HYDROSTATIC STEERING UNITS TYPE HKU(S).../5(D)(T)(E)(TE)(TU)–



The HKU(S).../5(D)(T)(TU) range expands the steering units family of M+S Hydraulic with the *"Closed Center - Non Reaction and Load Sensing Outlet" version* (static and dynamic hydraulic connection to the priority valve).

This range is manufactured in two versions; for modularly and pipe mounting and therefore were developed the two versions of priority (tracing) valves: PRD... and PRT...

HKU.../5 is designed to be connected to priority valves with built-in relief valves for rated flow up to 160 lpm [42 GPM] - PRT.../160.

The control hydraulic circuits of the HKU(S).../5(T) steering units were designed to ensures minimal energy consumption (energy losses) in various hydraulic systems, such as those of: fork-lift trucks, agricultural and construction machines and others.

HKU.../5TU is a steering unit at which the ports R and L in neutral position are connected to the drain line T. This scheme contributes for the fast discharge of the residual pressure in lines L and R, that usually is “locked” when the steering wheel is jerky released at neutral position. These steering units do not drive directly the steering cylinders, but they are connected to hydraulic systems in which they drive the flow amplifiers or other devices.

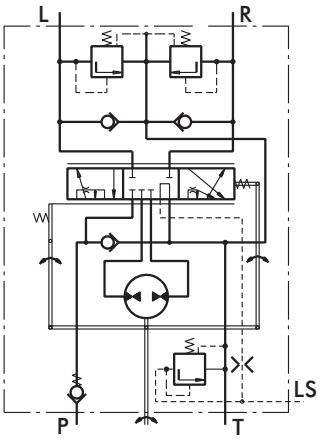
M+S Hydraulic produces steering units type HKUS.../5E(5TE) which have additional EL-port. An electro-hydraulic relay can be mounted on this port, providing control of the hydraulic system.The relay can be pre-set to normally - open (N.O) or normally - closed (N.C) contacts, with control range from 0,1 to 50 bars.

HKUS…/5D(DT)... is a new generation steering unit, where the dynamic flow to LS-line allows easy and smooth control when starting the steering. Main features are: Low torque of the steering wheel 0,5÷2,0 Nm [4.5÷18 lb-in] at normal operating conditions; High steering speed, limited only by the operating flow and the pressure of the supplying pump.

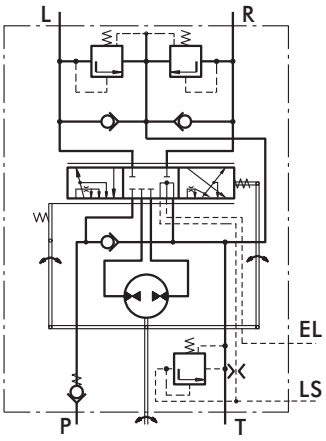
Constant oil flow to LS-line at neutral position within 0,45÷0,9 lpm [.12÷.24 GPM]. The unit works in a system with a dynamic priority valve and is appropriate for machines with increased energy saving requirements.

*For operation in condition of Thermal Shock see the notes on page 6.

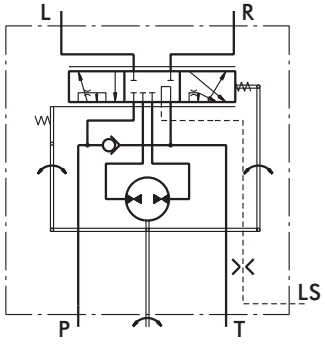
Pipe Mounting



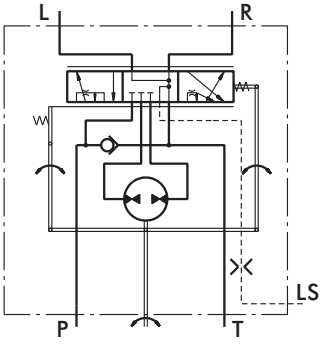
Closed Center - Non Reaction
Static Signal - HKUS.../5T
Dynamic Signal - HKUS.../5DT



Closed Center - Non Reaction
Static Signal - HKUS.../5TE

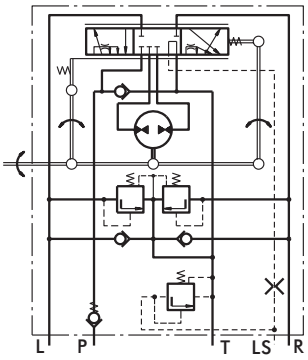


Closed Center - Non Reaction
Static Signal - HKU.../5T

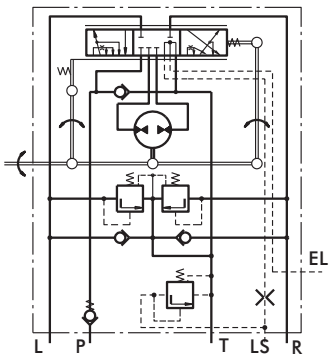


Closed Center - Non Reaction
Static Signal - HKU.../5TU

Modulary Mounting



Closed Center - Non Reaction
Static Signal - HKUS.../5
Dynamic Signal - HKUS.../5D



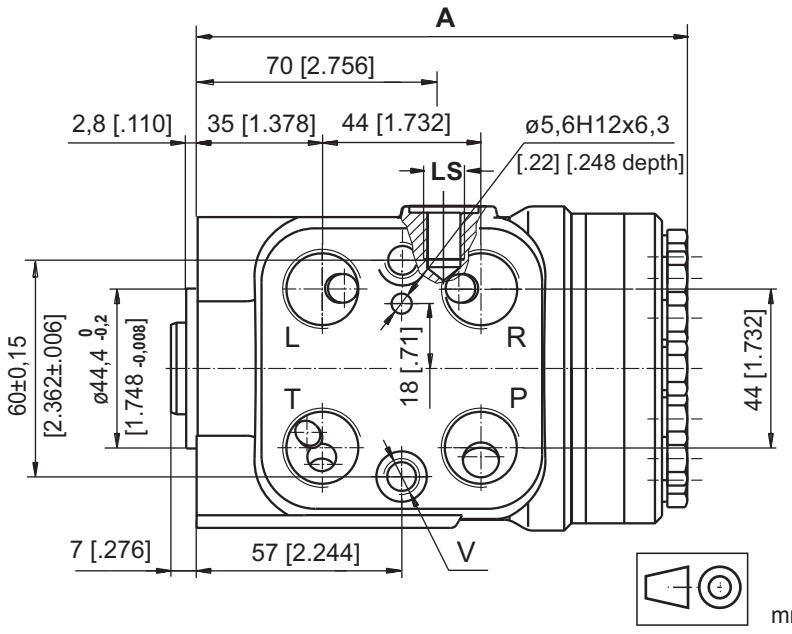
Closed Center - Non Reaction
Static Signal - HKUS.../5E

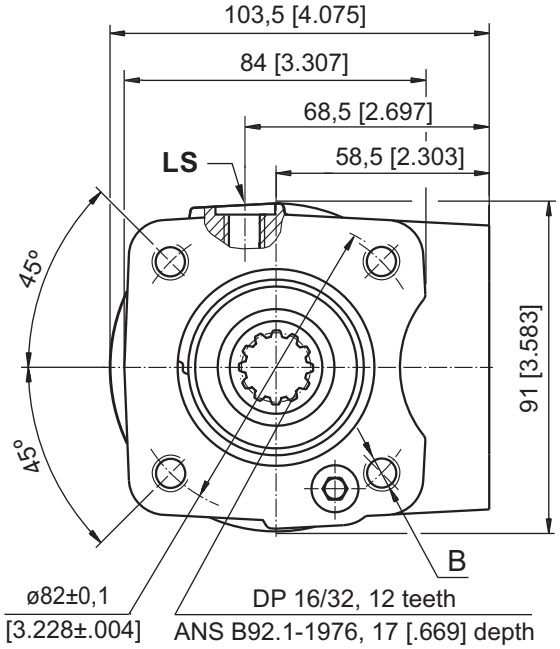
SPECIFICATION DATA

Parameters	Type												
	HKU 40/5T HKUS 40/5...	HKU 50/5T HKUS 50/5...	HKU 63/5T HKUS 63/5...	HKU 80/5T HKUS 80/5...	HKU 100/5T HKUS 100/5...	HKU 125/5T HKUS 125/5...	HKU 160/5T HKUS 160/5...	HKU 200/5T HKUS 200/5...	HKU 250/5T HKUS 250/5...	HKU 320/5T HKUS 320/5...	HKU 400/5T HKUS 400/5...	HKU 500/5T	HKU 630/5T
Displacement cm^3/rev	39,6	49,5	65,6	79,2	99,0	123,8	158,4	198	247,5	316,8	396	495	623,6
$[in^3/rev]$	[2.42]	[3.0]	[4.0]	[4.83]	[6.04]	[7.56]	[9.67]	[12.1]	[15.1]	[19.3]	[24.2]	[30.2]	[38.05]
Rated Flow* lpm	4	5	6	8	10	13	16	20	25	32	40	50	63
[GPM]	[1.1]	[1.3]	[1.6]	[2.1]	[2.6]	[3.4]	[4.2]	[5.3]	[6.6]	[8.4]	[10.6]	[13.2]	[16.6]
Rated Pressure bar	125	150	175										
[PSI]	[1810]	[2175]	[2540]										
LS-Valve Pressure Settings** bar [PSI]				80 [1160]		100 [1450]	125 [1810]		150 [2175]		175 [2540]		
Shock Valves Pressure Settings*** bar [PSI]				140 [2030]		160 [2320]	180 [2610]		200 [2900]		240 [3480]		
Max. Cont. Pressure in Line T bar [PSI]													
- standard							20 [290]						
- high pressure (H option)							40 [580]						
Max. Torque at Servoamplifying Nm [lb-in]													
-with standard springs							3,0 [26]				3,0 [26]		
-with soft springs (LT option)							1,8 [16]				-		
Max. Torque w/o Servoamplifying Nm [lb-in]							120 [1065]						
Weight kg	5,3	5,4	5,5	5,6	5,7	5,8	6,0	6,3	6,5	7,0	7,4	8,0	8,7
[lb]	[11.7]	[11.9]	[12.2]	[12.4]	[12.6]	[12.8]	[13.2]	[13.9]	[14.3]	[15.4]	[16.3]	[17.6]	[19.2]
Dimension A mm	130,8	132,2	133,9	136,2	138,8	142,2	146,8	152,2	158,8	168,2	178,8	192	209,3
[in]	[5.15]	[5.20]	[5.27]	[5.36]	[5.47]	[5.60]	[5.78]	[5.99]	[6.25]	[6.62]	[7.04]	[7.56]	[8.24]

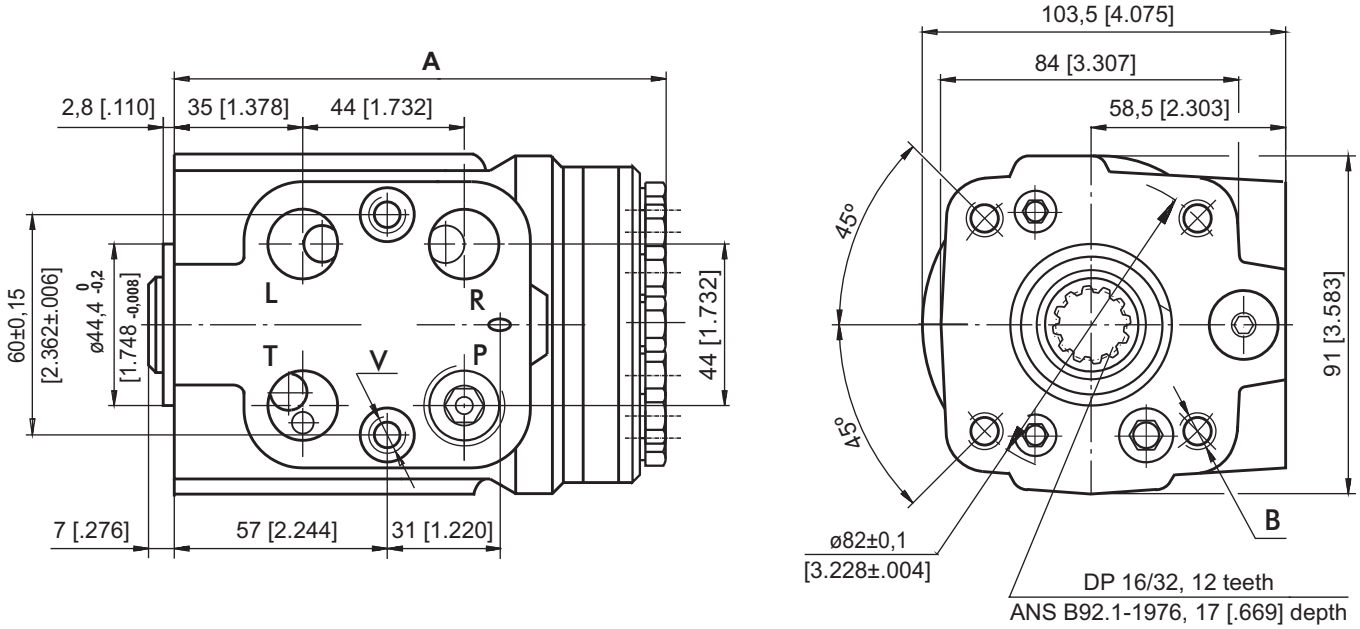
* Rated Flow at 100 RPM.
** Pressure Settings are at flow rate of 25 lpm [6.6 GPM] and viscosity 21 mm^2/s [105 SUS] at 50° C [122°F], supplied through priority valve.
***Pressure Settings are at flow rate of 2 lpm [.53 GPM] and viscosity 21 mm^2/s [105 SUS] at 50° C [122°F].

DIMENSIONS AND MOUNTING DATA - HKU.../5T(TU)

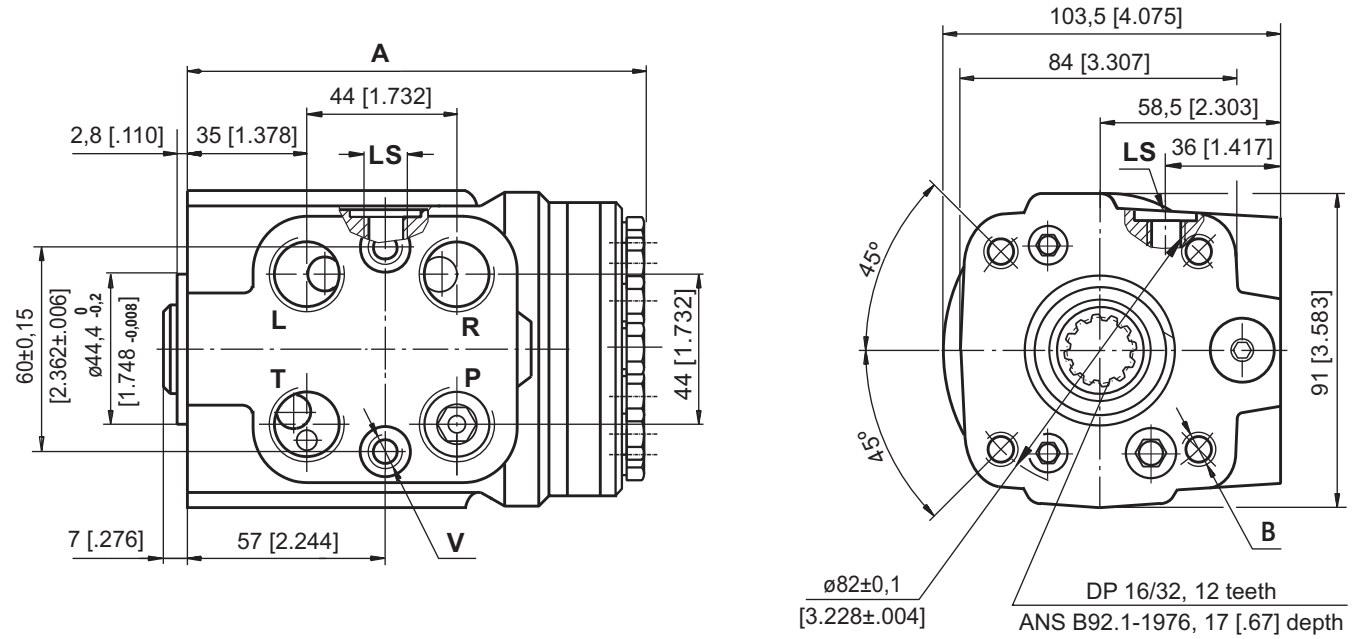




DIMENSIONS AND MOUNTING DATA - HKUS.../5(D)



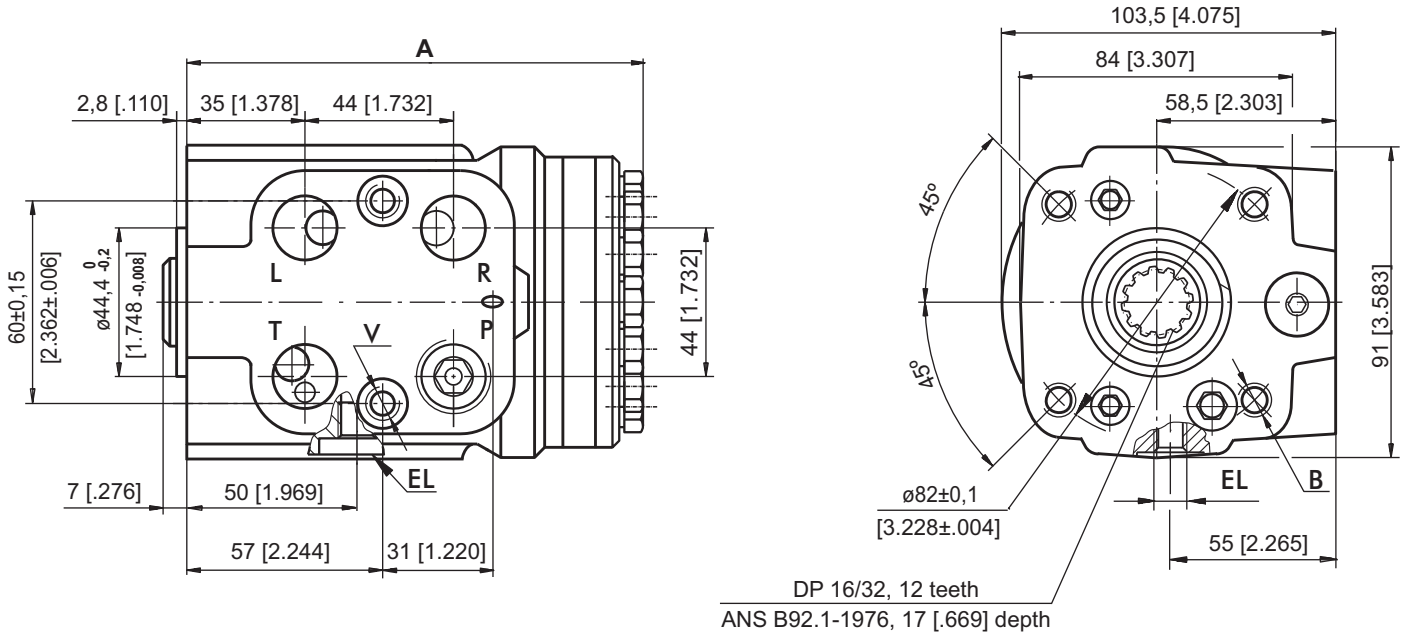
DIMENSIONS AND MOUNTING DATA - HKUS.../5T(DT)



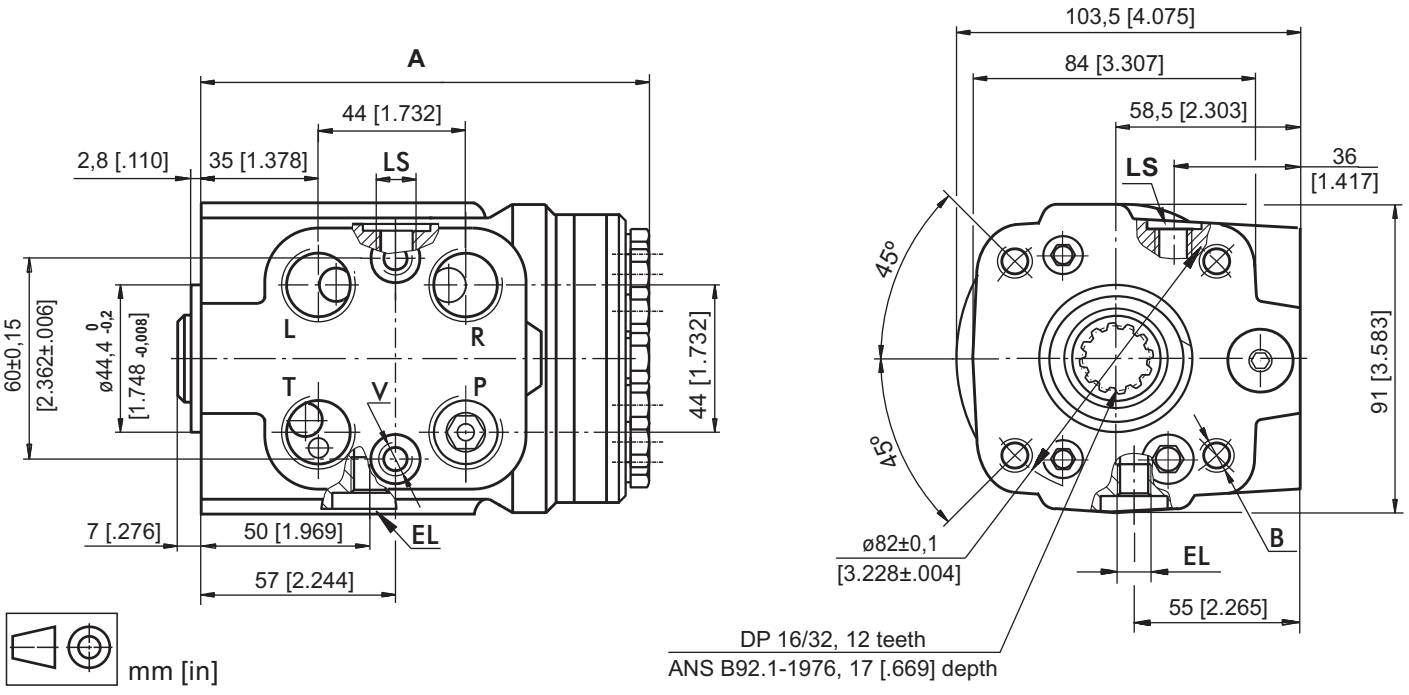
mm [in]

The ports are shown in the Table on page 22.

DIMENSIONS AND MOUNTING DATA - HKUS.../5E



DIMENSIONS AND MOUNTING DATA - HKUS.../5TE



mm [in]

code	Ports - *P, T, R, L Thread	Column Mounting Thread - B	Valve Mounting Thread - V	LS - Port	EL - Port
-	G1/2 15 mm [.59 in] depth	4 x M10 18 mm [.71 in] depth	2 x M10x1 16 mm [.63 in] depth	G1/4 14 mm [.55 in] depth	M10x1 10 mm [.39 in] depth
M	M22x1,5 15 mm [.59 in] depth	4 x M10 18 mm [.71 in] depth	2 x M10x1 16 mm [.63 in] depth	G1/4 14 mm [.55 in] depth	M10x1 10 mm [.39 in] depth
A	3/4 - 16 UNF O-ring 15 mm [.59 in] depth	4 x 3/8 - 16 UNC 15,7 mm [.62 in] depth	2 x 3/8 - 24 UNC 14,2 mm [.56 in] depth	7/16 - 20 UNC O-ring 12,7 mm [.50 in] depth	7/16 - 20 UNC O-ring 12,7 mm [.50 in] depth

*Threaded Ports P min 15 [.59] depth for pipe mounting.

ORDER CODE for HKUS.../5...

1	2	3	4	5	6	7	8	9	10	11
H K U S		/	5				-		-					

Pos.1 - Displacement code (see Specification Data)

40	- 39,6 cm³/rev [2.42 in³/rev]
50	- 49,5 cm³/rev [3.00 in³/rev]
63	- 65,6 cm³/rev [4.00 in³/rev]
80	- 79,2 cm³/rev [4.83 in³/rev]
100	- 99,0 cm³/rev [6.04 in³/rev]
125	- 123,8 cm³/rev [7.56 in³/rev]
160	- 158,4 cm³/rev [9.67 in³/rev]
200	- 198,0 cm³/rev [12.10 in³/rev]
250	- 247,5 cm³/rev [15.10 in³/rev]
320	- 316,8 cm³/rev [19.30 in³/rev]
400	- 396,0 cm³/rev [24.20 in³/rev]

Pos.2 - Versions

5 - Version 5 *"Closed Center - Non Reaction and Load Sensing Outlet"*

Pos.3 - Signal Type

omit - Static Load Signal
D - Dynamic Load Signal

Pos.4 - Priority Valve Connection

omit - Modulary Mounting
T - Pipe Mounting

Pos.5 - Electric Signal Connection

omit - Without electric signal connection
E - With electric signal connection*

Pos. 6 - LS - Valve Pressure Settings, bar

80	**100**	**125**	**150**	**175**

Pos. 7 - Ports

omit - BSPP (ISO 228)
M - Metric (ISO 262)
A - SAE (ANSI B 1.1 - 1982)

Pos. 8 - Max. Cont. Pressure in line T

omit - Standard
H - High pressure

Pos. 9 - Input torque

omit - Standard
LT** - Low

Pos.10 - Option (Paint)***

omit - No Paint
P - Painted****
PC - Corrosion Protected Paint****
PS - Special Paint*****
PCS - Special Corrosion Protected Paint*****

Pos.11 - Design Series

omit - Factory specified

Notes:
* Available with Static Load Signal only.
** Available for displacement from 40 to 200 only.
*** Colour at customer's request.
**** Not for HKUS.../5 and HKUS.../5D.
***** Non painted feeding surfaces, colour at customer's request.
The steering units are mangano-phosphatized as standard.

ORDER CODE for HKU.../5T...

1	2	3	4	5	6	7	8
H K U		/	5		-					

Pos.1 - Displacement code (see Specification Data)

40	- 39,6 cm³/rev [2.42 in³/rev]
50	- 49,5 cm³/rev [3.00 in³/rev]
63	- 65,6 cm³/rev [4.00 in³/rev]
80	- 79,2 cm³/rev [4.83 in³/rev]
100	- 99,0 cm³/rev [6.04 in³/rev]
125	- 123,8 cm³/rev [7.56 in³/rev]
160	- 158,4 cm³/rev [9.67 in³/rev]
200	- 198,0 cm³/rev [12.10 in³/rev]
250	- 247,5 cm³/rev [15.10 in³/rev]
320	- 316,8 cm³/rev [19.30 in³/rev]
400	- 396,0 cm³/rev [24.20 in³/rev]
500	- 495,0 cm³/rev [30.20 in³/rev]
630	- 623,6 cm³/rev [38.05 in³/rev]

Pos.2 - Versions

5 - Version 5 *"Closed Center - Non Reaction and Load Sensing Outlet"*

Pos.3 - Priority Valve Connection

T - Pipe Mounting (only)
TU - Pipe Mounting (ports R and L in neutral position are connected to the drain line T)

Pos.4 - Ports

omit - BSPP (ISO 228)
M - Metric (ISO 262)
A - SAE (ANSI B 1.1 - 1982)

Pos.5 - Max. Cont. Pressure in line T

omit - Standard
H - High pressure

Pos.6 - Input torque

omit - Standard
LT* - Low

Pos.7 - Option (Paint)**

omit - No Paint
P - Painted
PC - Corrosion Protected Paint
PS - Special Paint***
PCS - Special Corrosion Protected Paint***

Pos.8 - Design Series

omit - Factory specified

Notes:
* Available only for displacement from 40 to 200.
** Colour at customer's request.
*** Non painted feeding surfaces, colour at customer's request.
The steering units are mangano-phosphatized as standard.