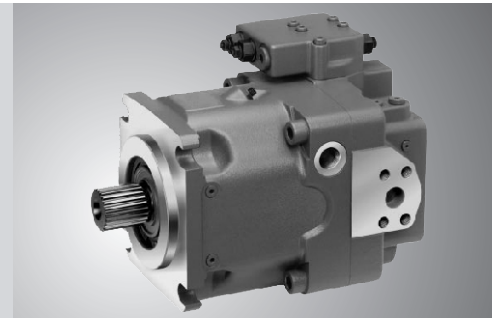


Variable Displacement Pump T11VO

Sizes 40...260mL/r

Series 1, for open circuits

Nominal pressure upto 350 MPa



for open circuit

Features

- The T11VO is a variable displacement pump of axial piston swashplate design for use in open circuit hydrostatic drives.
- Designed principally for use in mobile applications.
- The pump operates under self-priming condition, with tank pressurisation or with charge pump (impeller).
- A wide variety of controls are available.
- Setting of the constant power control is possible via external adjustments, even when the unit is operating.
- The pump is available with a through drive to accept a gear pump or a second axial piston pump up to the same size (100 % through drive).
- SAE mounting flange.
- Output flow is proportional to drive speed and pump displacement and is steplessly variable between maximum and zero.

Ordering Code / Standard Program

Operating Fluid

Mineral oil (no code)

Axial piston unit

Variable displacement, swashplate design

T11V

Charge pump (impeller)

40 60 75 95 130 190 260

without charge pump (no code)

● ● ● ● ● ● ●

with charge pump

- - - - ● ● ● L

Mode of operation

Pump in open circuit

O

Size

△ Displacement $V_{g \max}$ (cm³)

40 60 75 95 130 190 260

Control device

40 60 75 95 130 190 260

Constant power control	LR				●	●	●	●	●	●	●	LR
with power influence, high pressure related	LR3				●	●	●	●	●	●	●	LR3
with load limiting control hydraulic override, negative	LG1				●	●	●	●	●	●	●	LG1
with load limiting control hydraulic override, positive	LG2				●	●	●	●	●	●	●	LG2
with load limiting control electric override 12V, negative	LE1				○	○	○	●	●	○	○	LE1
with load limiting control electric override 24V, negative	LE2				○	○	○	●	●	○	○	LE2
with pressure cut-off		D			●	●	●	●	●	●	●	L . . D
with pressure cut-off, 2 stages		E			●	●	●	●	●	●	●	L . . E
with pressure cut-off, remote control			G		●	●	●	●	●	●	●	L . . G
with cross sensing control (flow control)			C		●	●	●	●	●	●	●	L . . C
with load sensing control			S		●	●	●	●	●	●	●	L . . S
with hydr. stroke limiter, neg. control, Dp=25 bar			H1		●	●	●	●	●	●	●	L . . H1
with hydr. stroke limiter, neg. control, Dp=10 bar			H5		●	●	●	●	●	●	●	L . . H5
with hydr. stroke limiter, pos. control, Dp=25 bar			H2		●	●	●	●	●	●	●	L . . H2
with hydr. stroke limiter, pos. control, Dp=10 bar			H6		●	●	●	●	●	●	●	L . . H6
with electrical stroke limiter 12 V			U1		○	●	●	●	●	●	●	L . . U1
with electrical stroke limiter 24V			U2		○	●	●	●	●	●	●	L . . U2
Constant pressure control	DR				●	●	●	●	●	●	●	DR
remote control			G		●	●	●	●	●	●	●	DRG
for parallel operation			L		○	○	○	●	●	●	●	DRL
load sensing control (flow control)			S									DRS
Hydraulic control, pilot pressure related		Dp = 10 bar	HD1		●	●	●	●	●	●	●	HD1
		Dp = 25 bar	HD2		●	●	●	●	●	●	●	HD2
pressure cut-off			D		●	●	●	●	●	●	●	HD . D
with remote pressure cut-off			G		●	●	●	●	●	●	●	HD . G
Electrical control with proportional solenoid		12 V	EP1		○	●	●	●	●	●	●	EP1
		24 V	EP2		○	●	●	●	●	●	●	EP2
pressure cut-off			D		○	●	●	●	●	●	●	EP.D
with remote pressure cut-off			G		○	●	●	●	●	●	●	EP.G

In case of controls with various additional functions take care of the **sequence** of the columns. For each column only 1 option is possible!

- = available
- = in preparation, available on enquiry
- = not available

 = preferred program (preferred types see page 32)

T11V **O** / **1** - **12**

Axial piston unit	
Charge pump	
Mode of operation	
Size	
Control device	

Series

	1
--	----------

Index

sizes 40...130	0
sizes 190...260	1

Direction of rotation

viewed on shaft end	clockwise	R
	anti-clockwise	L

Seals

NBR (nitril-caoutchouc), shaft seal in FPM (fluor-caoutchouc)	N
FPM (fluor-caoutchouc)	V

Shaft end

	40	60	75	95	130	190	260	
Splined shaft DIN 5480	●	●	●	●	●	●	●	Z
Parallel with key DIN 6885	●	●	●	●	●	●	●	P
Splined shaft SAE standard for single pump	●	●	●	●	●	●	●	S
standard for combination pump	●	●	●	- ¹⁾	- ¹⁾	●	●	T

¹⁾ Use shaft end **S** for combination pump

Mounting flange

	40	60	75	95	130	190	260	
SAE 2-hole	●	●	-	-	-	-	-	C
SAE 4-hole	-	-	●	●	●	●	●	D

Service line connections

	40	60	75	95	130	190	260	
Pressure and suction port SAE on (opposite) side, metric mounting threads	●	●	●	●	●	●	●	12

Through drive (assembly possibilities see page 30)

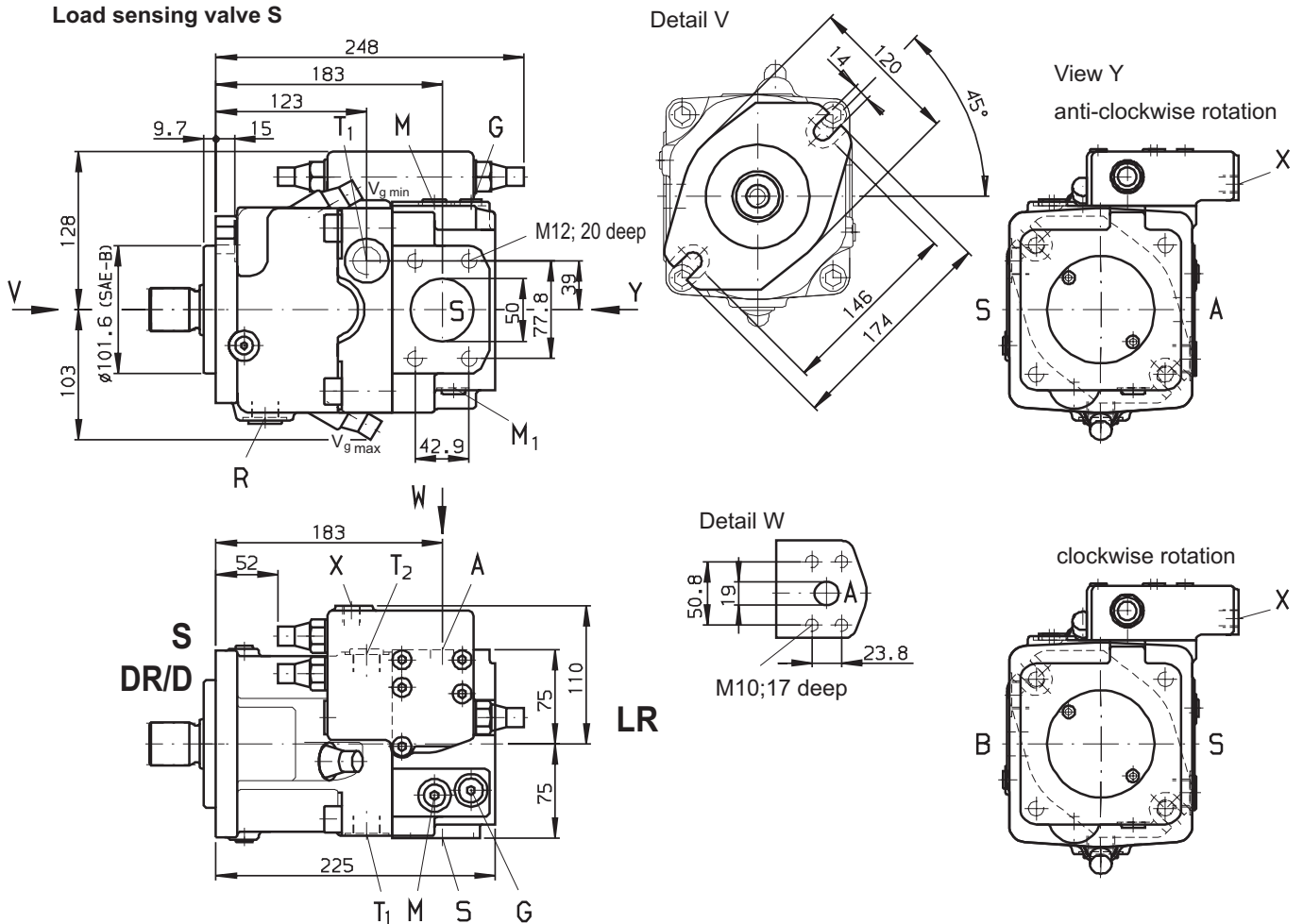
hub	flange	40	60	75	95	130	190	250	
-	-	●	●	●	●	●	●	●	N00
SAE A (N 5/8"-9T 16/32 DP)	SAE A, 2-hole	●	●	●	●	●	●	●	K01
SAE B (N 7/8"-13T 16/32 DP)	SAE B, 2-hole	●	●	●	●	●	●	●	K02
SAE B-B (N 1"-15T 16/32 DP)	SAE B, 2-hole	●	●	●	●	●	●	●	K04
SAE C (N 1 1/4"-14T 12/24 DP)	SAE C, 2-hole	-	●	●	●	●	●	●	K07
SAE C (N 1 1/4"-14T 12/24 DP)	SAE D, 4-hole	-	-	●	●	●	●	●	K86
SAE C-C (N 1 1/2"-17T 12/24 DP)	SAE C, 2-hole	-	-	-	●	●	●	●	K24
SAE D (N 1 3/4"-13T 8/16 DP)	SAE D, 4-hole	-	-	-	-	●	●	●	K17
SAE D (N 1 3/4"-13T 8/16 DP)	SAE E, 4-hole	-	-	-	-	-	●	●	K72
N 30 (DIN 5480)	SAE C, 2-hole	-	●	●	●	●	●	●	K80
N 35 (DIN 5480)	SAE B, 2-hole	●	●	●	●	●	●	●	K79
N 35 (DIN 5480)	SAE C, 2-hole	-	●	●	●	●	●	●	K61
N 40 (DIN 5480)	SAE D, 4-hole	-	-	●	●	●	●	●	K81
N 45 (DIN 5480)	SAE D, 4-hole	-	-	-	●	●	●	●	K82
N 50 (DIN 5480)	SAE D, 4-hole	-	-	-	-	●	●	●	K83
N 50 (DIN 5480)	SAE E, 4-hole	-	-	-	-	-	●	●	K84
N 60 (DIN 5480)	SAE E, 4-hole	-	-	-	-	-	-	●	K67

Swivel angle indicator

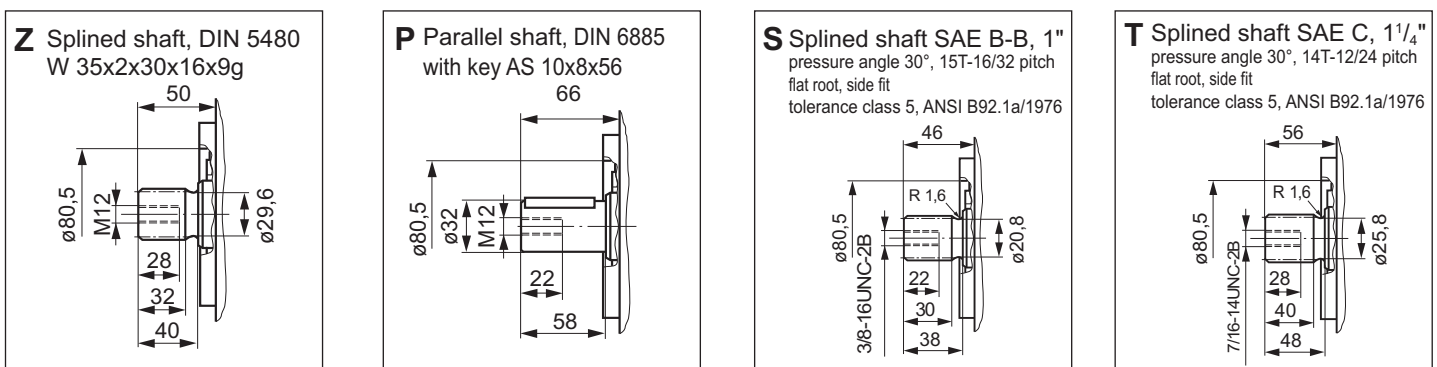
Without swivel angle indicator (no code)	●	●	●	●	●	●	●	●	
Optical swivel angle indicator	○	○	○	●	●	○	○	○	V
Electronical swivel angle indicator	○	○	●	●	○	○	○	○	E

Unit Dimensions, Size 40

Constant power control LR **Constant pressure control DR**
Variation: **Variation:**
Pressure cut-off D **Load sensing valve S**
Load sensing valve S



Shaft ends

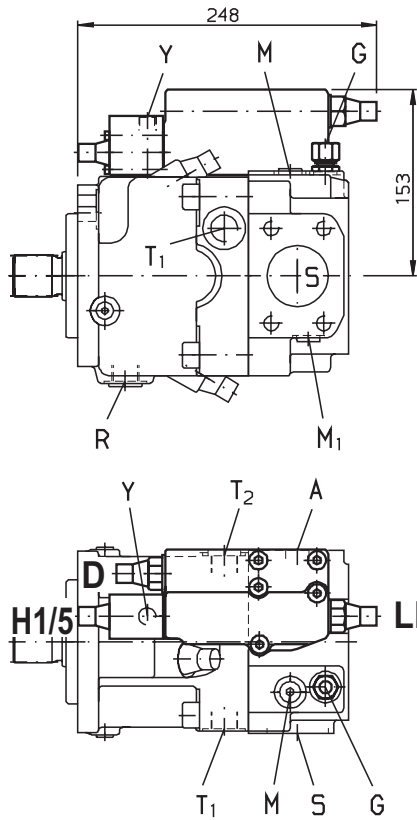


Connections

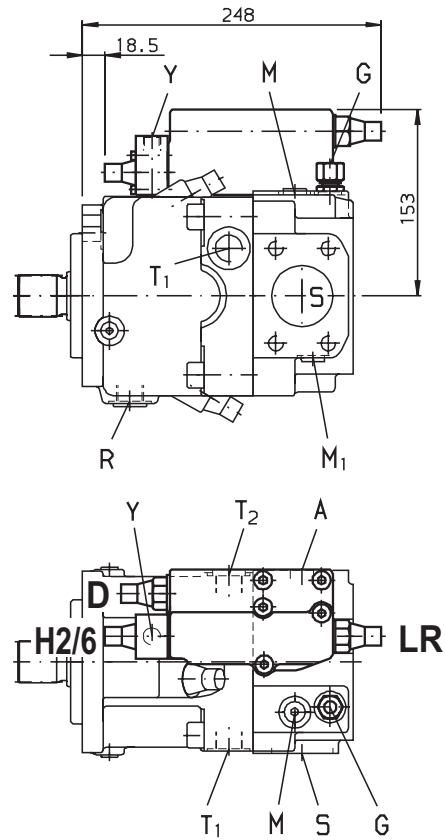
- | | |
|--|--|
| A, B Service line ports | SAE 3/4" 420 bar (6000 psi) high pressure series |
| S Suction port | SAE 2" 210 bar (3000 psi) standard series |
| T ₁ Air bleed, tank | M22x1,5; 14 deep |
| T ₂ Air bleed, tank | M22x1,5; 14 deep |
| M ₁ Gauge point positioning chamber | M12x1,5; 12 deep |
| M Gauge point for pressure port | M12x1,5; 12 deep |
| X port for Δp -control | M14x1,5; 12 deep |
| Y Pilot pressure port | M14x1,5; 12 deep |
| R Air bleed, Oil drain | M22x1,5; 14 deep |
| G Control pressure port | M14x1,5; 12 deep |
- at design with stroke limiter (H..., U2), or HD, EP-control with fitting GE10 - PLM (in other case is port "G" closed)

Unit Dimensions, Size 40

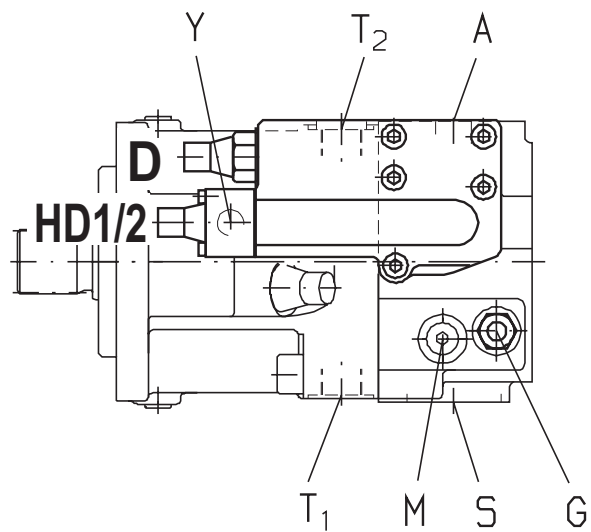
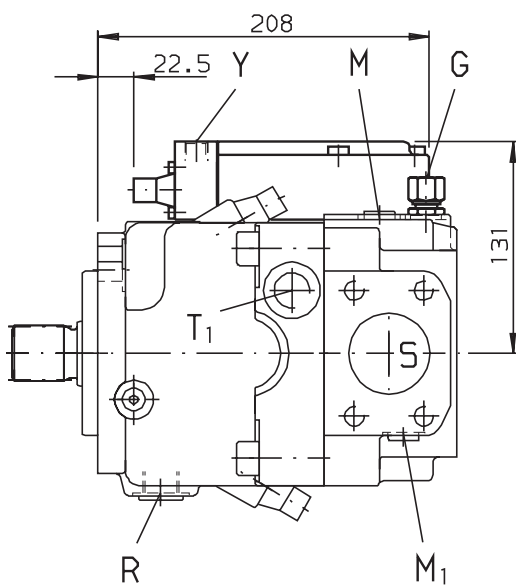
Constant power control with hydraulic stroke limiter and pressure cut-off LRDH1/LRDH5 (function: $V_{g \max}$ to $V_{g \min}$)



Constant power control with hydraulic stroke limiter and pressure cut-off LRDH2/LRDH6 (function: $V_{g \min}$ to $V_{g \max}$)

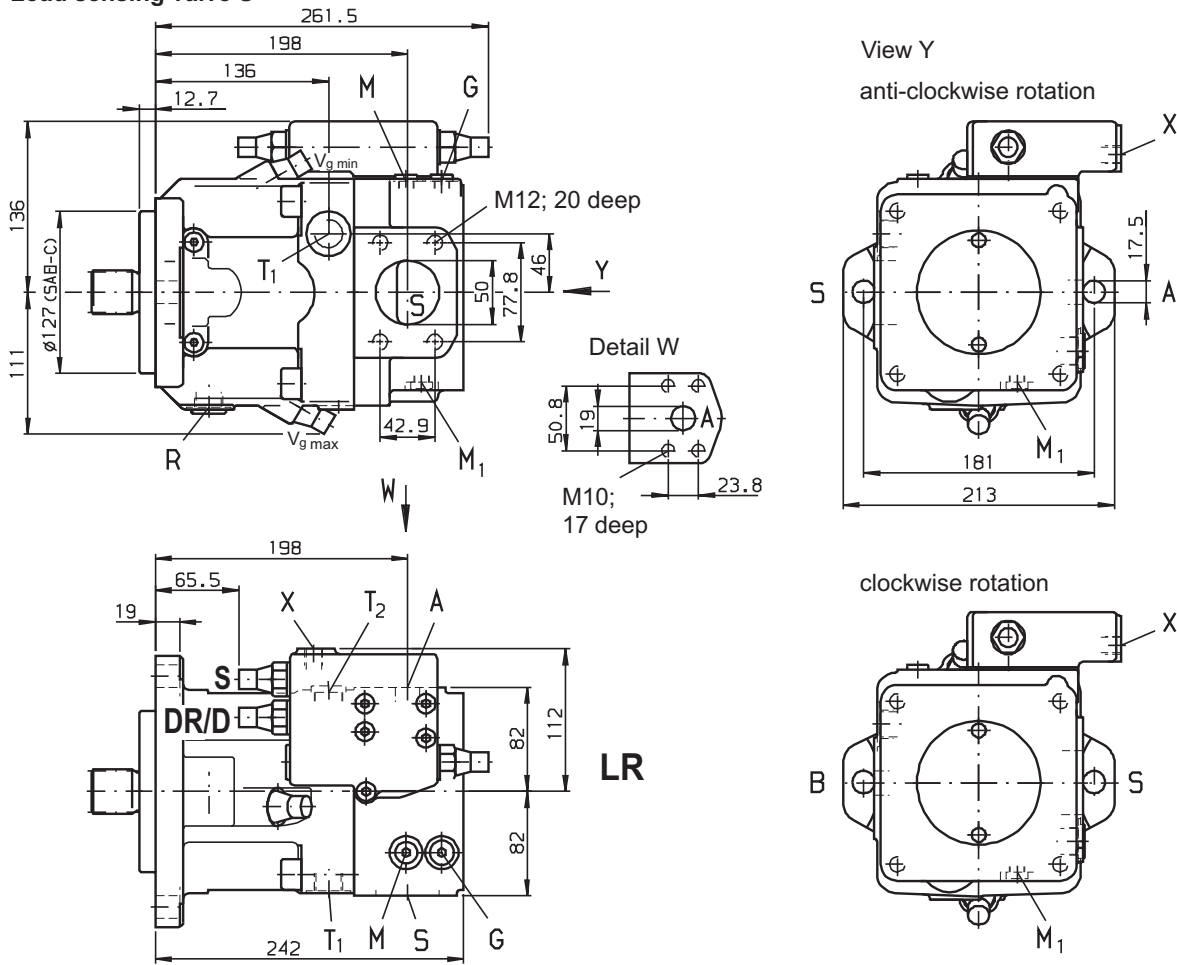


Hydraulic control, pilot pressure related,
Pressure cut-off HD1D, HD2D



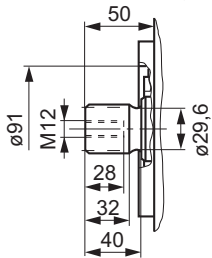
Unit Dimensions, Size 60

Constant power control LR **Constant pressure control DR**
Variation: **Variation:**
Pressure cut-off D **Load sensing valve S**
Load sensing valve S

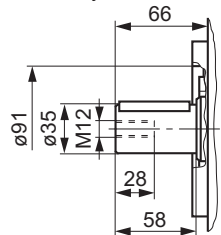


Shaft ends

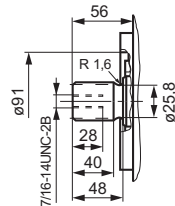
Z Splined shaft, DIN 5480
W 35x2x30x16x9g



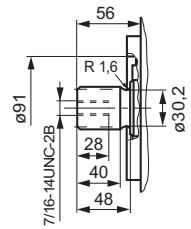
P Parallel shaft, DIN 6885
with key AS 10x8x56



S Splined shaft SAE C, 1 1/4"
pressure angle 30°, 14T-12/24 pitch
flat root, side fit
tolerance class 5, ANSI B92.1a/1976



T Splined shaft SAE 1 3/8"
pressure angle 30°, 21T-16/32 pitch
flat root, side fit
tolerance class 5, ANSI B92.1a/1976

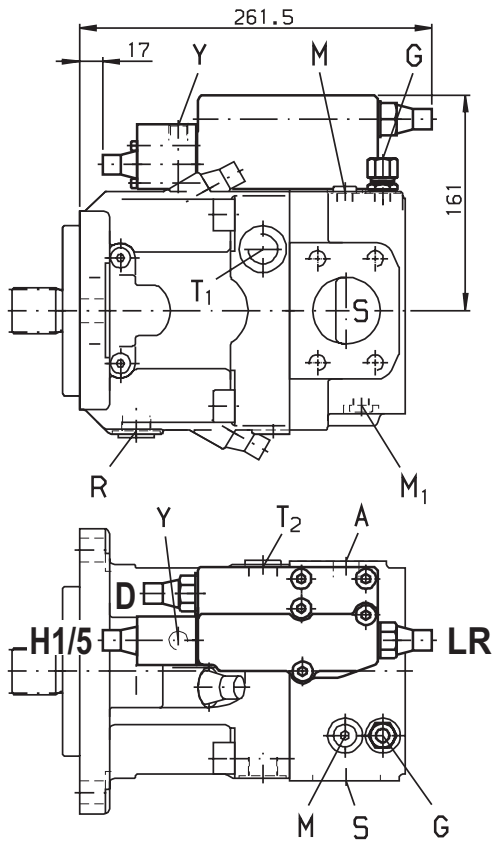


Connections

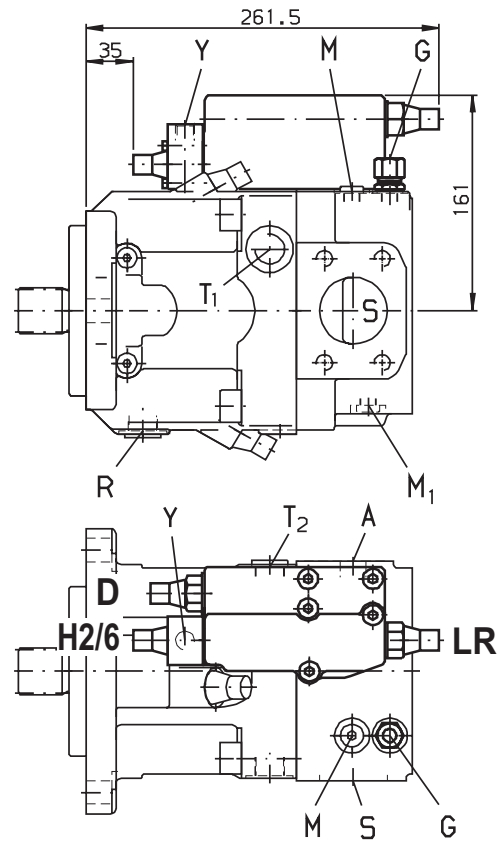
- | | |
|--|--|
| A, B Service line ports | SAE 3/4" 420 bar (6000 psi) high pressure series |
| S Suction port | SAE 2" 210 bar (3000 psi) standard series |
| T ₁ Air bleed, tank | M22x1,5; 14 deep |
| T ₂ Air bleed, tank | M22x1,5; 14 deep |
| M ₁ Gauge point positioning chamber | M12x1,5; 12 deep |
| M Gauge point for pressure port | M12x1,5; 12 deep |
| X port for Δp -control | M14x1,5; 12 deep |
| Y Pilot pressure port | M14x1,5; 12 deep |
| R Air bleed, Oil drain | M22x1,5; 14 deep |
| G Control pressure port | M14x1,5; 12 deep |
- at design with stroke limiter (H..., U2), or HD, EP-control with fitting GE10 - PLM (in other case is port "G" closed)

Unit Dimensions, Size 60

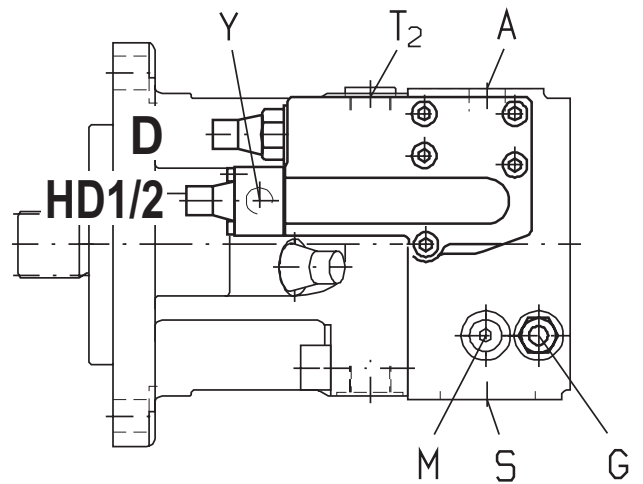
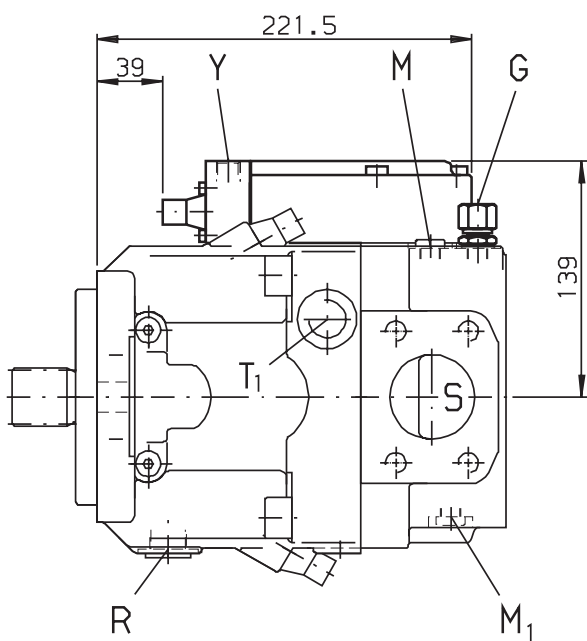
Constant power control with hydraulic stroke limiter and pressure cut-off LRDH1/LRDH5 (function: $V_{g\ max}$ to $V_{g\ min}$)



Constant power control with hydraulic stroke limiter and pressure cut-off LRDH2/LRDH6 (function: $V_{g\ min}$ to $V_{g\ max}$)

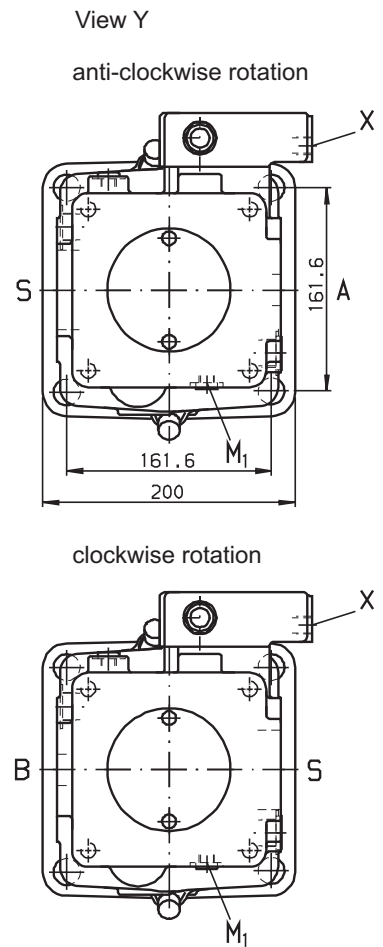
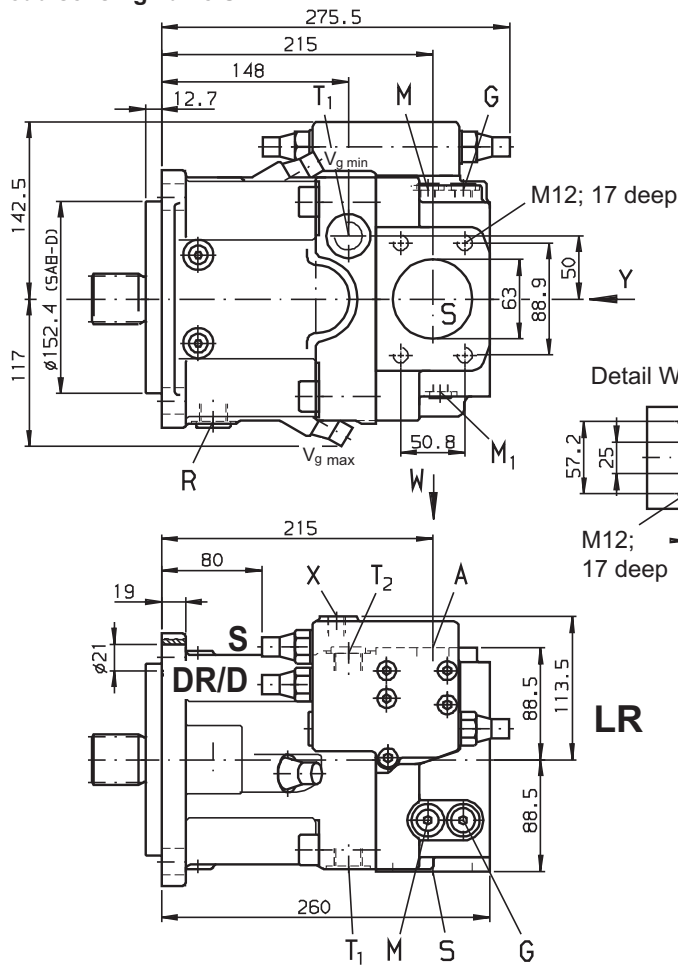


Hydraulic control, pilot pressure related,
Pressure cut-off HD1D, HD2D

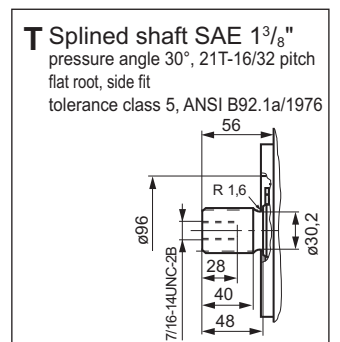
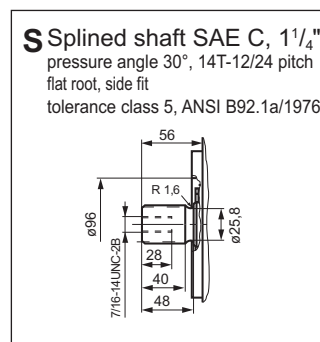
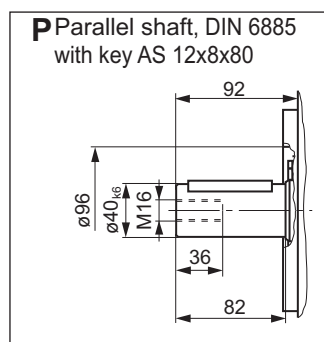
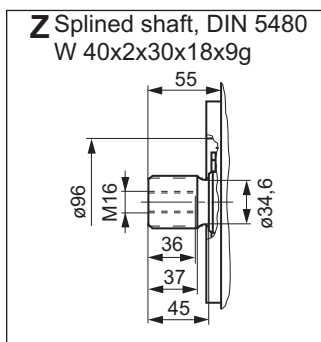


Unit Dimensions, Size 75

Constant power control LR **Constant pressure control DR**
Variation: **Variation:**
Pressure cut-off D **Load sensing valve S**
Load sensing valve S



Shaft ends

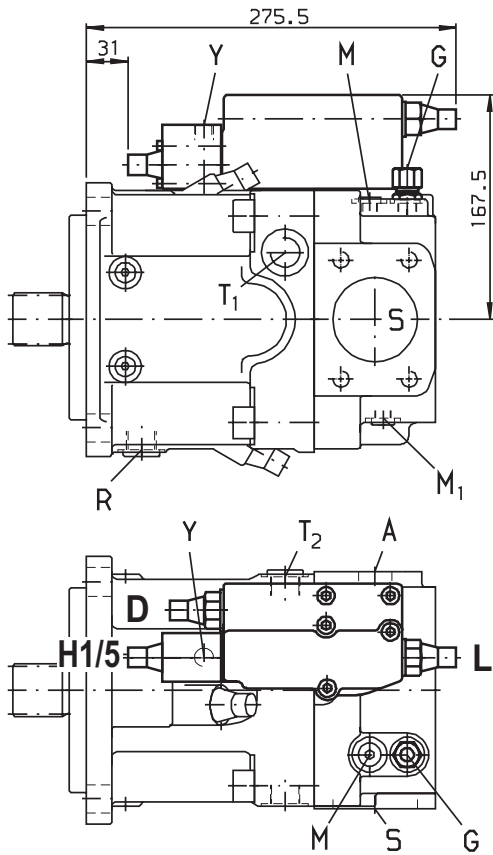


Connections

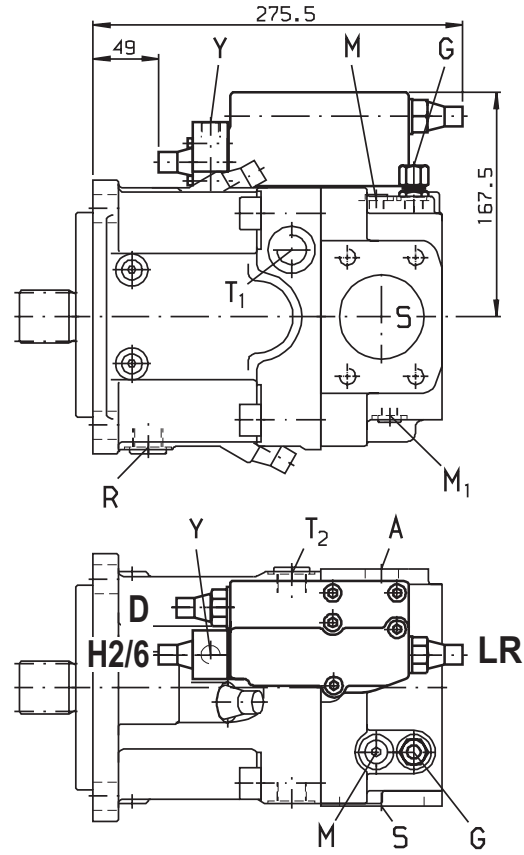
- | | |
|--|--|
| A, B Service line ports | SAE 1" 420 bar (6000 psi) high pressure series |
| S suction port | SAE 2" 1/2" 170 bar (3000 psi) standard series |
| T ₁ Air bleed, tank | M22x1,5; 14 deep |
| T ₂ Air bleed, tank | M22x1,5; 14 deep |
| M ₁ Gauge point positioning chamber | M12x1,5; 12 deep |
| M Gauge point for pressure port | M12x1,5; 12 deep |
| X port for Δp-control | M14x1,5; 12 deep |
| Y Pilot pressure port | M14x1,5; 12 deep |
| R Air bleed, Oil drain | M22x1,5; 14 deep |
| G Control pressure port | M14x1,5; 12 deep |
- at design with stroke limiter (H., U2), or HD, EP-control with fitting GE10 - PLM (in other case is port "G" closed)

Unit Dimensions, Size 75

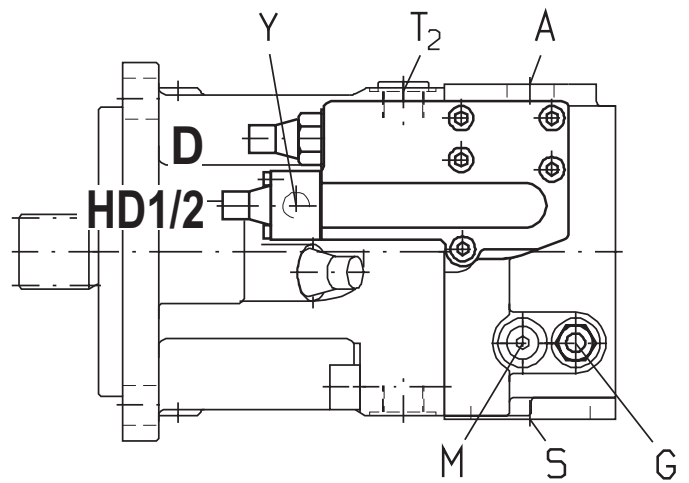
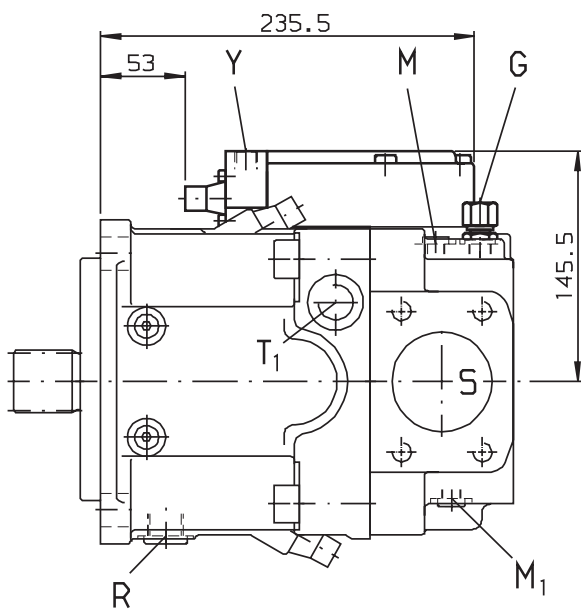
Constant power control with hydraulic stroke limiter and pressure cut-off LRDH1/LRDH5 (function: $V_{g\ max}$ to $V_{g\ min}$)



Constant power control with hydraulic stroke limiter and pressure cut-off LRDH2/LRDH6 (function: $V_{g\ min}$ to $V_{g\ max}$)

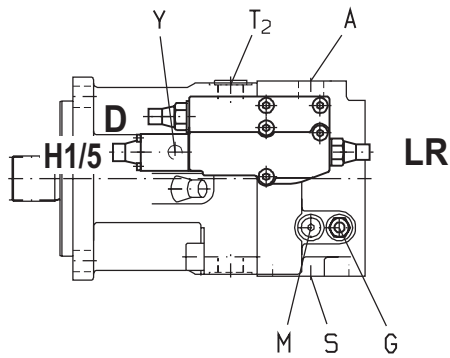
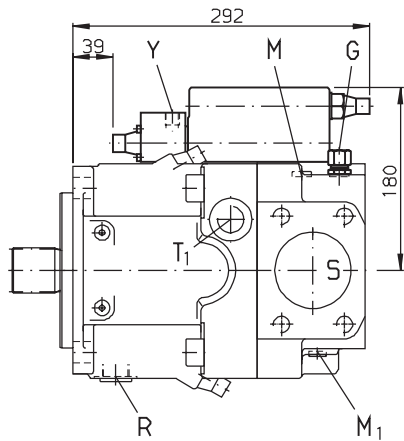


Hydraulic control, pilot pressure related, pressure cut-off HD1D, HD2D

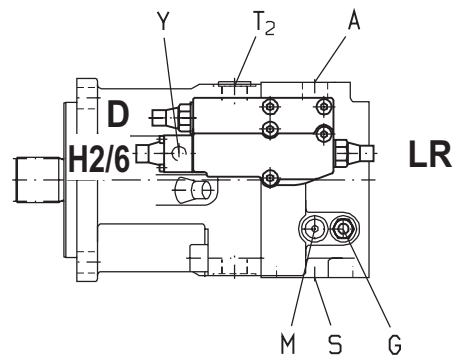
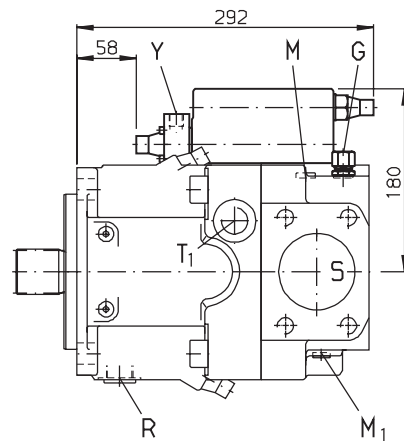


Unit Dimensions, Size 95

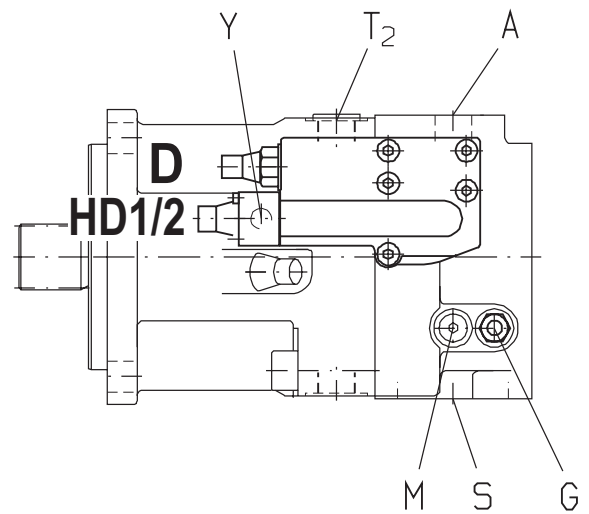
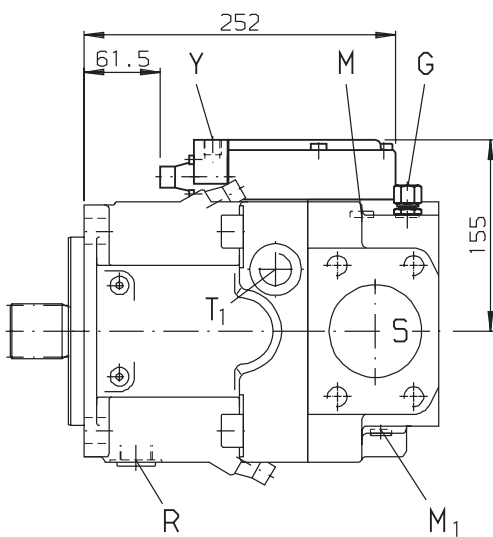
Constant power control with hydraulic stroke limiter and pressure cut-off LRDH1/LRDH5 (function: $V_{g\ max}$ to $V_{g\ min}$)



Constant power control with hydraulic stroke limiter and pressure cut-off LRDH2/LRDH6 (function: $V_{g\ min}$ to $V_{g\ max}$)



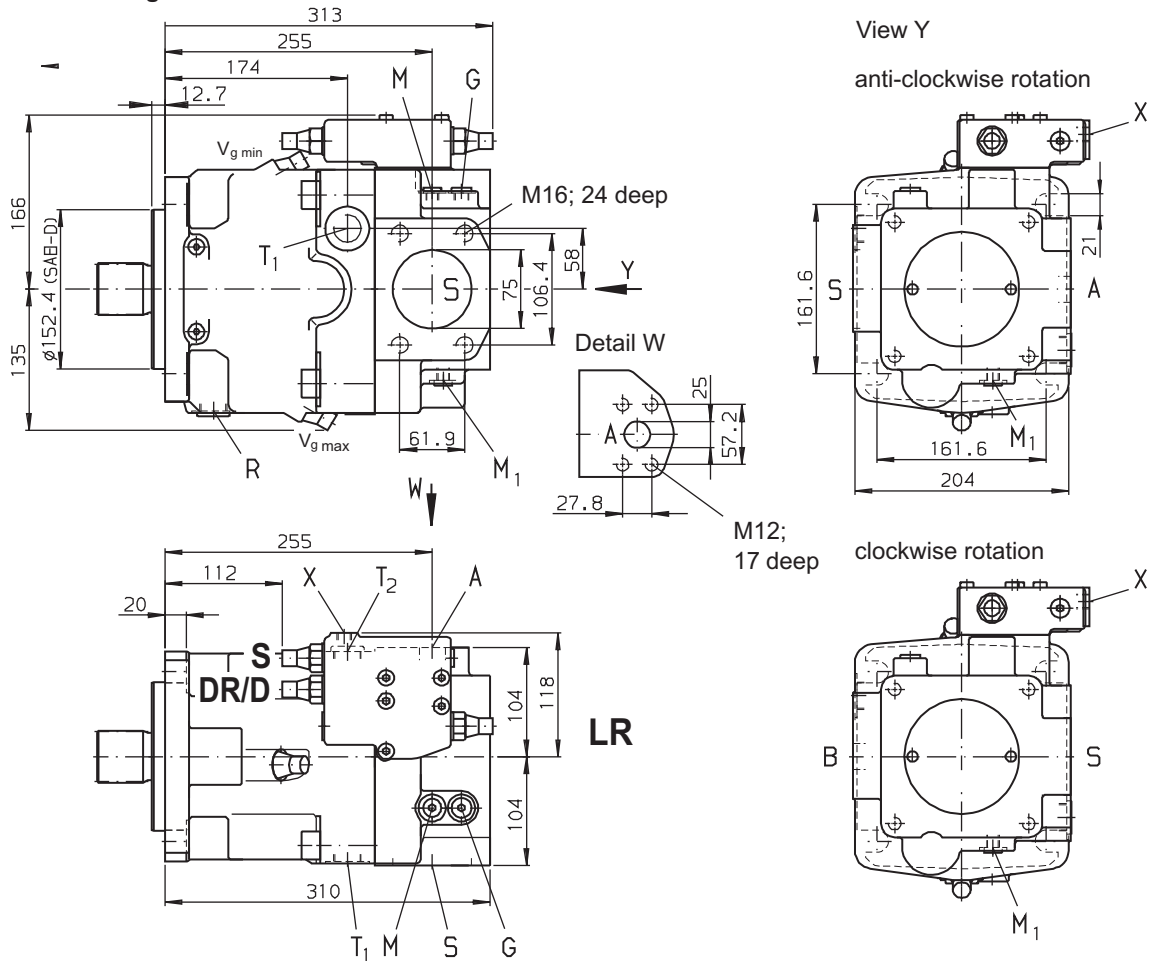
Hydraulic control, pilot pressure related, pressure cut-off HD1D, HD2D



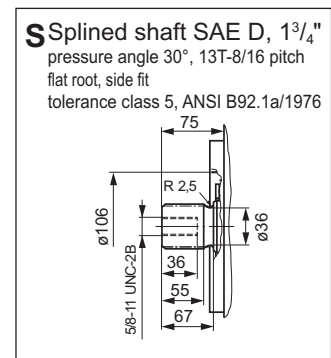
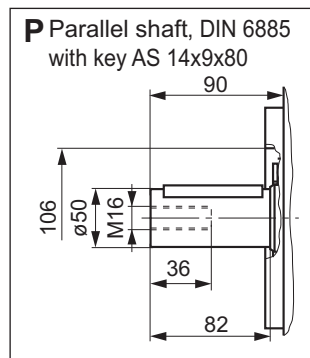
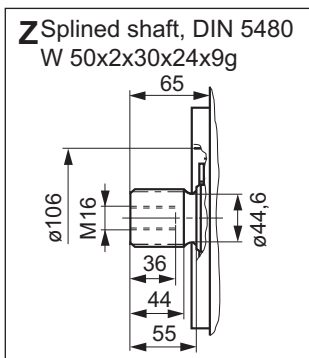
Unit Dimensions, Size 130

Constant power control LR
Variation:
Pressure cut-off D
Load sensing valve S

Constant pressure control DR
Variation:
Load sensing valve S



Shaft ends

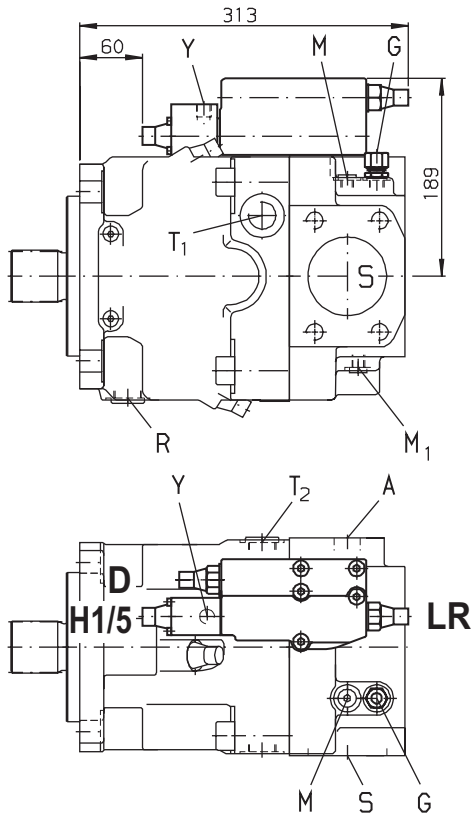


Connections

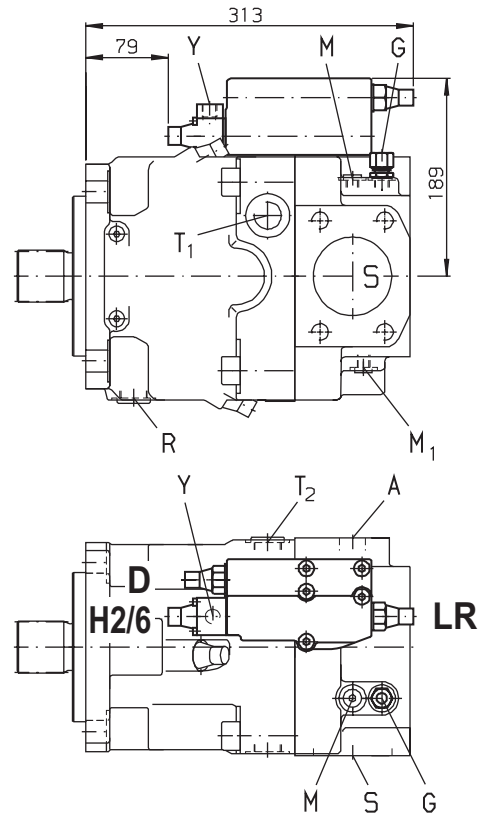
- A, B Service line ports (without impeller) SAE 1" 420 bar (6000 psi) high pressure series
 - A, B Service line ports (with impeller) SAE 1 1/4" 420 bar (6000 psi) high pressure series
 - S Suction port SAE 3" 140 bar (2000 psi) standard series
 - T₁ Air bleed, tank M26x1,5; 14 deep
 - T₂ Air bleed, tank M26x1,5; 14 deep
 - M₁ Gauge point positioning chamber M12x1,5; 12 deep
 - M Gauge point for pressure port M12x1,5; 12 deep
 - X port for Δp -control M14x1,5; 12 deep
 - Y Pilot pressure port M14x1,5; 12 deep
 - R Air bleed, Oil drain M26x1,5; 14 deep
 - G Control pressure port M14x1,5; 12 deep
- at design with stroke limiter (H..., U2), or HD, EP-control with fitting GE10 - PLM (in other case is port "G" closed)

Unit Dimensions, Size 130

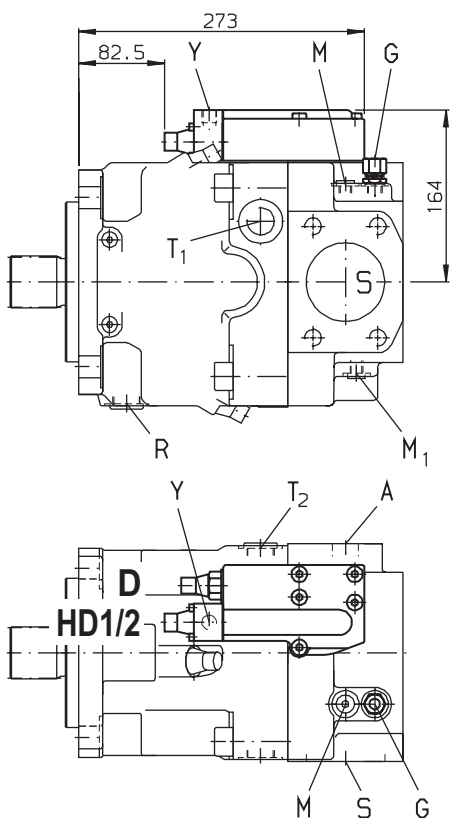
Constant power control with hydraulic stroke limiter and pressure cut-off LRDH1/LRDH5 (function: $V_{g\max}$ to $V_{g\min}$)



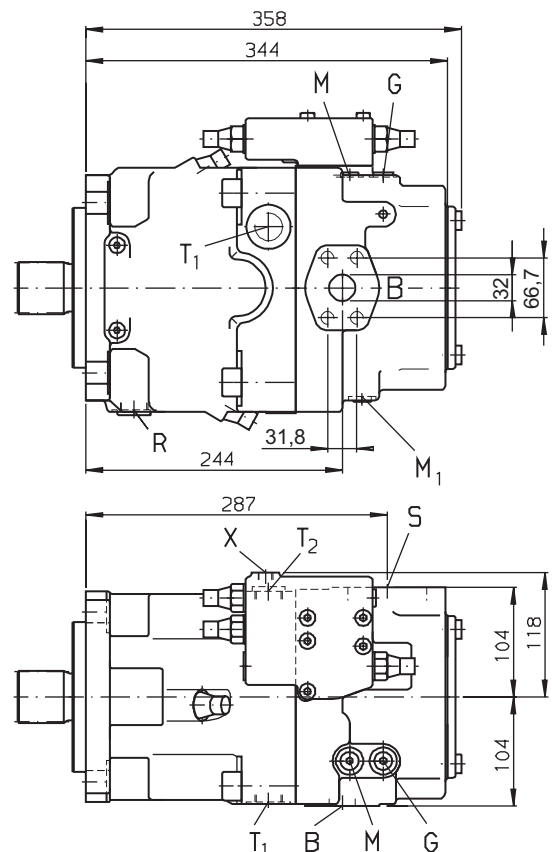
Constant power control with hydraulic stroke limiter and pressure cut-off LRDH2/LRDH6 (function: $V_{g\min}$ to $V_{g\max}$)



Hydraulic control, pilot pressure related, pressure cut-off HD1D, HD2D

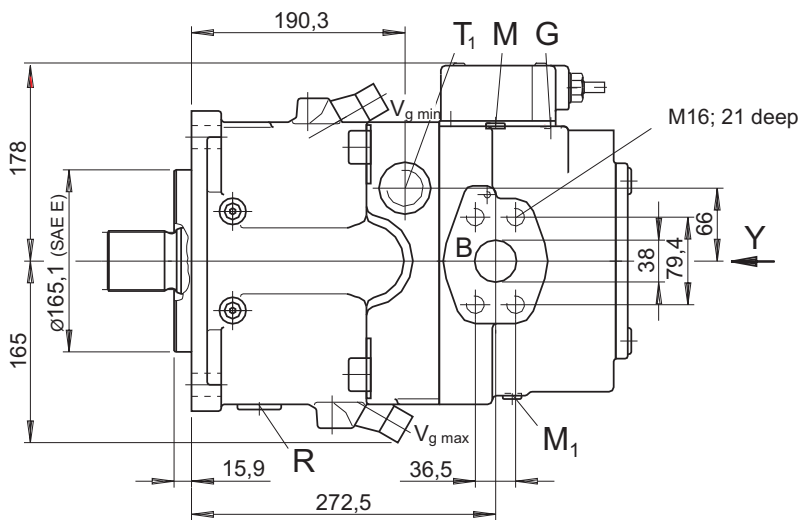


Design A11VLO (with charge pump, clockwise rotation) connections see page 22

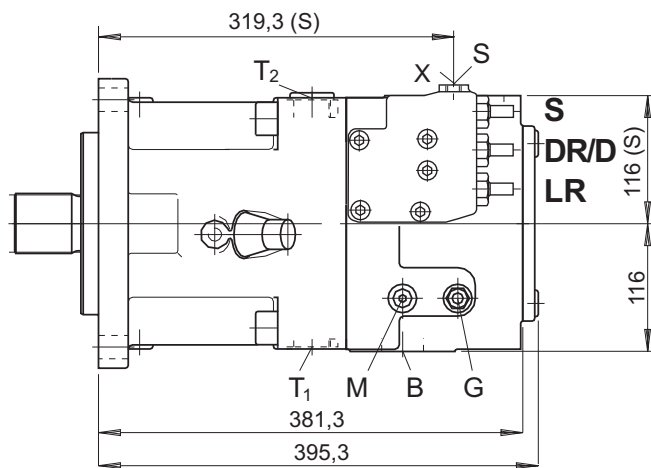
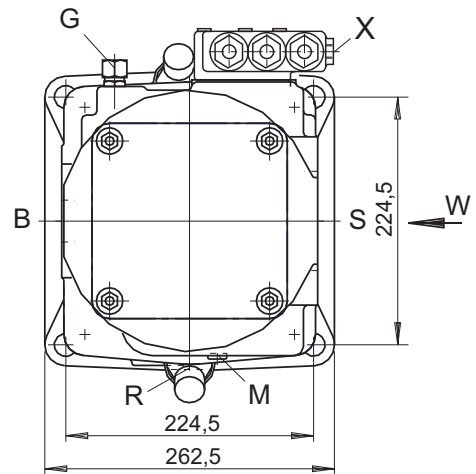


Unit Dimensions, Size 130 design with charge pump

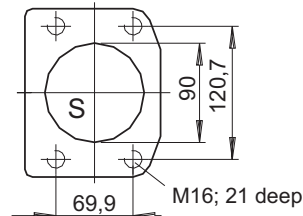
Constant power control, with pressure cut-off and Load sensing valve, LRDS
 Constant pressure control with Load sensing valve, DRS



View Y, clockwise rotation

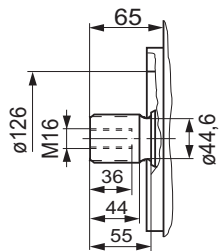


Detail W

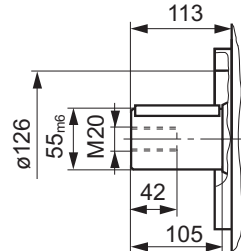


Shaft ends

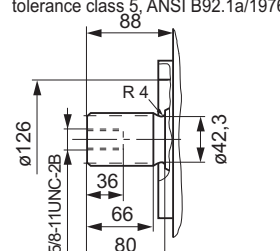
Z Splined shaft, DIN 5480
 W 50x2x30x24x9g



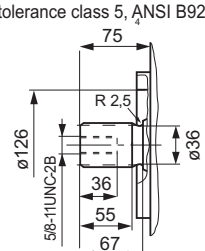
P Parallel shaft, DIN 6885
 with key AS 16x10x100



T Splined shaft SAE F, 2"
 pressure angle 30°, 15T-8/16 pitch
 flat root, side fit
 tolerance class 5, ANSI B92.1a/1976



S Splined shaft SAE D, 1 3/4"
 pressure angle 30°, 13T-8/16 pitch
 flat root, side fit
 tolerance class 5, ANSI B92.1a/1976

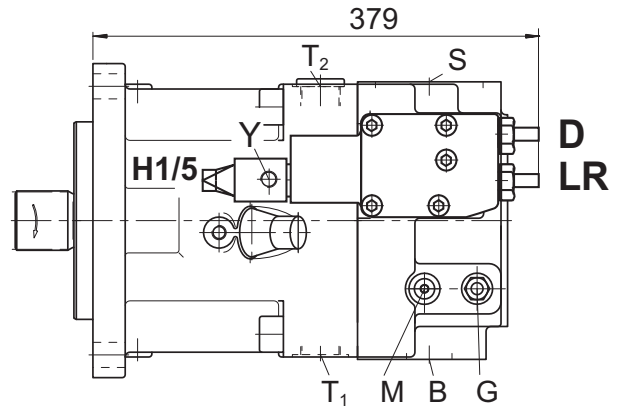
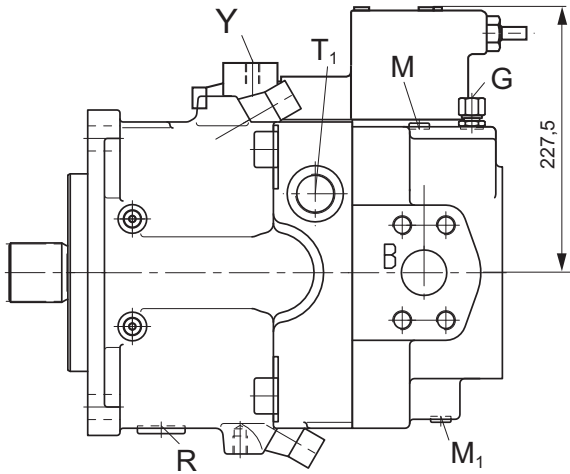


Connections

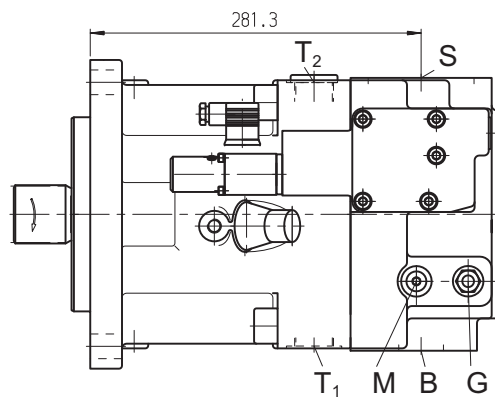
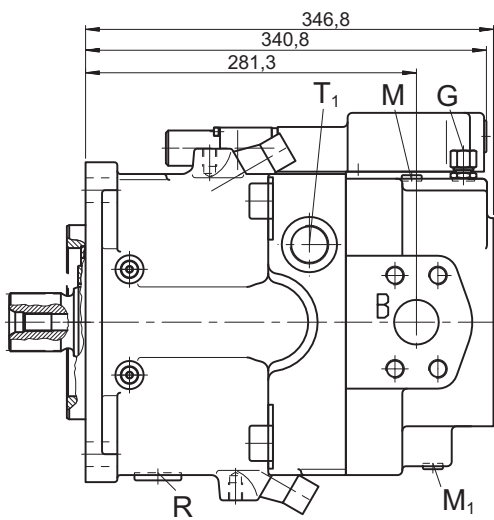
- A, B Service line ports SAE 1 1/2" 420 bar (6000 psi) high pressure series
- S Suction port SAE 3 1/2" 35 bar (500 psi) standard series
- T₁ Air bleed, tank M33x2; 16 deep
- T₂ Air bleed, tank M33x2; 16 deep
- M₁ Gauge point positioning chamber M12x1,5; 12 deep
- M Gauge point for pressure port M12x1,5; 12 deep
- X port for Δp-control M14x1,5; 12 deep
- Y Pilot pressure port M14x1,5; 12 deep
- R Air bleed, Oil drain M33x2; 16 deep
- G Control pressure port M14x1,5; 12 deep
 at design with stroke limiter (H..., U2), or HD, EP-control with fitting GE10 - PLM (in other case is port "G" closed)

Unit Dimensions, Size 190

Constant power control with hydraulic stroke limiter and pressure cut-off LRDH1/LRDH5 (function: $V_{g \max}$ to $V_{g \min}$)
(without charge pump)

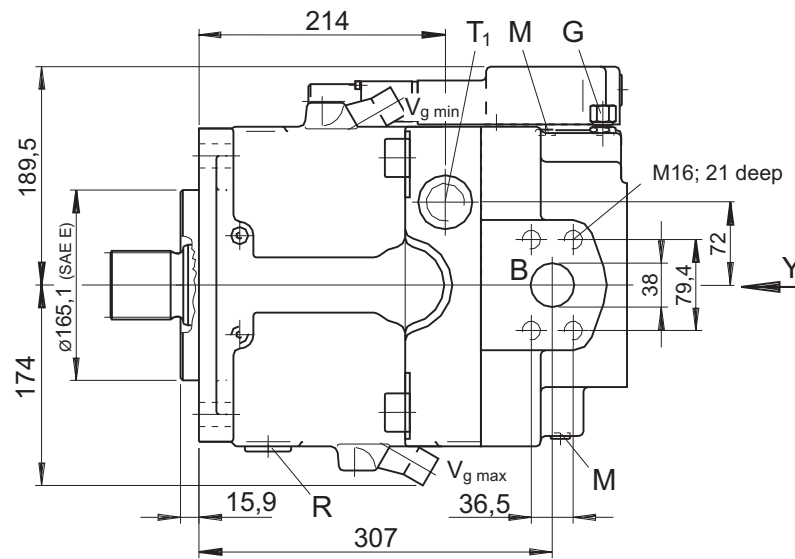


Design T11VO 190 (without charge pump, clockwise rotation), electrical control EP, connections see page 24

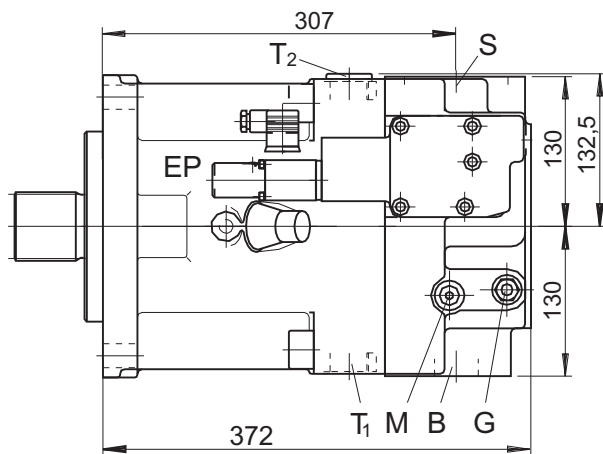
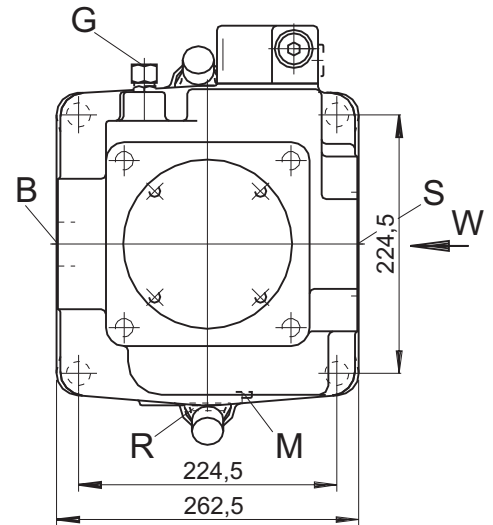


Unit Dimensions, Size 260

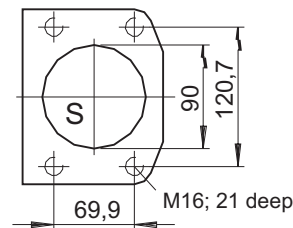
Electrical control EP, design without charge pump



View Y
clockwise rotation

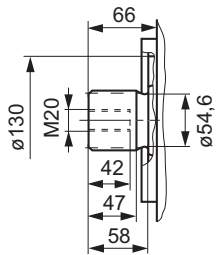


Detail W

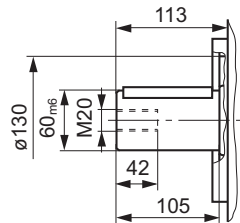


Shaft ends

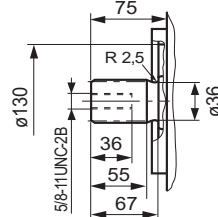
Z Splined shaft, DIN 5480
W 60x2x30x28x9g



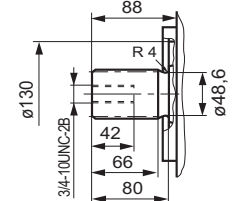
P Parallel shaft, DIN 6885
with key AS 18x11x100



S Splined shaft SAE D, 1 3/4"
pressure angle 30°, 13T-8/16 pitch
flat root, side fit
tolerance class 5, ANSI B92.1a/1976



T Splined shaft SAE 2 1/4"
pressure angle 30°, 17T-8/16 pitch
flat root, side fit
tolerance class 5, ANSI B92.1a/1976

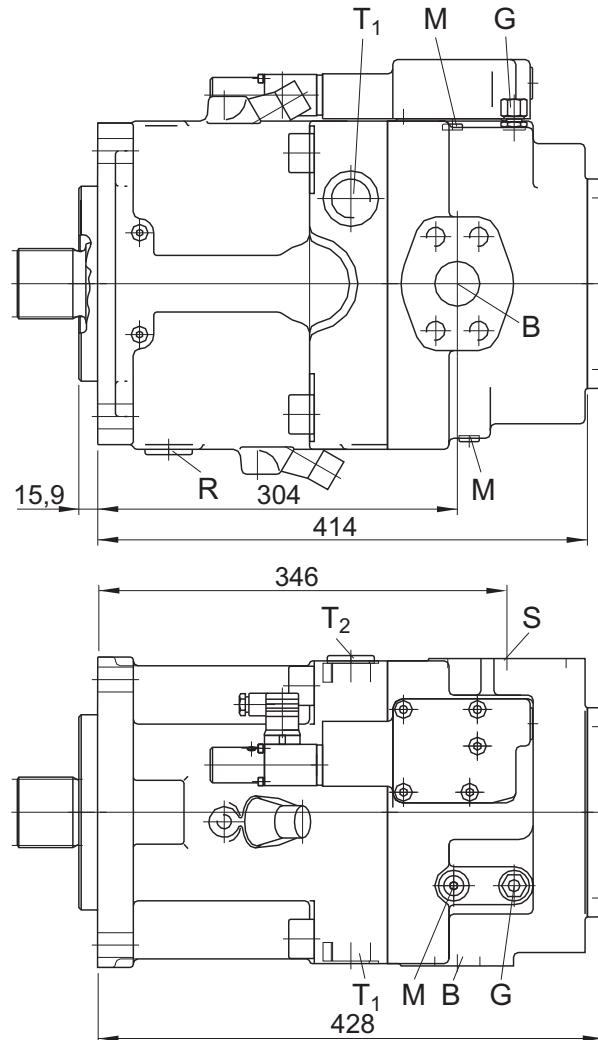


Connections

- A, B Service line ports SAE 1 1/2" 420 bar (6000 psi) high pressure series
- S Suction port (*without* charge pump) SAE 3 1/2" 35 bar (500 psi) standard series
- S Suction port (*with* charge pump) SAE 4" 35 bar (500 psi) standard series
- T₁ Air bleed, tank M33x2; 16 deep
- T₂ Air bleed, tank M33x2; 16 deep
- M₁ Gauge point positioning chamber M12x1,5; 12 deep
- M Gauge point for pressure port M12x1,5; 12 deep
- X port for Δp-control M14x1,5; 12 deep
- Y Pilot pressure port M14x1,5; 12 deep
- R Air bleed, Oil drain M33x2; 16 deep
- G Control pressure port M14x1,5; 12 deep
at design with stroke limiter (H..., U2), or HD, EP-control with fitting GE10 - PLM (in other case is port "G" closed)

Unit Dimensions, Size 260

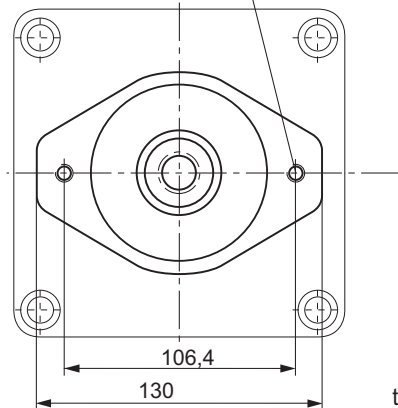
Design A11VLO 260 (with charge pump, clockwise rotation), electrical control EP, connections see page 26



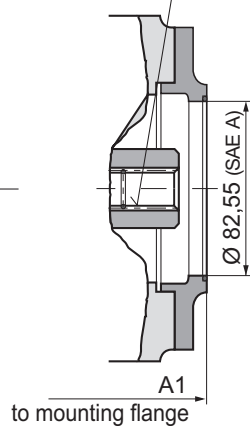
Dimensions for Through Drives

Through drive: flange SAE A, hub SAE A (K01)

M10; 15 deep (sizes 60, 75)
M10; 12,5 deep (sizes 95-260)



splined hub SAE A N 5/8"-9T 16/32 DP



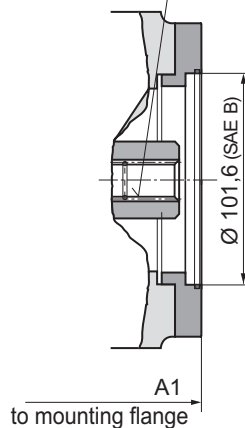
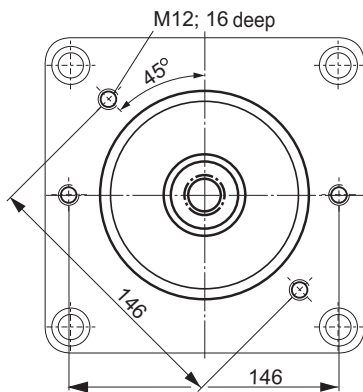
Total length A1

hub	SAE A K01
size 40	
60	257
75	275
95	306
130	339
130*	
190	
190*	394
260	385
260*	427,3

*) design with charge pump (impeller)

Through drive: flange SAE B, hub - SAE B (K02) - SAE B-B (K04) - N 35 (K79)

splined hub SAE B 7/8"-13T 16/32 DP
splined hub SAE B-B N 1"-15T 16/32 DP
splined hub DIN 5480N 35x2x30x16x9H



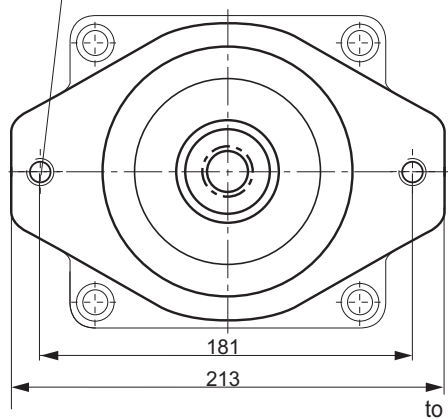
Total length A1

hub	SAE B K02	SAE B-B K04	N35 K79
size 40			
60	261	261	
75	279	279	
95	303	303	303
130	326	326	326
130*			
190			
190*	404	404	394
260	395	395	395
260*	437,5	437,5	437,5

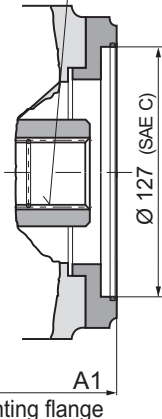
*) design with charge pump (impeller)

Through drive: flange SAE C, hub - SAE C (K07) - SAE C-C (K24) - N30 (K80) - N 35 (K61)

M16; 15 deep (sizes 60-95)
M16; 20 deep (sizes 130-260)



splined hub SAE C-C 1/2"-17T 12/24 DP
splined hub SAE C 1/4"-14T 12/24 DP
splined hub DIN 5480N 30x2x30x14x9H
splined hub DIN 5480 N 35x2x30x16x9H



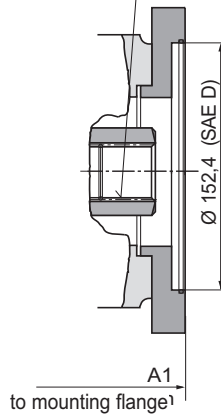
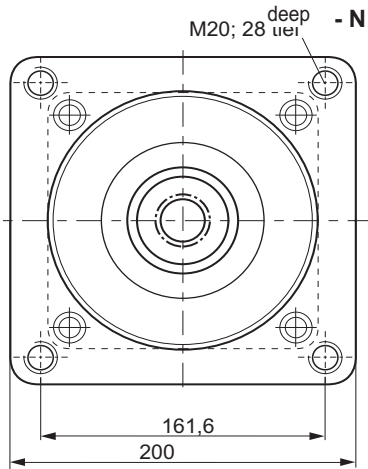
Total length A1

hub	SAE C K07	SAE C-C K24	N30 K80	N35 K61
size 60			265	265
75			283	283
95	318		318	318
130	330		330	330
130*	364		364	364
190				
190*	400		400	400
260	391,5		391,5	391,5
260*	433,5		433,5	433,5

*) design with charge pump (impeller)

Through drive: flange SAE D, hub - SAE C (K86)
 - SAE D (K17)
 - N 40 (K81)
 - N 45 (K82)
 - N 50 (K83)

splined hub SAE C N1 1/4"-14T 12/24 DP
 splined hub SAE D N 13/4"-13T 8/16 DP
 splined hub DIN 5480N 40x2x30x18x9H
 splined hub DIN 5480N 45x2x30x21x9H
 splined hub DIN 5480N 50x2x30x24x9H



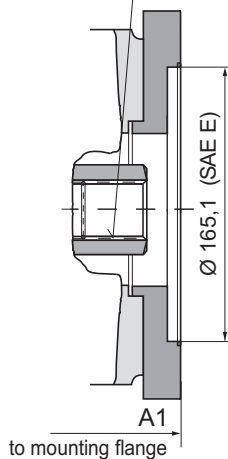
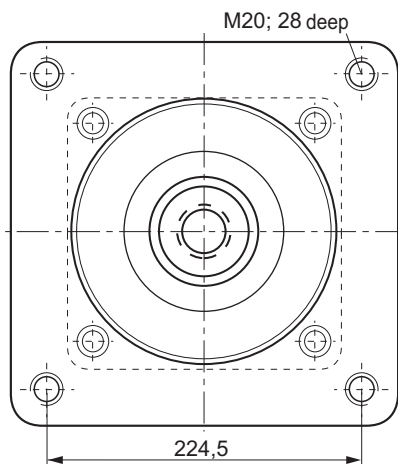
Total length A1

hub	SAE C K86	SAE D K17	N 40 K81	N 45 K82	N 50 K83
size 75		—		—	—
95		—		317	—
130	340		340	340	340
130*					
190					
190*					
260					
260*					

*) design with charge pump (impeller)

Through drive: flange SAE E, hub - SAE D (K72)
 - N 50 (K84)
 - N 60 (K67)

splined hub DIN 5480 N 50x2x30x24x9H
 splined hub DIN 5480 N 55x2x30x26x9H
 splined hub DIN 5480 N 60x2x30x28x9H



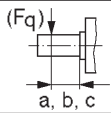
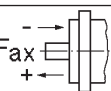
Total length A1

hub	SAE D K72	N 50 K84	N 60 K67
size 190			
190*		409	409
260		400	400
260*		442,5	442,5

*) design with charge pump (impeller)

Input Drive

Permissible axial and radial loading on drive shaft

Size				40	60	75	95	130	190	260
distance of F_q (from shaft collar)		a	mm	17,5	17,5	20	20	22,5	26	29
		b	mm	30	30	35	35	40	46	50
		c	mm	42,5	42,5	50	50	57,5	66	71
max. perm. radial load at distance	a	$F_{q \max}$	N	3600	5000	6300	8000	11 000	16 925	22 000
	b	$F_{q \max}$	N	2891	4046	4950	6334	8594	13 225	16 809
	c	$F_{q \max}$	N	2416	3398	4077	5242	7051	10 850	13 600
max. perm. axial load		$-F_{ax \max}$	N	1500	2200	2750	3500	4800	6000	4150

Summary of the Assembly Possibilities for T11VO

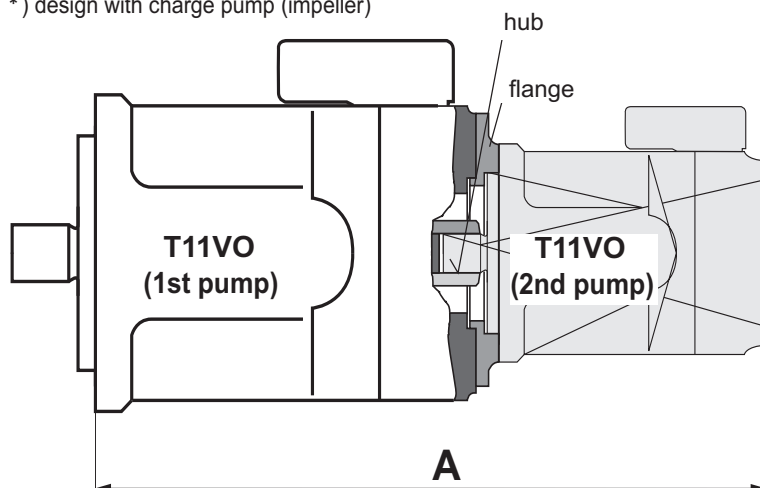
Through drive (T11VO)			assembly possibilities (2nd pump)					available for (see page 3):	
hub	flange		T11VO	T10V(S)O	T10VG	T4VG	others		
K01	SAE A	SAE A		SIZE 10,18				G2	T11VO 40...260
K02	SAE B	SAE B		size 28	size 18			G3	T11VO 40...260
K04	SAE B-B	SAE B	size 40	size 45	size 28, 45	size 28			T11VO 40...260
K07	SAE C	SAE C	size 60	size 60, 71		size 40, 56, 71			T11VO 60...260
K86	SAE C	SAE D	size 75						T11VO 75...260
K24	SAE C-C	SAE C		size 100					T11VO 95...260
K17	SAE D	SAE D	size 95, 130	size 140		size 90, 125			T11VO 130...260
K72	SAE D	SAE E	size 190, 260			size 180			T11VO 190...260
K80	N30	SAE C				size 40, 56			T11VO 60...260
K79	N35	SAE B	size 40						T11VO 40...260
K61	N35	SAE C	size 60			size 71			T11VO 60...260
K81	N40	SAE D	size 75			size 125			T11VO 75...260
K82	N45	SAE D	size 95			size 90			T11VO 95...260
K83	N50	SAE D	size 130						T11VO 130...260
K84	N50	SAE E	size 190			size 180			T11VO 190...260
K67	N60	SAE E	size 260						T11VO 260

Combination Pumps T11VO + T11VO, total length A ¹⁾

T11VO (1st pump)	T11VO (2nd pump)									
	size 40	size 60	size 75	size 95	size 130	size 130*	size 190	size 190*	size 260	size 260*
size 40	—	—	—	—	—	—	—	—	—	—
size 60		507	—	—	—	—	—	—	—	—
size 75		525	—	—	—	—	—	—	—	—
size 95	528	560		604	—	—	—	—	—	—
size 130	551	572	600	627	650	698	—	—	—	—
size 130*		606					—	—	—	—
size 190										
size 190*	619	642						803	—	—
size 260	620	633						794	758	829
size 260*	662,5	675,5						837	801	871

¹⁾ in case of use of the Z-shaft (splined shaft DIN 5480) for the mounted pump (2nd pump)

*) design with charge pump (impeller)



When ordering combination pumps the ordering code have to be connected by a "+" sign.

ordering code 1st pump
+
ordering code 2nd pump

T11VO130LRDS/10R-PZD12K61
+
T11VO60LRDS/10R-PZC12N00

Permissible Input and Through Drive Rotation Torques

Size			40	60	75	95
Corner torque at $V_{g,max}$ and $D_p = 350 \text{ bar}^1$)	T_{max}	Nm	234	324	412	522
Max. perm. input torque ²⁾						
shaft end P (DIN 6885)	T_{max}	Nm	468	648	824	1044
shaft end Z (DIN 5480)	$T_{E,perm.}$	Nm	912 (W35x2x30x16x9g)	912 (W35x2x30x16x9g)	1460 (W40x2x30x18x9g)	2190 (W45x2x30x21x9g)
shaft end S SAE (ANSI B92.1a-1976)	$T_{E,perm.}$	Nm	314 (SAE B-B) (W1"-15T 16/32DP)	602 (SAE C) (W1 1/4"-14T 12/24DP)	602 (SAE C) (W1 1/4"-14T 12/24DP)	1640 (SAE D) (W1 3/4"-13T 8/16DP)
shaft end T SAE (ANSI B92.1a-1976)	$T_{E,perm.}$	Nm	602 (SAE C) (W1 1/4"-14T 12/24DP)	970 (W1 3/8"-21T 16/32DP)	970 (W1 3/8"-21T 16/32DP)	
Max. perm. through drive torque ³⁾	$T_{D,perm.}$	Nm	314	521	660	822

Size			130	190	260
Corner torque at $V_{g,max}$ and $D_p = 350 \text{ bar}^1$)	T_{max}	Nm	723	1073	1447
Max. perm. input torque ²⁾					
shaft end P (DIN 6885)	T_{max}	Nm	1448	2226	2787
shaft end Z (DIN 5480)	$T_{E,perm.}$	Nm	3140 (W50x2x30x24x9g)	3140 (W50x2x30x24x9g)	5780 (W60x2x30x28x9g)
shaft end S SAE (ANSI B92.1a-1976)	$T_{E,perm.}$	Nm	1640 (SAE D) (W1 3/4"-13T 8/16DP)	1640 (SAE D) (W1 3/4"-13T 8/16DP)	1640 (SAE D) (W1 3/4"-13T 8/16DP)
shaft end T SAE (ANSI B92.1a-1976)	$T_{E,perm.}$	Nm		2670 (SAE F) (W2"-15T 8/16DP)	4070 (W2 1/4"-17T 8/16DP)
Max. perm. through drive torque ³⁾	$T_{D,perm.}$	Nm	1110	1760	2065

1) efficiency not considered

2) for drive shaft without radial load

3) note max. perm. input torque for shaft end **S!**

Code explanations

$T_{D,perm.}$ = max permissible through drive torque in Nm

$T_{E,perm.}$ = max. permissible input torque at the drive shaft in Nm

T_1 = take off torque at the 1st pump = $\frac{1,59 \cdot V_{g1} \cdot Dp_1}{100 \cdot h_{mh}}$ in Nm

T_2 = take off torque at the 2nd pump = $\frac{1,59 \cdot V_{g2} \cdot Dp_2}{100 \cdot h_{mh}}$ in Nm

V_{g1} = pump displacement per rev. 1st pump in cm^3

V_{g2} = pump displacement per rev. 2nd pump in cm^3

Dp_1 = differential pressure 1st pump in bar

Dp_2 = differential pressure 2nd pump in bar

h_{mh} = mechanical-hydraulic efficiency

