



## Axial Piston Variable Pump A11VO

### Data sheet

Series 1  
Size NG40 to 260  
Nominal pressure 350 bar  
Maximum pressure 400 bar  
Open circuit



### Features

- Variable axial piston pump of swashplate design for hydrostatic drives in open circuit hydraulic system.
- Designed primarily for use in mobile applications.
- The pump operates under self-priming conditions, with tank pressurization, or with an optional built-in charge pump (impeller).
- A comprehensive range of control options is available matching any application requirement.
- Power control option is externally adjustable, even when the pump is running.
- The through drive is suitable for adding gear pumps and axial piston pumps up to the same, i.e. 100% through drive.
- The output flow is proportional to the drive speed and infinitely variable between  $q_{V \max}$  and  $q_{V \min} = 0$ .

## Ordering Code / Standard Program

A11V		O		/	1		-	N									
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16		

### Axial piston unit

01	Swashplate design, variable, nominal pressure 350 bar, maximum pressure 400 bar	A11V
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### Charge pump(impeller)

02	without charge pump (no code)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	with charge pump	-	-	-	-	•	•	•	•	•	•	•	•	•	•	•	L

### Operation

03	Pump, open circuit	O
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### Size

04	≈ Displacement $V_{g \max}$ in $\text{cm}^3$	40	60	75	95	130	145	190	260
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### Control unit

05	Power control	LR				•	•	•	•	•	•	•	•	•	•	•	LR
	with override	cross sensing	negative	LR	C	•	•	•	•	•	•	•	•	•	•	•	LR.C
		high-pressure related	negative	LR3		•	•	•	•	•	•	•	•	•	•	•	LR3
		pilot-pressure related	negative	LG1		•	•	•	•	•	•	•	•	•	•	•	LG1
			positive	LG2		•	•	•	•	•	•	•	•	•	•	•	LG2
		electric	U = 12 V	negative	LE1		○	○	○	•	•	•	•	•	•	•	LE1
			U = 24 V	negative	LE2		○	•	•	•	•	•	•	•	•	•	LE2
		with pressure cut-off			D		•	•	•	•	•	•	•	•	•	•	L.D.
			hydraulic, 2-stage		E		•	•	•	•	•	•	•	•	•	•	L.E.
			hydraulic, remote controlled			G	•	•	•	•	•	•	•	•	•	•	L.G.
		with load sensing				S	•	•	•	•	•	•	•	•	•	•	L.S
			electric, prop. override, 24 V			S2	○	○	○	•	•	•	•	•	•	•	L.S2
			hydraulic, prop. override			S5	○	○	○	•	•	•	•	•	•	•	L.S5
		with stroke limiter	negative	$\Delta p = 25 \text{ bar}$		H1	•	•	•	•	•	•	•	•	•	•	L.H1
			characteristic	$\Delta p = 10 \text{ bar}$		H5	•	•	•	•	•	•	•	•	•	•	L.H5
			positive	$\Delta p = 25 \text{ bar}$		H2	•	•	•	•	•	•	•	•	•	•	L.H2
			characteristic	$\Delta p = 10 \text{ bar}$		H6	•	•	•	•	•	•	•	•	•	•	L.H6
				U = 12 V		U1	•	•	•	•	•	•	•	•	•	•	L.U1
				U = 24 V		U2	•	•	•	•	•	•	•	•	•	•	L.U2
		Pressure control			DR		•	•	•	•	•	•	•	•	•	•	DR
			with load sensing		DRS		•	•	•	•	•	•	•	•	•	•	DRS
			remote controlled		DRG		•	•	•	•	•	•	•	•	•	•	DRG
			for parallel operation		DRL		•	•	•	•	•	•	•	•	•	•	DRL
		Hydraulic control,		$\Delta p = 10 \text{ bar}$	HD1		•	•	•	•	•	•	•	•	•	•	HD1
		pilot-pressure related	(positive characteristic)	$\Delta p = 25 \text{ bar}$	HD2		•	•	•	•	•	•	•	•	•	•	HD2
		with pressure cut-off		D		•	•	•	•	•	•	•	•	•	•	HD.D	
		with pressure cut-off, remote controlled		G		○	•	○	○	○	○	○	○	○	○	HD.G	
	Electric control		U = 12 V	EP1		•	•	•	•	•	•	•	•	•	•	EP1	
	with	(positive characteristic)	U = 24 V	EP2		•	•	•	•	•	•	•	•	•	•	EP2	
	proportional solenoid	with pressure cut-off		D		•	•	•	•	•	•	•	•	•	•	EP.D	
		with pressure cut-off, remote control		G		•	•	•	•	•	•	•	•	•	•	EP.G	

In case of controls with several additional functions, observe the order of the columns, only one option per column is possible (e.g. LRDCH2). The following combinations are not available for the power control: LRDS2, LRDS5, L...GS, L...GS2, L...GS5, L...EC and the combination L...DG in conjunction with the stroke limiters H1, H2, H5, H6, U1 and U2.

## Ordering Code / Standard Program

A11V		O	/	1			-	N									
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16		

### Series

06																	1
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### Index

07																	0
																	1

### Direction of rotation

08	Viewed from shaft end	clockwise															R
		counter-clockwise															

### Seals

09	NBR (nitrile-caoutchouc), shaft seal ring in FKM (fluor-caoutchouc)																N
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### Shaft end (see page 8 for permissible input and through grve torques)

10	Splined shaft DIN 5480 for single and combination pump																Z
	Parallel keyed shaft DIN 6885																P
	Splined shaft ANSI B92.1a-1976 for single pump																S
	Splined shaft ANSI B92.1a-1976 for combination pump																T

### Mounting flange

11	SAE J744 - 2-hole																C
	SAE J744 - 4-hole																D
	SAE J617 <sup>2)</sup> (SAE 3)																G

### Service line ports

12	Pressure and suction port SAE, at side, opposite side (with metric fastening threads)																12

### Through drive (see page 58 for attachments)

13	Flange SAE J744 <sup>3)</sup>	Coupler for splined shaft																	
	-	-															N00		
	82-2 (A)	5/8in	9T 16/32DP (A)															K01	
			3/4in	11T 16/32DP (A-B)														K52	
	101-2 (B)	7/8in	13T 16/32DP (B)															K02	
			1 in	15T 16/32DP (B-B)														K04	
			W35	2x30x16x9g														K79	
	127-2 (C) <sup>4)</sup>	1 1/4in	14T 12/24DP (C)															K07	
			1 1/2in	17T 12/24DP (C-C)														K24	
			W30	2x30x14x9g														K80	
			W35	2x30x16x9g															K61
	152-4 (D)	1 1/4in	14T 12/24DP (C)															K86	
			1 3/4in	13T 8/16DP (D)														K17	
			W40	2x30x18x9g															K81
			W45	2x30x21x9g															K82
			W50	2x30x24x9g															
	165-4 (E)	1 3/4in	13T 8/16DP (D)															K72	
			W50	2x30x24x9g															K84
			W60	2x30x28x9g															

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### Swivel angle indicator (page 59)

14	without swivel angle indicator (no symbol)																
	with optical swivel angle indicator																V
	with electric swivel angle sensor																R

### Connector for solenoids (page 60)

15	DEUTSCH connector molded, 2-pin - without suppressor diode																P

### Standard / special version

16	Standard version	without symbol															
		combined with attachment part or attachment pump															-K
	Special version																-S
		combined with attachment part or attachment pump															-SK

<sup>1)</sup> S-shaft suitable for combination pump!

<sup>2)</sup> To fit the flywheel case of the combustion engine

<sup>3)</sup> 2  $\triangle$  2-hole; 4  $\triangle$  4-hole

<sup>4)</sup> Size 190 and 260 with 2 + 4-hole flange

● = available

○ = on request

-- = not available

□ = preferred program

## Technical Data

**Table of values** (theoretical values, without efficiency and tolerances; values rounded)

Size	A11VO	40	60	75	95	130	190	190	260
Displacement	$V_{g \max}$	42	58.5	74	93.5	130	190	190	260
	$V_{g \min}$	0	0	0	0	0	0	0	0
Speed									
maximum at $V_{g \max}^{1)}$	$n_{\max}$	3000	2700	2550	2350	2100	2200	2100	1800
maximum at $V_{g \leq V_{g \max}^{1)}$	$n_{\max 1}$	3500	3250	3000	2780	2500	2500	2100	2300
Flow at $n_{\max}$ and $V_{g \max}$	$q_{v \max}$	126	158	289	220	273	319	405	468
Power at $q_{v \max}$ and $\Delta p = 350$ bar	$P_{\max}$	74	92	110	128	159	186	236	273
Torque at $V_{g \max}$ and $\Delta p = 350$ bar	$T_{\max}$	234	326	412	521	724	808	1075	1448
Rotary stiffness	Z shaft	88894	102440	145836	199601	302495	302495	346190	686465
	P shaft	87467	107888	143104	196435	312403	312403	383292	653835
	S shaft	58347	86308	101921	173704	236861	236861	259773	352009
	T shaft	74476	102440	12560	–	–	–	301928	567115
Moment of inertia for rotary group	$J_{rW}$	0.0048	0.0082	0.0115	0.0173	0.0318	0.0341	0.055	0.0878
Angular acceleration, max <sup>4)</sup>	$\alpha$	22000	17500	15000	13000	10500	9000	6800	4800
Filling capacity	V	1.1	1.35	1.85	2.1	2.9	2.9	3.8	4.6
Mass (approx.)	m	32	40	45	53	66	76	95	125
Size	A11VLO (with charge pump)	130	145	190	260				
Displacement	$V_{g \max}$	130	145	193	260				
	$V_{g \min}$	0	0	0	0				
Speed									
maximum at $V_{g \max}^{2)}$	$n_{\max}$	2500	2500	2500	2300				
maximum at $V_{g \leq V_{g \max}^{3)}$	$n_{\max 1}$	2500	2500	2500	2300				
Flow at $n_{\max}$ and $V_{g \max}$	$q_{v \max}$	325	363	483	598				
Power at $q_{v \max}$ and $\Delta p = 350$ bar	$P_{\max}$	190	211	281	349				
Torque at $V_{g \max}$ and $\Delta p = 350$ bar	$T_{\max}$	724	808	1075	1448				
Rotary stiffness	Z shaft	302495	302495	346190	686465				
	P shaft	312403	312403	383292	653835				
	S shaft	236861	236861	259773	352009				
	T shaft	–	–	301928	567115				
Moment of inertia for rotary group	$J_{rR}$	0.0337	0.036	0.0577	0.0895				
Angular acceleration, max <sup>4)</sup>	$\alpha$	10500	9000	6800	4800				
Filling capacity	V	2.9	2.9	3.8	4.6				
Mass (approx.)	m	72	73	104	138				

- 1) The values apply at absolute pressure ( $p_{abs}$ ) 1 bar at the suction port S and mineral hydraulic fluid.
- 2) The values apply at absolute pressure ( $p_{abs}$ ) of at least 0.8 bar at the suction port S and mineral hydraulic fluid.
- 3) The values apply at  $V_{g \leq V_{g \max}}$  or in case of an increase in the inlet pressure  $p_{abs}$  at the suction port S (see diagram page 6)
- 4) – The area of validity is situated between 0 and the maximum permissible speed.  
It applies for external stimuli (e.g. engine 2-8 times rotary frequency, cardan shaft twice the rotary frequency).  
– The limit value applies for a single pump only.  
– The loading on the connection parts has to be considered.

### Caution:

Exceeding the permissible limit values could cause a loss of function, reduced service life or the destruction of the axial piston unit. The permissible values can be determined by calculation.

## Technical Data

### Permissible radial and axial loading on drive shaft

The values stated are maximum data and not permissible for continuous operation

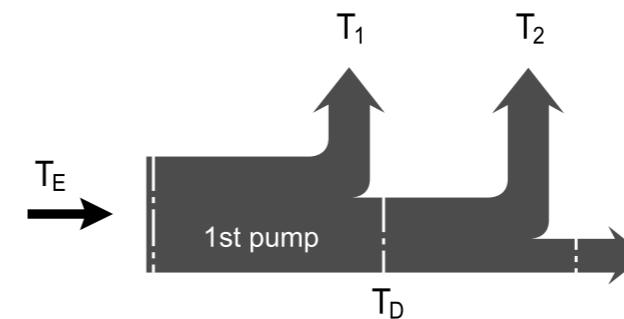
Size	Size	40	60	75	95	130	145	190	260	
Radial force, max. at distance a, b, c (from shaft collar)	$F_{q \max}$	N	3600	5000	6300	8000	11000	11000	16925	22000
	a	mm	17.5	17.5	20	20	22.5	22.5	26	29
	$F_{q \max}$	N	2891	4046	4950	6334	8594	8594	13225	16809
	B	mm	30	30	35	35	40	40	46	50
	$F_{q \max}$	N	2416	3398	4077	5242	7051	7051	108500	13600
	c	mm	42.5	42.5	50	50	57.5	57.5	66	71
Axial force, max.	$\pm F_{ax \max}$	N	1500	2200	2750	3500	4800	4800	6000	4150

### Permissible input and through drive torques

Size	Size	40	60	75	95	130	145	190	260	
Torque (at $V_{g \max}$ and $\Delta p = 350$ bar <sup>1)</sup> )	$T_{\max}$	Nm	234	326	412	521	724	808	1075	1448
Input torque, max <sup>2)</sup>										
at shaft end P Shaft key DN 6885	$T_{E \text{ perm.}}$	Nm	468	648	824	1044	1448	1448	2226	2787
at Z shaft end DIN 5480	$T_{E \text{ perm.}}$	Nm	912	912	1460	2190	3140	3140	3140	5780
at S shaft end ANSI B92.1a-1976 (SAE J744)	$T_{E \text{ perm.}}$	Nm	314	602	602	1640	1640	1640	1640	1640
at T shaft end ANSI B92.1a-1976 (SAE J744)	$T_{E \text{ perm.}}$	Nm	602	970	970	–	–	–	2670	4070
Through drive torque, max <sup>3)</sup>	$T_{D \text{ perm.}}$	Nm	314	521	660	822	1110	1110	1760	2065

- 1) Efficiency not considered
- 2) For drive shafts with no radial force
- 3) Observe max. input torque for shaft S!

### Torque distribution



### Determining the nominal value

$$\text{Flow } q_v = \frac{V_g \cdot n \cdot \eta_v}{1000} \quad \text{l/min}$$

$$\text{Torque } T = \frac{V_g \cdot \Delta p}{20 \cdot \pi \cdot \eta_{mh}} \quad \text{Nm}$$

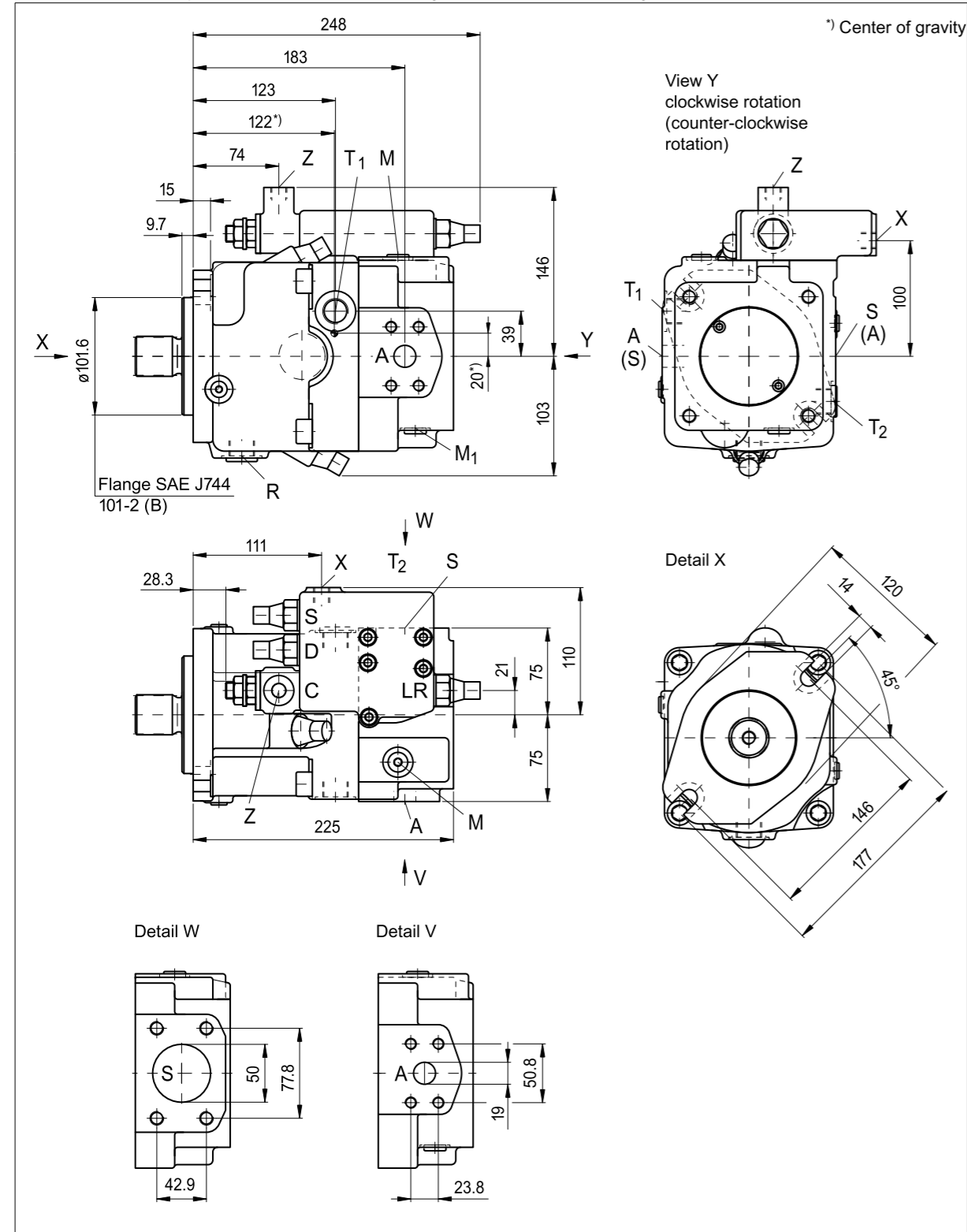
$$\text{Power } P = \frac{2 \pi \cdot T \cdot n}{60,000} = \frac{q_v \cdot \Delta p}{600 \cdot \eta_t} \quad \text{kW}$$

- $V_g$  = Displacement per revolution in  $\text{cm}^3$   
 $\Delta p$  = Differential pressure in bar  
 $n$  = Speed in rpm  
 $\eta_v$  = Volumetric efficiency  
 $\eta_{mh}$  = Mechanical-hydraulic efficiency  
 $\eta_t$  = Overall efficiency ( $\eta_t = \eta_v \cdot \eta_{mh}$ )

## Dimensions, Size 40

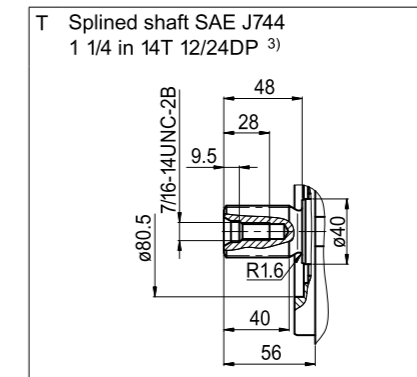
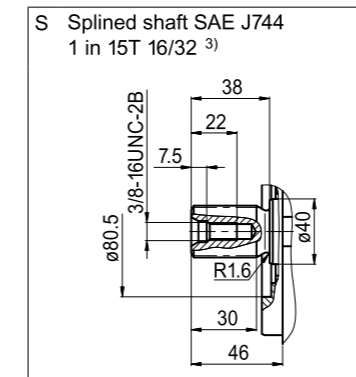
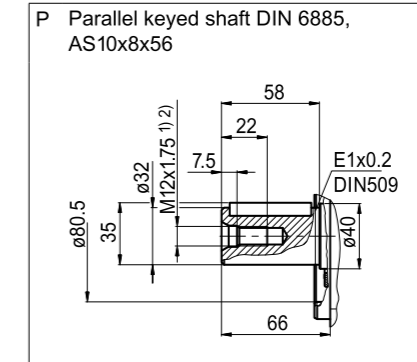
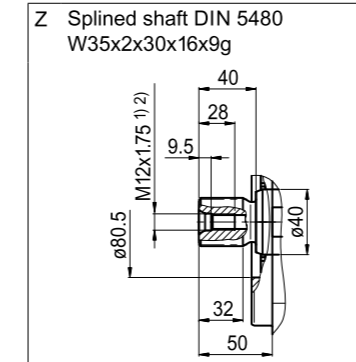
### LRDCS

Power control LR with pressure cut-off D, cross sensing control C and load sensing control S



## Dimensions, Size 40

### Shaft ends



### Ports

Designation	Function	Standard	Size <sup>2)</sup>	Max. pressure (bar) <sup>4)</sup>	State
A	Service line port Fixing thread	SAE J518 DIN 13	3/4 in M10x1.5; 16 deep	400	O
S	Suction port Fixing thread	SAE J518 DIN 13	2 in M12x1.75; 17 deep	30	O
T <sub>1</sub> , T <sub>2</sub>	Tank port	DIN 3852	M22x1.5; 14 deep	10	5)
R	Air bleed	DIN 3852	M22x1.5; 14 deep	10	X
M <sub>1</sub>	Measurement point, positioning chamber	DIN 3852	M12x1.5; 12 deep	400	X
M	Measurement point, service line port	DIN 3852	M12x1.5; 12 deep	400	X
X	Pilot pressure port in version with load sensing (S) and remote controlled pressure cut-off (G)	DIN 3852	M14x1.5; 12 deep	400	O
Y	Pilot pressure port in version with stroke limiter (H...), 2-stage pressure cut-off (E) and HD	DIN 3852	M14x1.5; 12 deep	40	O
Z	Pilot pressure port in version with cross sensing (C) and power override (LR3) power override (LG1)	DIN 3852	M14x1.5; 12 deep	400 40	O
G	Port for control pressure (controller) in version with stroke limiter (H... U2), HD and EP with screw union GE10 - PLM (otherwise closed)	DIN 3852	M14x1.5; 12 deep	40	O

<sup>1)</sup> Center bore according to DIN 332 (thread acc. to DIN 13)

<sup>2)</sup> For max. tightening torque, please refer to general notes on page 64

<sup>3)</sup> ANSI B92.1a-1976, 30° pressure angle, flat root, side fit, tolerance class 5

<sup>4)</sup> Depending on adjustment data and operating pressure

<sup>5)</sup> Depending on installation position, T<sub>1</sub> or T<sub>2</sub> must be connected (see also page 61)

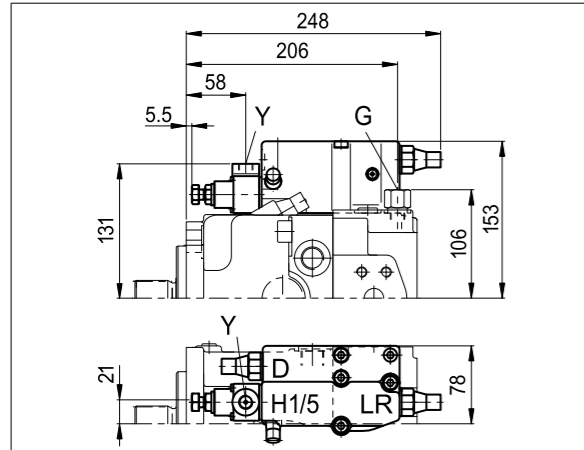
O = Open, must be connected (closed on delivery)

X = Closed (in normal operation)

## Dimensions, Size 40

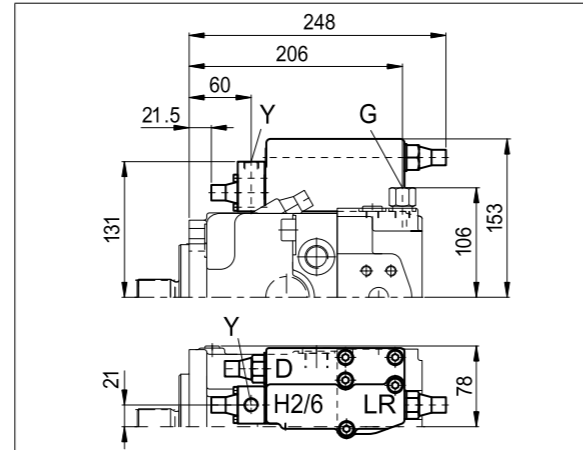
### LRDH1/LRDH5

Power control with pressure cut-off and hydraulic stroke limiter (negative characteristic)



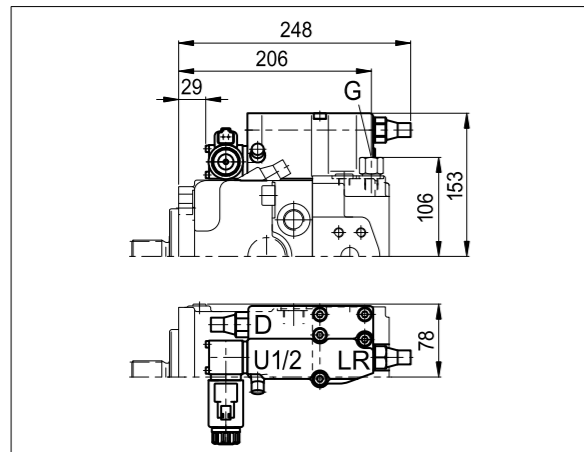
### LRDH2/LRDH6

Power control with pressure cut-off and hydraulic stroke limiter (positive characteristic)



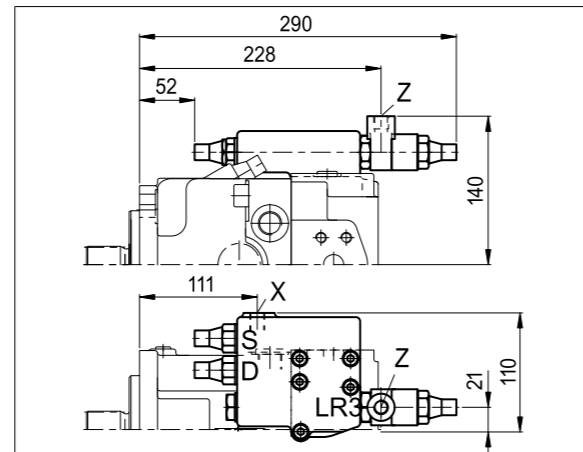
### LRDU1/LRDU2

Power control with pressure cut-off and electric stroke limiter (positive characteristic)



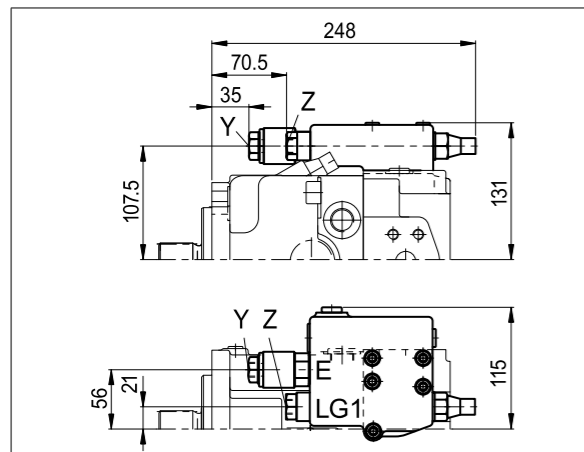
### LR3DS

Power control with high-pressure related override, pressure cut-off and load sensing control



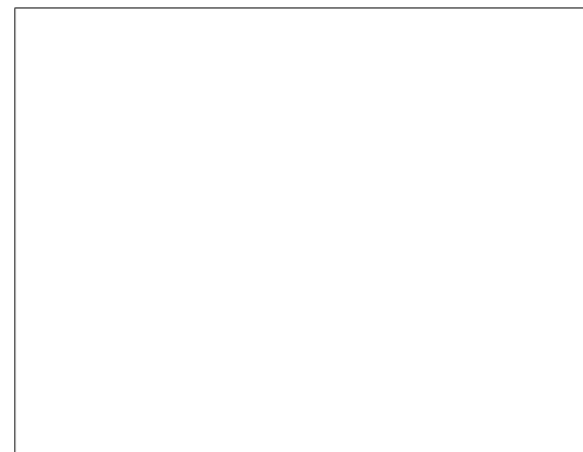
### LG1E

Power control with pilot-pressure related override (negative) and 2-stage pressure cut-off



### LG2E

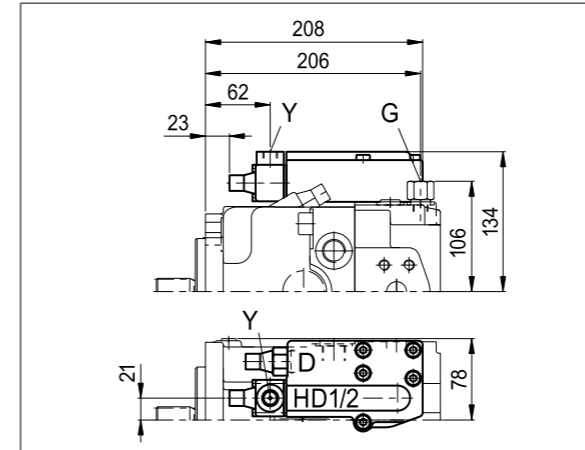
Power control with pilot-pressure related override (positive) and 2-stage pressure cut-off



## Dimensions, Size 40

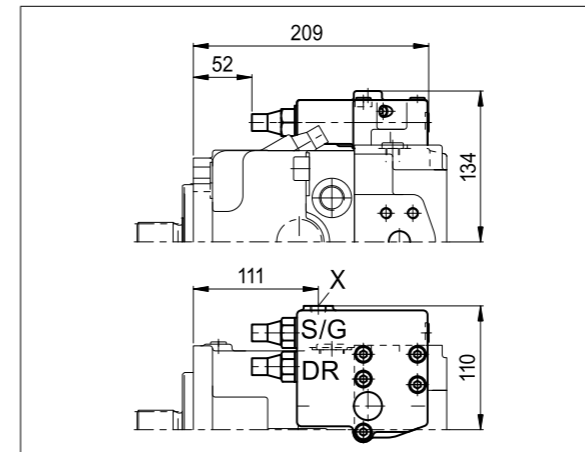
### HD1D/HD2D

Hydraulic control, pilot-pressure related with pressure cut-off



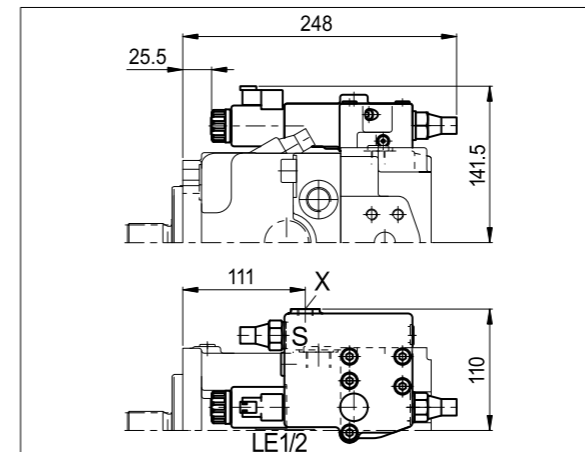
### DRS/DRG

Pressure control with load sensing control  
Pressure control remote controlled



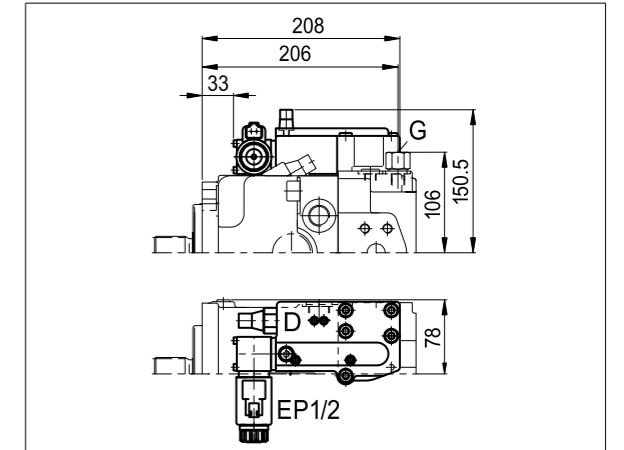
### LE1S/LE2S

Power control with electric override (negative) and load sensing control



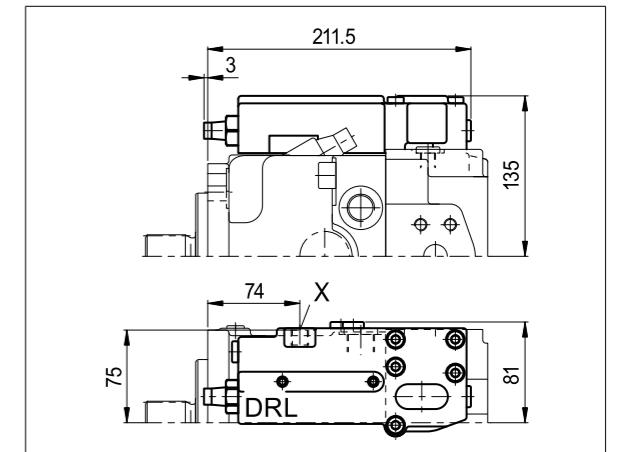
### EP1D/EP2D

Electric control with proportional solenoid and pressure cut-off



### DRL

Pressure control for parallel operation



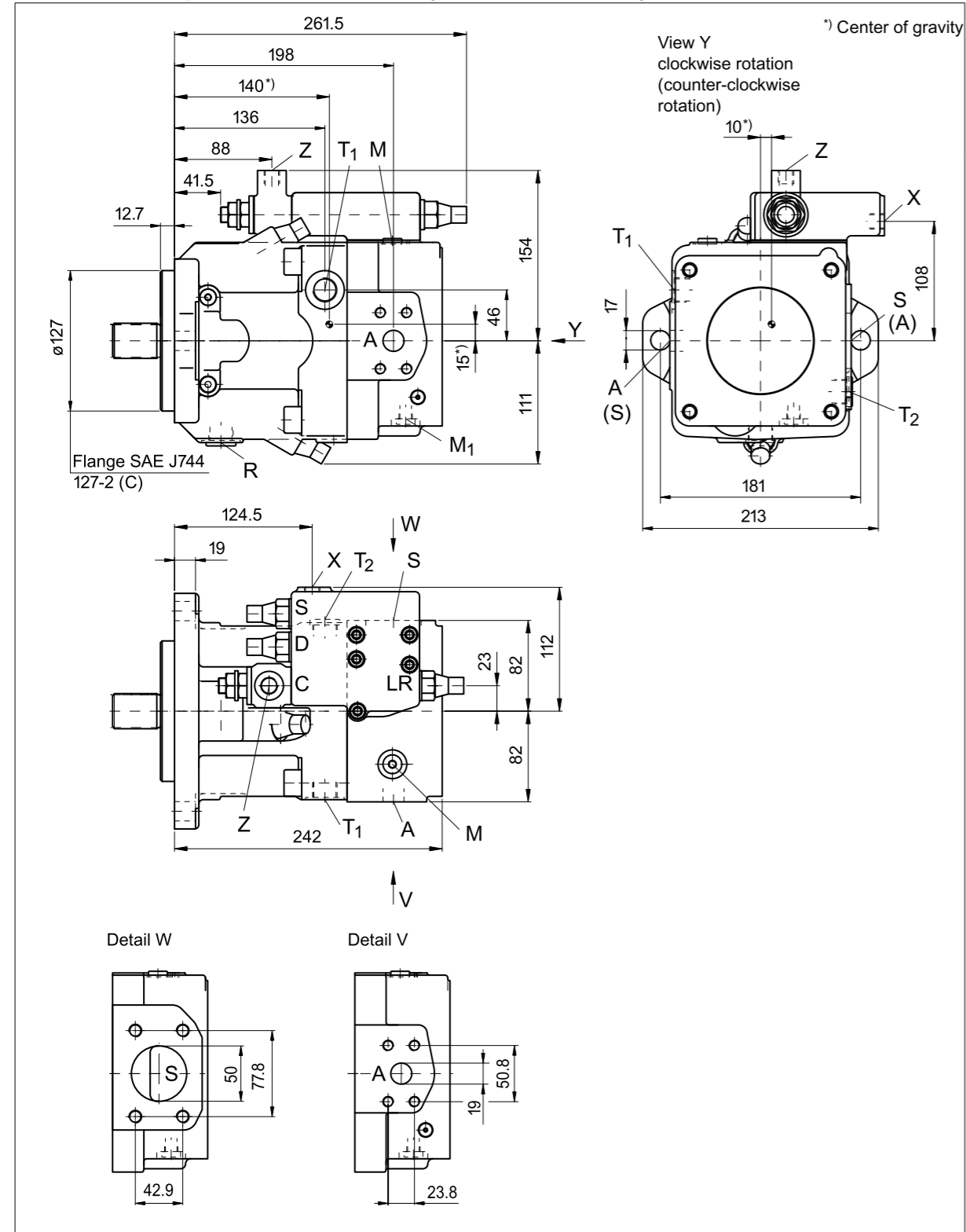
### LE2S2/LE1S5/LE2S5

Power control with electric override (negative) and load sensing control, override

## Dimensions, Size 60

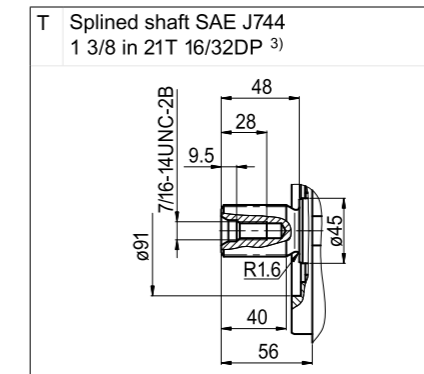
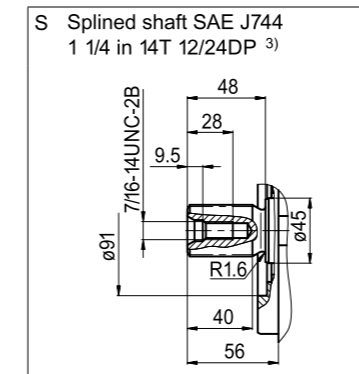
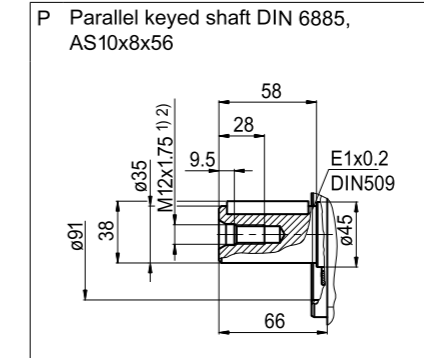
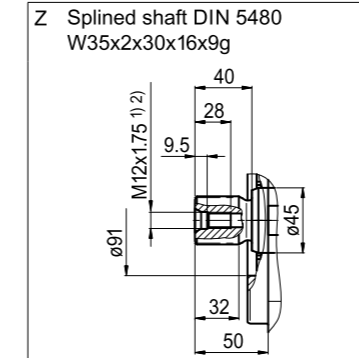
### LRDCS

Power control LR with pressure cut-off D, cross sensing control C and load sensing control S



## Dimensions, Size 60

### Shaft ends



### Ports

Designation	Function	Standard	Size <sup>2)</sup>	Max. pressure (bar) <sup>4)</sup>	State
A	Service line port Fixing thread	SAE J518 DIN 13	3/4 in M10x1.5; 17 deep	400	O
S	Suction port Fixing thread	SAE J518 DIN 13	2 in M12x1.75; 20 deep	30	O
T <sub>1</sub> , T <sub>2</sub>	Tank port	DIN 3852	M22x1.5; 14 deep	10	<sup>5)</sup>
R	Air bleed	DIN 3852	M22x1.5; 14 deep	10	X
M <sub>1</sub>	Measurement point, positioning chamber	DIN 3852	M12x1.5; 12 deep	400	X
M	Measurement point, service line port	DIN 3852	M12x1.5; 12 deep	400	X
X	Pilot pressure port in version with load sensing (S) and remote controlled pressure cut-off (G)	DIN 3852	M14x1.5; 12 deep	400	O
Y	Pilot pressure port in version with stroke limiter (H...), 2-stage pressure cut-off (E) and HD	DIN 3852	M14x1.5; 12 deep	40	O
Z	Pilot pressure port in version with cross sensing (C) and power override (LR3) power override (LG1)	DIN 3852	M14x1.5; 12 deep	400 40	O
G	Port for control pressure (controller) in version with stroke limiter (H... U2), HD and EP with screw union GE10 - PLM (otherwise closed)	DIN 3852	M14x1.5; 12 deep	40	O

<sup>1)</sup> Center bore according to DIN 332 (thread acc. to DIN 13)

<sup>2)</sup> For max. tightening torque, please refer to general notes on page 64

<sup>3)</sup> ANSI B92.1a-1976, 30° pressure angle, flat root, side fit, tolerance class 5

<sup>4)</sup> Depending on adjustment data and operating pressure

<sup>5)</sup> Depending on installation position, T1 or T2 must be connected (see also page 61)

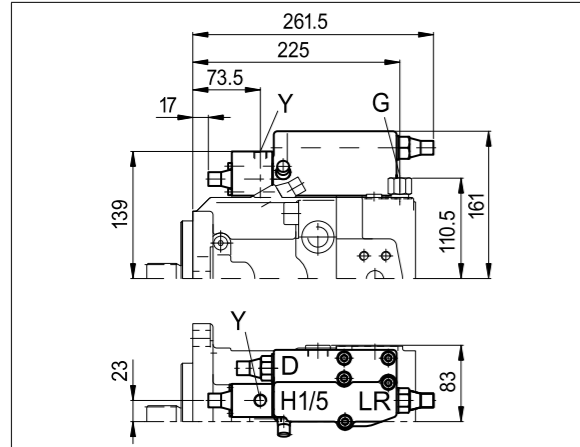
O = Open, must be connected (closed on delivery)

X = Closed (in normal operation)

## Dimensions, Size 60

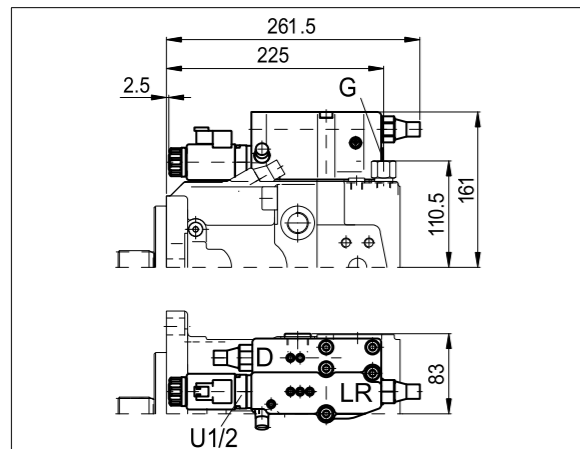
### LRDH1/LRDH5

Power control with pressure cut-off and hydraulic stroke limiter (negative characteristic)



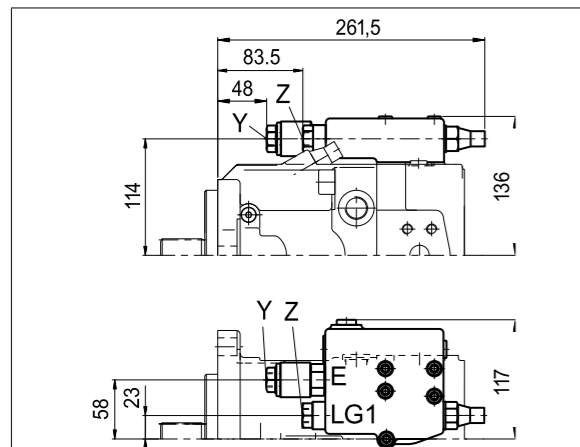
### LRDU1/LRDU2

Power control with pressure cut-off and electric stroke limiter (positive characteristic)



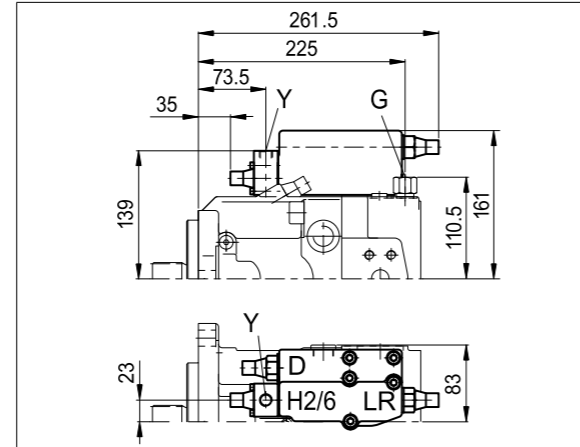
### LG1E

Power control with pilot-pressure related override (negative) and 2-stage pressure cut-off



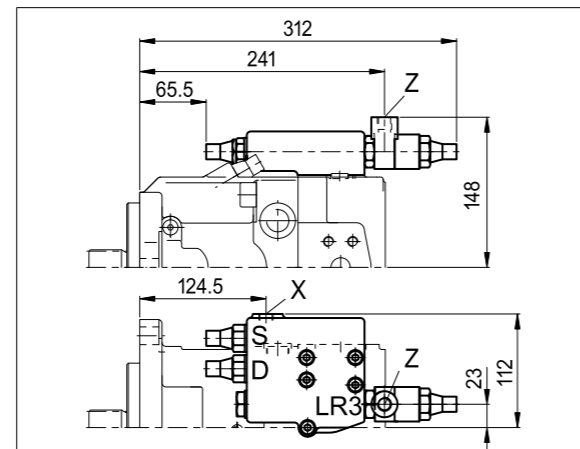
### LRDH2/LRDH6

Power control with pressure cut-off and hydraulic stroke limiter (positive characteristic)



### LR3DS

Power control with high-pressure related override, pressure cut-off and load sensing control



### LG2E

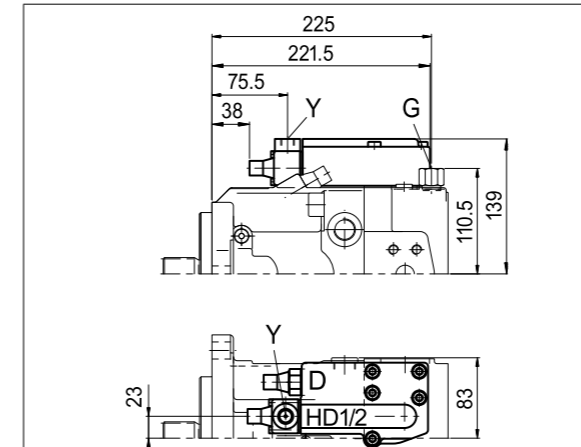
Power control with pilot-pressure related override (positive) and 2-stage pressure cut-off



## Dimensions, Size 60

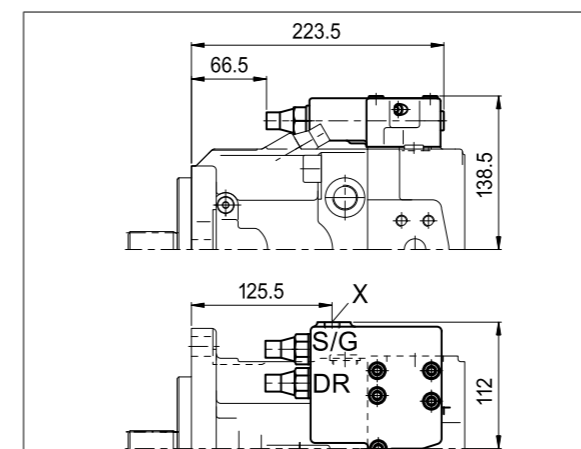
### HD1D/HD2D

Hydraulic control, pilot-pressure related with pressure cut-off



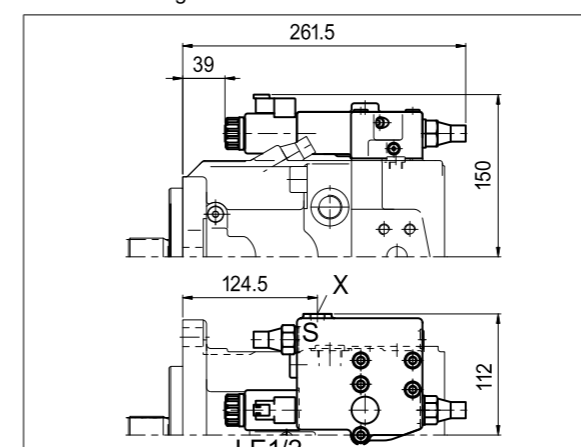
### DRS/DRG

Pressure control with load sensing control  
Pressure control remote controlled



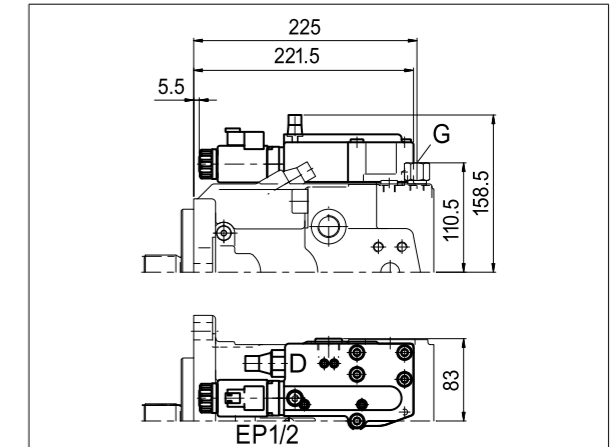
### LE1S/LE2S

Power control with electric override (negative) and load sensing control



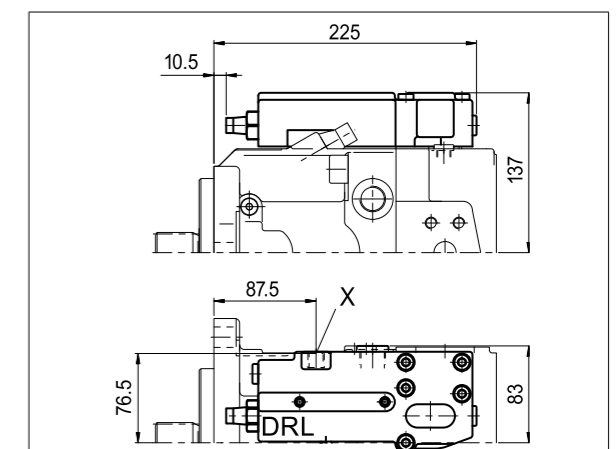
### EP1D/EP2D

Electric control with proportional solenoid and pressure cut-off



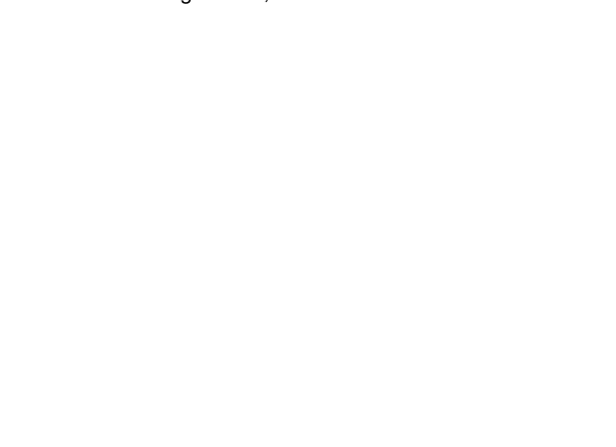
### DRL

Pressure control for parallel operation



### LE2S2/LE1S5/LE2S5

Power control with electric override (negative) and load sensing control, override

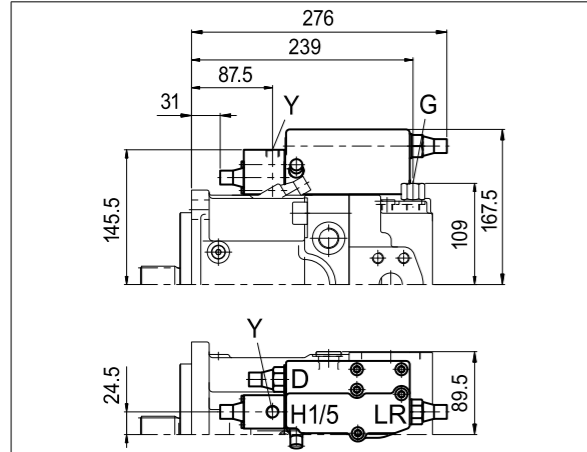




## Dimensions, Size 75

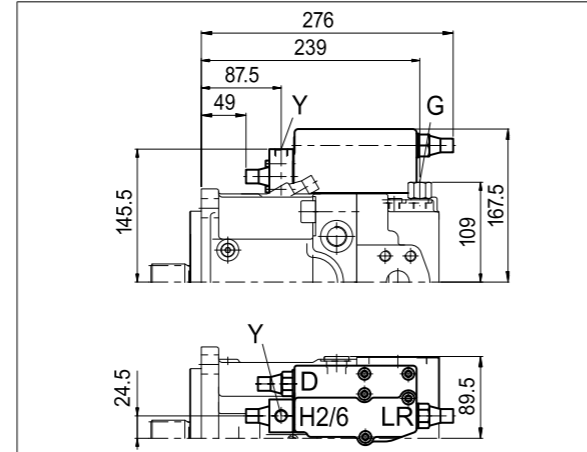
### LRDH1/LRDH5

Power control with pressure cut-off and hydraulic stroke limiter (negative characteristic)



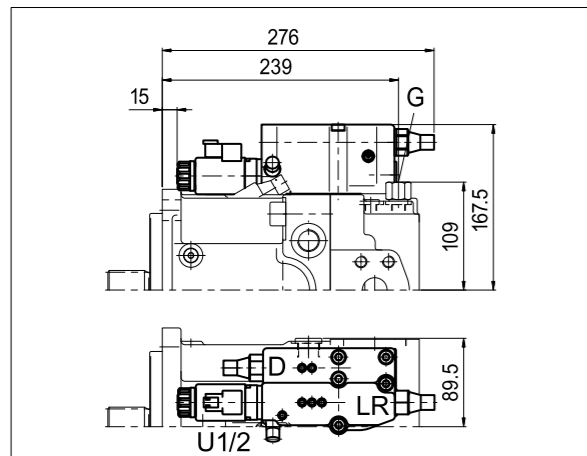
### LRDH2/LRDH6

Power control with pressure cut-off and hydraulic stroke limiter (positive characteristic)



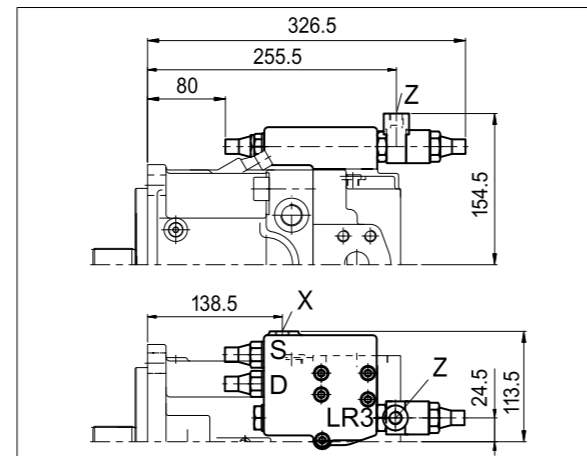
### LRDU1/LRDU2

Power control with pressure cut-off and electric stroke limiter (positive characteristic)



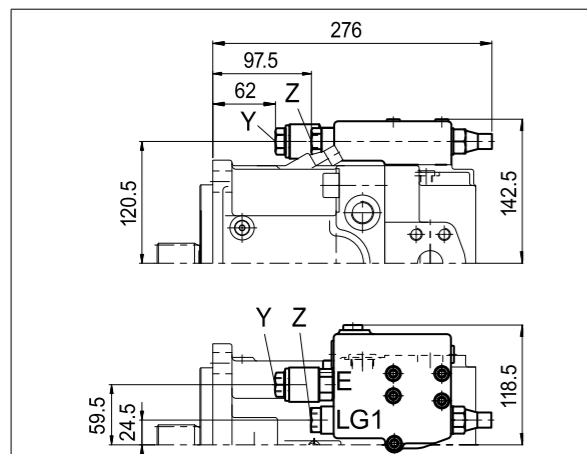
### LR3DS

Pressure control with high-pressure related override, pressure cut-off and load sensing control



### LG1E

Power control with pilot-pressure related override (negative) and 2-stage pressure cut-off



### LG2E

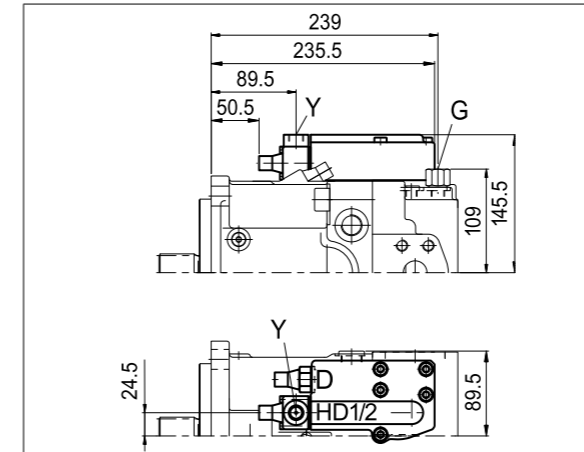
Power control with pilot-pressure related override (positive) and 2-stage pressure cut-off



## Dimensions, Size 75

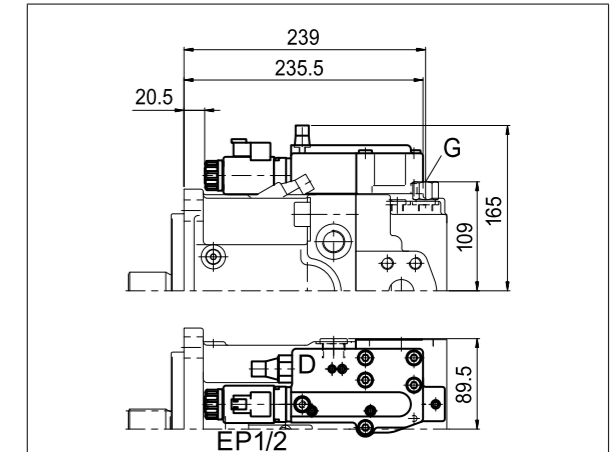
### HD1D/HD2D

Hydraulic control, pilot-pressure related with pressure cut-off



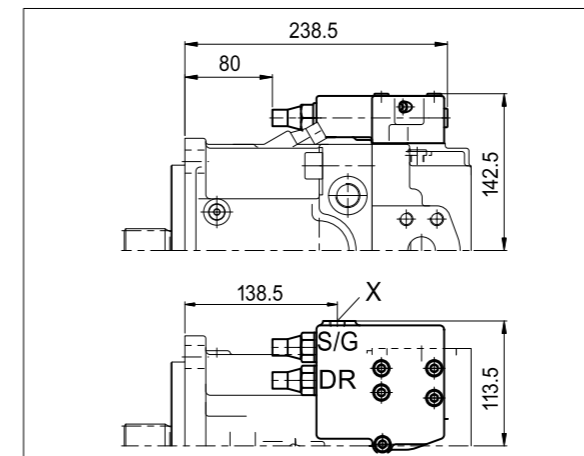
### EP1D/EP2D

Electric control with proportional solenoid and pressure cut-off



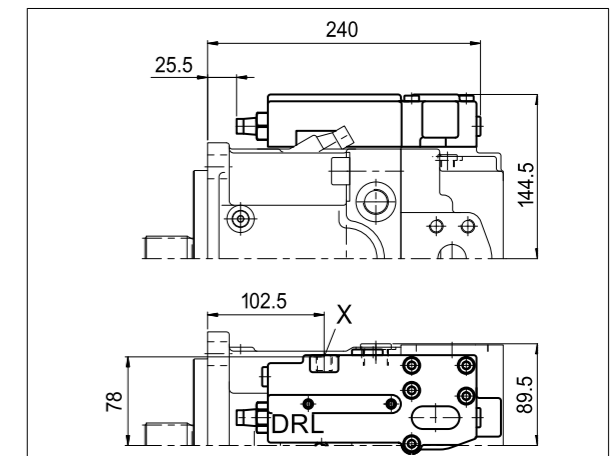
### DRS/DRG

Pressure control with load sensing control  
Pressure control remote controlled



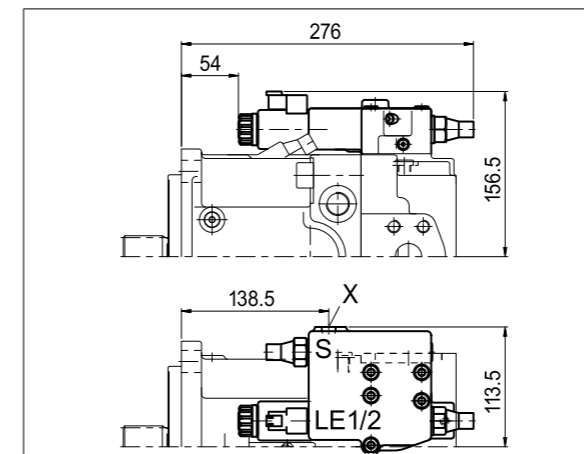
### DRL

Pressure control for parallel operation



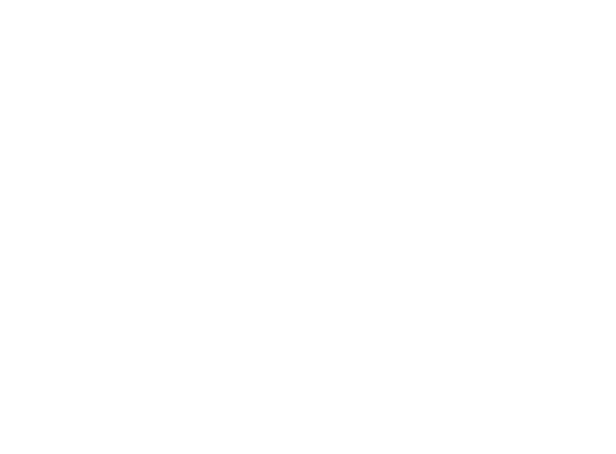
### LE1S/LE2S

Power control with electric override (negative) and load sensing control



### LE2S2/LE1S5/LE2S5

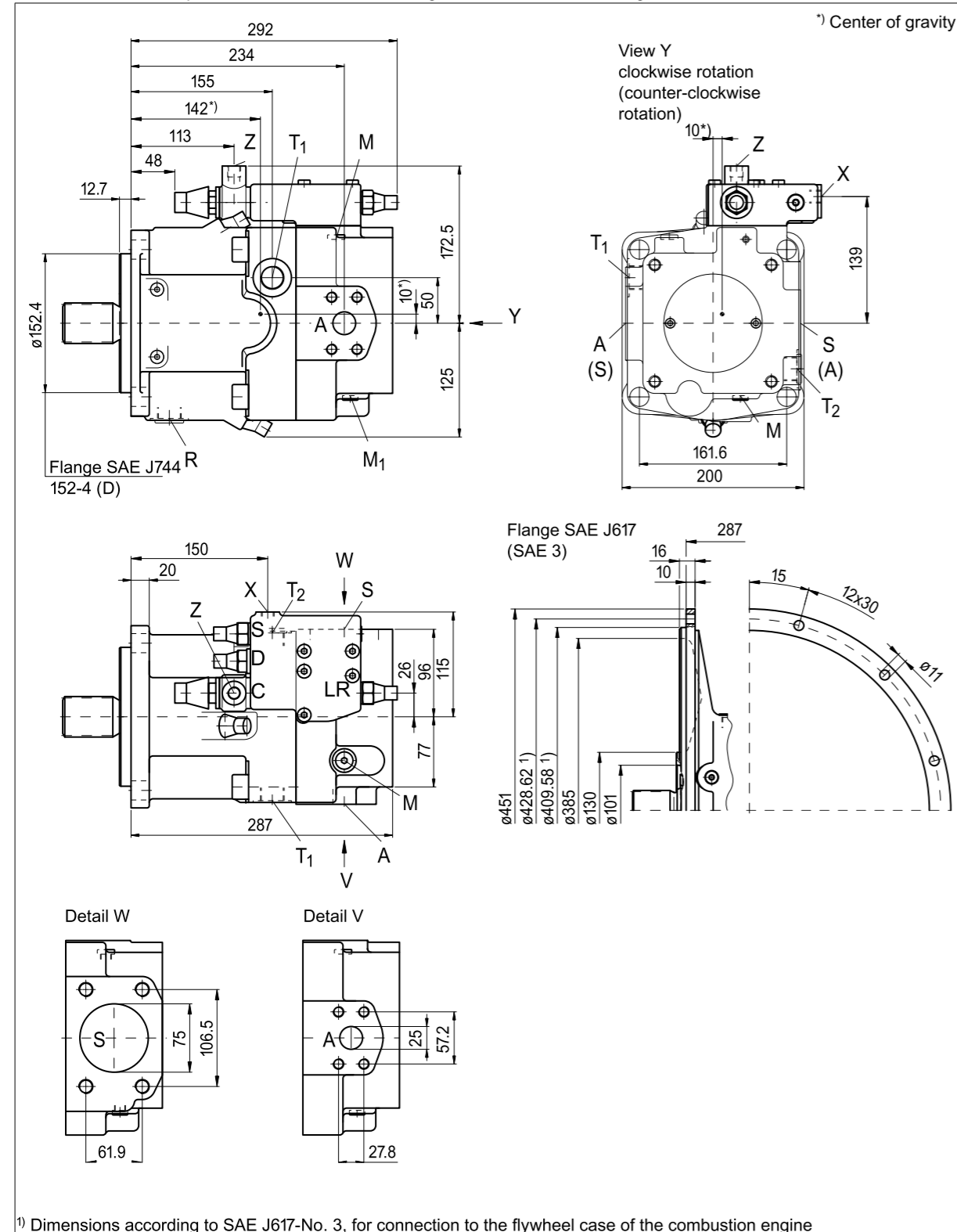
Power control with electric override (negative) and load sensing control, override



## Dimensions, Size 95

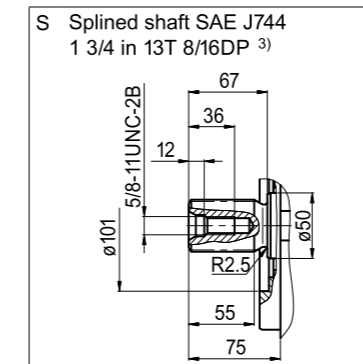
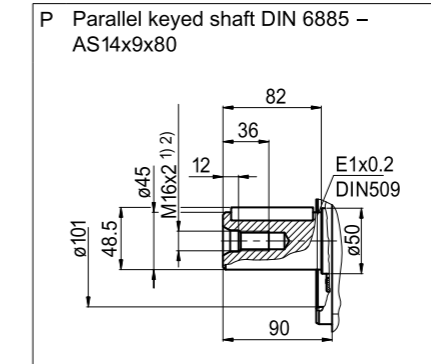
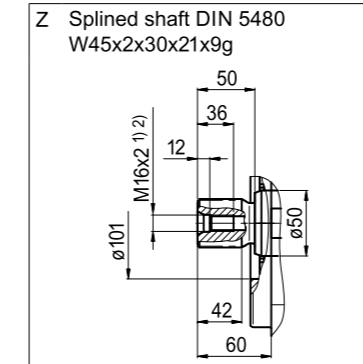
### LRDCS

Power control LR with pressure cut-off D, cross sensing control C and load sensing control S



## Dimensions, Size 95

### Shaft ends



### Ports

Designation	Function	Standard	Size <sup>2)</sup>	Max. pres- sure ( bar ) <sup>4)</sup>	State
A	Service line port Fixing thread	SAE J518 DIN 13	1 in M12x1.75; 17 deep	400	O
S	Suction port Fixing thread	SAE J518 DIN 13	3 in M16x2; 24 deep	30	O
T <sub>1</sub> , T <sub>2</sub>	Tank port	DIN 3852	M26x1.5; 16 deep	10	5)
R	Air bleed	DIN 3852	M26x1.5; 16 deep	10	X
M <sub>1</sub>	Measurement point, positioning chamber	DIN 3852	M12x1.5; 12 deep	400	X
M	Measurement point, service line port	DIN 3852	M12x1.5; 12 deep	400	X
X	Pilot pressure port in version with load sensing (S) and remote controlled pressure cut-off (G)	DIN 3852	M14x1.5 12 deep	400	O
Y	Pilot pressure port in version with stroke limiter (H...), 2-stage pressure cut-off (E) and HD	DIN 3852	M14x1.5; 12 deep	40	O
Z	Pilot pressure port in version with cross sensing (C) and power override (LR3) power override (LG1)	DIN 3852	M14x1.5; 12 deep	400 40	O
G	Port for control pressure (controller) in version with stroke limiter (H... U2), HD and EP with screw union GE10 - PLM (otherwise closed)	DIN 3852	M14x1.5; 12 deep	40	O

1) Center bore according to DIN 332 (thread acc. to DIN 13)

2) For max. tightening torque, please refer to general notes on page 64

3) ANSI B92.1a-1976, 30° pressure angle, flat root, side fit, tolerance class 5

4) Depending on adjustment data and operating pressure

5) Depending on installation position, T1 or T2 must be connected (see also page 61)

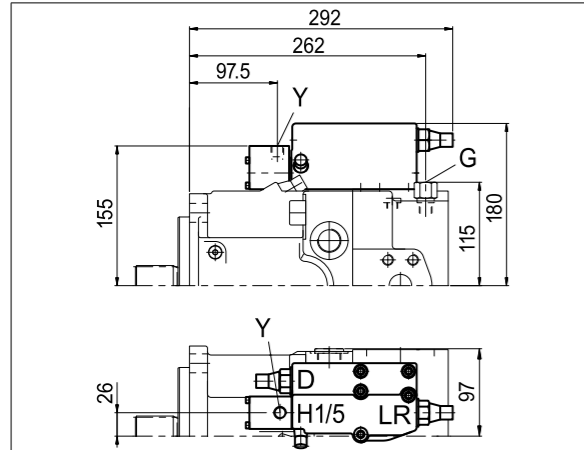
O = Open, must be connected (closed on delivery)

X = Closed (in normal operation)

## Dimensions, Size 95

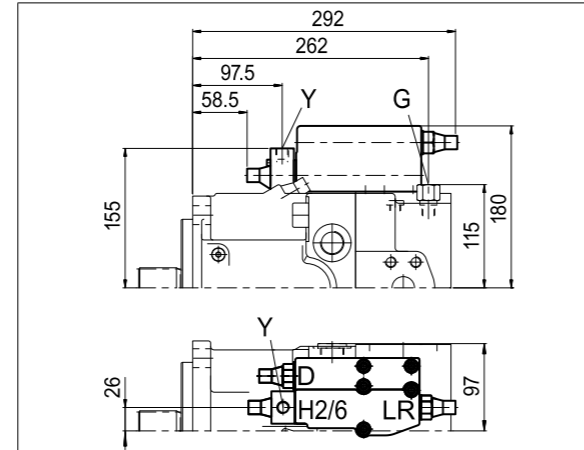
### LRDH1/LRDH5

Power control with pressure cut-off and hydraulic stroke limiter (negative characteristic)



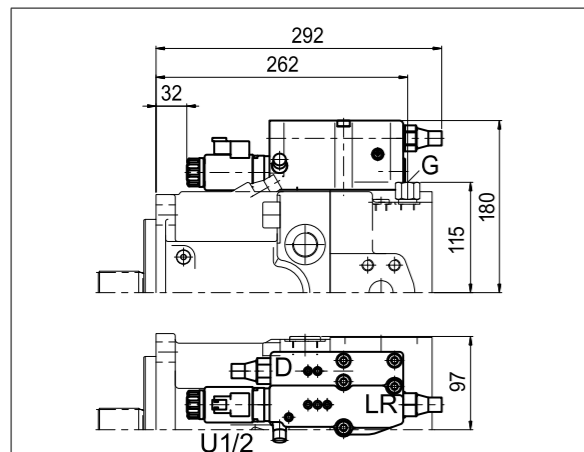
### LRDH2/LRDH6

Power control with pressure cut-off and hydraulic stroke limiter (positive characteristic)



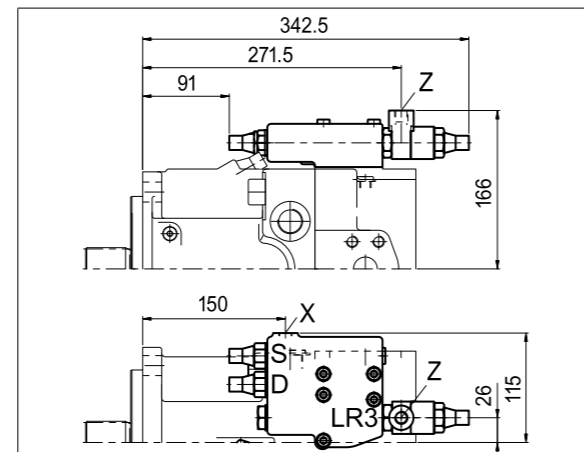
### LRDU1/LRDU2

Power control with pressure cut-off and electric stroke limiter (positive characteristic)



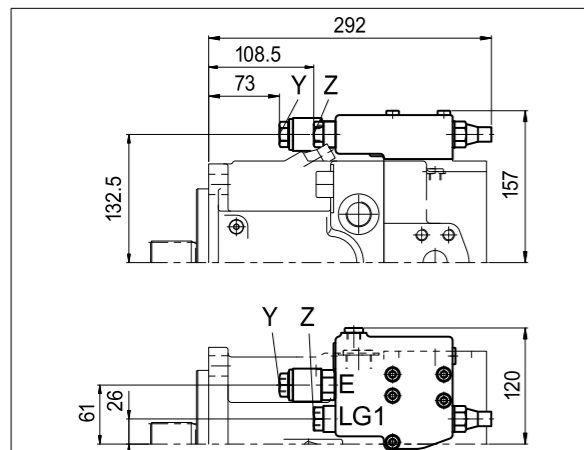
### LR3DS

Power control with high-pressure related override, pressure cut-off and load sensing control



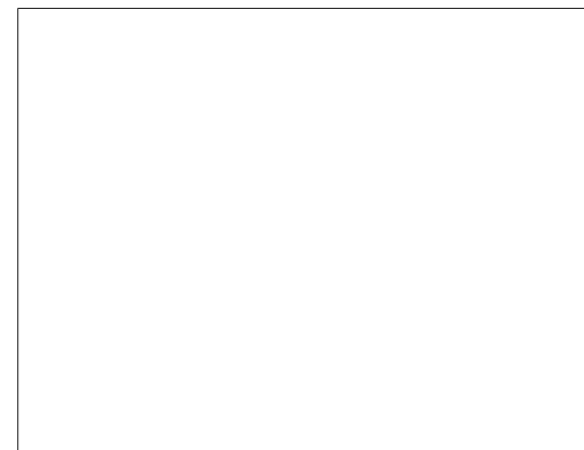
### LG1E

Power control with pilot-pressure related override (negative) and 2-stage pressure cut-off



### LG2E

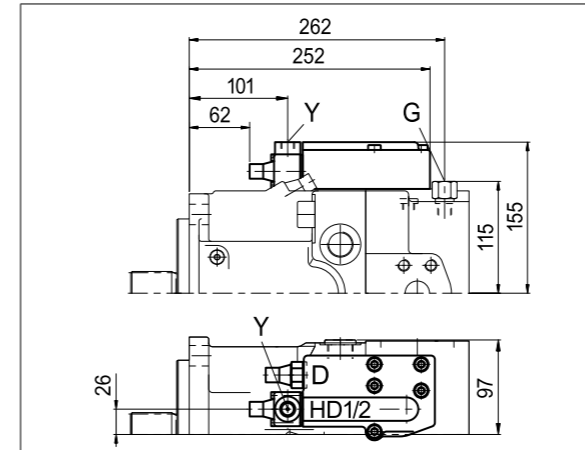
Power control with pilot-pressure related override (positive) and 2-stage pressure cut-off



## Dimensions, Size 95

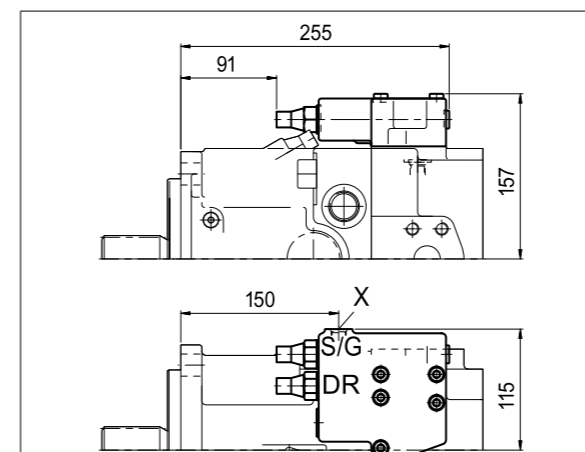
### HD1D/HD2D

Hydraulic control, pilot-pressure related with pressure cut-off



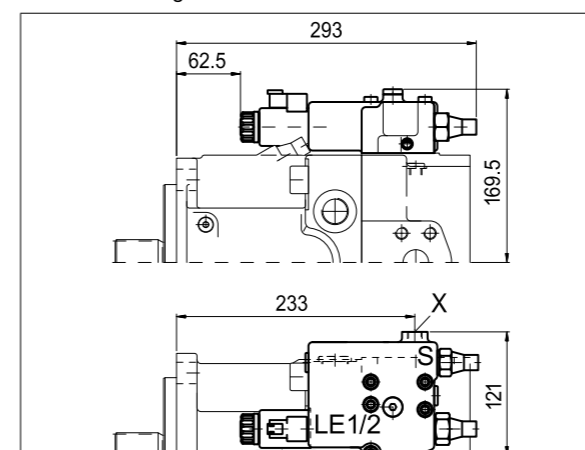
### DRS/DRG

Pressure control with load sensing control  
Pressure control remote controlled



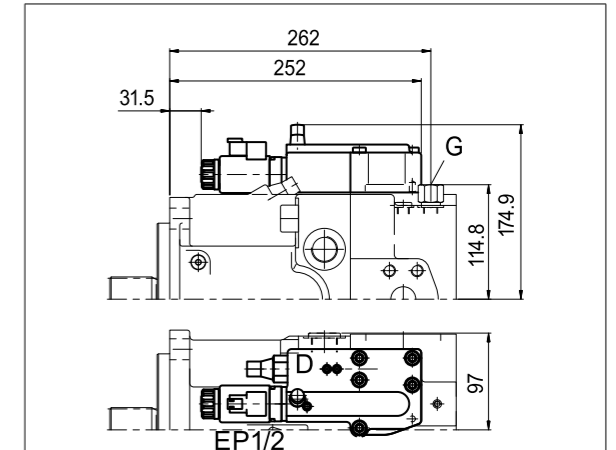
### LE1S/LE2S

Power control with electric override (negative) and load sensing control



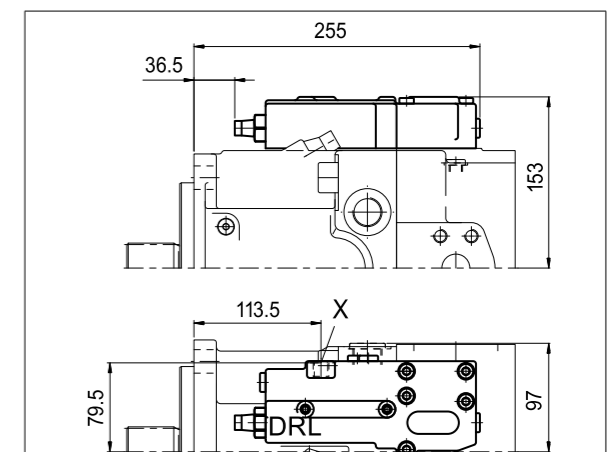
### EP1D/EP2D

Electric control with proportional solenoid and pressure cut-off



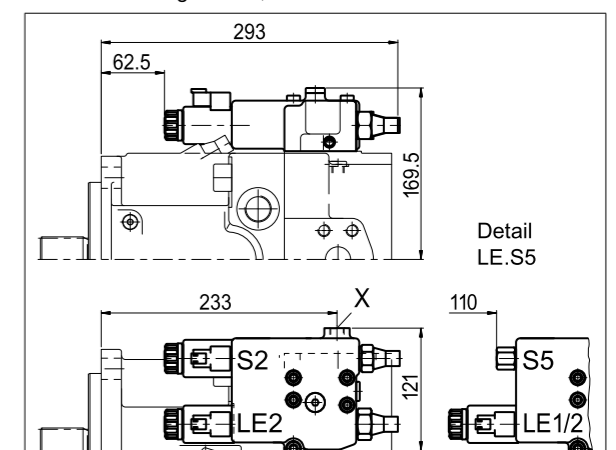
### DRL

Pressure control for parallel operation



### LE2S2/LE1S5/LE2S5

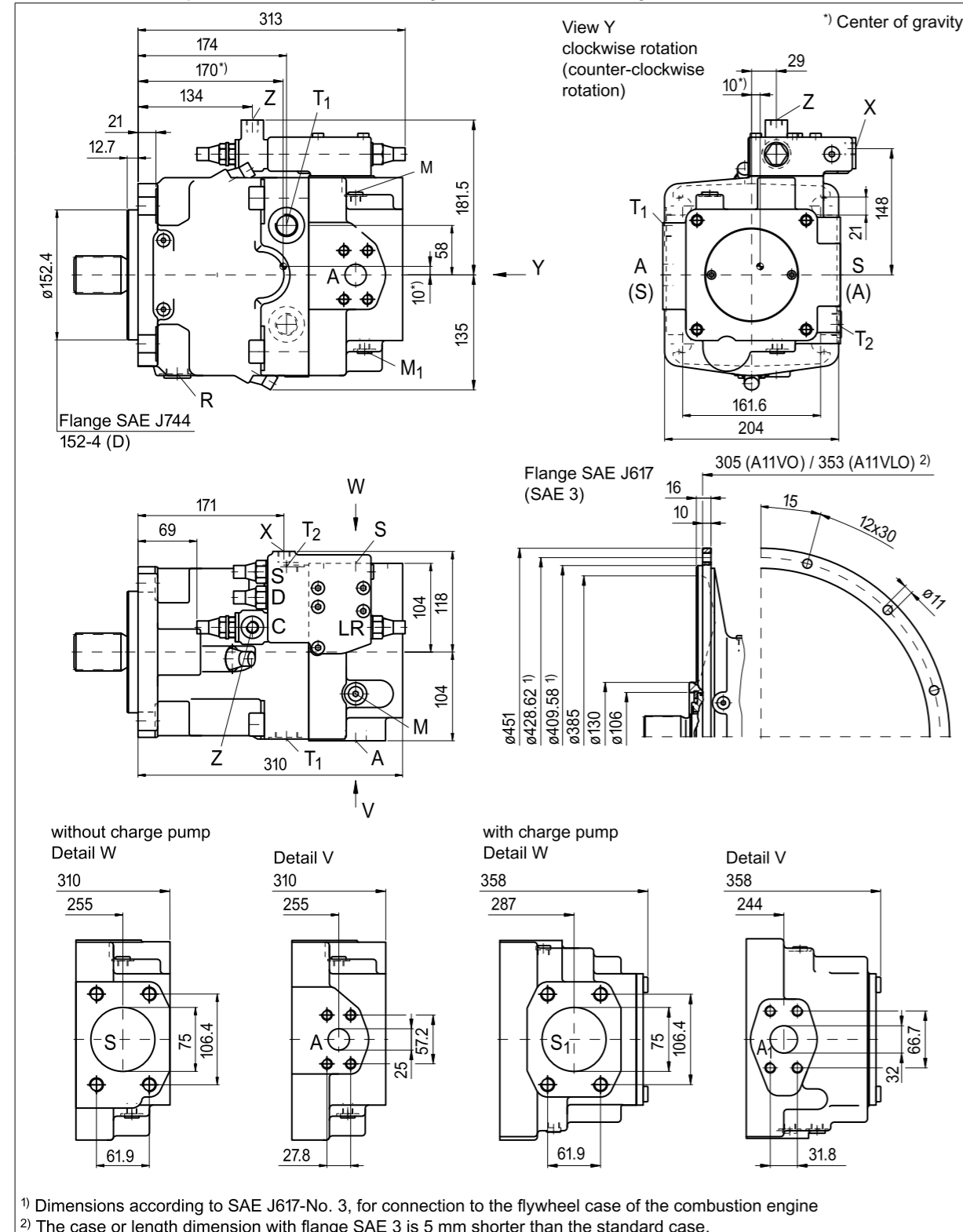
Power control with electric override (negative) and load sensing control, override



## Dimensions, Size 130/145

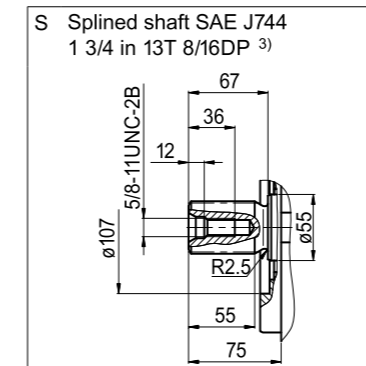
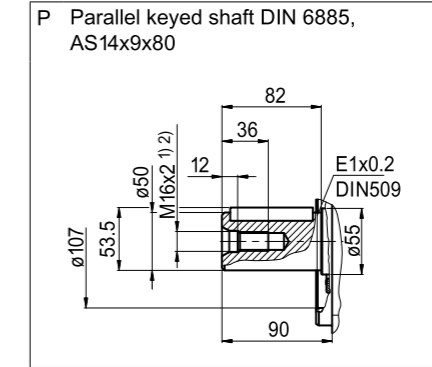
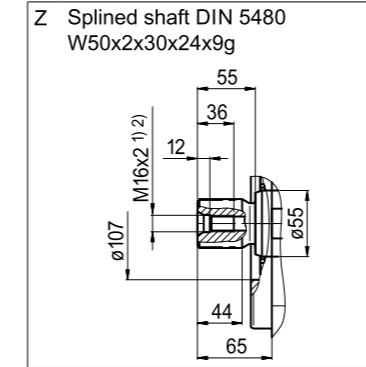
### LRDCS

Power control LR with pressure cut-off D, cross sensing control C and load sensing control S



## Dimensions, Size 130/145

### Shaft ends



### Ports

Designation	Function	Standard	Size <sup>2)</sup>	Max. pressure (bar) <sup>4)</sup>	State
A	Service line port Fixing thread	SAE J518 DIN 13	1 in M12x1.75; 17 deep	400	O
A <sub>1</sub>	Service line port Fixing thread	SAE J518 DIN 13	1 1/4 in M14x2; 19 deep	400	O
S, S <sub>1</sub>	Suction port Fixing thread	SAE J518 DIN 13	3 in M16x2; 24 deep	30 2 <sup>6)</sup>	O
T <sub>1</sub> , T <sub>2</sub>	Tank port	DIN 3852	M26x1.5; 16 deep	10	<sup>5)</sup>
R	Air bleed	DIN 3852	M26x1.5; 16 deep	10	X
M <sub>1</sub>	Measurement point, positioning chamber	DIN 3852	M12x1.5; 12 deep	400	X
M	Measurement point, service line port	DIN 3852	M12x1.5; 12 deep	400	X
X	Pilot pressure port in version with load sensing (S) and remote controlled pressure cut-off (G)	DIN 3852	M14x1.5; 12 deep	400	O
Y	Pilot pressure port in version with stroke limiter (H...), 2-stage pressure cut-off (E) and HD	DIN 3852	M14x1.5; 12 deep	40	O
Z	Pilot pressure port in version with cross sensing (C) and power override (LR3) power override (LG1)	DIN 3852	M14x1.5; 12 deep	400 40	O
G	Port for control pressure (controller) in version with stroke limiter (H... U2), HD and EP with screw union GE10 - PLM (otherwise closed)	DIN 3852	M14x1.5; 12 deep	40	O

<sup>1)</sup> Center bore according to DIN 332 (thread acc. to DIN 13)

<sup>2)</sup> For max. tightening torque, please refer to general notes on page 64

<sup>3)</sup> ANSI B92.1a-1976, 30° pressure angle, flat root, side fit, tolerance class 5

<sup>4)</sup> Depending on adjustment data and operating pressure

<sup>5)</sup> Depending on installation position, T1 or T2 must be connected (see also page 61)

<sup>6)</sup> with charge pump

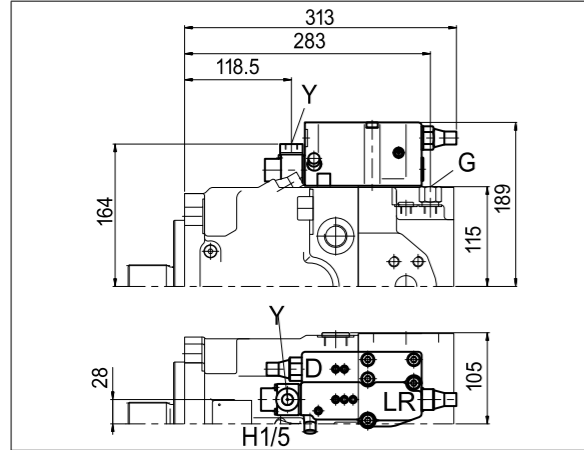
O = Open, must be connected (closed on delivery)

X = Closed (in normal operation)

## Dimensions, Size 130/145

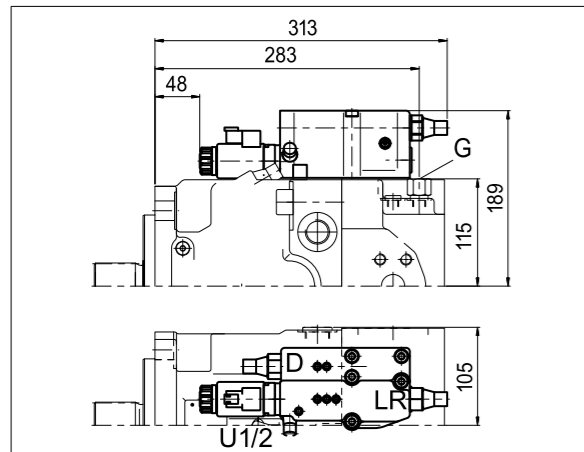
### LRDH1/LRDH5

Power control with pressure cut-off and hydraulic stroke limiter (negative characteristic)



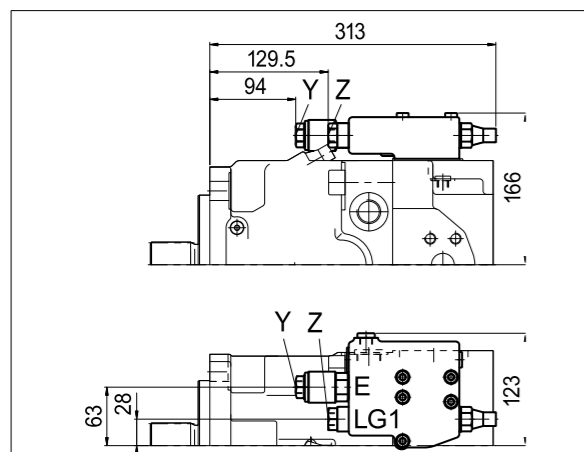
### LRDH1/LRDH2

Power control with pressure cut-off and electric stroke limiter (positive characteristic)



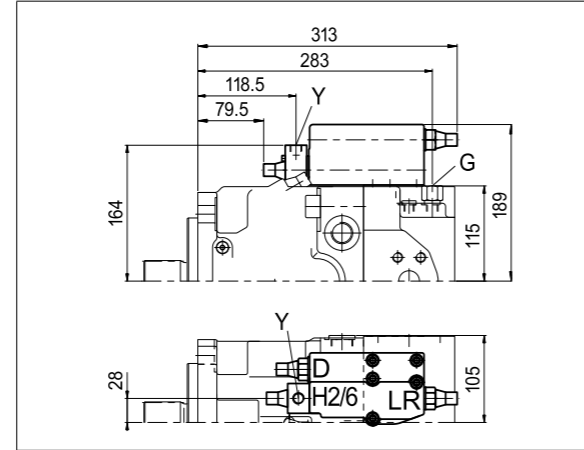
### LG1E

Power control with pilot-pressure related override (negative) and 2-stage pressure cut-off



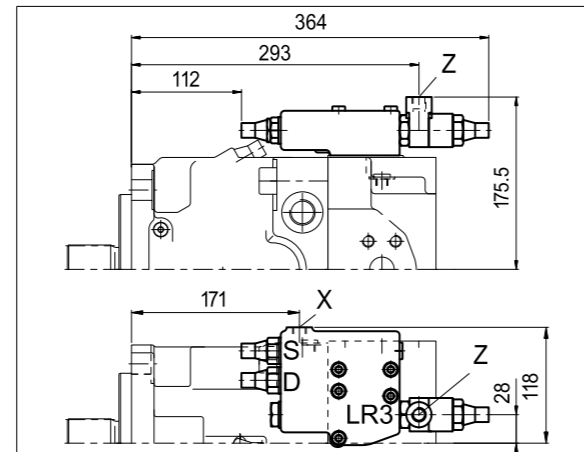
### LRDH2/LRDH6

Power control with pressure cut-off and hydraulic stroke limiter (positive characteristic)



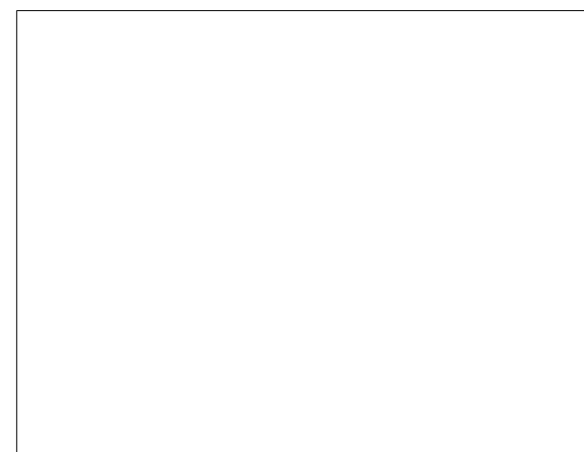
### LR3DS

Power control with high-pressure related override, pressure cut-off and load sensing control



### LG2E

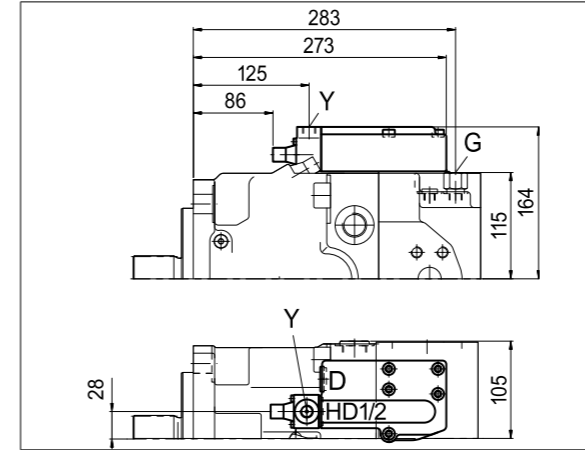
Power control with pilot-pressure related override (positive) and 2-stage pressure cut-off



## Dimensions, Size 130/145

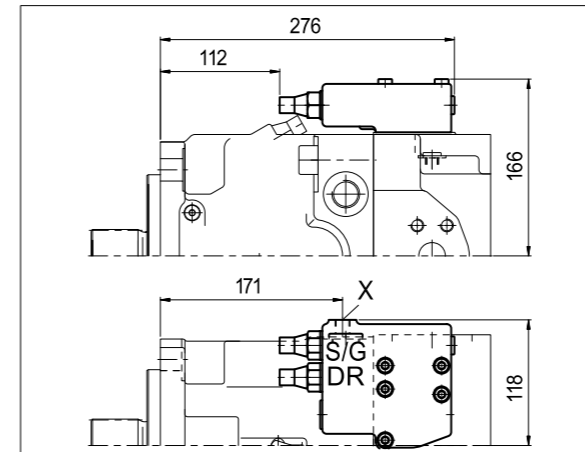
### HD1D/HD2D

Hydraulic control, pilot-pressure related with pressure cut-off



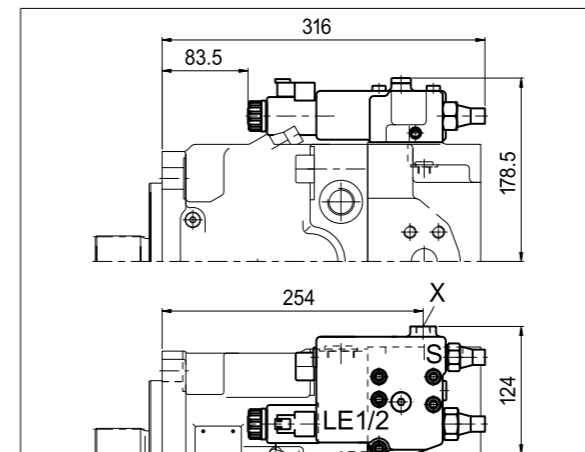
### DRS/DRG

Pressure control with load sensing control  
Pressure control remote controlled



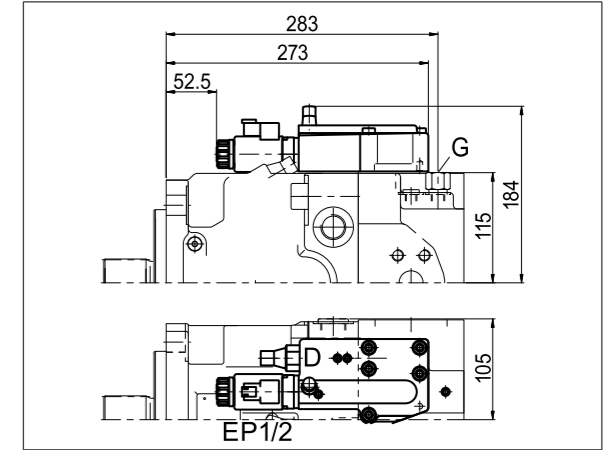
### LE1S/LE2S

Power control with electric override (negative) and load sensing control



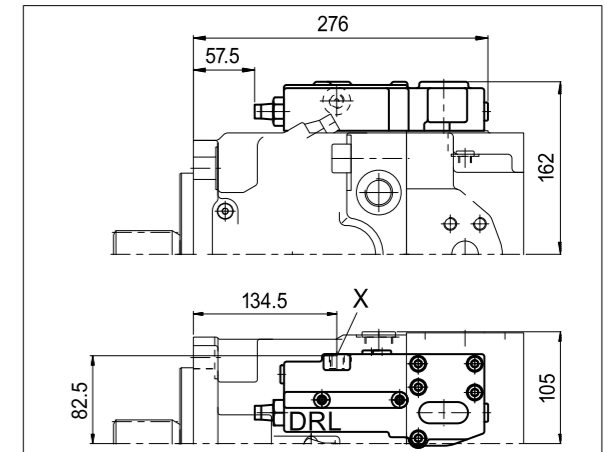
### EP1D/EP2D

Electric control with proportional solenoid and pressure cut-off



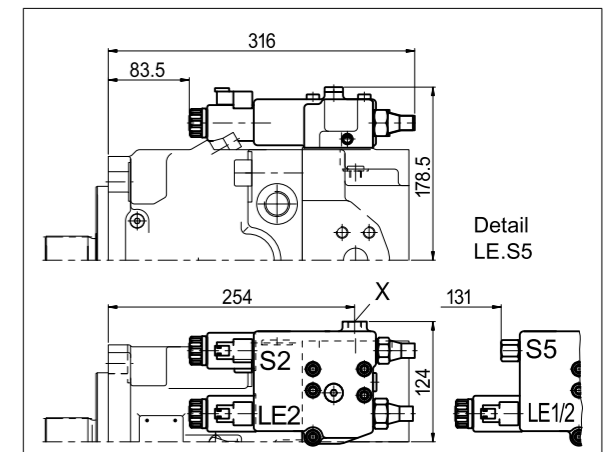
### DRL

Pressure control for parallel operation



### LE2S2/LE1S5/LE2S5

Power control with electric override (negative) and load sensing control, override

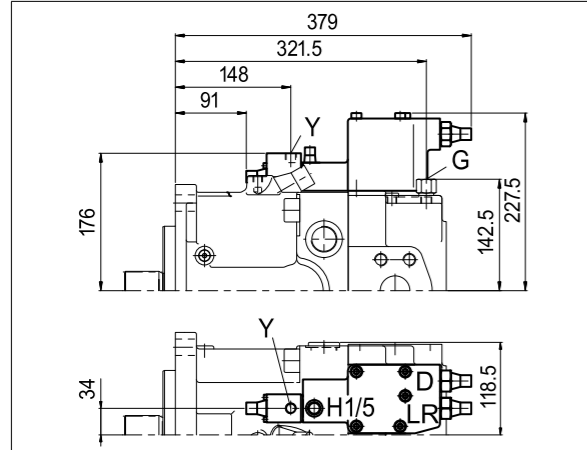




## Dimensions, Size 190

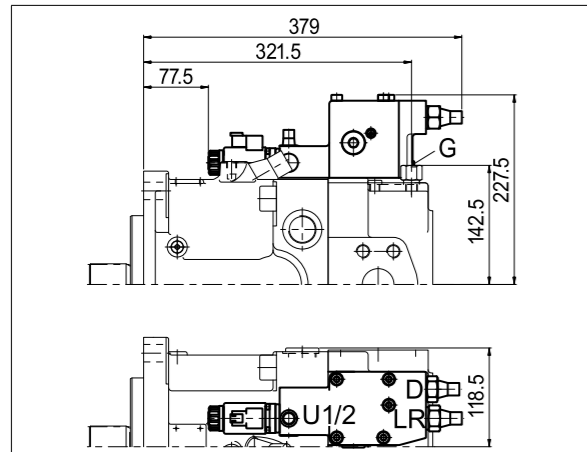
### LRDH1/LRDH5

Power control with pressure cut-off and hydraulic stroke limiter (negative characteristic)



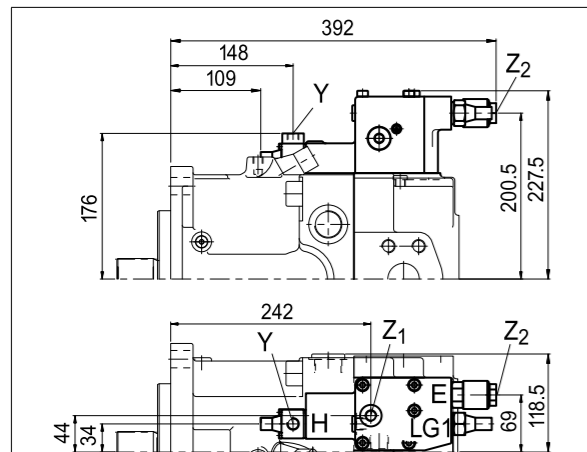
### LRDH1/LRDH2

Power control with pressure cut-off and electric stroke limiter (positive characteristic)



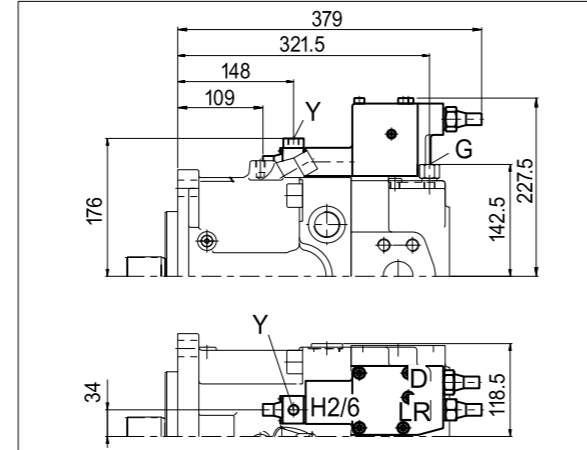
### LG1EH

Power control with pilot-pressure related override (neg.), 2-stage pressure cut-off and hydr. stroke limiter



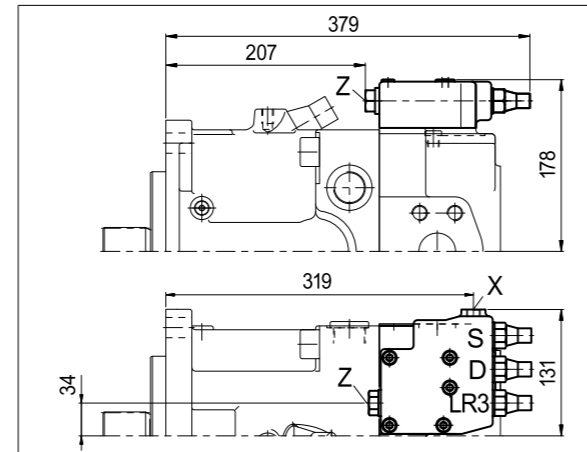
### LRDH2/LRDH6

Power control with pressure cut-off and hydraulic stroke limiter (positive characteristic)



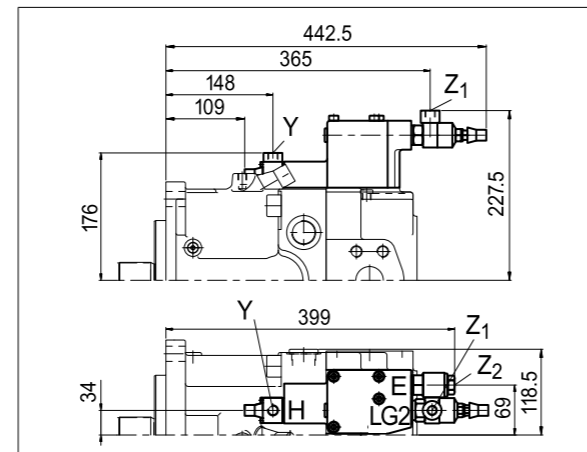
### LR3DS

Power control with high-pressure related override, pressure cut-off and load sensing control



### LG2EH

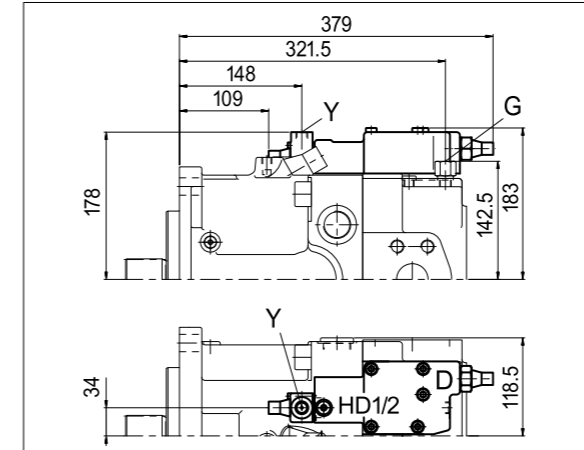
Power control with pilot-pressure related override (pos.), 2-stage pressure cut-off and hydr. stroke limiter



## Dimensions, Size 190

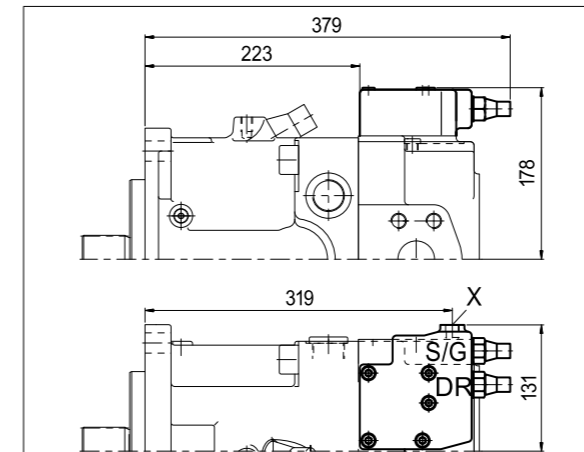
### HD1D/HD2D

Hydraulic control, pilot-pressure related with pressure cut-off



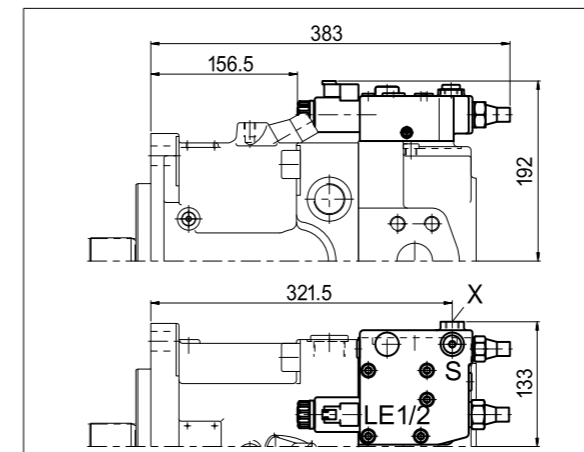
### DRS/DRG

Pressure control with load sensing control  
Pressure control remote controlled



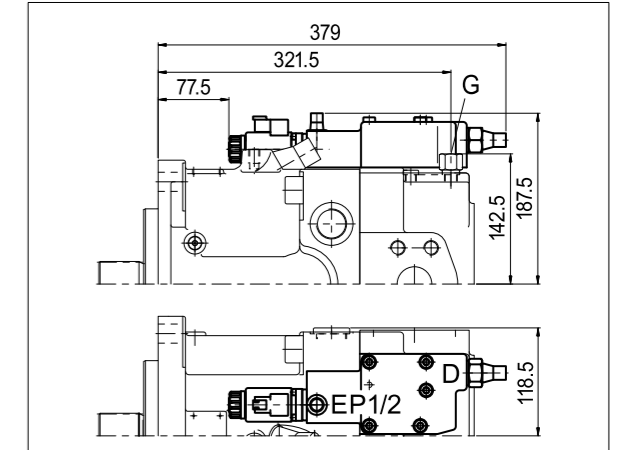
### LE1S/LE2S

Power control with electric override (negative) and load sensing control



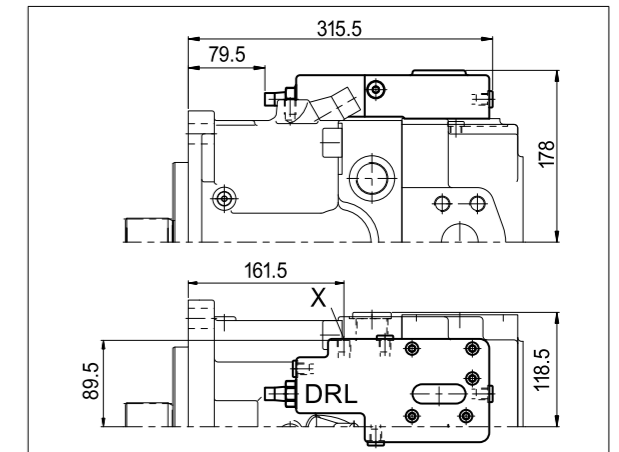
### EP1D/EP2D

Electric control with proportional solenoid and pressure cut-off



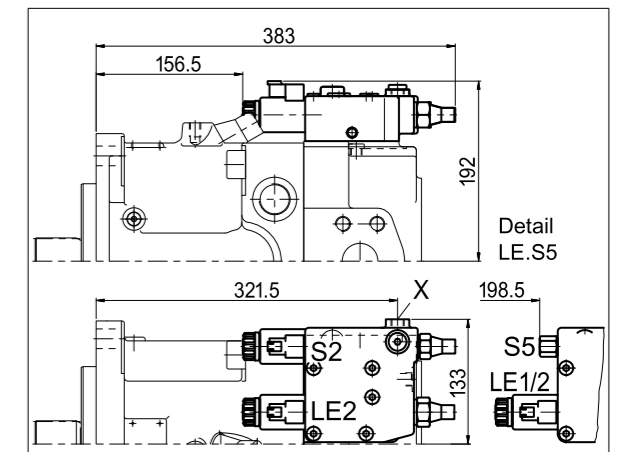
### DRL

Pressure control for parallel operation



### LE2S2/LE1S5/LE2S5

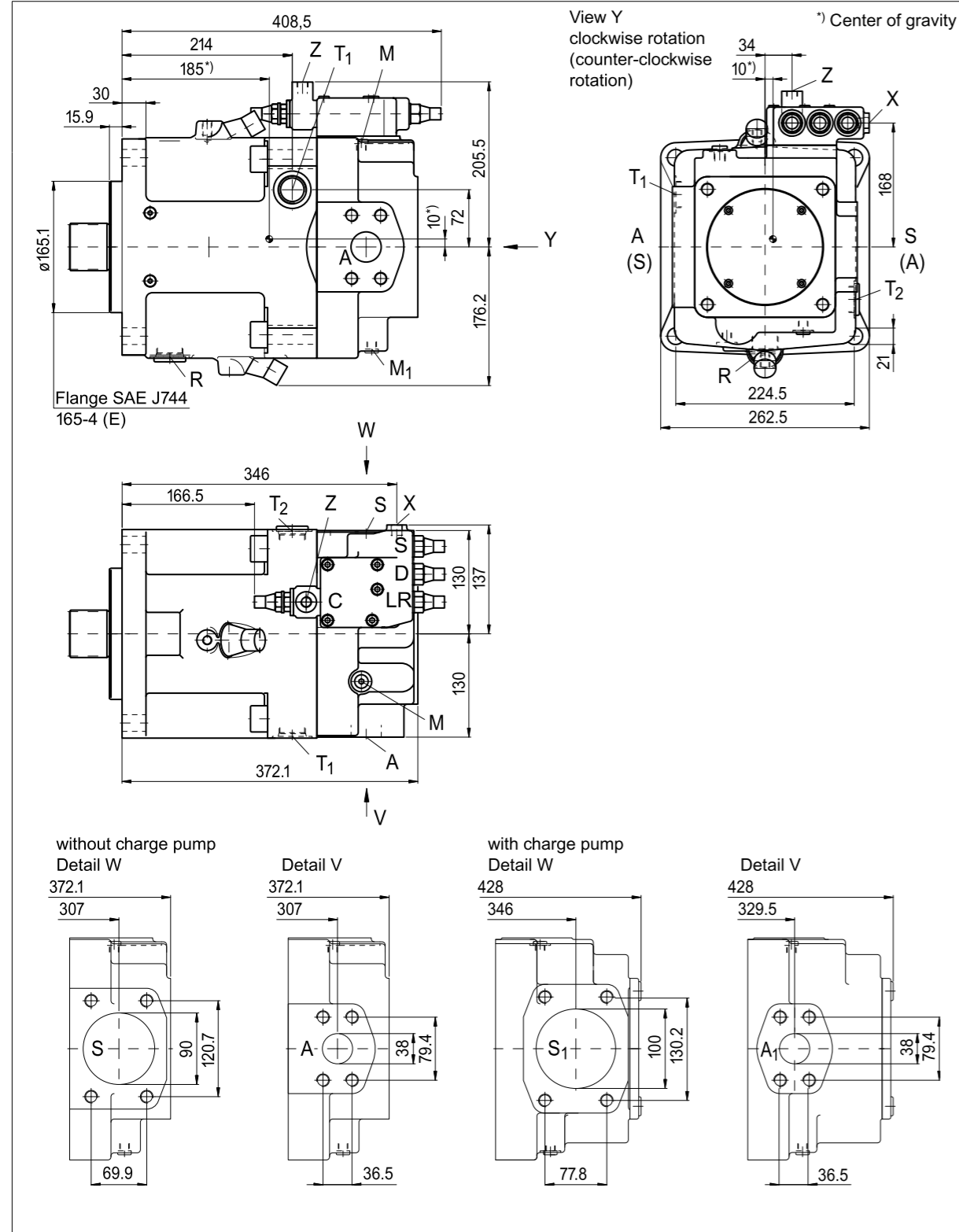
Power control with electric override (negative) and load sensing control, override



## Dimensions, Size 260

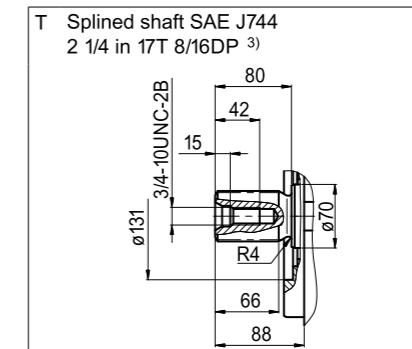
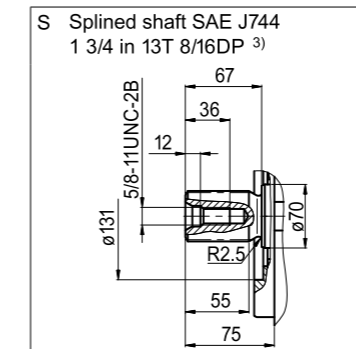
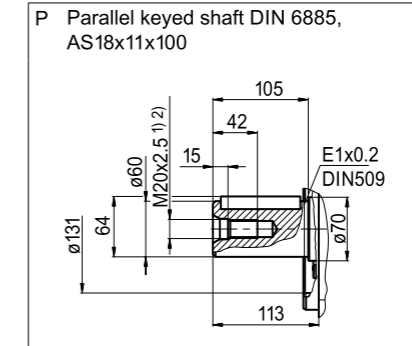
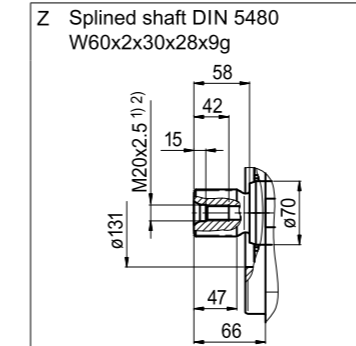
### LRDCS

Power control LR with pressure cut-off D, cross sensing control C and load sensing control S



## Dimensions, Size 260

### Shaft ends



### Ports

Designation	Function	Standard	Size <sup>2)</sup>	Max. pressure (bar) <sup>4)</sup>	State
A, A <sub>1</sub>	Service line port Fixing thread	SAE J518 DIN 13	1 1/2 in M16x2; 21 deep	400	O
S	Suction port Fixing thread	SAE J518 DIN 13	3 1/2 in M16x2; 24 deep	30	O
S <sub>1</sub>	Suction port Fixing thread	SAE J518 DIN 13	4 in M16x2; 21 deep	2 <sup>6)</sup>	O
T <sub>1</sub> , T <sub>2</sub>	Tank port	DIN 3852	M33x2; 16 deep	10 <sup>5)</sup>	
R	Air bleed	DIN 3852	M33x2; 16 deep	10	X
M <sub>1</sub>	Measurement point, positioning chamber	DIN 3852	M12x1.5; 12 deep	400	X
M	Measurement point, service line port	DIN 3852	M12x1.5; 12 deep	400	X
X	Pilot pressure port in version with load sensing (S) and remote controlled pressure cut-off (G)	DIN 3852	M14x1.5 12 deep	400	O
Y	Pilot pressure port in version with stroke limiter (H...), 2-stage pressure cut-off (E) and HD	DIN 3852	M14x1.5; 12 deep	40	O
Z	Pilot pressure port in version with cross sensing (C) and power override (LR3) power override (LG1)	DIN 3852	M14x1.5; 12 deep	400 40	O
G	Port for control pressure (controller) in version with stroke limiter (H... U2), HD and EP with screw union GE10 - PLM (otherwise closed)	DIN 3852	M14x1.5; 12 deep	40	O

<sup>1)</sup> Center bore according to DIN 332 (thread acc. to DIN 13)

<sup>2)</sup> For max. tightening torque, please refer to general notes on page 64

<sup>3)</sup> ANSI B92.1a-1976, 30° pressure angle, flat root, side fit, tolerance class 5

<sup>4)</sup> Depending on adjustment data and operating pressure

<sup>5)</sup> Depending on installation position, T<sub>1</sub> or T<sub>2</sub> must be connected (see also page 61)

<sup>6)</sup> with charge pump

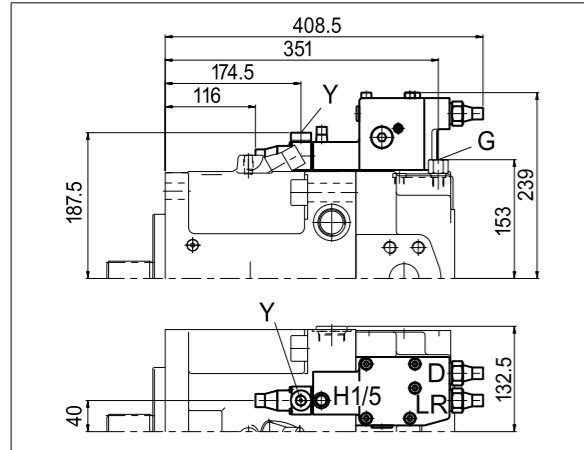
O = Open, must be connected (closed on delivery)

X = Closed (in normal operation)

## Dimensions, Size 260

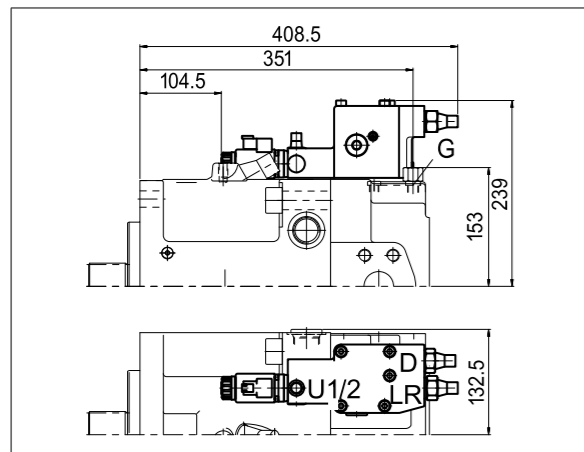
### LRDH1/LRDH5

Power control with pressure cut-off and hydraulic stroke limiter (negative characteristic)



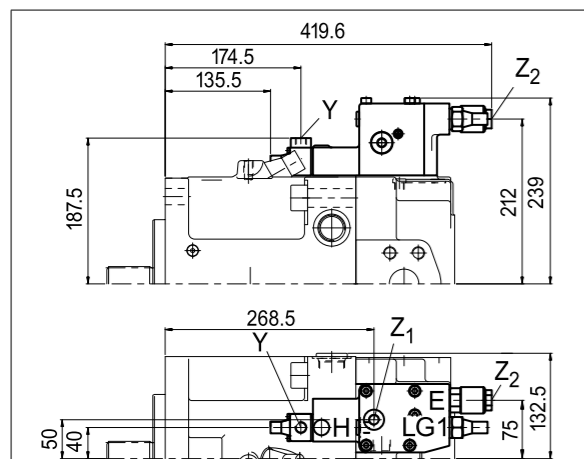
### LRDH1/LRDH2

Power control with pressure cut-off and electric stroke limiter (positive characteristic)



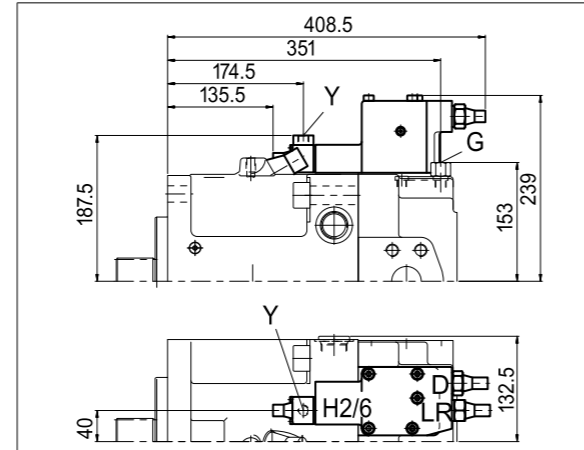
### LG1EH

Power control with pilot-pressure related override (neg.), 2-stage pressure cut-off and hydr. stroke limiter



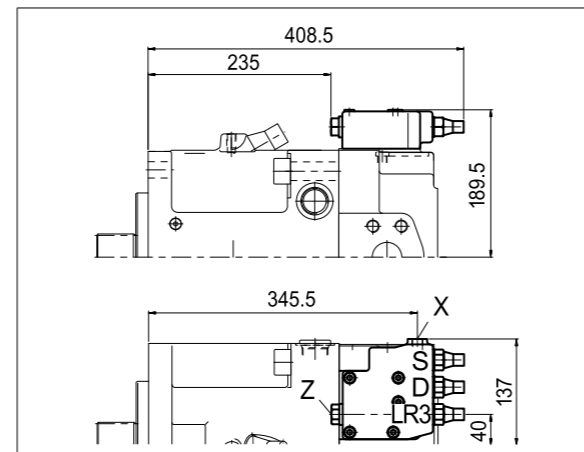
### LRDH2/LRDH6

Power control with pressure cut-off and hydraulic stroke limiter (positive characteristic)



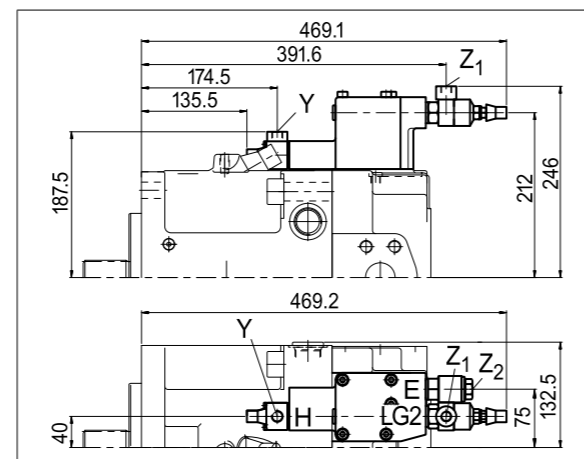
### LR3DS

Power control with high-pressure related override, pressure cut-off and load sensing control



### LG2EH

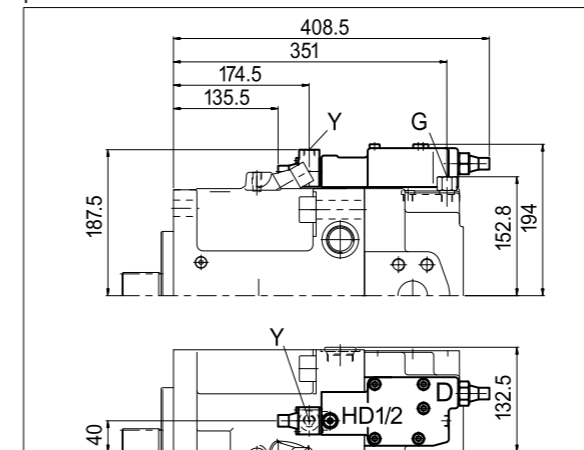
Power control with pilot-pressure related override (pos.), 2-stage pressure cut-off and hydr. stroke limiter



## Dimensions, Size 260

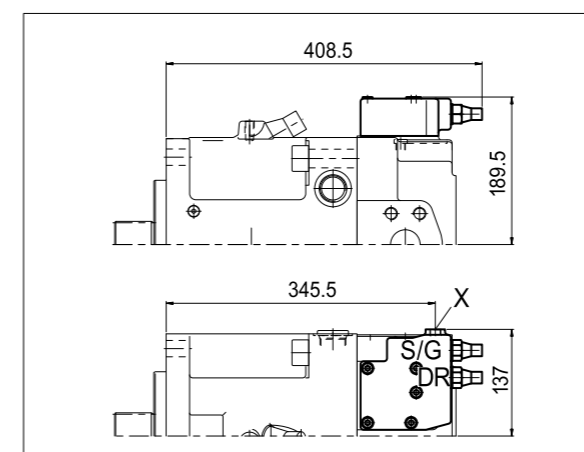
### HD1D/HD2D

Hydraulic control, pilot-pressure related with pressure cut-off



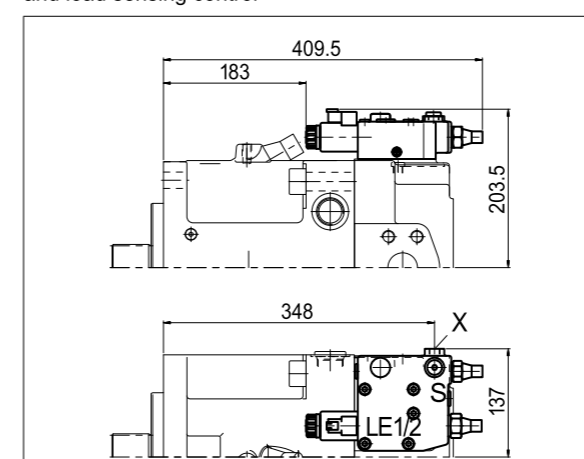
### DRS/DRG

Pressure control with load sensing control  
Pressure control remote controlled



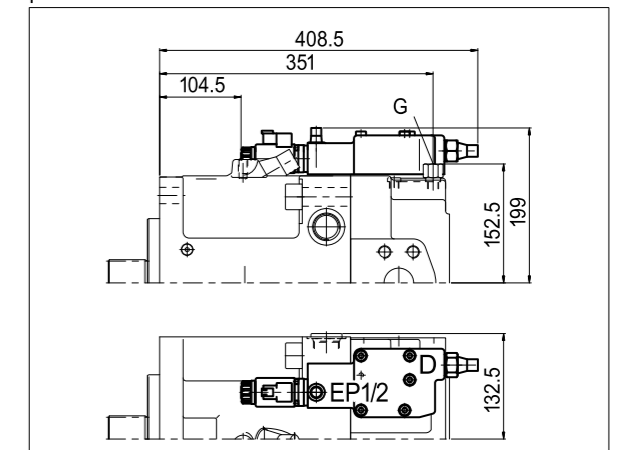
### LE1S/LE2S

Power control with electric override (negative) and load sensing control



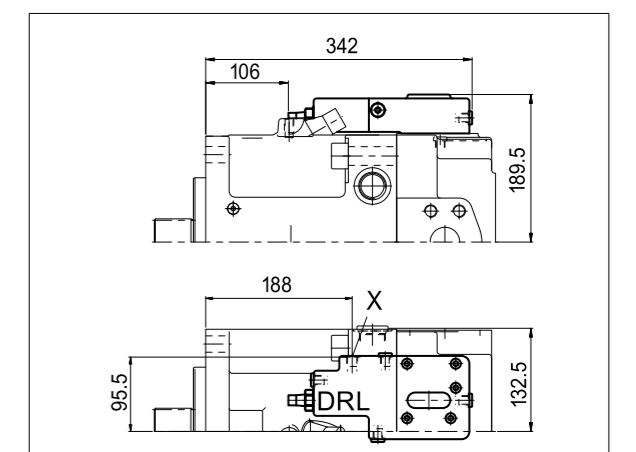
### EP1D/EP2D

Electric control with proportional solenoid and pressure cut-off



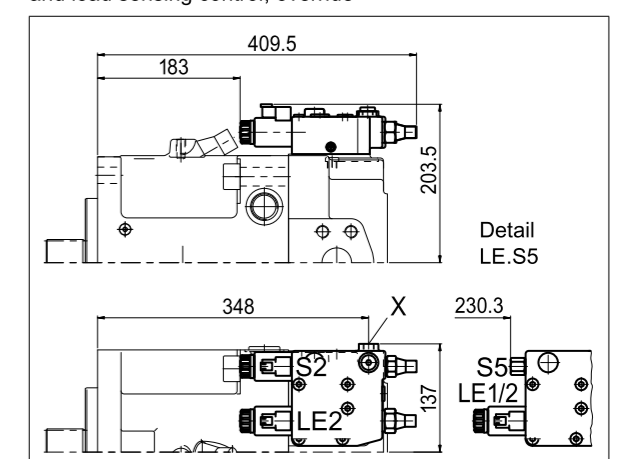
### DRL

Pressure control for parallel operation



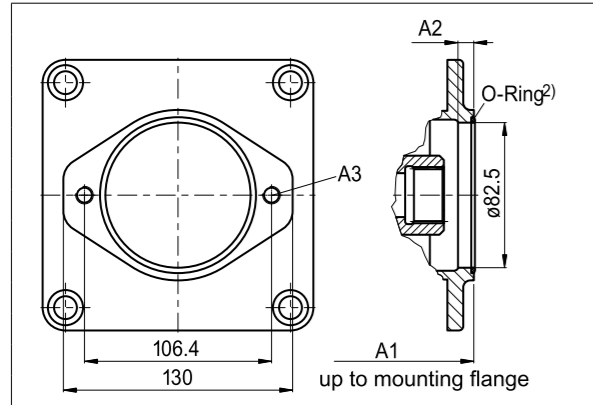
### LE2S2/LE1S5/LE2S5

Power control with electric override (negative) and load sensing control, override



## Through Drive Dimensions

**Flange SAE J744-82-2 (A) Coupler** for splined shaft acc. to ANSI B92.1a-1976 5/8 in 9T 16/32 DP<sup>1)</sup> (SAE J744 - 16-4 (A) K01  
3/4 in 11T 16/32 DP<sup>1)</sup> (SAE J744 - 19-4 (A-B)) K52

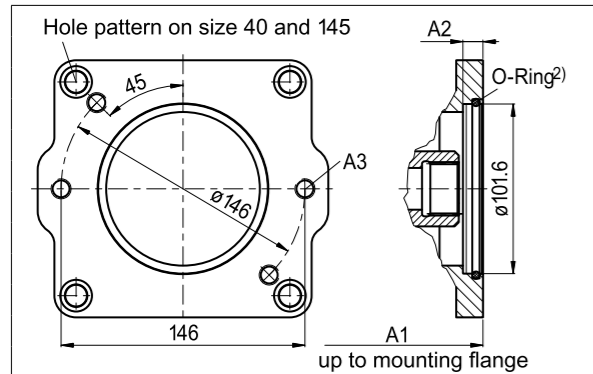


Size	A1		A2	A3 <sup>3)</sup>	
	K01	K52			
40	240	240	8	M10x1.5; 15 deep	
60	257	257	-	M10x1.5; 15 deep	
75	275	275	-	M10x1.5; 15 deep	
95	306	306	-	M10x1.5; 12.5 deep	
130/145	329	329	-	M10x1.5; 12.5 deep	
130/145*	363	363	-	M10x1.5; 12.5 deep	
190	359.8	359.8	-	M10x1.5; 13 deep	
190*	394	394	-	M10x1.5; 13 deep	
260	385	385	-	M10x1.5; 13 deep	
260*	427.3	427.3	-	M10x1.5; 13 deep	

<sup>\*)</sup> Version with charge pump

**Flange SAE J744-101-2 (B) Coupler** for splined shaft acc. to ANSI B92.1a-1976 7/8 in 13T 16/32 DP<sup>1)</sup> (SAE J744 - 22-4 (B)) K02  
1 in 15T 16/32 DP<sup>1)</sup> (SAE J744 - 25-4(B-B))K04

Coupler for splined shaft acc. to DIN 5480



In size 190 and 260 the hole template is turned 45° counter-clockwise.

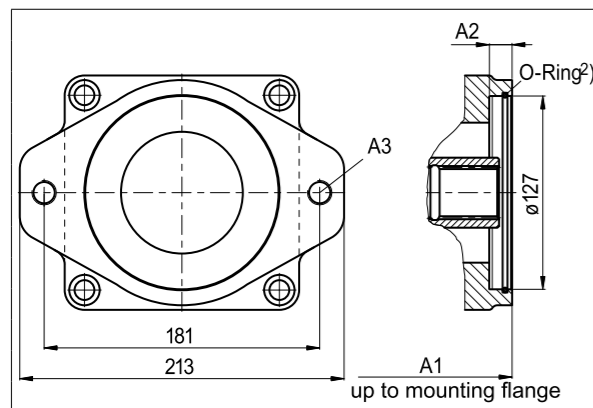
W35x2x30x16x9g K79

Size	A1			A2	A3 <sup>3)</sup>	
	K02	K04	K79			
40	244	244		10	M12x1.75; 19 deep	
60	261	261	261	10	M12x1.75; 19 deep	
75	279	279		10	M12x1.75; 19 deep	
95	303	303	303	10	M12x1.75; 16 deep	
130/145	326	326	326	10	M12x1.75; 16 deep	
130/145*	360	360	360	10	M12x1.75; 16 deep	
190	371.8	369.8	361.8	-	M12x1.75; 15 deep	
190*	404	404	394	-	M12x1.75; 15 deep	
260	395	395	395	-	M12x1.75; 15 deep	
260*	437.5	437.5	437.5	-	M12x1.75; 15 deep	

<sup>\*)</sup> Version with charge pump

**Flange SAE J744-127-2 (C) Coupler** for splined shaft acc. to ANSI B92.1a-1976 1 1/4 in 14T 12/24 DP<sup>1)</sup> (SAE J744 - 32-4 (C)) K07  
1 1/2 in 17T 12/24 DP<sup>1)</sup> (SAE J744 - 38-4 (C-C)) K24

Coupler for splined shaft acc. to DIN 5480



W30x2x30x14x9g K80  
W35x2x30x16x9g K61

Size	A1				A2	A3 <sup>3)</sup>	
	K07	K24	K80	K61			
60	272	-	265	265	13	M16x2; 20 deep	
75	290	-	283	283	13	M16x2; 20 deep	
95	318	318	318	318	13	M16x2; 16 deep	
130/145	330	330	330	330	13	M16x2; 20 deep	
130/145*	364	364	364	364	13	M16x2; 20 deep	

<sup>\*)</sup> Version with charge pump

Note:

The mounting flange may be turned through 90°. Standard position as illustrated. Please state in clear text if required.

<sup>1)</sup> 30° pressure angle, flat root, side fit, tolerance class 5

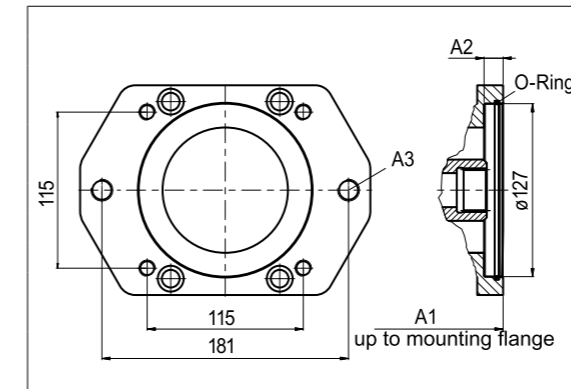
<sup>2)</sup> O-ring included in the delivery contents

<sup>3)</sup> DIN 13, for max. tightening torque, please refer to general notes on page 64

## Through Drive Dimensions

**Flange SAE J744-127-2+4(A) Coupler** for splined shaft acc. to ANSI B92.1a-1976 1 1/4 in 14T 12/24 DP<sup>1)</sup> (SAE J744-32-4(C)) K07

Coupler for splined shaft acc. to DIN 5480



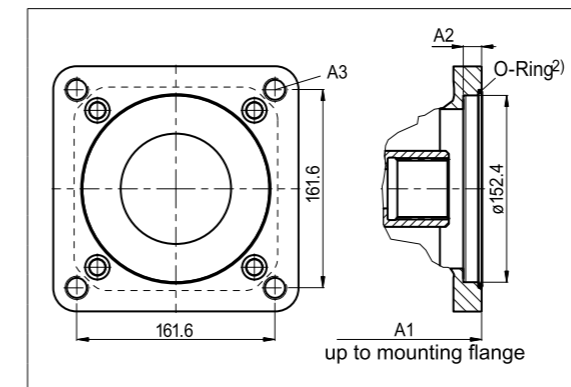
1 1/2 in 17T 12/24 DP<sup>1)</sup> (SAE J744 - 38-4 (C-C)) K24  
W30x2x30x14x9g K80  
W35x2x30x16x9g K61

Size	A1				A2	A3 <sup>3)</sup>	
	K07	K24	K80	K61			
190	367.8	367.8	367.8	367.8	13	M16x2; 19 deep	
190*	400	400	400	400	13	M16x2; 19 deep	
260	391.5	391.5	391.5	391.5	13	M16x2; 19 deep	
260*	433.5	433.5	433.5	433.5	13	M16x2; 19 deep	

<sup>\*)</sup> version with charge pump

**Flange SAE J744-152-4 (D) Coupler** for splined shaft acc. to ANSI B92.1a-1976 1 1/4 in 14T 12/24 DP<sup>1)</sup> (SAE J744 - 32-4 (C)) K86  
1 3/4 in 13T 8/16 DP<sup>1)</sup> (SAE J744 - 44-4 (D)) K17

Coupler for splined shaft acc. to DIN 5480



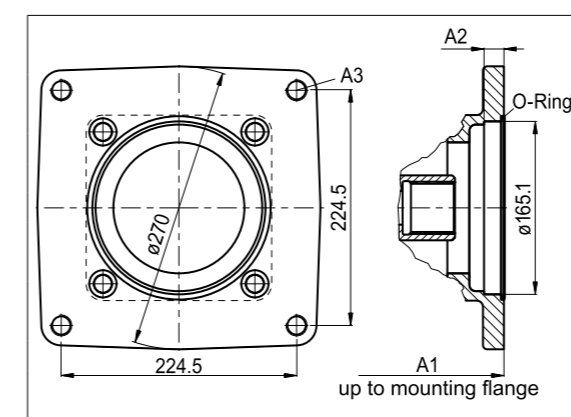
W40x2x30x18x9g K81  
W45x2x30x21x9g K82  
W50x2x30x24x9g K83

Size	A1					A2	A3 <sup>3)</sup>	
	K86	K17	K81	K82	K83			
75	290	-	290	-	-	13	M20x2.5; 28 deep	
95	317	327	317	317	-	30	M20x2.5; 25 deep	
130/145	340	350	340	340	340	30	M20x2.5; 25 deep	
130/145*	374	384	374	374	374	30	M20x2.5; 25 deep	
190	392	392	392	392	392	13	M20x2.5; 22 deep	
190*	424	424	424	424	424	13	M20x2.5; 22 deep	
260	417	417	417	417	417	13	M20x2.5; 22 deep	
260*	459	459	459	459	459	13	M20x2.5; 22 deep	

<sup>\*)</sup> version with charge pump

**Flange SAE J744-101-2 (E) Coupler** for splined shaft acc. to ANSI B92.1a-1976 1 3/4 in 13T 16/32 DP<sup>1)</sup> (SAE J744 - 32-4 (C)) K72

Coupler for splined shaft acc. to DIN 5480



W50x2x30x24x9g K84  
W60x2x30x28x9g K67

Size	A1			A2	A3 <sup>3)</sup>	
	K72	K84	K67			
190	376.8	376.8	-	19	M20x2.5; 20 deep	
190*	409	409	-	19	M20x2.5; 20 deep	
260	417	400	400	19	M20x2.5; 20 deep	
260*	459	442.5	442.5	19	M20x2.5; 20 deep	

<sup>\*)</sup> Version with charge pump

Note:

The mounting flange may be turned through 90°. Standard position as illustrated. Please state in clear text if required.

<sup>1)</sup> 30° pressure angle, flat root, side fit, tolerance class 5

<sup>2)</sup> O-ring included in the delivery contents

<sup>3)</sup> DIN 13, for max. tightening torque, please refer to general notes on page 64

## Overview of Attachments for A11V(L)O

Through drive Flange	A11VO		Attachment – 2nd pump							Through drive available for size
	Couple for splined shaft	Code	A11VO Size(shaft)	A10V(S)O/31 Size(shaft)	A10V(S) O/53 Size(shaft)	A4FO Size(shaft)	A4VG Size(shaft)	A10VG Size(shaft)	External gear pump	
82-2 (A)	5/8 in	K01	–	18 (U)	10 (U)	–	–	–	Frame size F Size 4-22 <sup>1)</sup>	40...260
	3/4 in	K52	–	18 (S)	10 (S)	–	–	–	–	40...260
101-2 (B)	7/8 in	K02	–	28 (S, R) 45 (U)	28 (S, R) 45 (U, W)	16, 22, 28 (S)	–	18 (S)	Frame size N Size 20-32 <sup>1)</sup> Frame size G Size 38-45 <sup>1)</sup>	40...260
	1 in	K04	40 (S)	45 (S, R)	45 (S, R) 60 (U, W)	–	28 (S)	28, 45 (S)	–	40...260
	W35	K79	40 (Z)	–	–	–	–	–	–	40...260
127-2 (C)	1 1/4 in	K07	60 (S)	71 (S, R) 100 (U)	60 (S) <sup>2)</sup> 85 (U)	–	40, 56, 71 (S)	63 (S)	–	60...260
	1 1/2 in	K24	–	100 (S)	85 (S)	–	–	–	–	95...260
	W30	K80	–	–	–	–	40, 56 (Z)	–	–	60...260
152-4 (D)	W35	K61	60 (Z)	–	–	–	40, 56 (A) 71 (Z)	–	–	60...260
	1 1/4 in	K86	75 (S)	–	–	–	–	–	–	75...260
	1 3/4 in	K17	95, 130, 145 (S)	140 (S)	–	–	90, 125 (S)	–	–	130...260
	W40	K81	75 (Z)	–	–	–	125 (Z)	–	–	75...260
	W45	K82	95 (Z)	–	–	–	90, 125 (A)	–	–	95...260
165-4 (E)	W50	K83	130, 145 (Z)	–	–	–	–	–	–	130...260
	1 3/4 in	K72	190, 260 (S)	–	–	–	180, 250 (S)	–	–	190...260
	W50	K84	90 (Z)	–	–	–	180 (Z)	–	–	190...260
	W60	K67	260 (Z)	–	–	–	–	–	–	260

<sup>1)</sup> Prance recommends special versions of the gear pumps. Please ask.

<sup>2)</sup> Only A10VO with 4-hole mounting flange can be mounted to A11V(L)O 190 and 260.

## Combination Pumps A11VO + A11VO

Total length A <sup>1)</sup>

A11VO										
1st pump	Size 40	Size 60	Size 75	Size 95	Size 130/145	Size 130/145 <sup>2)</sup>	Size 190	Size 190 <sup>2)</sup>	Size 260	Size 260 <sup>2)</sup>
Size 40	–	–	–	–	–	–	–	–	–	–
Size 60	490	507	–	–	–	–	–	–	–	–
Size 75	–	525	550	–	–	–	–	–	–	–
Size 95	528	560	577	604	–	–	–	–	–	–
Size 130/145	551	572	600	627	650	698	–	–	–	–
Size 130/145 <sup>2)</sup>	585	606	634	661	684	732	–	–	–	–
Size 190	586.8	609.8	652	679	702	750	723.6	772.3	–	–
Size 190 <sup>2)</sup>	619	642	684	711	734	782	755.8	804.5	–	–
Size 260	620	633.5	677	704	727	775	746.8	795.5	772	828
Size 260 <sup>2)</sup>	662.5	675.5	719	746	769	817	789.3	838	814.5	870.5

<sup>1)</sup> When using the Z shaft (splined shaft DIN 5480) for the attached pump (2nd pump)

<sup>2)</sup> Version with charge pump

When ordering combination pumps, the type designations of the 1st and 2nd pumps must be connected by a "+".

Ordering code 1st pump + Ordering code 2nd pump

Ordering example:

A11VO130LRDS/10R-NZD12K61 + A11VO60LRDS/10R-NZC12N00

