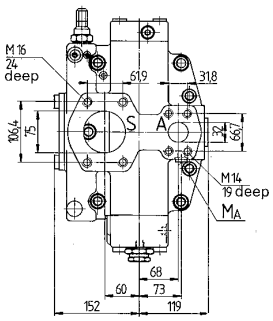


Variation
Shaft end **P**
Key AS 14 x 9 x 80
DIN 6885

Variation
Ports **A** / **B at back** (**01**)
Clockwise



Anti-clockwise



Ports

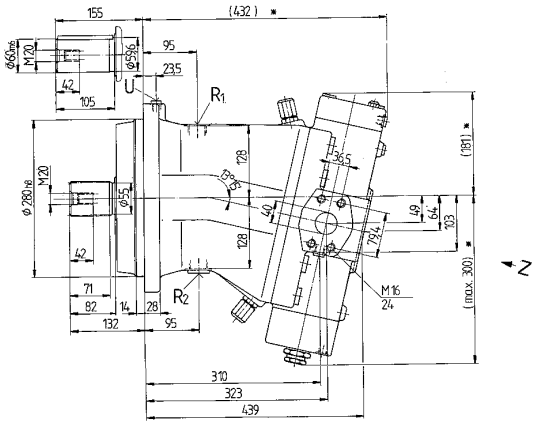
A,**B**	Pressure ports	1 1/4" SAE	(High pressure series)
S	Suction port	3" SAE	(Standard pressure series)
U	Flushing port	M 14 x 1,5	(Plugged in factory)
$\mathbf{R_{1,2}}$	Case drain port	M 22 x 1,5	($\mathbf{R_2}$ plugged in factory)
$\mathbf{M_A}$, $\mathbf{M_B}$	Measuring port	M 14 x 1,5	(Plugged in factory)

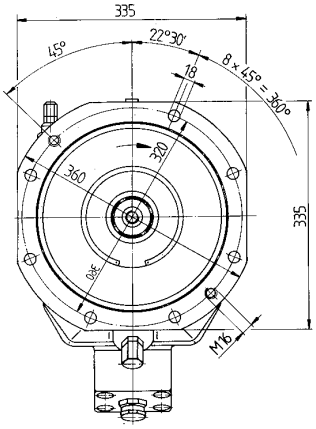
Unit dimensions, size 355

(not including control)

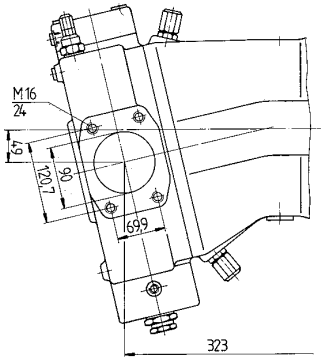
Ports **A/B on sides opposite each other 02**; clockwise direction of rotation

Splined shaft
W60x2x28x9g
DIN 5480

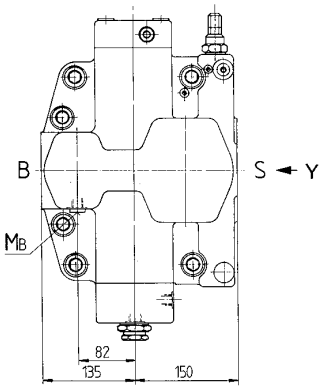




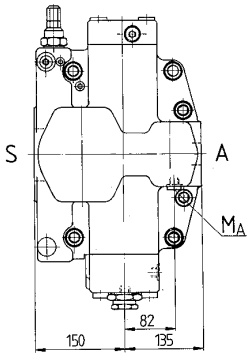
View Y



View Z clockwise



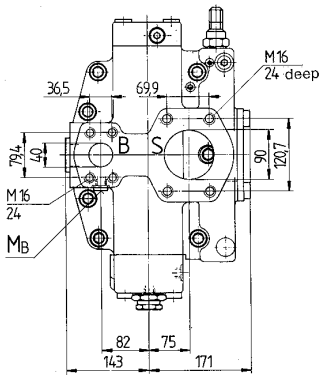
View Z anti-clockwise



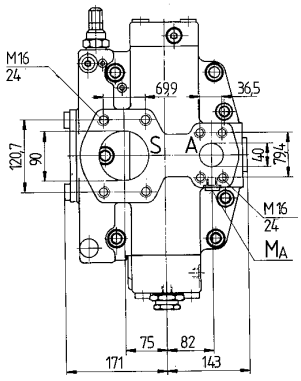
Variation
Shaft end **P**
Key AS 18 x 11 x 100
DIN 6885

Variation
Ports **A** / **B at back** (**01**)

Clockwise



Anti-clockwise



Ports

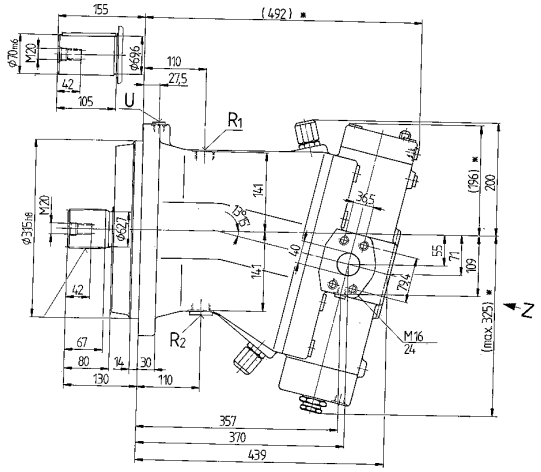
A,**B**	Pressure ports	1 1/2" SAE	(High pressure series)
S	Suction port	3 1/2" SAE	(Standard pressure series)
U	Flushing port	M 14 x 1,5	(Plugged in factory)
$\mathbf{R}_{1,2}$	Case drain port	M 33 x 2	($\mathbf{R}_2$ plugged in factory)
$\mathbf{M}_A$, $\mathbf{M}_B$	Measuring port	M 14 x 1,5	(Plugged in factory)

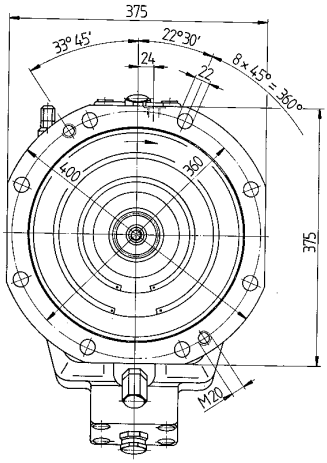
Unit dimensions, size 500

(not including control)

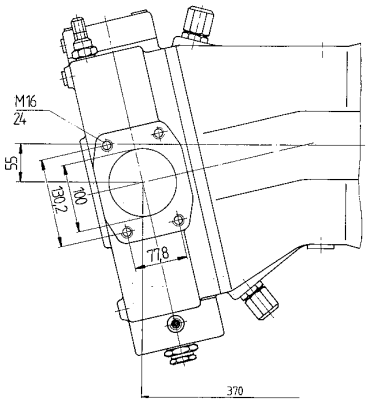
Ports **A/B on sides opposite each other 02**; clockwise direction of rotation

Splined shaft
W70x3x22x9g
DIN 5480

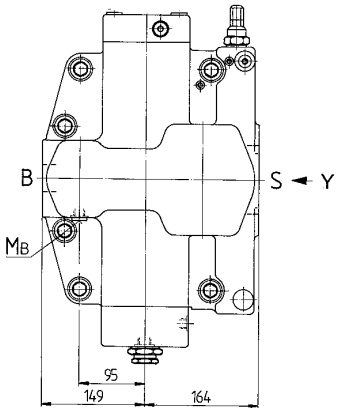




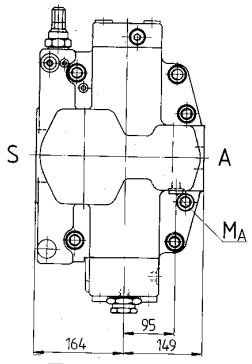
View Y



View Z clockwise



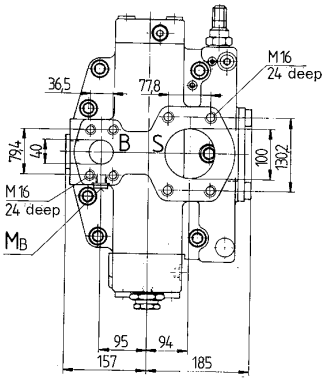
View Z anti-clockwise



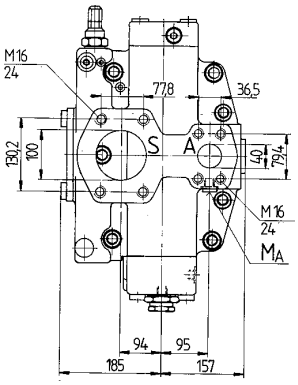
Variation
Shaft end **P**
Key AS 20 x 12 x 100
DIN 6885

Variation
Ports **A** / **B at back** (**01**)

Clockwise



Anti-clockwise



Ports

A,**B**	Pressure ports	1 1/2" SAE	(High pressure series)
S	Suction port	4" SAE	(Standard pressure series)
U	Flushing port	M 18 x 1,5	(Plugged in factory)
$\mathbf{R}_{1,2}$	Case drain port	M 33 x 1,5	($\mathbf{R}_2$ plugged in factory)
$\mathbf{M}_A$, $\mathbf{M}_B$	Measuring port	M 14 x 1,5	(Plugged in factory)

LRD Power Control,

with integrated pressure control

Initial setting V_{gmax}

Power control

Power control permits the drive power to be used to an optimum degree due to its exact matching to the hyperbolic operating curve.

The power control controls the displacement of the pump dependent on the operating pressure, so that a given drive power is not exceeded at constant drive speed.

Operating pressure p_B • displacement V_g = constant drive power

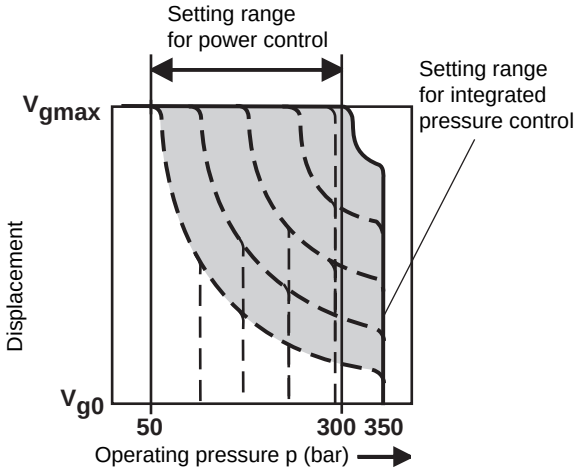
The operating pressure acts on a lever mechanism via the measuring spool in the positioning piston. The externally set spring force acting on the pilot valve determines the power setting.

As the operating pressure is also present on the small side of the piston, the pump is held at the maximum displacement V_{gmax}.

If the operating pressure exceeds the set spring force, the lever to the pilot valve is operated, the larger piston area is supplied with positioning pressure and the pump swivels in the direction of the smaller displacement V_{gmin}. This in turn reduces the effective moment on the rocker, thus allowing the operating pressure to rise in the same ratio by which the output flow is reduced, (p_B • V_g = constant).

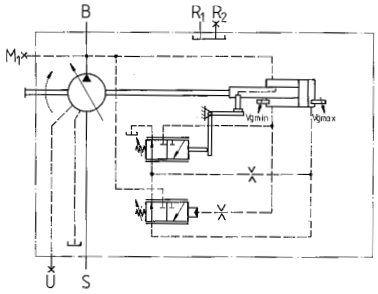
The start of control may be adjusted from 50 to 300 bar.
Start of control min ..... 50 bar
Start of control max ..... 300 bar

When ordering, state in clear text :
Drive power P (kW)
Drive speed n (rpm)
Max. flow Q_{max} (L/min)



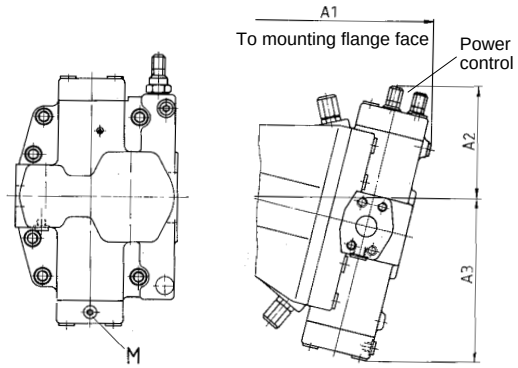
Integrated pressure control is standard and overrides power control. For description see page 11.

Circuit

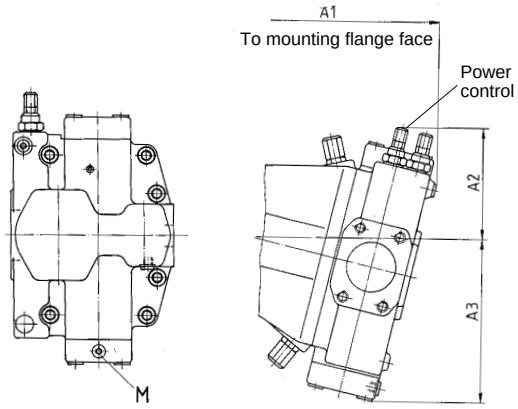


Unit dimensions
For general dimensions see pages 7 - 9.

Clockwise direction of rotation



Anti-clockwise direction of rotation



Unit dimensions

Size	A_1	A_2	A_3
250	385	170	248
355	430	175	279
500	490	200	306

LRD Integrated Pressure Control

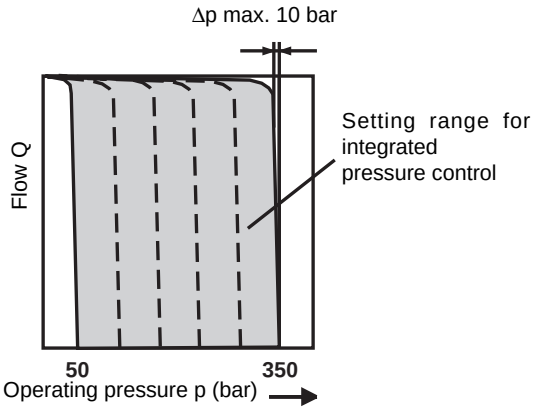
Initial setting V_{gmax}

Pressure control overrides power control.
It protects the pump from pressure being exceeded and hence protects the pump from damage.
The valve is integrated into the control housing and may be set externally.
On reaching the set command pessure the pump is controlled back to the minimum displacement.
The setting range is between 50 and 350 bar.

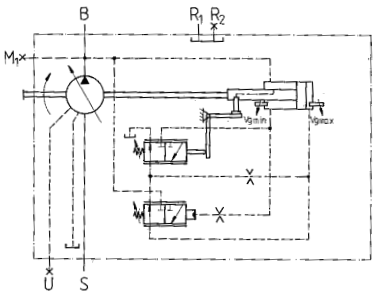
Please state setting in clear text when ordering:
Pressure control setting (bar)

The pressure relief valve, included in the system to safeguard the maximum pressure, must have a cracking pressure at least 20 bar above the control setting.

For circuit see page 10.



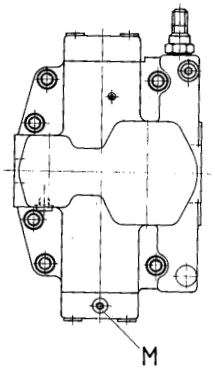
Circuit

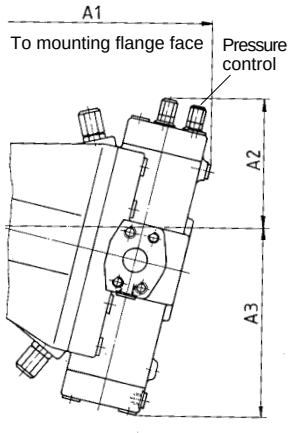


Unit dimensions

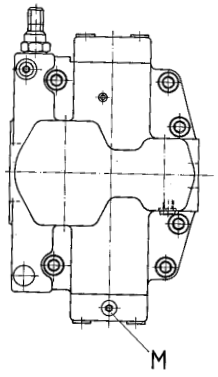
For general dimensions see page 7(8).

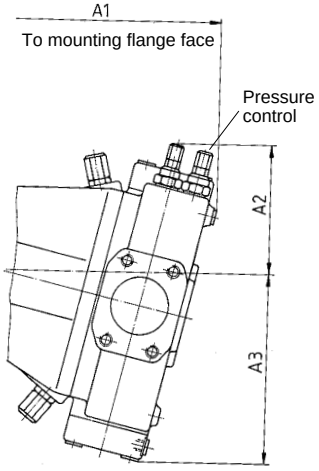
Clockwise direction of rotation





Anti-clockwise direction of rotation





Unit dimensions

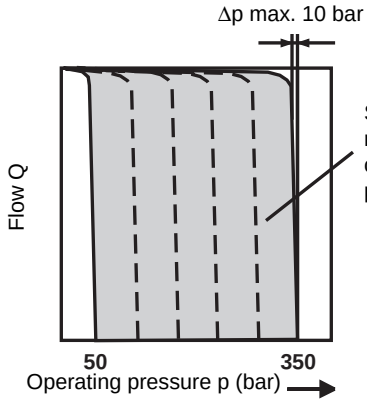
Size	A_1	A_2	A_3
250	385	170	248
355	430	175	279
500	490	200	306

Variation LR**G** With remotely controlled pressure control

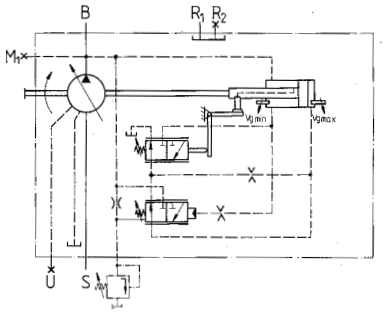
On reaching the set command pressure the remotely controlled pressure control sets the pump to minimum displacement V_{gmin}. It overrides the power control.
A pressure relief valve (not supplied), which is separate to the pump, controls the internal pressure cut-off valve.
As long as the command pressure of the pressure relief valve is not reached, the internal control valve is uniformly pressurised on both sides in addition to the spring force and is not operated. The command pressure is between 50 bar and 315 bar.
On reaching the command pressure at the separate pressure relief valve, it opens and the pressure on the spring side is reduced to tank. The internal control valve switches and the pump swivels to the minimum displacement V_{gmin}.
The differential pressure at the pilot valves is set normally to 25 bar.
For use as the separate pressure relief valve we recommend the following:

DBD 6 (hydraulic) to RE 25 402

Max. line length should not exceed 2m.



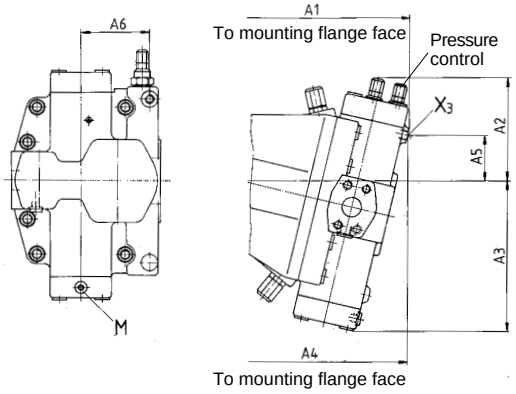
Circuit



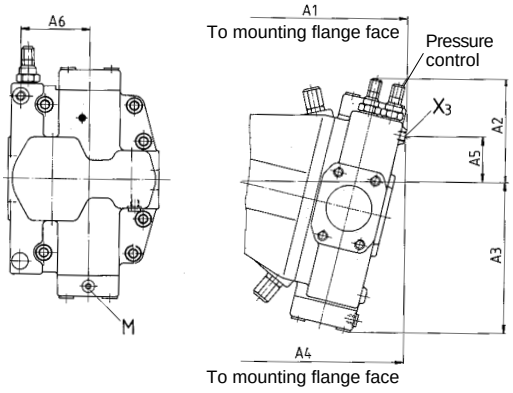
Power control with remotely controlled pressure control

Unit dimensions, size 250(355)
For general dimensions see page 7(8).

Clockwise direction of rotation



Anti-clockwise direction of rotation



Unit dimensions							Ports
Size	A_1	A_2	A_3	A_4	A_5	A_6	X_3
250	385	170	248	380	74	112	M14 x 1,5
355	430	175	279	425	80	131	M14 x 1,5
500	490	200	306	483	96	142	M14 x 1,5

Variation LRD**H** with hydraulic stroke limiter

Initial setting V_{gmax}

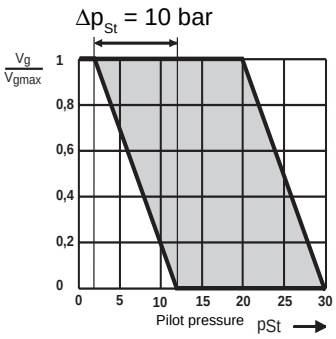
The hydraulic stroke limiter is used to smoothly adjust the flow between V_{gmax} and V_{gmin}.
The power control overrides it.
Displacement is set by the pilot pressure existing at port X_1.

The hydraulic stroke limiter takes the required positioning pressure from the high pressure. It must be noted, that the operating pressure requires at least 40 bar. If the pressure may fall below this, the pump must be supplied with an external positioning pressure via port X_2.

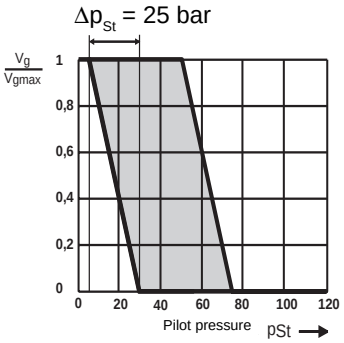
The start of control may be adjusted.

Please state the start of control in clear text on ordering.

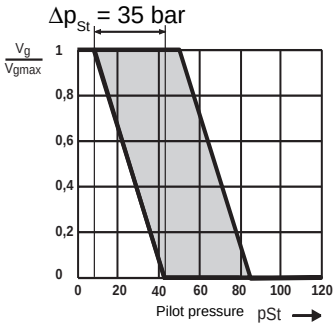
H1 Δp_{St} for hydraulic stroke limiter ..... 10 bar
Variable start of control ..... 2 - 20 bar



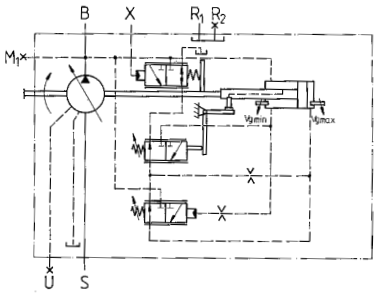
H2 Δp_{St} for hydraulic stroke limiter ..... 25 bar
Variable start of control ..... 5 - 50 bar



H3 Δp_{St} for hydraulic stroke limiter ..... 35 bar
Variable start of control ..... 7,5 - 50 bar



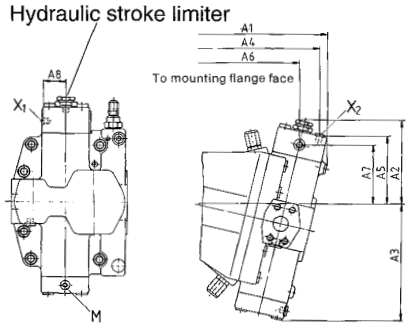
Circuit



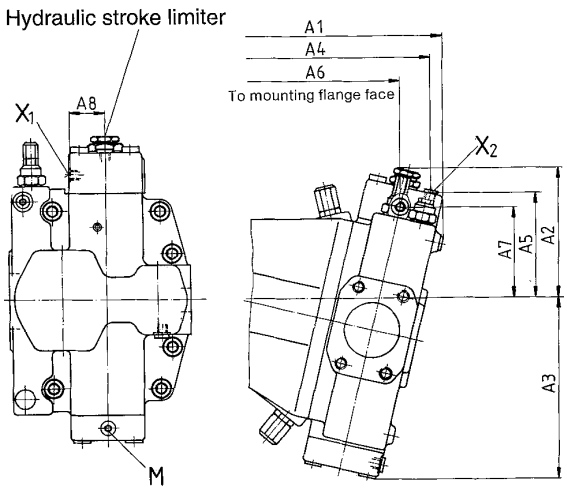
Power control with integrated pressure control and hydraulic stroke limiter

Unit dimensions, size 250
For general dimensions see page 7.

Clockwise direction of rotation



Anti-clockwise direction of rotation



Unit dimensions **Ports**

Size	A_1	A_2	A_3	A_4	A_5	A_6	A_7	A_8	X_1, X_2
250	385	188	248	370	144	327	123	49	M14 x 1,5
355	432	203	279	416	157	366	137	54	M14 x 1,5
500	490	215	306	470	169	417	148	61,5	M14 x 1,5

Variation LRD**N** with hydraulic stroke limiter

Initial setting V_{gmax}

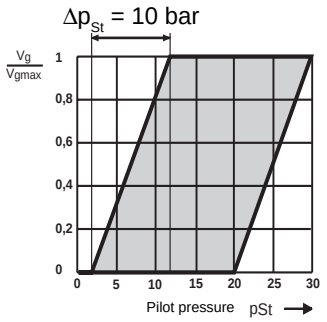
The hydraulic stroke limiter is used to smoothly adjust the flow between V_{gmax} and V_{gmin}.
The power control overrides it.
Displacement is set by the pilot pressure existing at port X_1.

The hydraulic stroke limiter takes the required positioning pressure from the high pressure. It must be noted, that the operating pressure requires at least 40 bar. If the pressure may fall below this, the pump must be supplied with an external positioning pressure via port X_2.

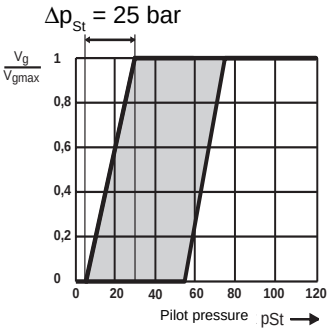
The start of control may be adjusted.

Please state the start of control in clear text on ordering.

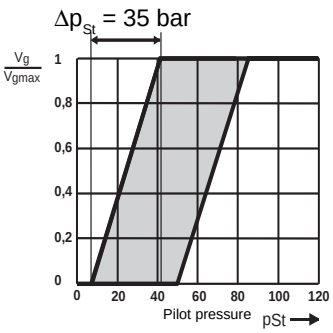
N1 Δp_{St} for hydraulic stroke limiter ..... 10 bar
Variable start of control ..... 2 - 20 bar



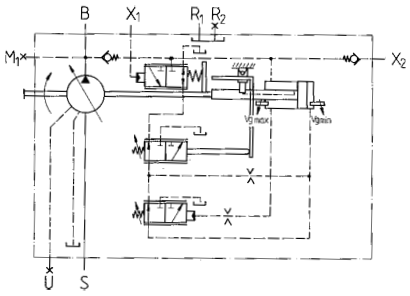
N2 Δp_{St} for hydraulic stroke limiter ..... 25 bar
Variable start of control ..... 5 - 50 bar



N3 Δp_{St} for hydraulic stroke limiter ..... 35 bar
Variable start of control ..... 7,5 - 50 bar



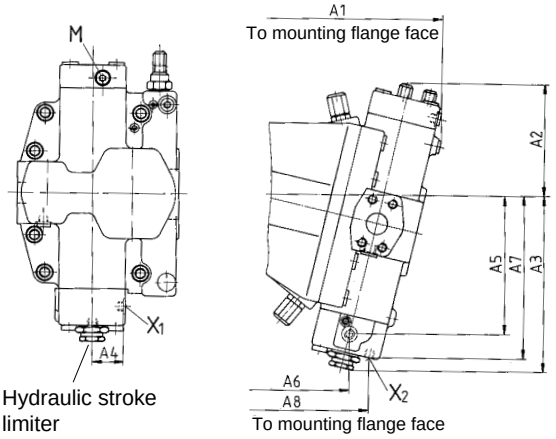
Circuit



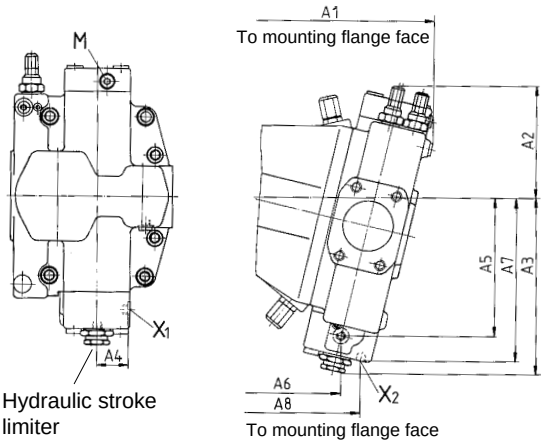
Power control with integrated pressure control and hydraulic stroke limiter

Unit dimensions, size 250
For general dimensions see page 7.

Clockwise direction of rotation



Anti-clockwise direction of rotation



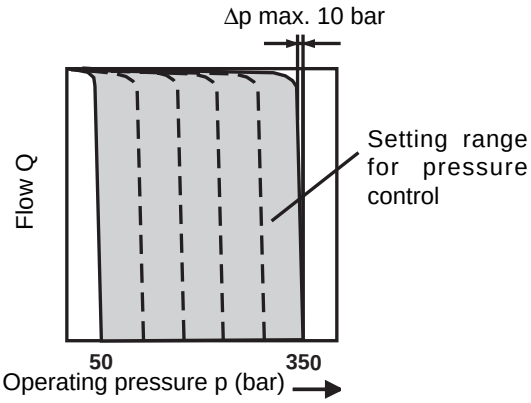
Unit dimensions									Ports
Size	A_1	A_2	A_3	A_4	A_5	A_6	A_7	A_8	X_1, X_2
250	385	170	275	49	210	248	248	276	M14 x 1,5
355	430	175	300	54	234	278	275	315	M14 x 1,5
500	490	200	325	61,5	258	322	300	359	M14 x 1,5

DR Pressure Control

Initial setting V_{gmax}

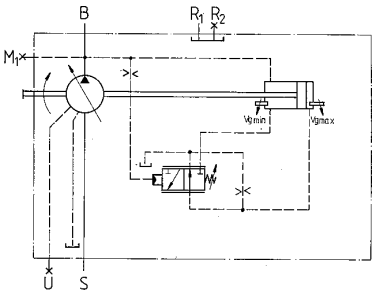
The pressure control maintains the pressure in a hydraulic system constant within its control range in spite of changing pump flow requirements. The variable displacement pump supplies only the volume of fluid required by the actuator. Should operating presssure exceed the set pressure, the pump is automatically swivelled back to a smaller angle and the deviation in control corrected.

Setting range from 50 to 350 bar.
Please state the pressure control setting (bar) in clear text on ordering.
A pressure relief valve situated in the system to safeguard the maximum pressure must have a cracking pressure at least 20 bar higher than the control setting.



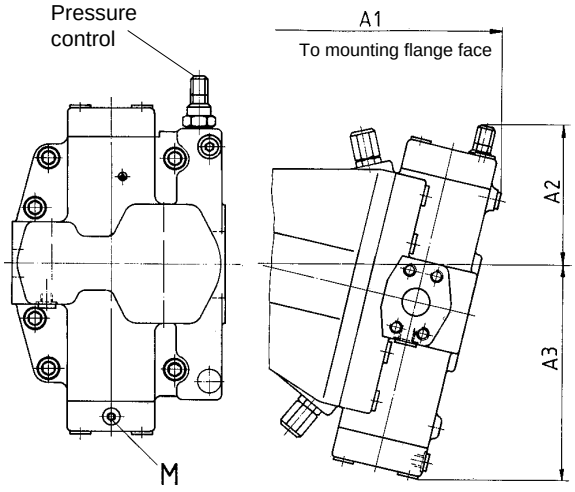
Variation DRG
In addition to the remote control of the pressure control port **X_3** is available. The pressure relief valve, arranged separate from the pump is connected here and it is not supplied with the DRG. For description, size and position of port X_3 see page 12.

Circuit

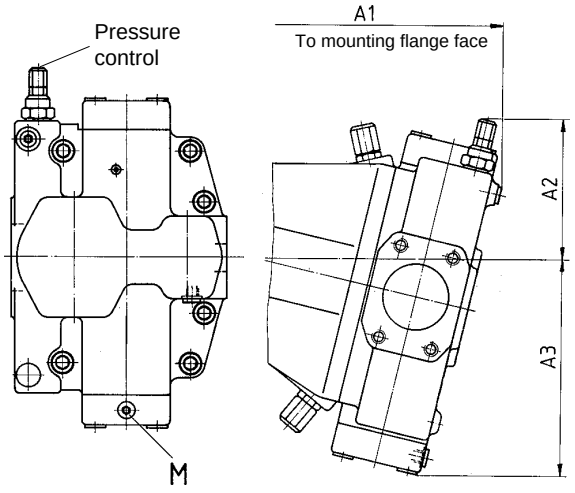


Unit dimensions 250
For general dimensions see page 7.

Clockwise direction of rotation



Anti-clockwise direction of rotation



Unit dimensions

Size	A_1	A_2	A_3
250	385	161	248
355	430	166“	279
500	490	200	306

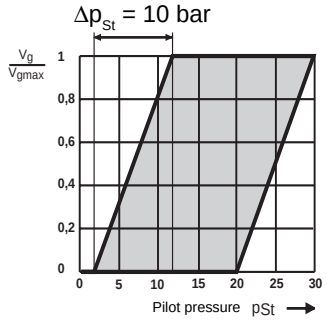
HDD Hydraulic Control, dependent on pressure,

Initial setting V_{gmin}

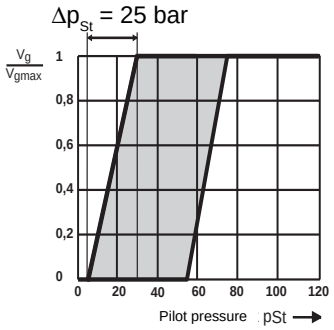
Hydraulic control, dependent on pressure, permits the displacement of the pump to be smoothly adjusted in accordance with the pilot pressure. The adjustment is proportional to the pilot pressure at port X_1.

A pressure of 40 bar is required for the adjustment. The required positioning oil is taken from the high pressure.
If operating pressure ≥ 40 bar and V_{gmin} ≥ 0, then no external positioning pressure is necessary and port X_2 must be closed before commissioning.
Otherwise an external setting pressure of at least 40 bar msut be fed to port X_2.

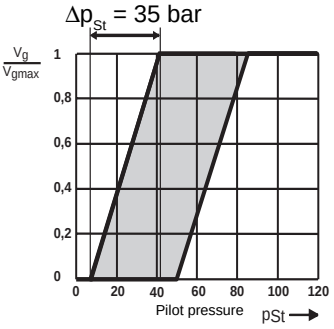
HD1D Δp_{St} ..... 10 bar
Variable start of control ..... 2 - 20 bar



HD2D Δp_{St} ..... 25 bar
Variable start of control ..... 5 - 50 bar

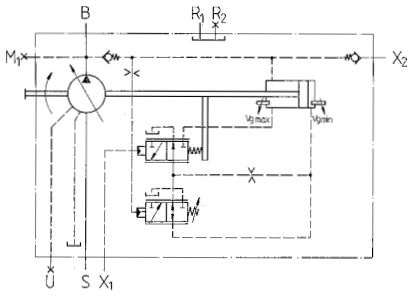


HD3D Δp_{St} ..... 35 bar
Variable start of control ..... 7,5 - 70 bar



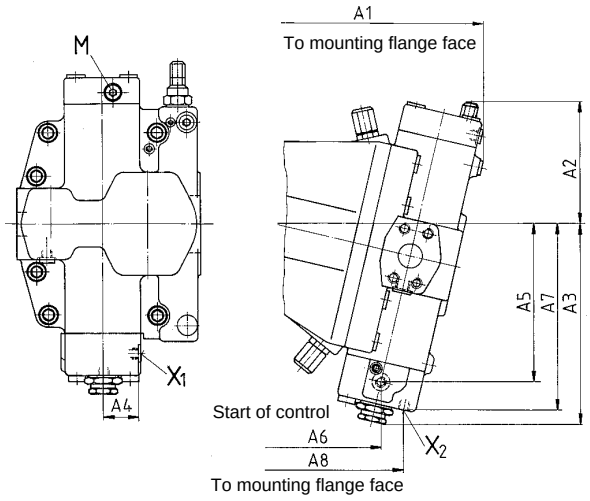
Integrated pressure control is standard
For description see page 17.

Circuit

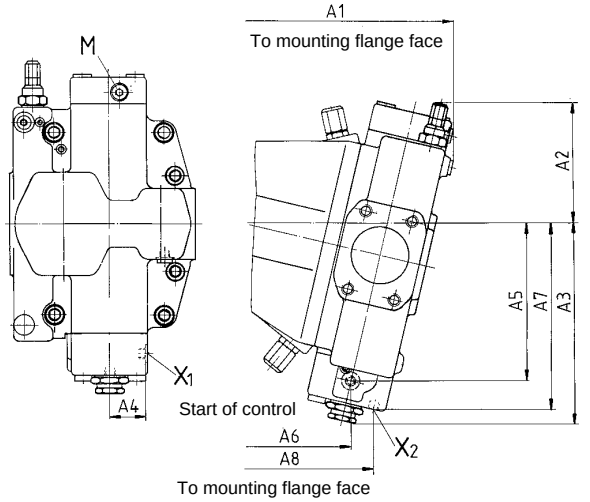


Unit dimensions
For general dimenions see pages 7, 8 and 9.

Clockwise direction of rotation



Anti-clockwise direction of rotation



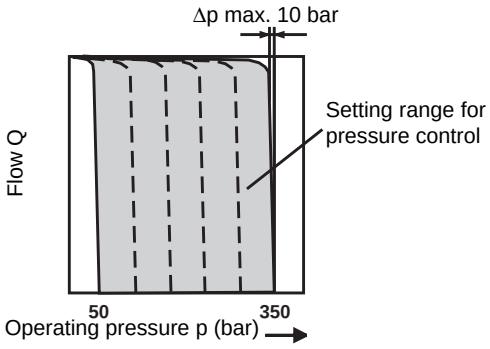
For dimensions table see page 17.

HD**D** Integrated pressure control

Pressure control overrides the HD function. It protects the pump from the pressure being exceeded and hence protects the pump from damage. The valve is integrated into the control housing and may be set externally. On reaching the set command pressure the pump reduces its displacement back to the minimum displacement.

The pressure relief valve installed to ensure that the maximum pressure is not exceeded must be set so that the pressure at which it starts to open is 20 bar higher that the control setting.

For circuit see page 16.



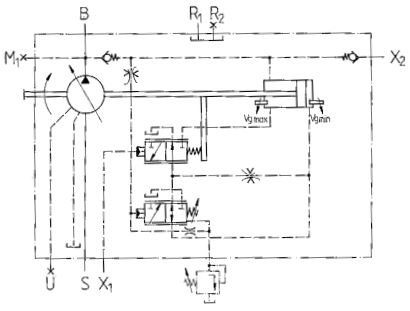
Variation HD**G** With remotely controlled pressure control

On reaching the set command pressure the remotely controlled pressure control sets the pump to minimum displacement V_{gmin}.
A pressure relief valve (not supplied), which is separate to the pump, controls the internal pressure cut-off valve.
As long as the command pressure of the pressure relief valve is not reached, the internal control valve is uniformly pressurised on both sides in addition to the spring force and is not operated.
The command pressure is between 50 bar and 315 bar.
On reaching the command pressure at the separate pressure relief valve, it opens and the pressure on the spring side is reduced to tank pressure. The internal control valve switches and the pump swivels to the minimum displacement V_{gmin}.
The differential pressure at the pilot valves is set normally to 25 bar.
As the separate pressure relief valve, we recommend the following:

DBD 6 (hydraulic) to RE 25 402

Max. line length should not exceed 2m.

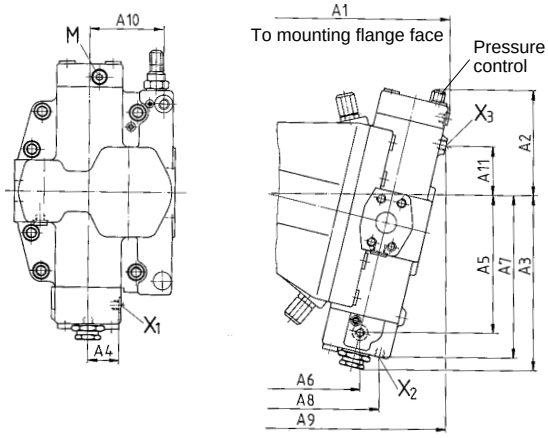
Circuit



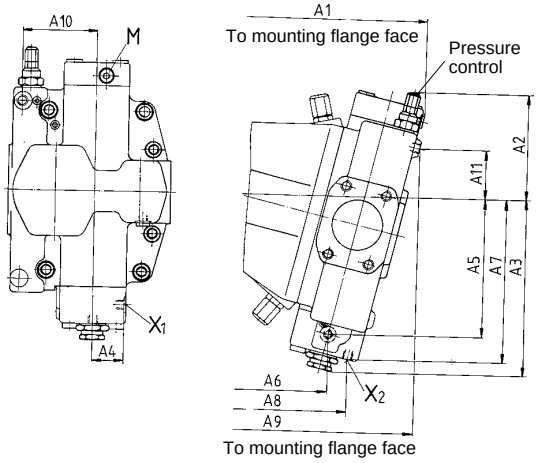
Hydraulic control, dependent on pressure with remotely controlled pressure control

Unit dimensions, size 250-500
For general dimension see pages 7, 8 and 9

Clockwise direction of rotation



Anti-clockwise direction of rotation



Unit dimensions

Size	A_1	A_2	A_3	A_4	A_5	A_6	A_7	A_8	A_9
250	385	161	max.275	49	210	248	248	276	380
355	432	181	max.300	54	234	278	275	315	425
500	492	200	max.325	61,5	258	322	300	359	483

			Ports		
Size	A_{10}	A_{11}	X_1	X_2	X_3
250	112	74	M14x1,5	M14x1,5	M14x1,5
355	131	80	M14x1,5	M14x1,5	M14x1,5
500	142	96	M14x1,5	M18x1,5	M14x1,5

EP$_D$ Hydraulic control, with proportional valve,

Initial position V_{gmin}

Hydraulic control permits the displacement of the pump to be smoothly varied.

The displacement is set proportional to the current fed to the solenoid of the proportional pressure reducing valve DRE 4 K (see RE 29181), i.e. an increase in current produces an increase in displacement.

Various amplifiers from the Rexroth range are available for controlling the proportional valve, see RE 29181.

With zero operating pressure a positioning pressure of at least 40 bar must be set at port X_2. If operating pressure ≥40 bar and $V_{gmin} > 0$, no external positioning pressure is then necessary and port X_2 should be plugged before commissioning.

In order to operate the integrated pilot valve, a control pressure of 50 bar is required at port P.

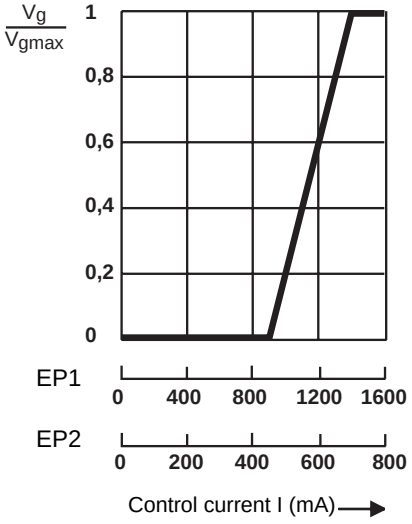
Positioning pressure at port P

Required p_{min} 50bar

p_{max} ..... 100 bar

Model	Control voltage (DC)	Control current Start of to end of control		
EP1	12V	900mA	–	1400mA
EP2	24V	450mA	–	700mA

Insulation IP 65



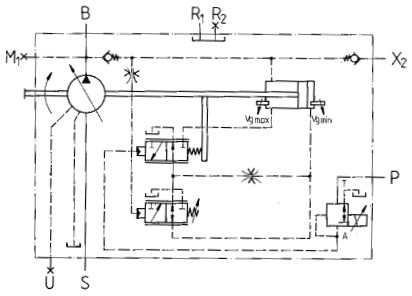
Integrated pressure control EP**D** is standard and overrides EP.
For description see page 19.

Unit dimensions

Size	A_1	A_2	A_3	A_4	A_5	A_6	A_7	A_8	A_9
250	385	161	max.275	124	248	276	238	241	36
355	432	181	max.300	125	275	315	268	286	36
500	492	200	max.325	132	300	359	294	328	43

Size	A_{10}	A_{11}	A_{12}	Ports P	X_2	X_3
250	112	131	142	M14x1,5	M14x1,5	M14x1,5
355	**380**	425	483	M14x1,5	M14x1,5	M14x1,5
500	**74**	80	96	M14x1,5	M18x1,5	M14x1,5

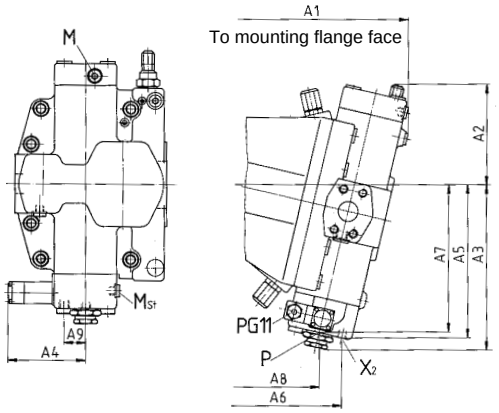
Circuit



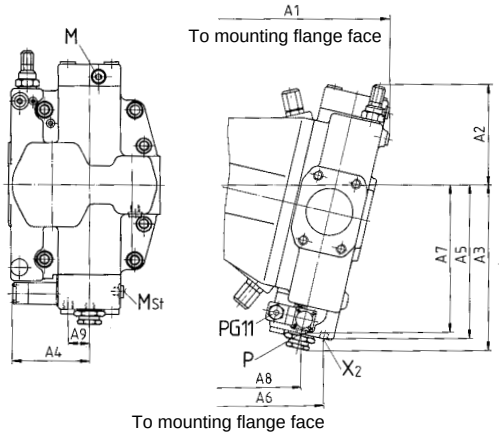
Unit dimensions, size 250

For general dimensions see page 7.

Clockwise direction of rotation



Anti-clockwise direction of rotation

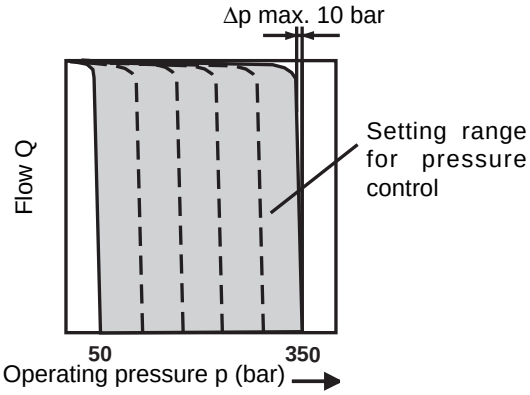


EP**D** Integrated pressure control

Pressure control overrides the HD function. It protects the pump from the pressure being exceeded and hence protects the pump from damage. The valve is integrated into the control housing and may be set externally. On reaching the set command pressure the pump reduces its displacement back to the minimum displacement.

The pressure relief valve installed to ensure that the maximum pressure is not exceeded must be set so that the pressure at which it starts to open is 20 bar higher that the control setting.

For circuit see page 18.



Variation EP**G** With remotely controlled pressure control

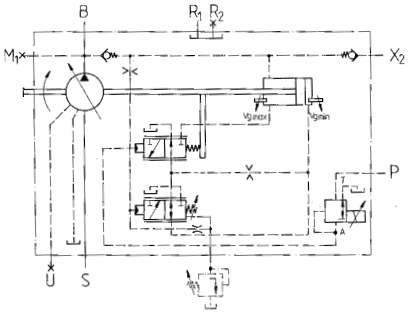
Initial position V_{gmin}

On reaching the set command pressure the remotely controlled pressure control sets the pump to minimum displacement V_{gmin}.
A pressure relief valve (not supplied), which is separate to the pump, controls the internal pressure cut-off valve.
As long as the command pressure of the pressure relief valve is not reached, the internal control valve is uniformly pressurised on both sides in addition to the spring force and is not operated.
The command pressure is between 50 bar and 315 bar.
On reaching the command pressure at the separate pressure relief valve, it opens and the pressure on the spring side is reduced to tank pressure. The internal control valve switches and the pump swivels to the minimum displacement V_{gmin}.
The differential pressure at the pilot valves is set normally to 25 bar.
As the separate pressure relief valve we recommend the following:

DBD 6 (hydraulic) to RE 25 402

Max. line length should not exceed 2m.

Circuit

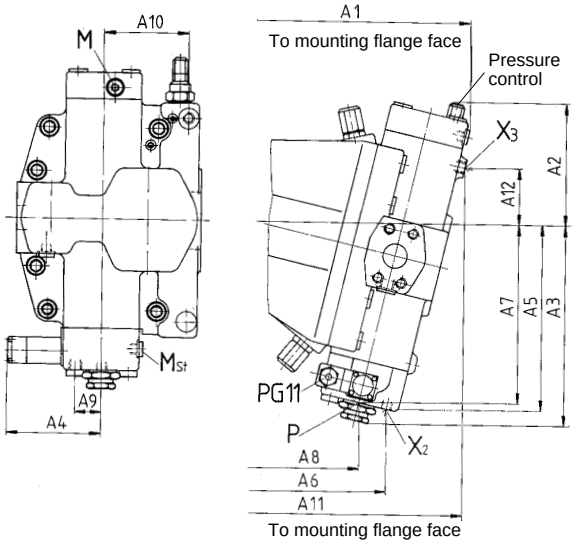


Hydraulic control, with electrical proportional valve and remotely controlled pressure control

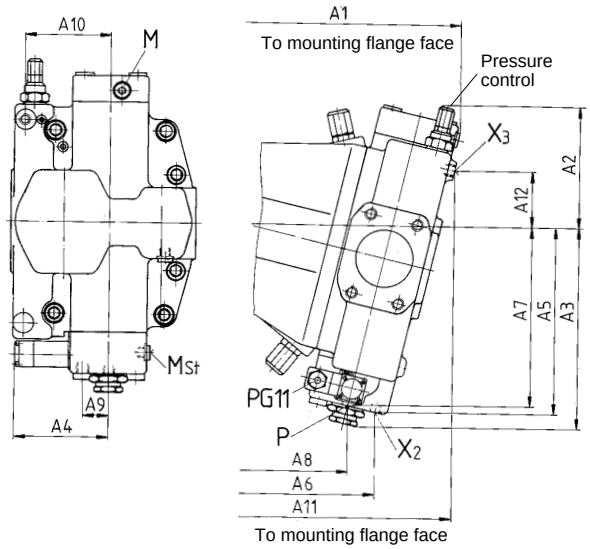
Unit dimensions, size 250

For general dimensions see page 7.

Clockwise direction of rotation



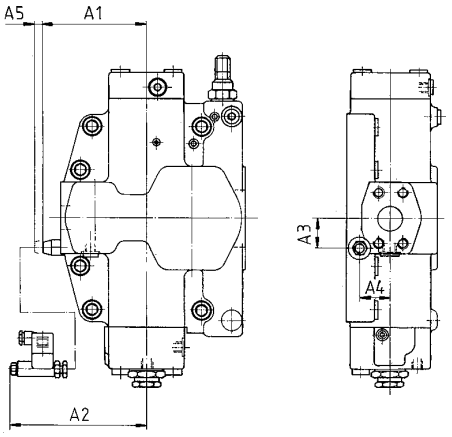
Anti-clockwise direction of rotation



V Optical swivel angle display

Swivel position is indicated by means of a pin on the side of the housing.
Depending on the position of the spool rod the pin is pushed out.
If it is flush to the housing, the pump is at **zero**.
At max. swivel $\mathbf{V_{gmax}}$ the length of the pin is approx**. 8mm**.

Unit dimensions, size 250
For general dimensions see page 7.



Unit dimensions

Size	A_1	A_2	A_3	A_4	A_5
250	136,5	182	40	41,3	11
355	159,5	205	47	46,5	11
500	172,5	218	47	50,8	11

E Electrical swivel angle display

The pump position is fed back by means of an inductive positional transducer.
It converts the displacement into an electrical signal. The swivel angle may be e.g. fed to an amplifier card by means of this signal.
Inductive positional transducer, type IW9 – 03 – 01

Unit dimensions, size 250
For general dimensions see page 7.

Type list (short delivery times), incrase of order please note type and part no.

type	part no.	type	part no.
A7V O 250 DR/63R-PPB02	934369		
A7V O 250 LRD/63R-PPB02	934370		
A7V O 250 LRDH1/63R-PPB02	934368		
A7V O 250 LRDH3/63R-PPB02	942130		

See RDE 90131.

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***Rexroth Hydraulics Div., Mobile,* 1700 Old Mansfield Road, Wooster, OH 44691-0394 Tel. (330) 263-3400 Fax: (330) 263-3333**