HANSA · TMP srl

HYDRAULIC COMPONENTS
HYDROSTATIC TRANSMISSIONS
GEARBOXES - ACCESSORIES

Certified ISO 9001 and 14001 TÜV INTERCERT SAAR

HT 73 / B / 105 / 0513 / E

Hydraulic Pilot Control Valves

HPVS SERIES
SINGLE AND SECTIONAL
PILOT CONTROL VALVES

HPVM SERIES
SINGLE AND SECTIONAL
PILOT CONTROL VALVES

HPVL/SPVL SERIES
HYDRAULIC PILOT CONTROLS

CPVL SERIES
HYDRAULIC PILOT CONTROLS

HPVB E SERIES
HYDRAULIC PILOT CONTROLS

HPV1 - HPV2 SERIES
HYDRAULIC PILOT CONTROLS

HPVP SERIES
FOOT PEDALS

SUH SERIES
PILOT SUPPLY UNITS

HANDLES
MULTI-FUNCTION ERGONOMIC HANDLES
AND KNOBS

CONTENTS

HPVS SERIES
HYDRAULIC PILOT CONTROL

HYDRAULIC PILOT CONTROL HPVS

HPV Pilot Control Valves are part of the comprehensive range of our product.
The product, with its single lever single axis control, and supported by an extensive range of control curve characteristics and handle options, makes it suitable for a wide range of both mobile and industrial applications.
Our engineers can offer specialist support to optimise this product to suit your application.
The product is supported by a comprehensive sales and service facility around the world.

BENEFITS

- Compact and light weight
- Suitable for arm rest of console mounting
- Compatible with a wide range of product
- Stylish good looks suitable for modern cabs
- Operator is insulated from high temperature components
- Proven, simple pressure reducing elements
- Wide range of low hysteresis, high accuracy, pressure control curves
- Wide range of electrical options in both standard and multi-functional ergonomic handles
- Low effort lever control

ORDER CODE

HPVS XX X XX F X X XX

Micro Switch options

M1	= 1 switch senses out of center position
M2	= 2 switches sense movement away from neutral each way
M3	= 1 switch senses forward movement away from neutral
M4	= 1 switch senses backward movement away from neutral

Port Size & Type

	= Omit for 1/4” BSP
S	= 7/16”-20 UNF SAE #4

Return Spring

0	= 1.4 to 2.8 daN (Standard)
1	= 3.0 to 4.5 daN

F	= Standard Control Plunger

Metering curve

see ***PCV Characteristics*** catalogue

Handle type

see ***Handles*** catalogue

W	= Without Handle

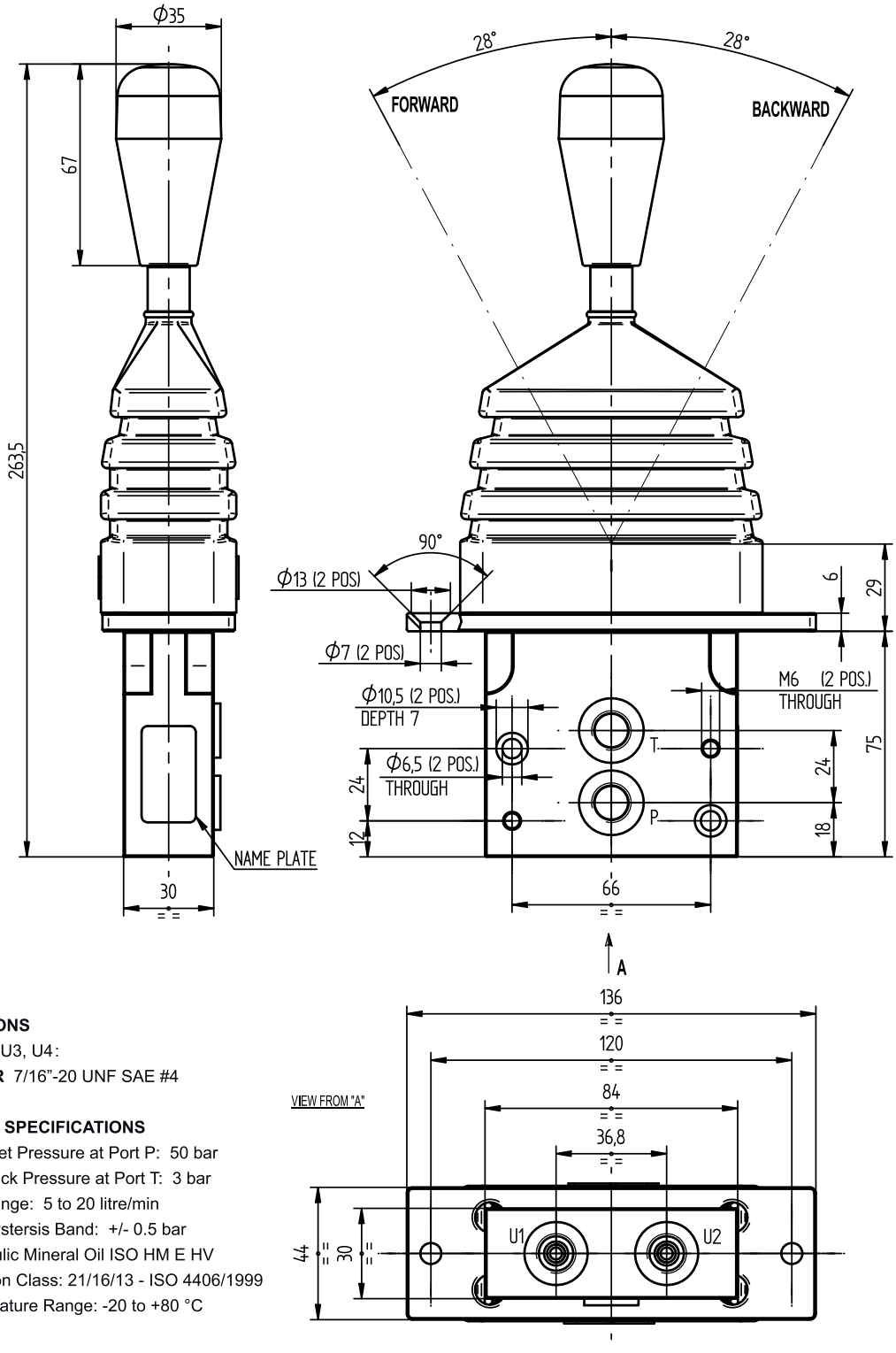
Basic Model Number - includes 2 service ports

01	= lever spring returned to neutral
02	= lever detented in any position
03	= lever detented in any position with neutral sensor
04	= lever detented at both stroke ends
05	= lever detented in neutral position
06	= lever detented in neutral and friction hold in any position
07	= lever detented to U1 and spring return to neutral from U2
08	= lever detented to U2 and spring return to neutral from U1

HPVS	= sectional hydraulic compact pilot valve series S

HYDRAULIC PILOT CONTROL HPVS

Technical Data and Installation Drawing



PORT OPTIONS

P, T, U1, U2, U3, U4:

1/4" BSP **OR** 7/16"-20 UNF SAE #4

TECHNICAL SPECIFICATIONS

Maximum Inlet Pressure at Port P: 50 bar

Maximum Back Pressure at Port T: 3 bar

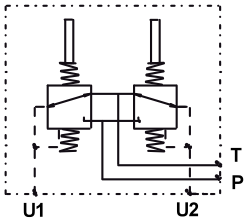
Inlet Flow Range: 5 to 20 litre/min

Maximum Hystersis Band: +/- 0.5 bar

Fluid: Hydraulic Mineral Oil ISO HM E HV

Contamination Class: 21/16/13 - ISO 4406/1999

Fluid Temperature Range: -20 to +80 °C



CIRCUIT DIAGRAM

HPVM SERIES
HYDRAULIC PILOT CONTROL

HYDRAULIC PILOT CONTROL HPVM

HPVM Pilot Control Valves are part of the comprehensive range of our product.
The product, with its double lever single axis control, and supported by an extensive range of control curve characteristics and handle options, makes it suitable for a wide range of both mobile and industrial applications.
Our engineers can offer specialist support to optimise this product to suit your application.
The product is supported by a comprehensive sales and service facility around the world.

BENEFITS

- Compact and light weight
- Suitable for arm rest of console mounting
- Compatible with a wide range of product
- Stylish good looks suitable for modern cabs
- Operator is insulated from high temperature components
- Proven, simple pressure reducing elements
- Wide range of low hysteresis, high accuracy, pressure control curves
- Wide range of electrical options in both standard and multi-functional ergonomic handles
- Low effort lever control

ORDER CODE

HPVM XX X XX F X X XX

Micro Switch options

M1	= 1 switch senses out of center position
M2	= 2 switches sense movement away from neutral each way
M3	= 1 switch senses forward movement away from neutral
M4	= 1 switch senses backward movement away from neutral

Port Size & Type

	= Omit for 1/4" BSP
S	= 7/16"-20 UNF SAE #4

Return Spring

0	= 1.4 to 2.8 daN (Standard)
1	= 3.0 to 4.5 daN

F	= Standard Control Plunger

Metering curve

see ***PCV Characteristics*** catalogue

Handle type

see ***Handles*** catalogue

W	= Without Handle

Basic Model Number - includes 2 service ports

01	= lever spring returned to neutral
02	= lever detented in any position
03	= lever detented in any position with neutral sensor
04	= lever detented at both stroke ends
05	= lever detented in neutral position
06	= lever detented in neutral and friction hold in any position
07	= lever detented to U1 and spring return to neutral from U2
08	= lever detented to U2 and spring return to neutral from U1

HPVM	= sectional hydraulic compact pilot valve series M

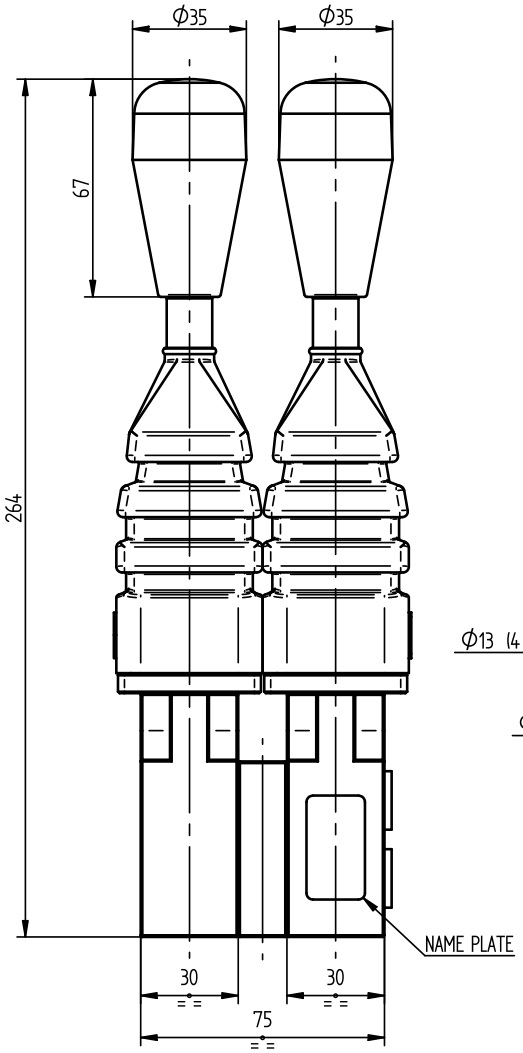
Ordering key for multiple sectional HPVM assemblies is as follows:-

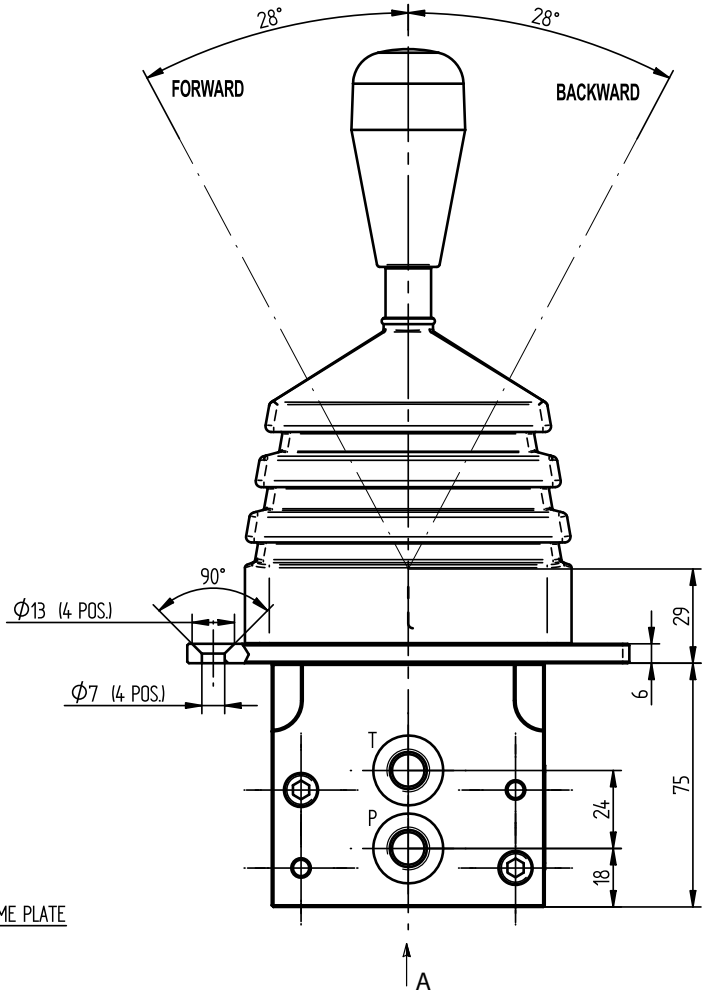
Code each section in turn as shown on the coding chart on this page and then put them in sequence as shown in the example below.

Example: 2 section assembly - HPVM01KB001F0+HPVM02KL015F0

HYDRAULIC PILOT CONTROL HPVM

Technical Data and Installation Drawing





PORT OPTIONS

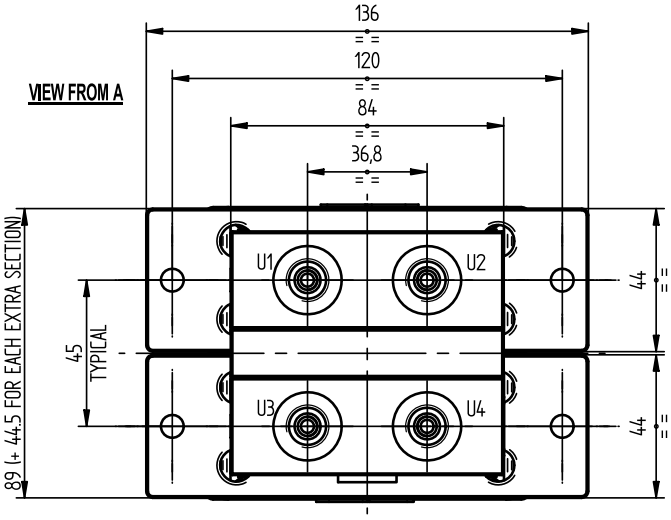
P, T, U1, U2, U3, U4:
1/4" BSP **OR** 7/16" - 20 UNF SAE #4

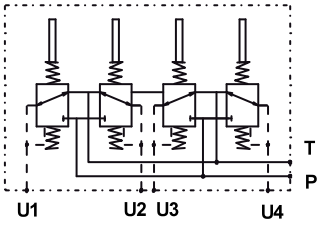
TECHNICAL SPECIFICATIONS

Maximum Inlet Pressure at Port P: 50 bar
Maximum Back Pressure at Port T: 3 bar
Inlet Flow Range: 5 to 20 litre/min
Maximum Hystersis Band: +/- 0.5 bar
Fluid: Hydraulic Mineral Oil ISO HM E HV
Contamination Class: 21/16/13 - ISO 4406/1999
Fluid Temperature Range: -20 to +80 °C

INSTALLATION DATA

Extra Pilot Valve Sections can be added as required. On a third section the ports will be designated U5 & U6, on a fourth section the ports will be designated U7 & U8 etc.





CIRCUIT DIAGRAM

HPVL-SPVL SERIES
HYDRAULIC PILOT CONTROL

HYDRAULIC PILOT CONTROL HPVL / SPVL

LOADER TYPE PILOT CONTROLS

HPVL and SPVL Pilot Control Valves are part of the comprehensive range of our product, and with the inclusion of electrical detents are designed specifically for wheeled loader applications.
The product is supported by an extensive range of control curve characteristics and handle options, and can be supplied to control either two service or three service loader applications.
Our engineers can offer specialist support to optimise this product to suit your application.
The product is supported by a comprehensive sales and service facility around the world.

BENEFITS

- Compact and light weight
- All ports on bottom face for ease of installation
- Stylish good looks suitable for modern cabs
- Operator is insulated from high temperature components
- Proven, simple pressure reducing elements
- Wide range of low hysteresis, high accuracy, pressure control curves
- Wide range of electrical options in both standard and multi-functional ergonomic handles
- Electrically releasable detents available as required
- Low effort lever control

ORDER CODE

XPVL 1 XX XX XXX X X

Return spring

0	=	Standard:	1.4 to 2.8 daN
1	=	Light:	3.0 to 4.5 daN
2	=	Medium:	7.5 to 13.8 daN

Gaiter

R	=	Round
S	=	Square

Metering curve

*see **PCV CHARACTERISTICS** catalogue*

Handle type

W	=	Without Handle

*see **HANDLES** catalogue*

Basic model type

04	=	To control 2 services
06	=	To control 3 services

1	=	Design Mark

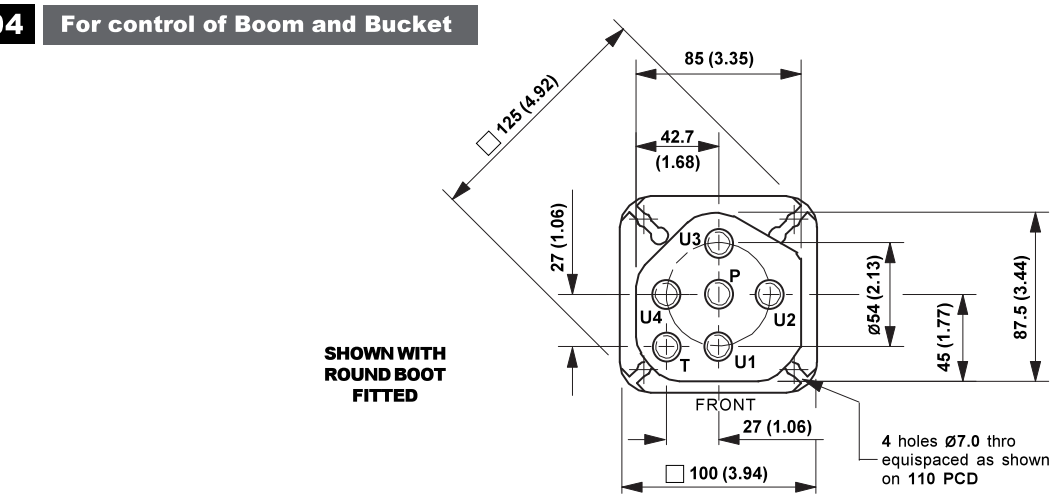
HPVL	=	Hydraulic Pilot Control
SPVL	=	Hydraulic Pilot Control

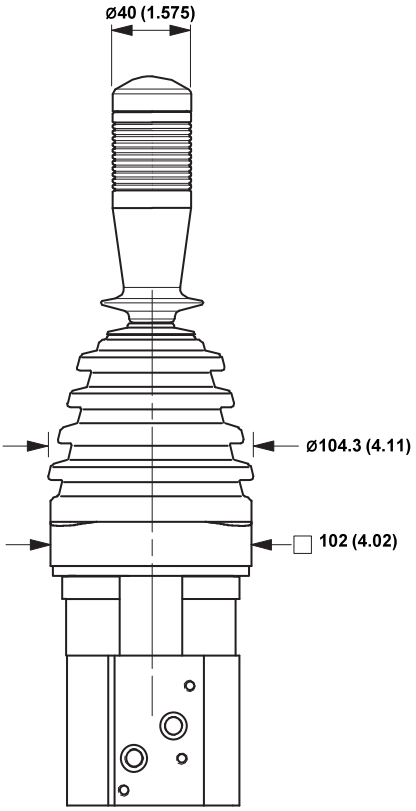
Example: ordering number: HPVL 1 06 SA 015 S 1
model number: HPVL 1 06 SA 015 S 1 / 123456
(assigned number)

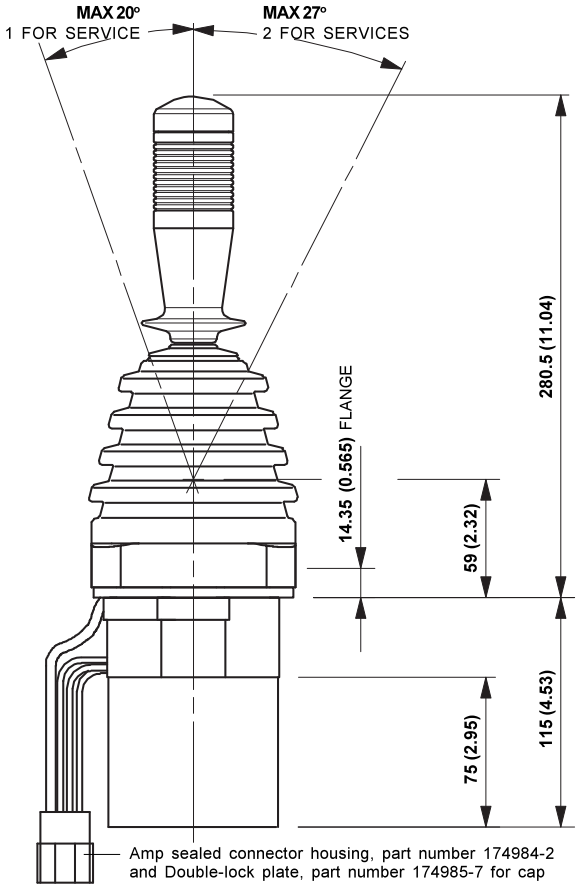
HYDRAULIC PILOT CONTROL HPVL / SPVL

Installation Drawing

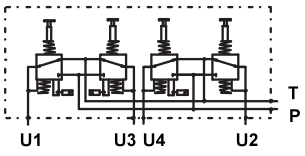
HPVL104 **For control of Boom and Bucket**

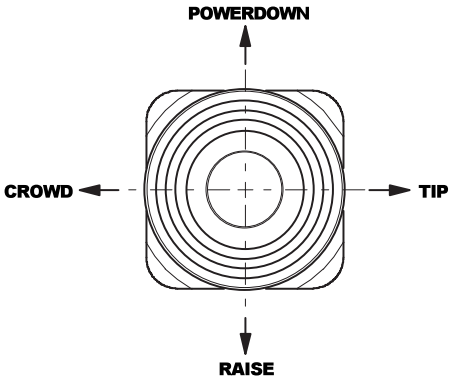






CIRCUIT DIAGRAM

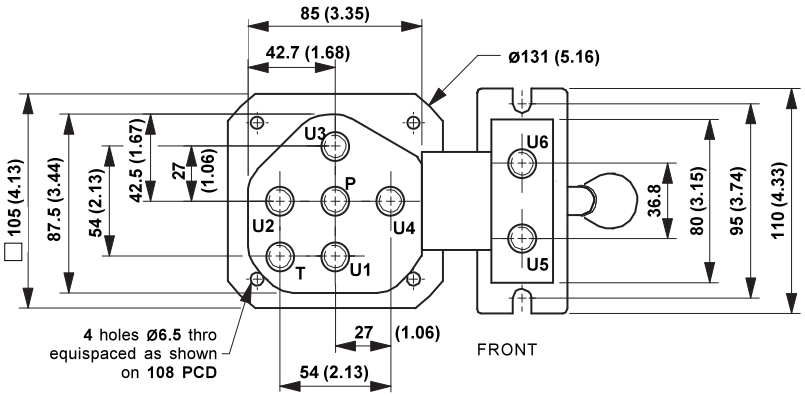




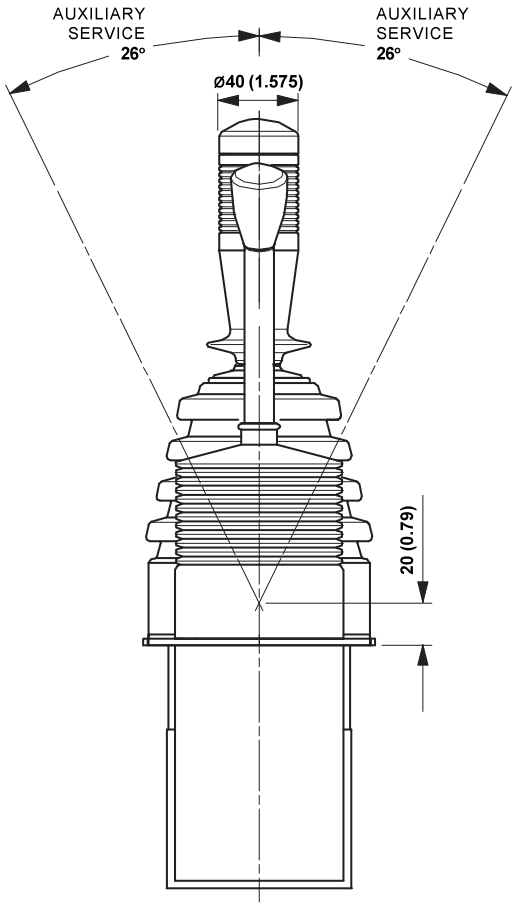
HYDRAULIC PILOT CONTROL HPVL / SPVL

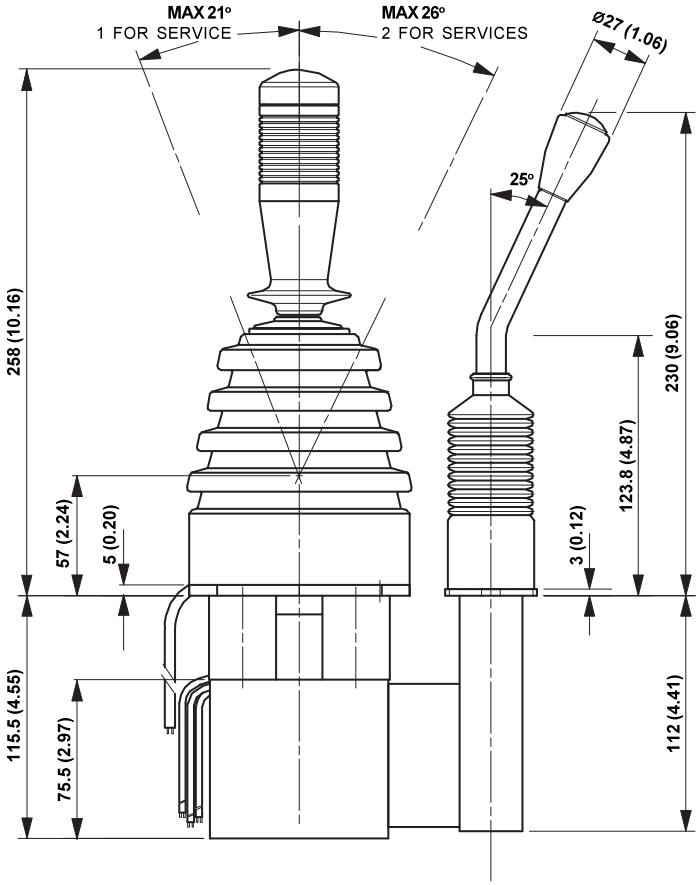
Installation Drawing

HPVL106 For control of Boom, Bucket and Auxiliary

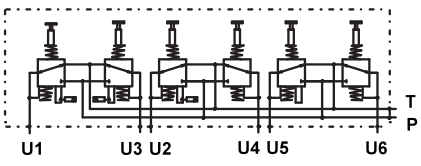


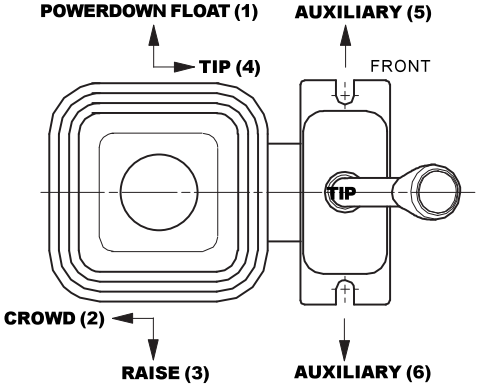
SHOWN WITH SQUARE BOOT FITTED

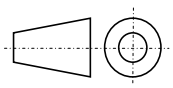




CIRCUIT DIAGRAM



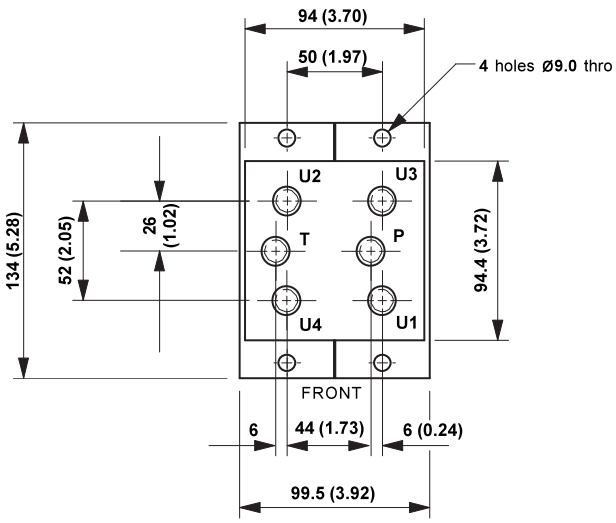




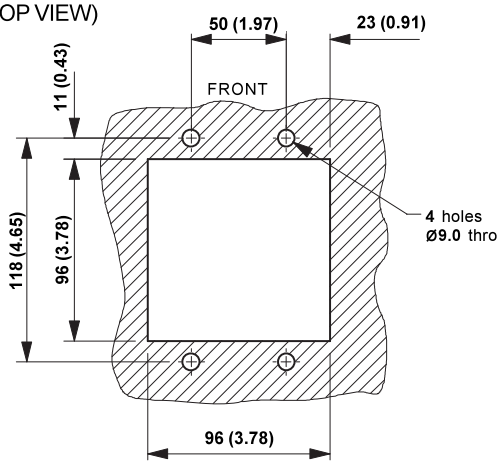
HYDRAULIC PILOT CONTROL HPVL / SPVL

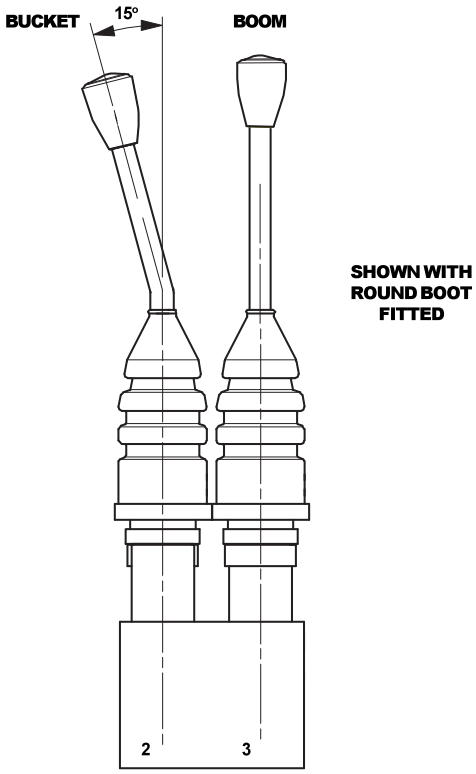
Installation Drawing

SPVL104 For control of Boom and Bucket

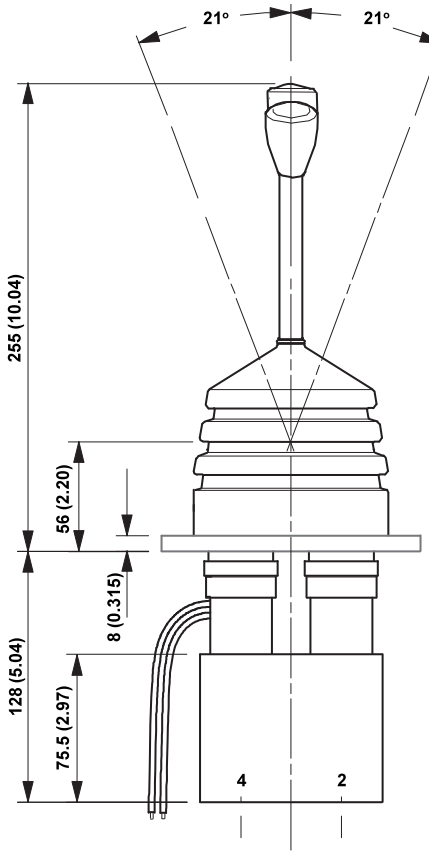


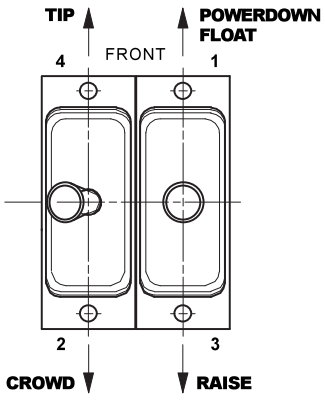
MOUNTING PANEL DETAILS
(TOP VIEW)



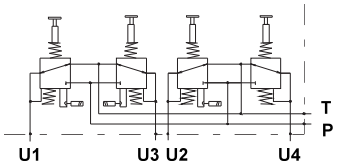


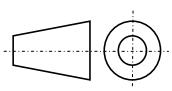
SHOWN WITH ROUND BOOT FITTED





CIRCUIT DIAGRAM

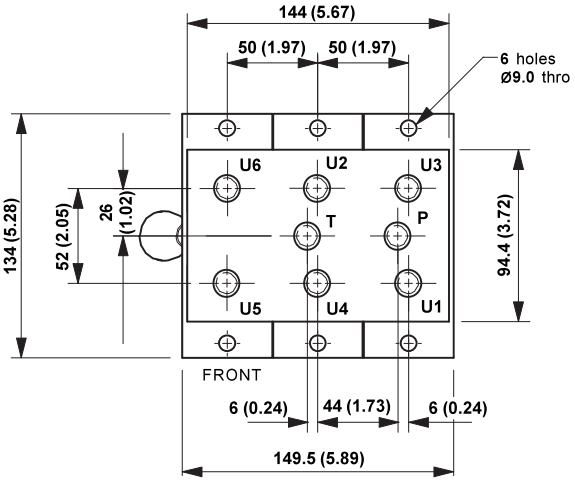




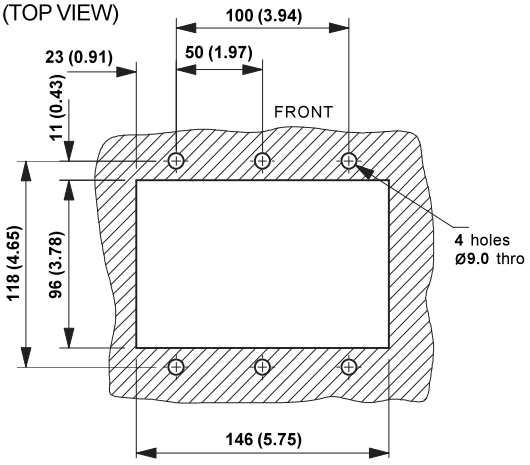
HYDRAULIC PILOT CONTROL HPVL - SPVL

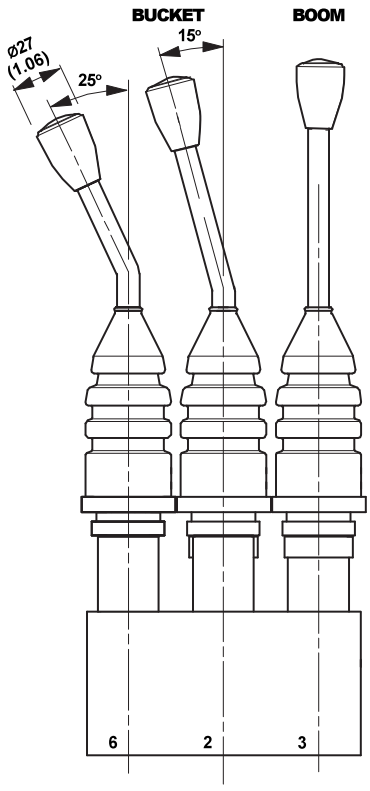
Installation Drawing

SPVL106 For control of Boom, Bucket and Auxiliary

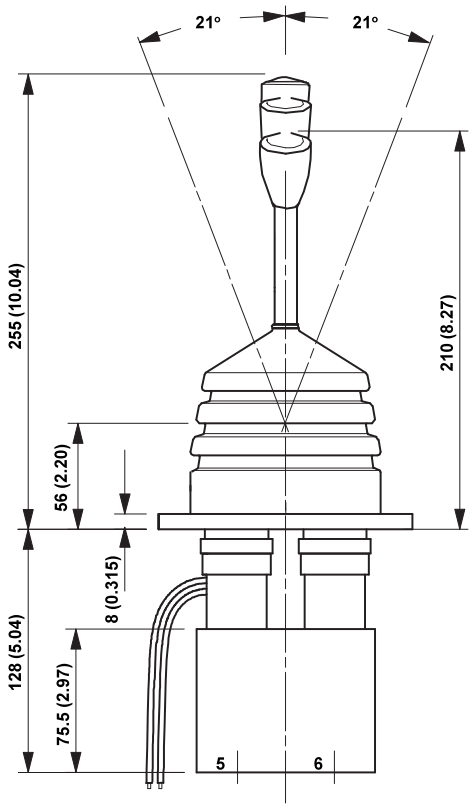


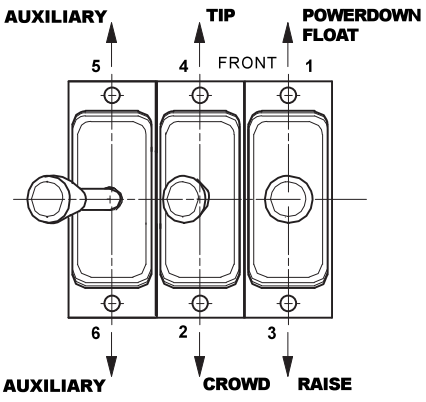
MOUNTING PANEL DETAILS
(TOP VIEW)



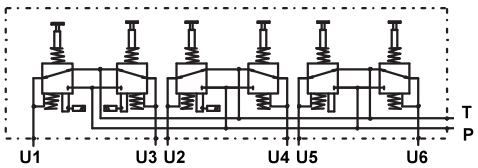


SHOWN WITH SQUARE BOOT FITTED





CIRCUIT DIAGRAM



CPVL SERIES
HYDRAULIC PILOT CONTROL

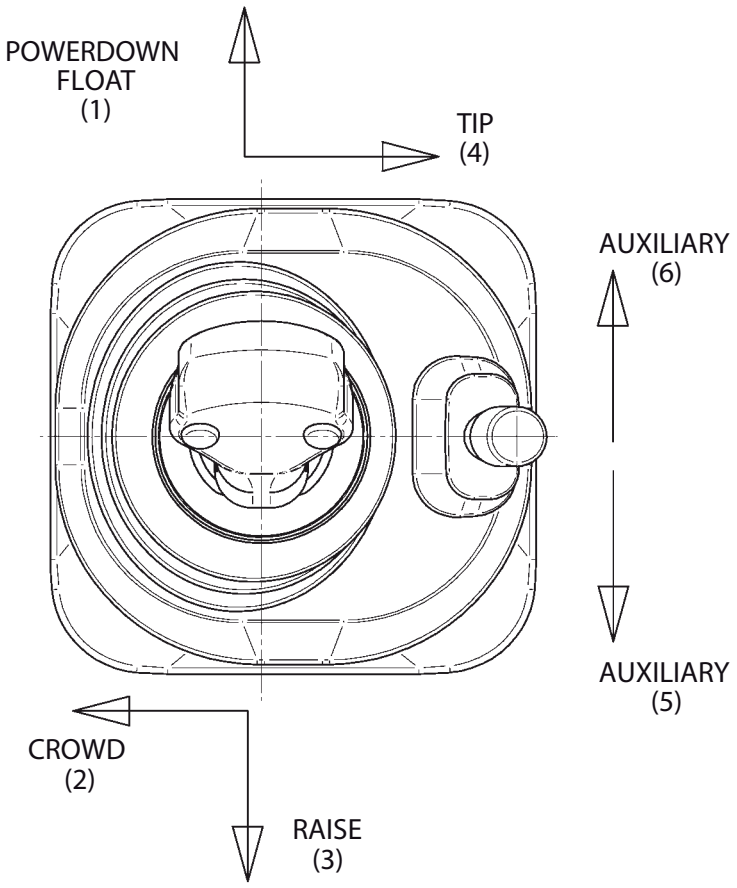
HYDRAULIC PILOT CONTROL CPVL 106

LOADER TYPE PILOT CONTROLS

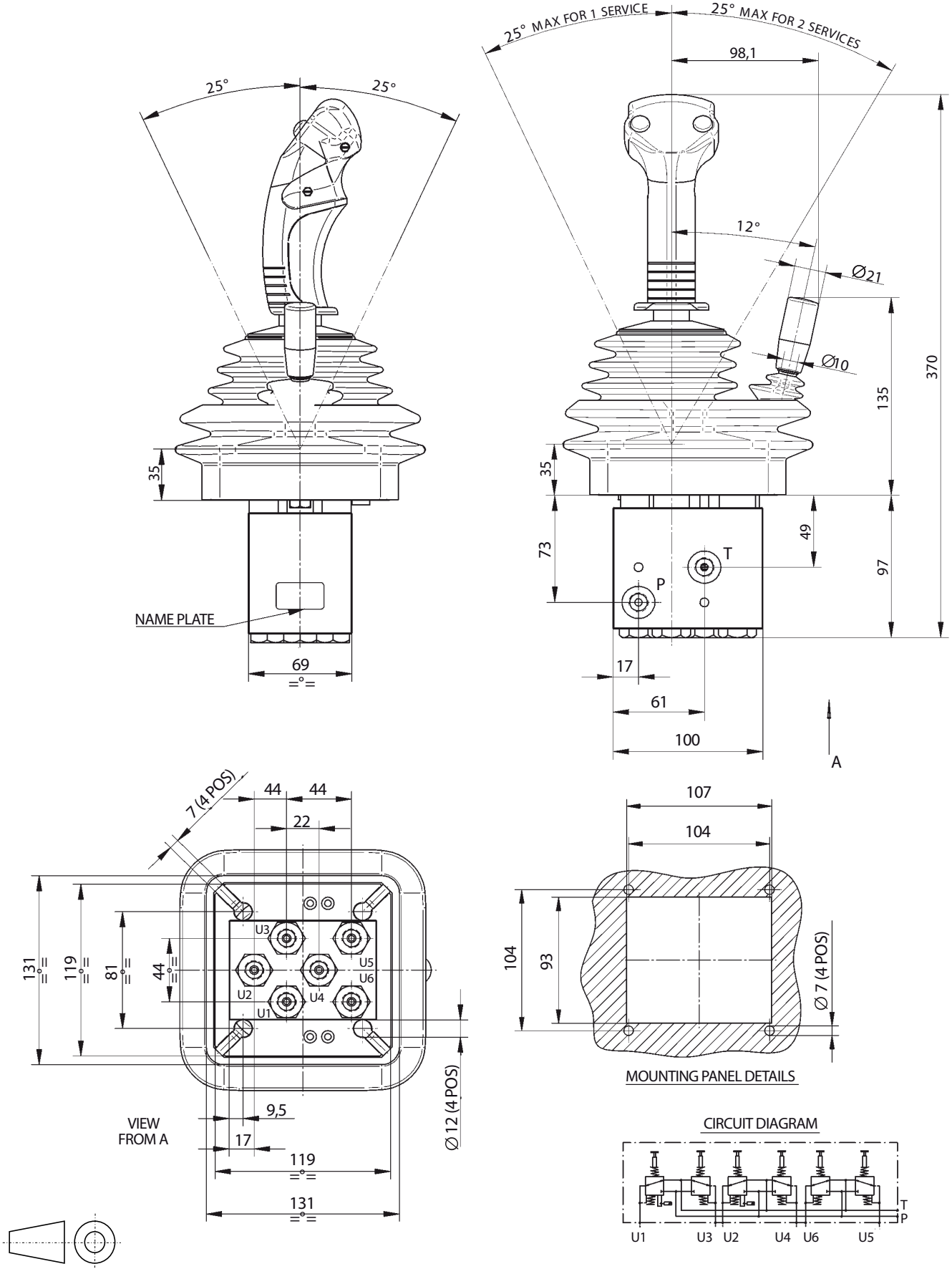
CPVL 106 Pilot Control Valves are part of the comprehensive range of our prduct, and with the inclusion of electrical detents are designed specifically for wheeled loader applications. The product is supported by an extensive range of control curve characteristics and handle options, and can be supplied to control either two service or three service loader applications. Our engineers can offer specialist support to optimise this product to suit your application. The product is supported by a comprehensive sales and service facility around the world.

BENEFITS

- Compact and light weight
- Optional linkage for lever connection
- Stylish good looks suitable for modern cabs
- Operator is insulated from high temperature components
- Proven, simple pressure reducing elements
- Wide range of low hysteresis, high accuracy, pressure control curves
- Wide range of electrical options in both standard and multi-functional ergonomic handles
- Electrically and mechanically releasable detents available as required
- Low effort lever control

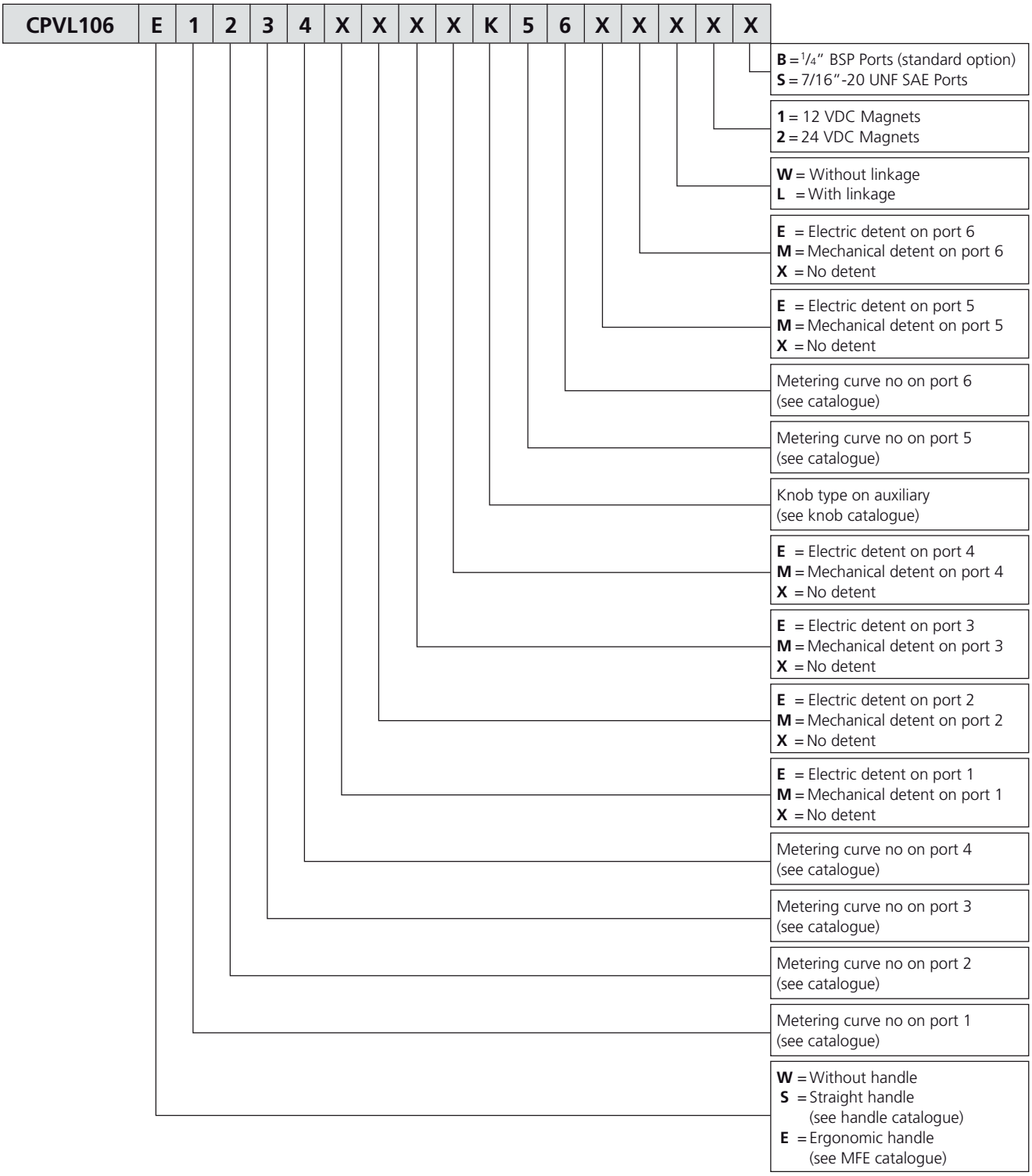


HYDRAULIC PILOT CONTROL CPVL 106
Installation Drawing



HYDRAULIC PILOT CONTROL CPVL 106

ORDER CODE



Example:
CPVL106E018050050050MXXXKG050018XEW1B

HPVB/E SERIES

ONE AND TWO LEVER OPERATED PILOT CONTROL VALVES

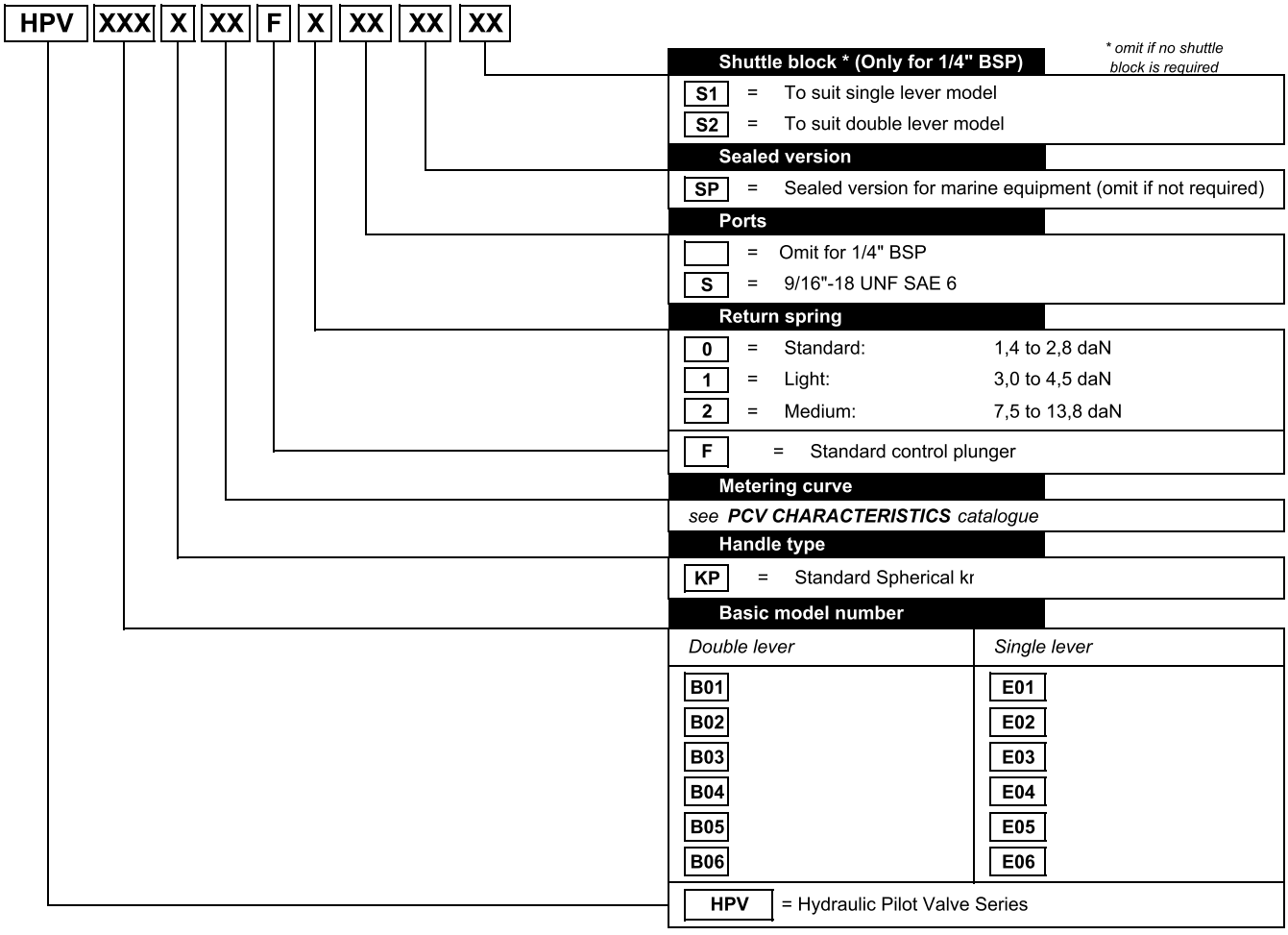
HYDRAULIC PILOT CONTROL HPVB/E

HPV Pilot Control Valves are part of the comprehensive range of our product, and with the inclusion of electrical detents are designed specifically for wheeled loader applications.
This product, with is individual lever control,supported by an extensive range of control curve characteristics makes it suitable for a wide range of applications
Our engineers can offer specialist support to optimise this product to suit your application.
The product is supported by a comprehensive sales and service facility around the world.

BENEFITS

- Compact and light weight
- All ports on bottom face for ease of installation
- Simple to mount
- Compatible with a wide range of product
- Operator is insulated from high temperature components
- Proven, simple pressure reducing elements
- Wide range of low hysteresis, high accuracy, pressure control curves
- Low effort lever control with spring centred and detented version available

ORDER CODE

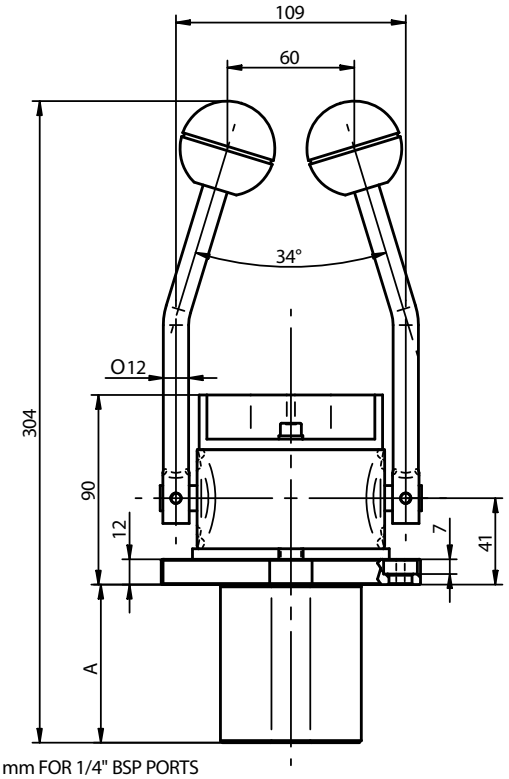


HYDRAULIC PILOT CONTROL HPVB/E

Installation Drawing

BO1 PILOT OPERATED CONTROL

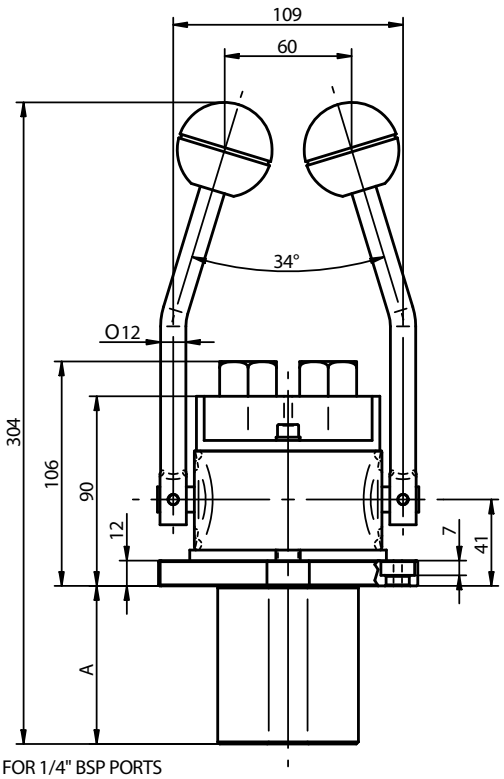
2 side levers with return spring



A=75 mm FOR 1/4" BSP PORTS
A=82 mm FOR 9/16"-18 UNF SAE6 PORTS

BO2 PILOT OPERATED CONTROL

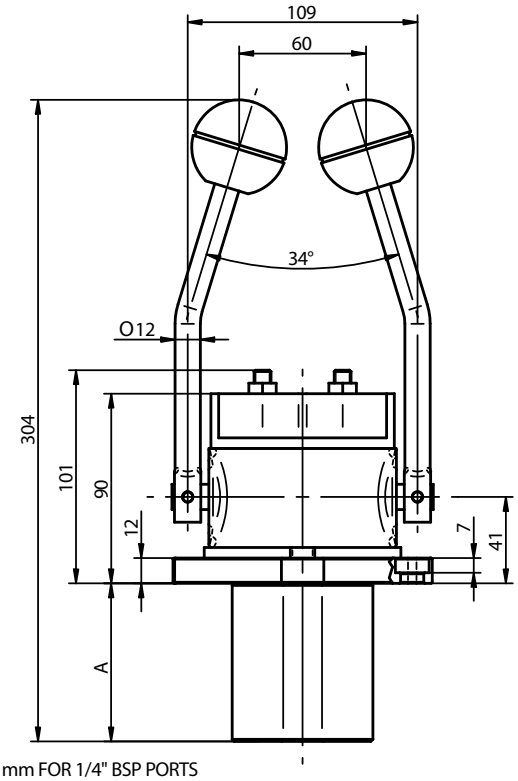
2 side levers with mechanical detent



A=75 mm FOR 1/4" BSP PORTS
A=82 mm FOR 9/16"-18 UNF SAE6 PORTS

BO3 PILOT OPERATED CONTROL

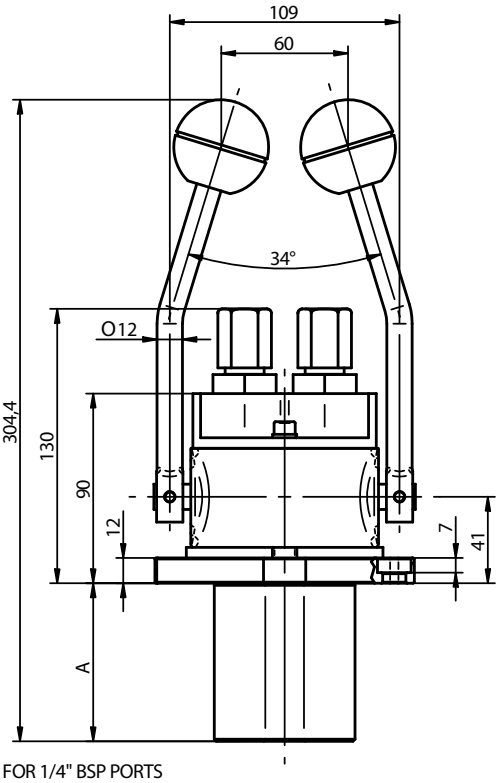
2 side levers with detent in any position



A=75 mm FOR 1/4" BSP PORTS
A=82 mm FOR 9/16"-18 UNF SAE6 PORTS

BO4 PILOT OPERATED CONTROL

2 side levers with detent in any position + neutral position sensor



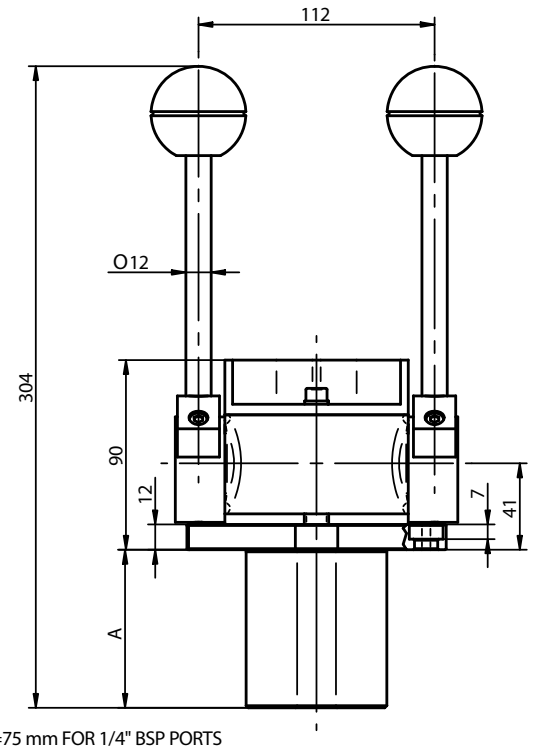
A=75 mm FOR 1/4" BSP PORTS
A=82 mm FOR 9/16"-18 UNF SAE6 PORTS

HYDRAULIC PILOT CONTROL HPVB/E

Installation Drawing

B05 PILOT OPERATED CONTROL

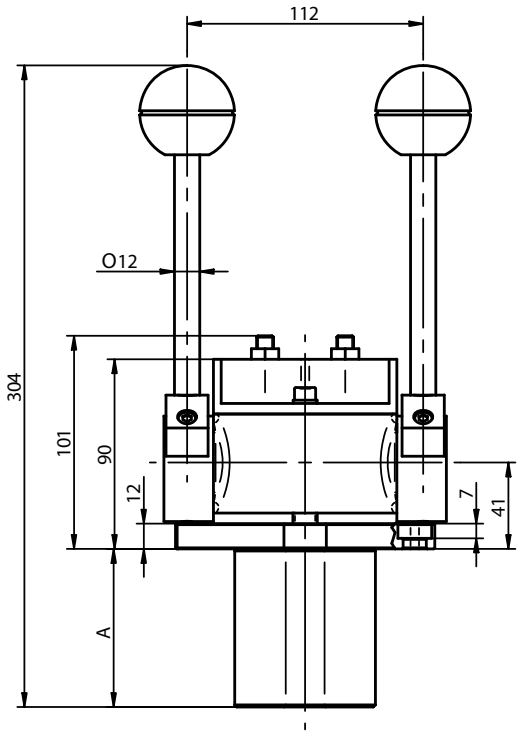
2 side levers with detent in rest



A=75 mm FOR 1/4" BSP PORTS
A=82 mm FOR 9/16"-18 UNF SAE6 PORTS

B06 PILOT OPERATED CONTROL

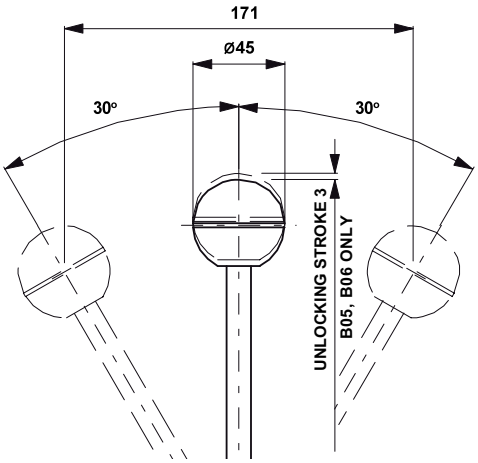
2 side levers with detent in rest and clutch in any position



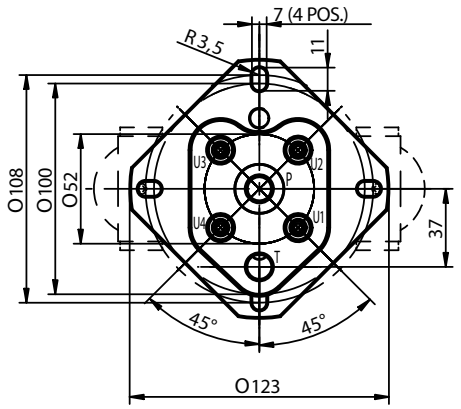
A=75 mm FOR 1/4" BSP PORTS
A=82 mm FOR 9/16"-18 UNF SAE6 PORTS

HPVB SERIES TYPICAL TECHNICAL DATA

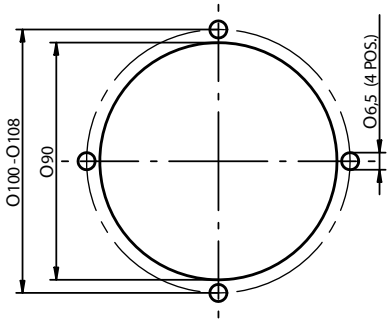
TYPICAL RANGE OF LEVER MOVEMENT



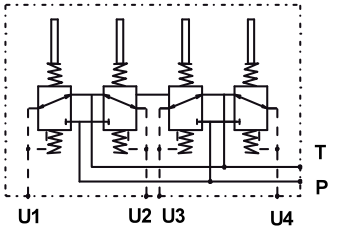
TYPICAL PORT ARRANGEMENT



TYPICAL INSTALLATION DIMENSIONS



TYPICAL HYDRAULIC CIRCUIT DIAGRAM

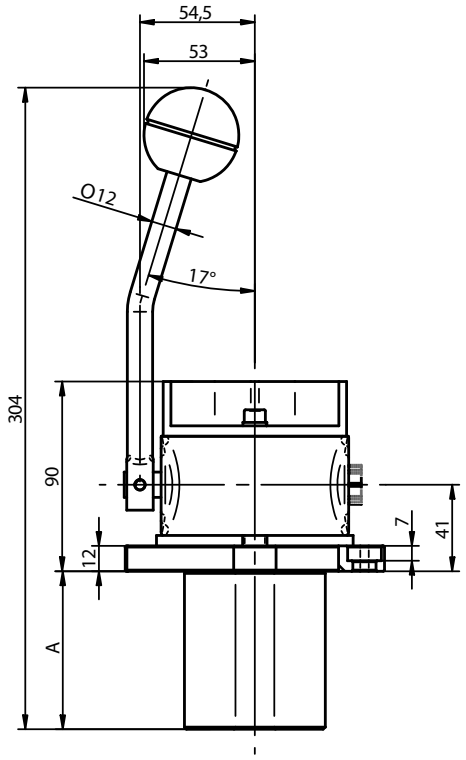


HYDRAULIC PILOT CONTROL HPVB/E

Installation Drawing

EO1 PILOT OPERATED CONTROL

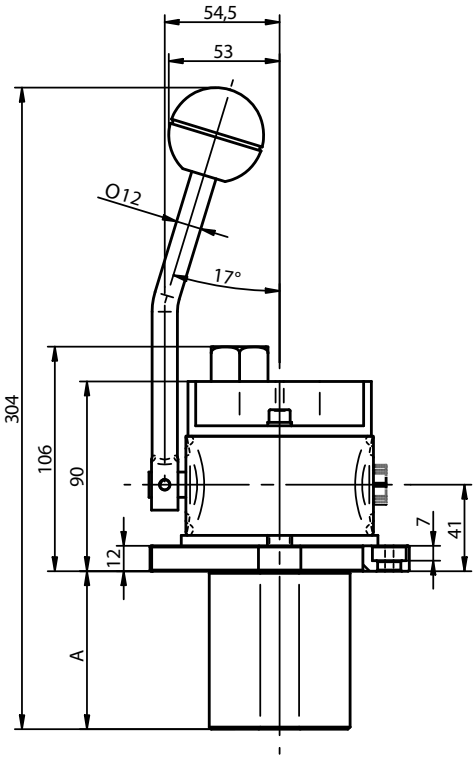
single side lever with return spring



A=75 mm FOR 1/4" BSP PORTS
A=82 mm FOR 9/16"-18 UNF SAE6 PORTS

EO2 PILOT OPERATED CONTROL

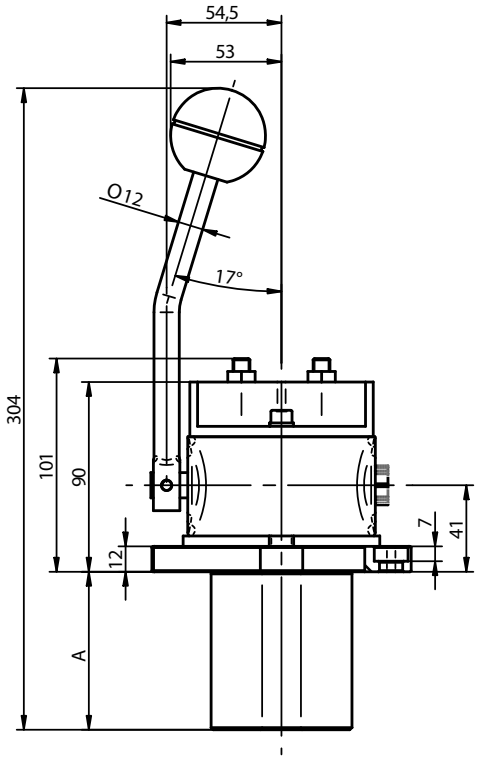
single side lever with mechanical detent



A=75 mm FOR 1/4" BSP PORTS
A=82 mm FOR 9/16"-18 UNF SAE6 PORTS

EO3 PILOT OPERATED CONTROL

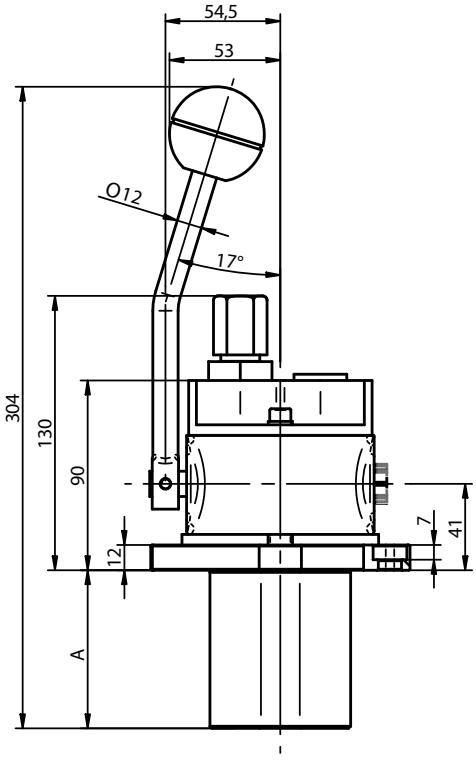
single side lever with detent in any position



A=75 mm FOR 1/4" BSP PORTS
A=82 mm FOR 9/16"-18 UNF SAE6 PORTS

EO4 PILOT OPERATED CONTROL

single side lever with detent in any position + neutral position sensor



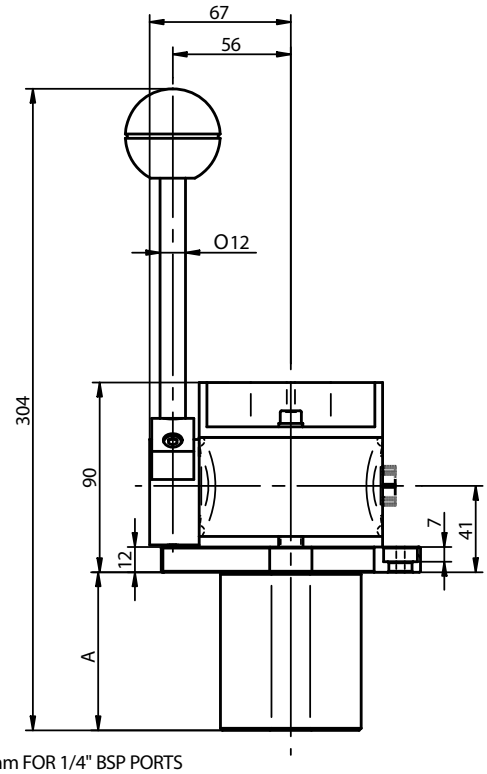
A=75 mm FOR 1/4" BSP PORTS
A=82 mm FOR 9/16"-18 UNF SAE6 PORTS

HYDRAULIC PILOT CONTROL HPVB/E

Installation Drawing

E05 PILOT OPERATED CONTROL

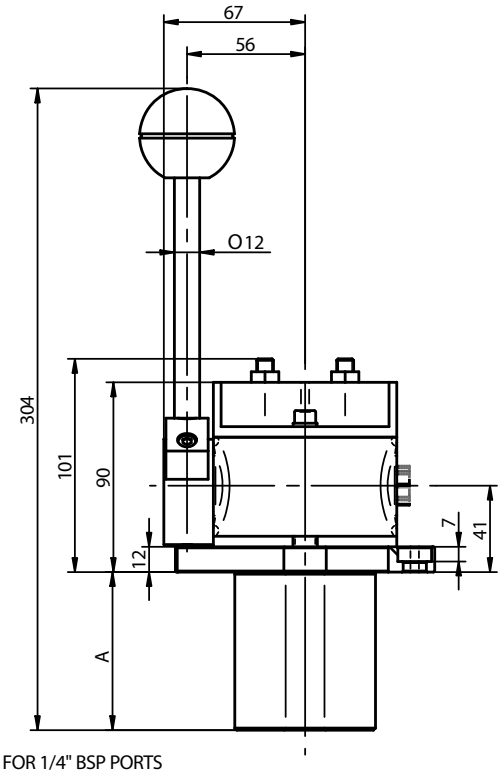
single side lever with detent in rest



A=75 mm FOR 1/4" BSP PORTS
A=82 mm FOR 9/16"-18 UNF SAE6 PORTS

E06 PILOT OPERATED CONTROL

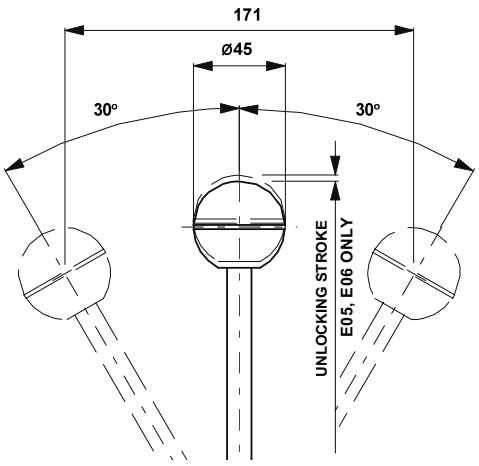
single side lever with detent in rest and clutch in any position



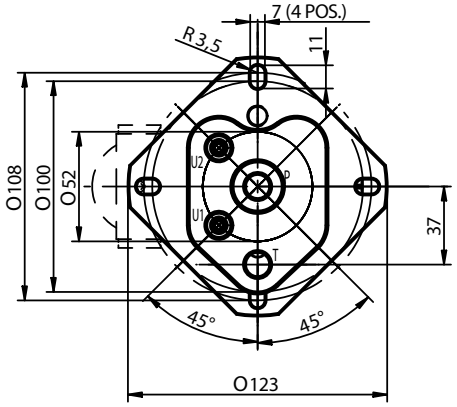
A=75 mm FOR 1/4" BSP PORTS
A=82 mm FOR 9/16"-18 UNF SAE6 PORTS

HPVE SERIES TYPICAL TECHNICAL DATA

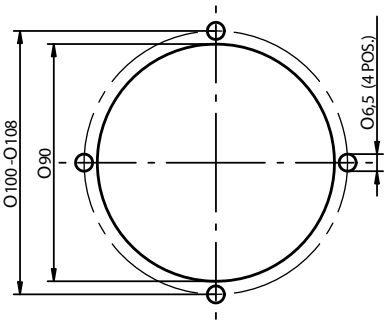
TYPICAL RANGE OF LEVER MOVEMENT



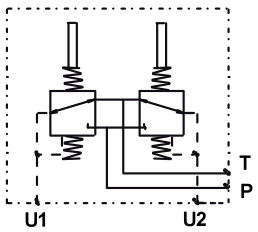
TYPICAL PORT ARRANGEMENT



TYPICAL INSTALLATION DIMENSIONS



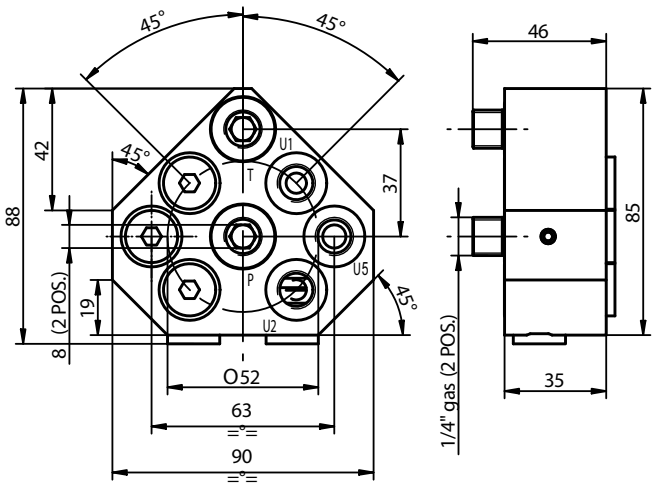
TYPICAL HYDRAULIC CIRCUIT DIAGRAM



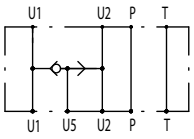
HYDRAULIC PILOT CONTROL HPVB/E

Installation Drawing

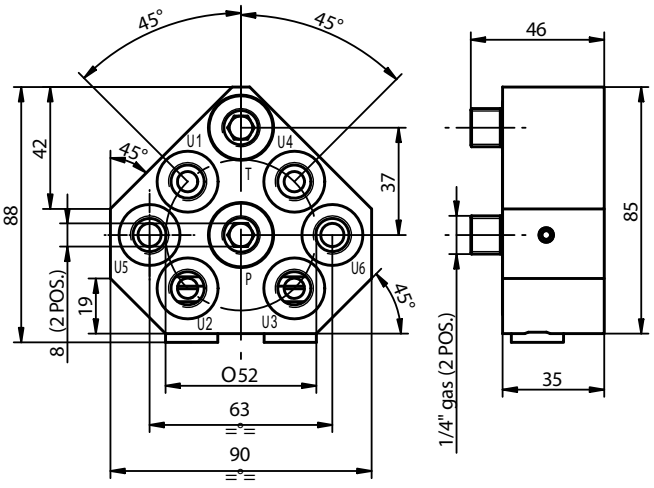
S1 SHUTTLE BLOCK



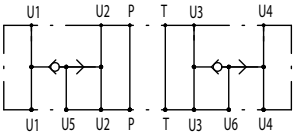
HYDRAULIC CIRCUIT DIAGRAM



S3 SHUTTLE BLOCK



HYDRAULIC CIRCUIT DIAGRAM



HPV1 SERIES
HYDRAULIC PILOT CONTROL

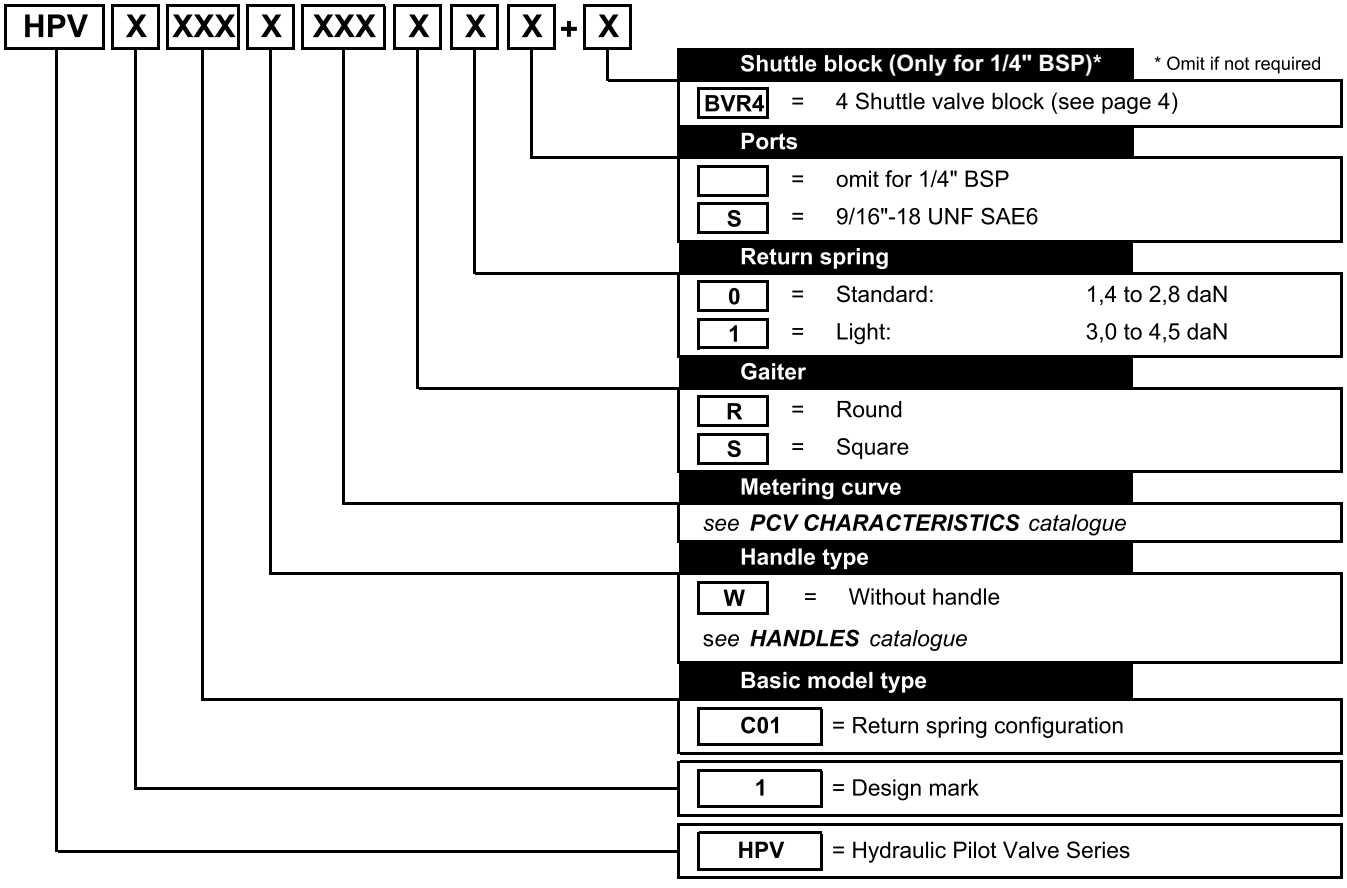
HYDRAULIC PILOT CONTROL HPV1

HPV1 Pilot Control Valves are part of the comprehensive range of our product.
The product, with its single lever dual axis control, and supported by an extensive range of control curve characteristics and handle options, makes it suitable for a wide range of both mobile and industrial applications.
Our engineers can offer specialist support to optimise this product to suit your application.
The product is supported by a comprehensive sales and service facility around the world.

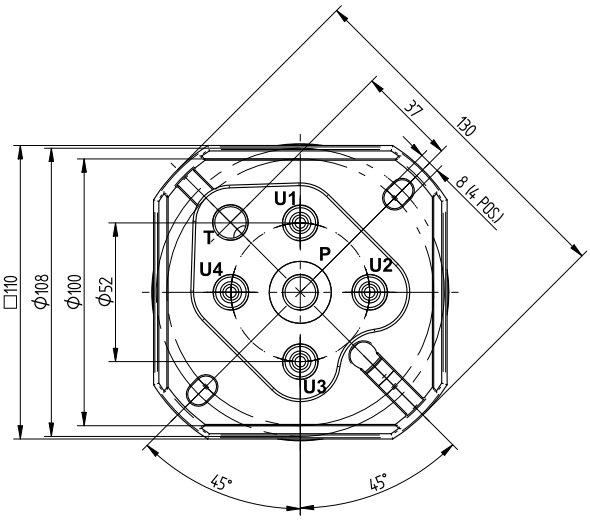
BENEFITS

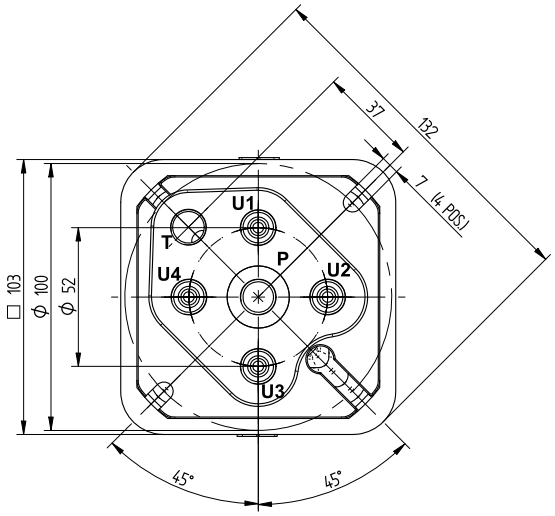
- Compact and light weight
- All ports on bottom face for ease of installation
- Suitable for arm rest of console mounting
- Compatible with a wide range of product
- Stylish good looks suitable for modern cabs
- Operator is insulated from high temperature components
- Proven, simple pressure reducing elements
- Wide range of low hysteresis, high accuracy, pressure control curves
- Wide range of electrical options in both standard and multi-functional ergonomic handles
- Low effort lever control

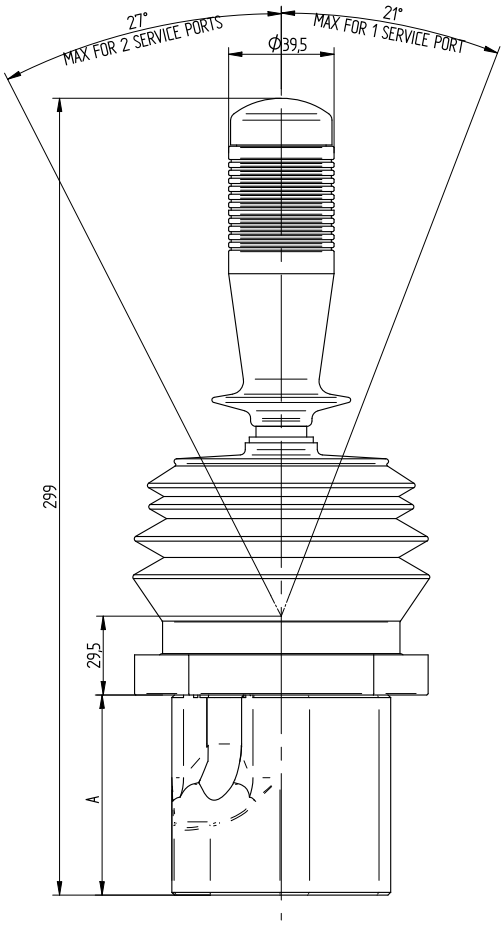
ORDER CODE

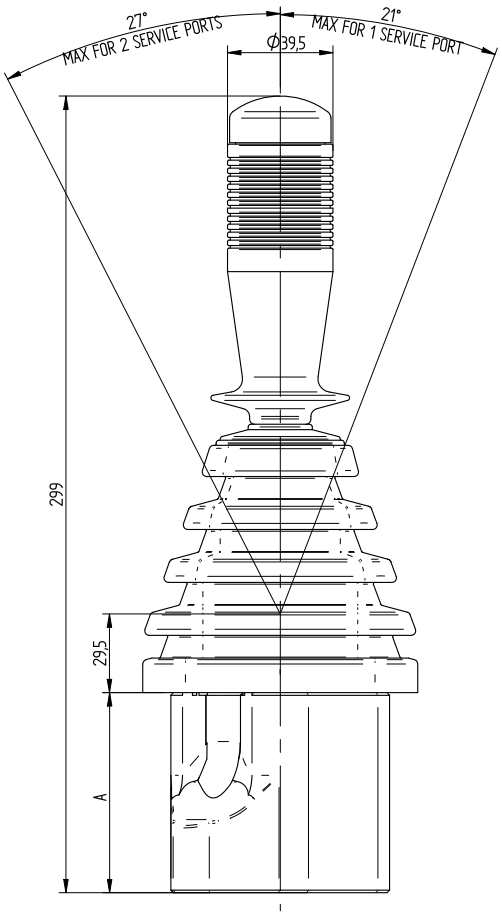


HYDRAULIC PILOT CONTROL HPV1
Installation Drawing









A= 75 mm 1/4" BSP PORTS
A= 82 mm 9/16"-18 SAE6 PORTS

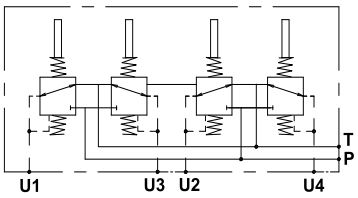
HYDRAULIC PILOT CONTROL HPV1

Technical Data and Installation Drawing

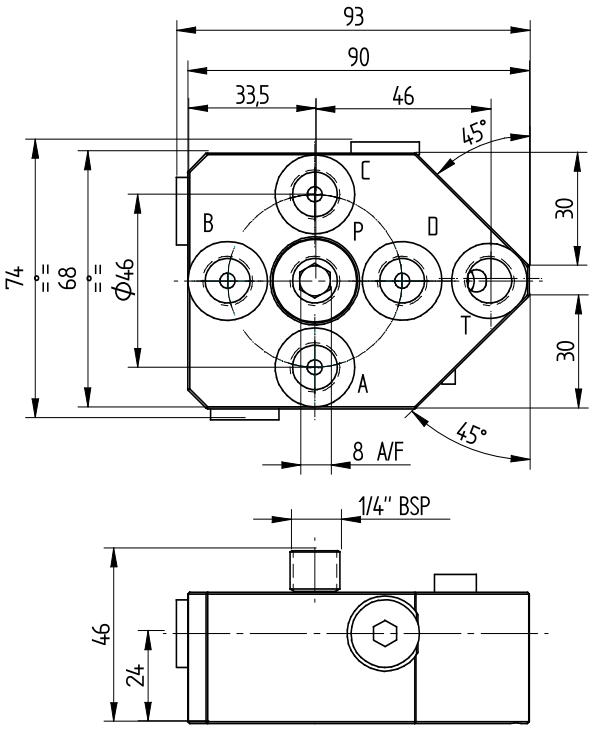
TECHNICAL DATA

Service ports	:	**P, T, U1, U2, U3, U4; 1/4" BSP**
Maximum inlet pressure	:	**Port P - 50 bar**
Maximum back pressure	:	**Port T - 3 bar**
Supply flow range	:	**from 5 up to 20 litres/minute**
Maximum Hysteresis	:	**+/- 0.5 bar**
Fluid	:	**Mineral Oils ISO, HM and HV**
Contamination class	:	**21/16/13 ISO 4406/1999**
Fluid temperature range	:	**from -20 up to +80°C**

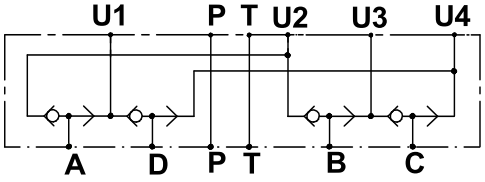
HYDRAULIC CIRCUIT DIAGRAM



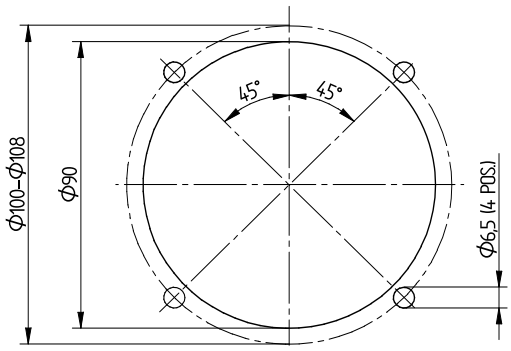
BVR4 SHUTTLE BLOCK

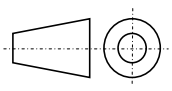


HYDRAULIC CIRCUIT DIAGRAM



TYPICAL INSTALLATION DIMENSION





HPV2 SERIES
HYDRAULIC PILOT CONTROL

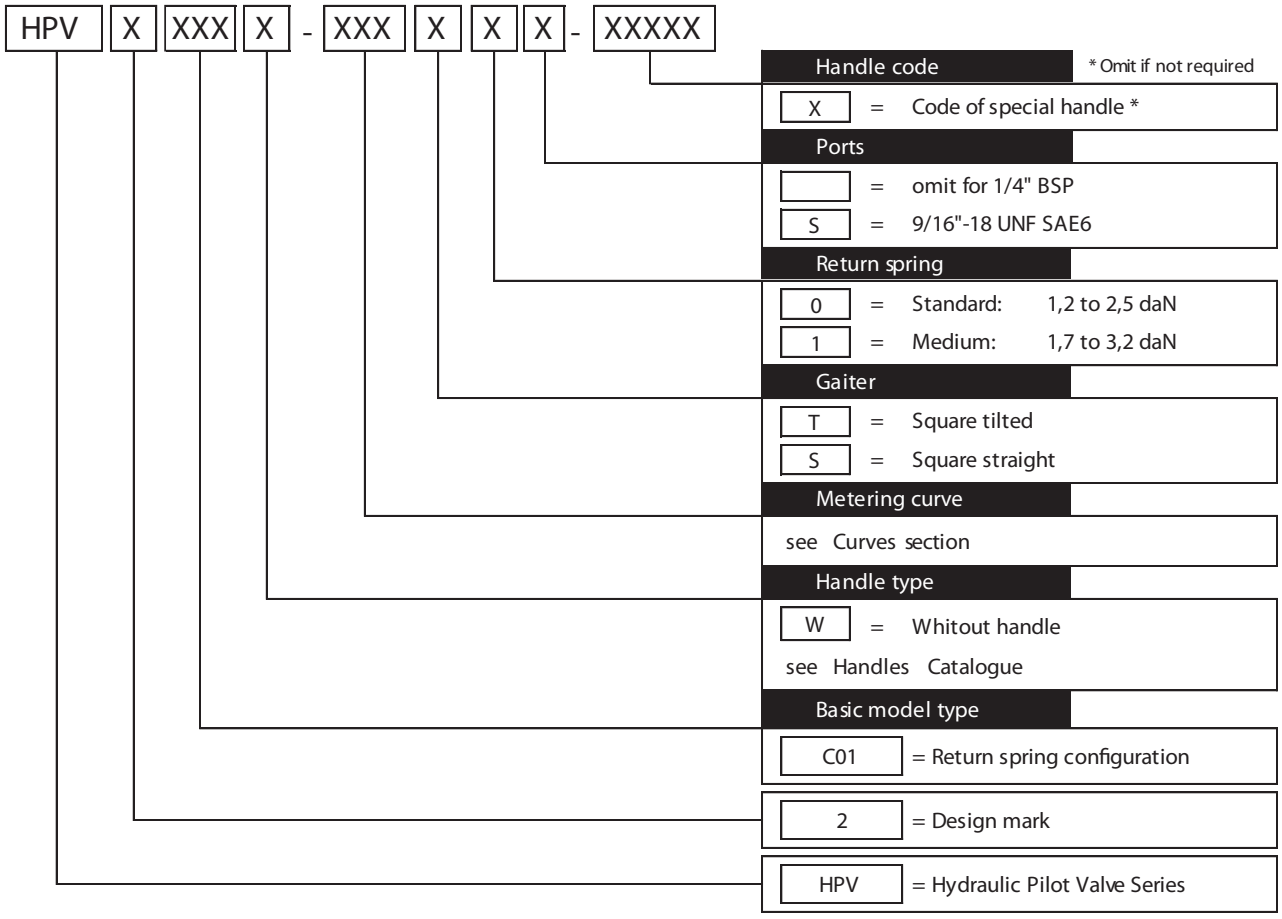
HYDRAULIC PILOT CONTROL HPV2

HPV2 Pilot Control Valves are part of the comprehensive range of our product.
The product, with its single lever dual axis control, and supported by an extensive range of control curve characteristics and handle options, makes it suitable for a wide range of both mobile and industrial applications.
Our engineers can offer specialist support to optimise this product to suit your application.
The product is supported by a comprehensive sales and service facility around the world.

BENEFITS

- Compact and light weight
- Low effort lever control and smooth movements
- Rugged construction for long operating life
- Spare parts available for maintenance
- All ports on bottom face for ease of installation
- Suitable for arm rest of console mounting
- Compatible with a wide range of product
- Stylish good looks suitable for modern cabs
- Wide range of low hysteresis, high accuracy, pressure control curves
- Wide range of electrical options in both standard and multi-functional ergonomic handles
- Optional magnetic detent available

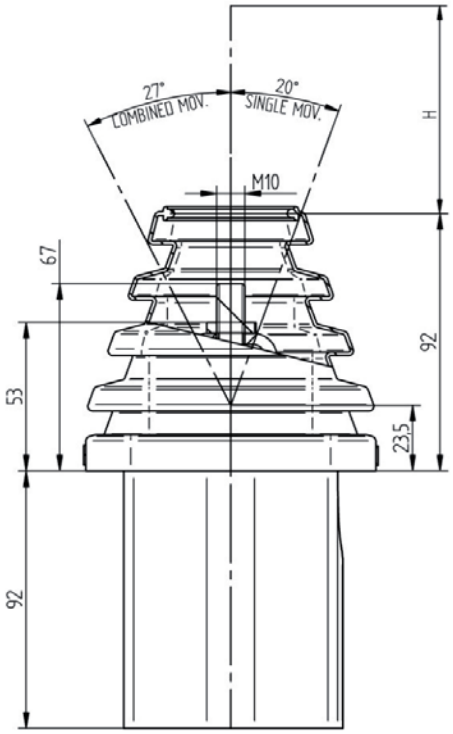
ORDER CODE

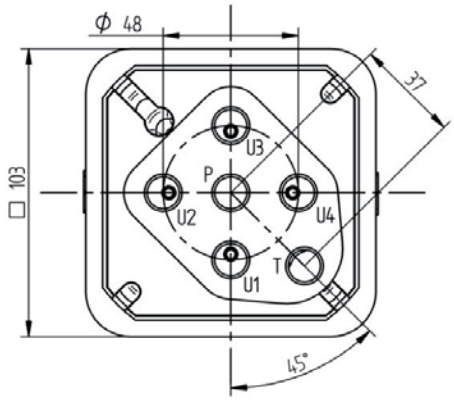


HYDRAULIC PILOT CONTROL HPV2

Technical Data and Installation Drawing

CONFIGURATIONS AVAILABLE *





Configuration	Approx net weight	Handle height (H)
Only Body & Gaiter	1.4 Kg	-
With S Handle	1.7 Kg	131 mm
With MFE2 Handle	1.8 Kg	153 mm
With MFE Handle	1.7 Kg	154 mm
With EXM Handle	1.6 Kg	137 mm

* All handles can be fully customizable to fit customer application. See Handle catalogue for details.

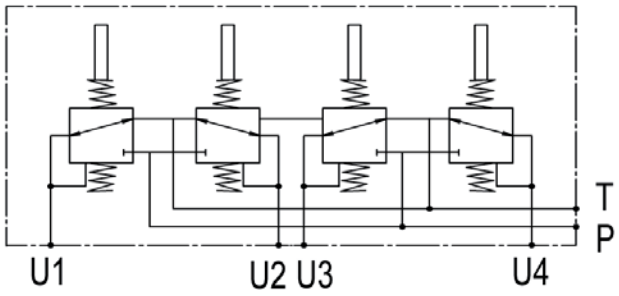
HYDRAULIC PILOT CONTROL HPV2

Technical Data and Installation Drawing

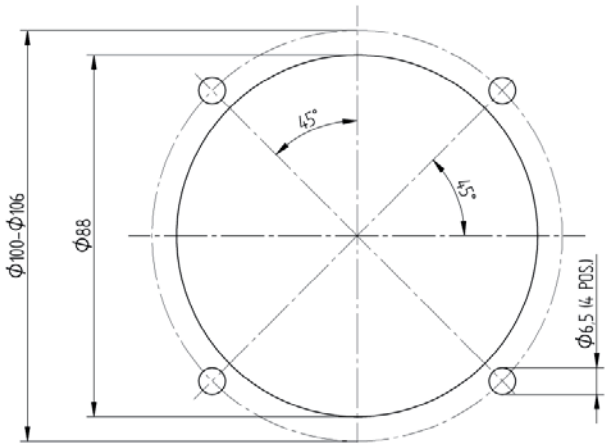
TECHNICAL DATA

Service ports: P,T,U1,U3,U4; ¼ BSP or 9/16 UNF
Maximum inlet pressure: Port P – 50 bar
Maximum back pressure: Port T – 3 bar
Pilot oil flow: up to 15 l/min
Maximum Hysteresis: +/- 0.5 bar
Seals type: NBR
Fluid: Mineral Oils ISO, HM and HV
Contamination class: 21/16/13 ISO 4406/1999
Fluid temperature range: from -20 to +80°C

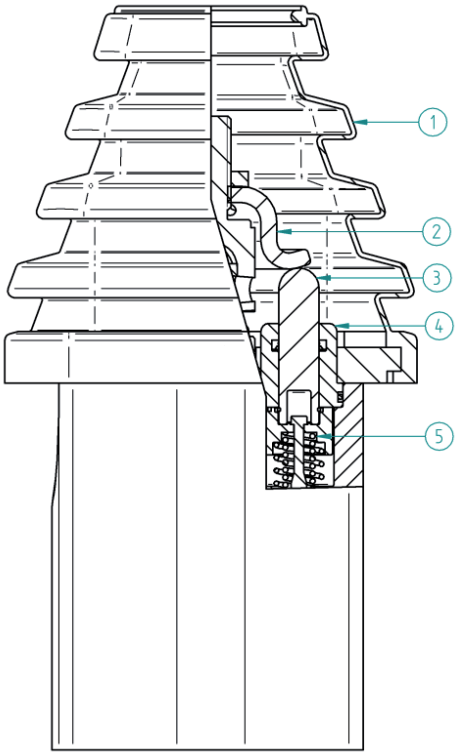
HYDRAULIC CIRCUIT DIAGRAM



TIPICAL INSTALLATION DIMENSION



SPARE PARTS



Pos	Description	Part Number
1	Gaiter	P9634000353 (straight) P9734000303 (tilted)
2	Operating disc	P9734000053
3	Kit plunger	G9734000013 (for curve with step) G9734000023 (for curve no step)
4	Kit guide-seals	G9734000003 (with o-ring and seal)
5	Kit Metering curve	G97349YXXX3 (Y=return spring type; XXX=ID curve number)*

APPLICATIONS

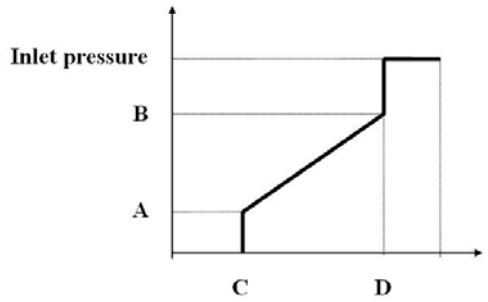
- Excavator and Mini-excavators
- Crane
- Forestry Machines
- Access platforms
- Container handlers
- Tracked Machines
- Skid steer loader
- Forklift trucks

* See specific page for spring Type and curve numbers

HYDRAULIC PILOT CONTROL HPV2

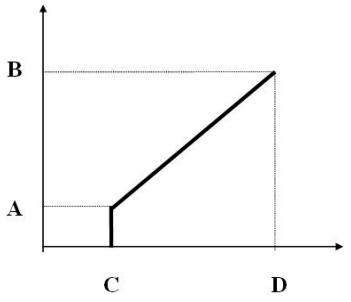
Technical Data

METERING CURVES WITH STEP *



Press. [bar]		Stroke [mm]		ID Curve
A	B	C	D	
2.1	15.9	1	7.5	CR2- 078
2.7	11.5	1	7.5	CR2- 051
4.1	13	1	7.5	CR2- 122
4.2	21.8	1	7.5	CR2- 038
4.8	16.7	1	7.5	CR2- 117
4.9	18.6	1	7.5	CR2- 018
5.0	22.6	1	7.5	CR2- 116
5.6	23.1	1	7.5	CR2- 015
5.9	19.7	1	7.5	CR2 -106
5.9	23.4	1	7.5	CR2- 082
6.4	23.9	1	7.5	CR2- 115
7.4	21.2	1	7.5	CR2- 044
8.1	21.8	1	7.5	CR2- 098

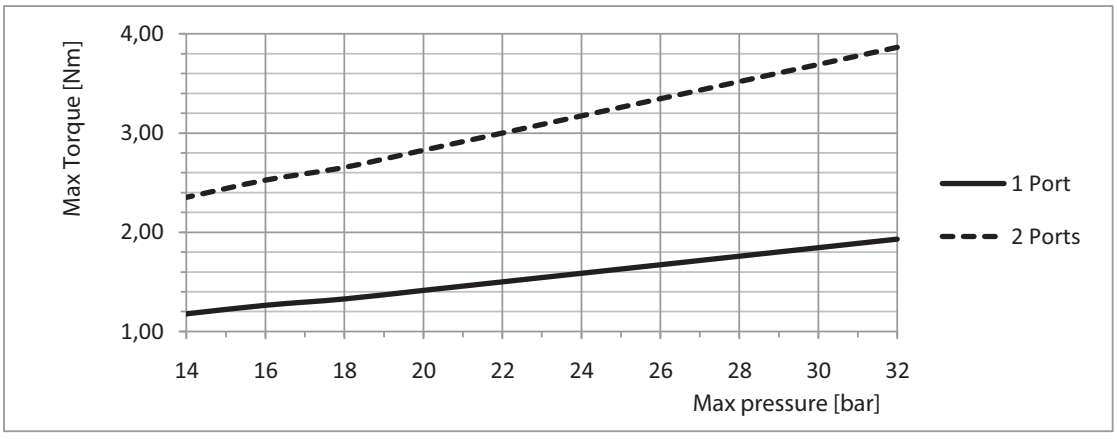
METERING CURVES WITHOUT STEP *



Press. [bar]		Stroke [mm]		ID Curve
A	B	C	D	
2.0	14.9	1	8	CR2- 060
4.2	23.1	1	8	CR2- 074
4.9	19.7	1	8	CR2- 079
5.0	23.8	1	8	CR2- 202
5.1	19.9	1	8	CR2- 094
5.5	30.8	1	8	CR2- 133
5.6	24.5	1	8	CR2- 075
5.7	23.6	1	8	CR2- 036
6.2	31.5	1	8	CR2- 001
7.0	29.1	1	8	CR2- 068
8.0	26.9	1	8	CR2- 039
8.1	22.9	1	8	CR2- 059

* Tolerances on pressure settings ±0.5 bar. Contact sale office for different metering curves

MAX OPERATING TORQUE **



** At full stroke of plungers. Don't take into account the rubber boot resistance.

HPVP SERIES
FOOT PEDALS

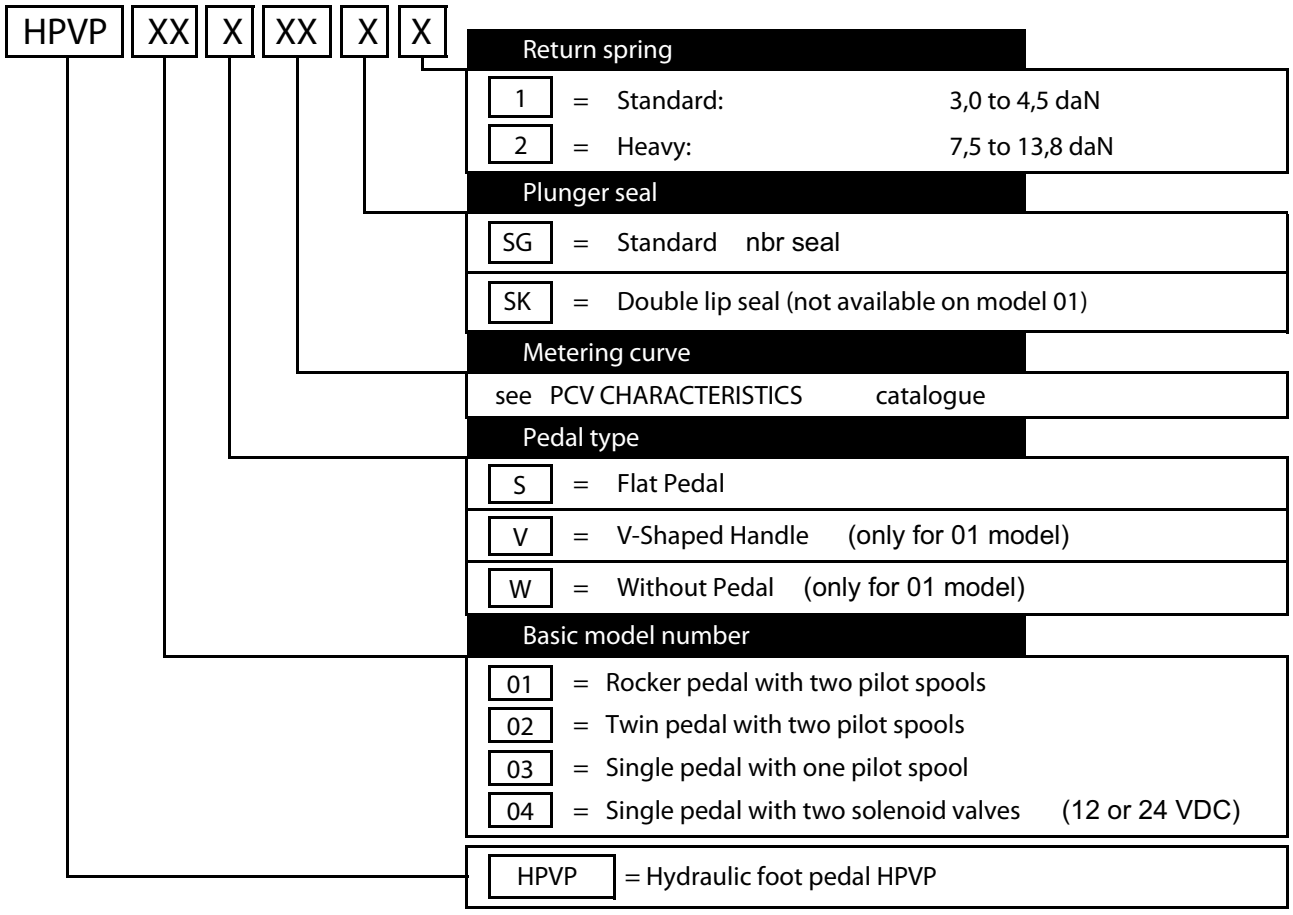
FOOT PEDAL HYDRAULIC PILOT CONTROL HPVP

HPVP Foot Pedal Valves are part of the comprehensive range of our product.
This product, with its range of foot pedal controls, supported by an extensive range of control curve characteristics and pedal options, makes it suitable for a wide range of both mobile and industrial applications.
Our engineers can offer specialist support to optimise this product to suit your application.
The product is supported by a comprehensive sales and service facility around the world.

BENEFITS

- Compact and light weight
- Ports ideally positioned for ease of installation
- Simple to mount
- Compatible with a wide range of product
- Operator is insulated from high temperature components
- Proven, simple pressure reducing elements
- Wide range of low hysteresis, high accuracy, pressure control curves
- Range of operator pedal efforts available
- Rubber boot protection to prevente ingress of airborne contaminant
- Rubber boot suitable for a wide range of environmental conditions
- Plunger manufactured from non corrosive steel
- End of stroke limited externally to prevent any damage to internal components
- Double lip seal option available for increased product life
- Optimised angular mouvements of foot pedal

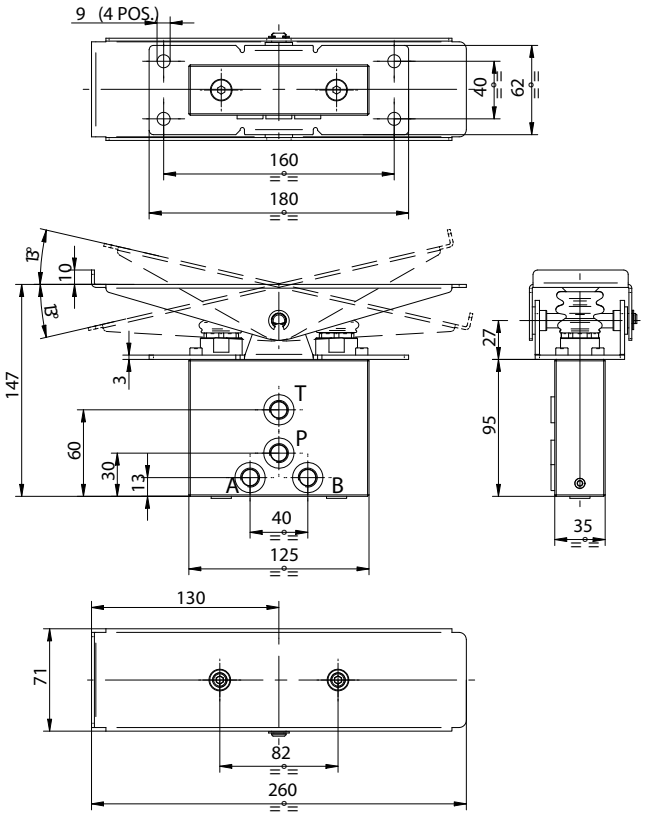
ORDER CODE



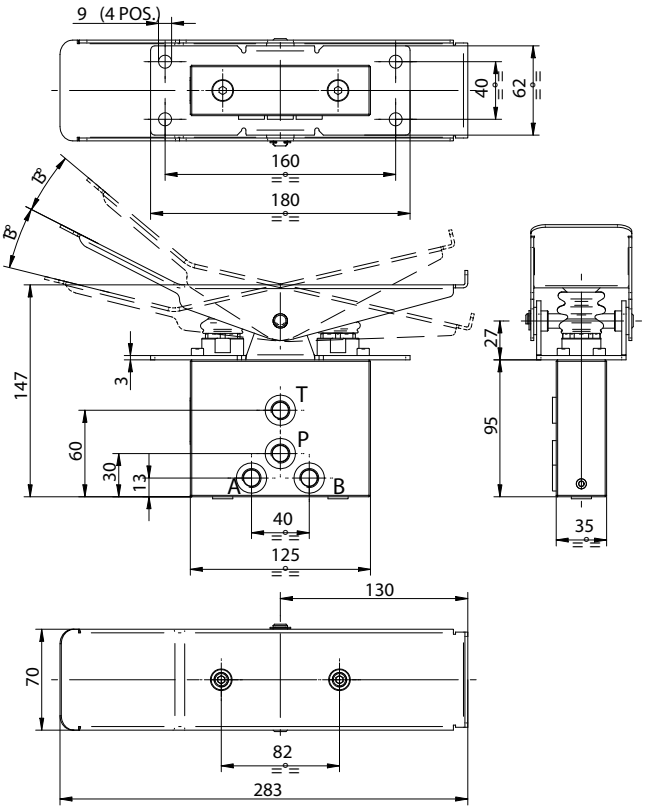
FOOT PEDAL HYDRAULIC PILOT CONTROL HPVP

Technical Data and Installation Drawing

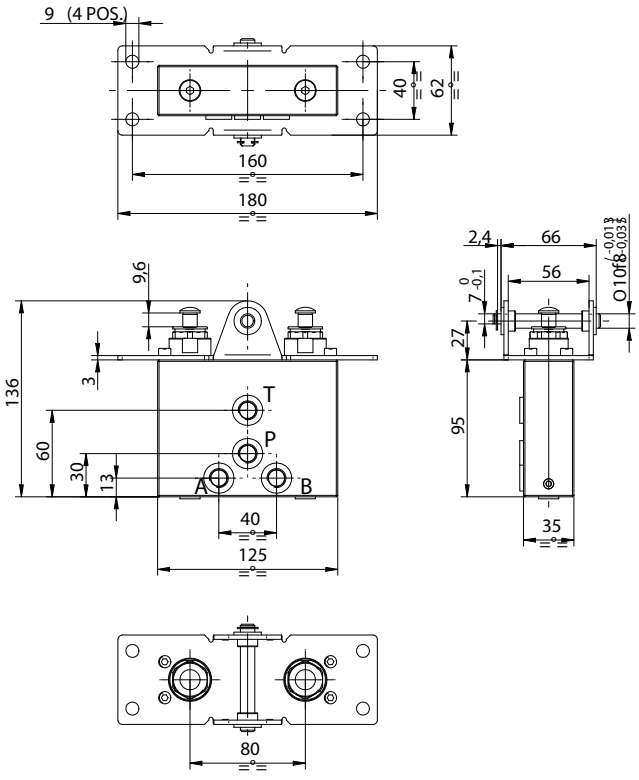
HPVP01S FLAT ROCKER PEDAL



HPVP01V V SHAPED ROCKER PEDAL

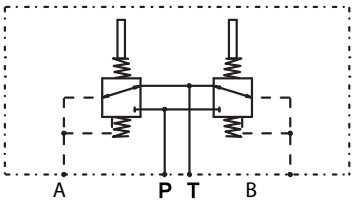


HPVP01W WITHOUT PEDAL



HYDRAULIC CIRCUIT DIAGRAM

for all foot pedals illustrated on this page



TECHNICAL DATA

for all foot pedals illustrated on this page

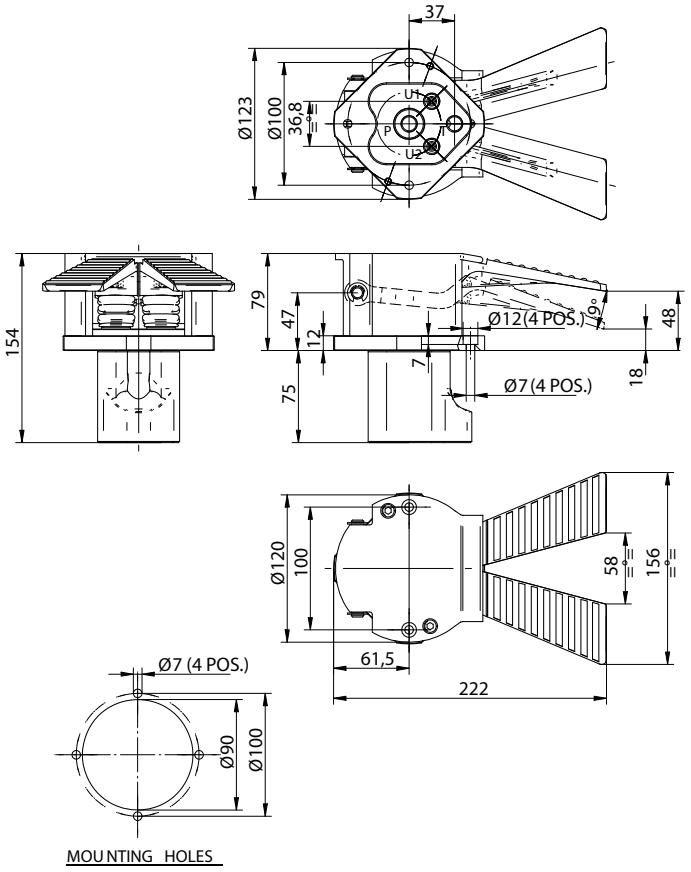
Service ports	:	**P, T,** A, B **; 1/4" BSP**
Maximum inlet pressure *	:	**Port P - 50 bar**
Maximum back pressure	:	**Port T - 3 bar**
Supply flow range	:	**from 5 up to 20 litres/minute**
Maximum Hysteresis	:	**+/- 0.5 bar**
Fluid	:	**Mineral Oils ISO, HM and HV**
Contamination class	:	**21/16/13 ISO 4406/1999**
Fluid temperature range	:	**from -20 up to +80°C**

* *Higher inlet pressures may be possible. Also bottom porting is available. For both requirements, please consult our Tech Dept.*

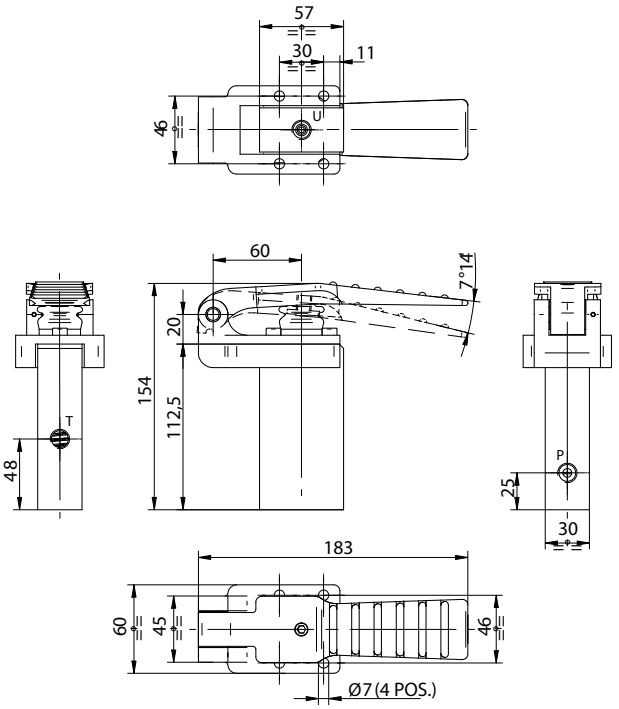
FOOT PEDAL HYDRAULIC PILOT CONTROL HPVP

Technical Data and Installation Drawing

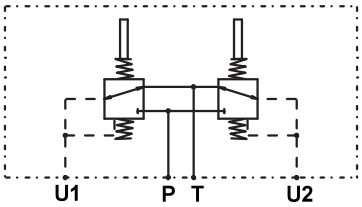
HPVP02 TWIN PEDAL



HPVP03 SINGLE PEDAL



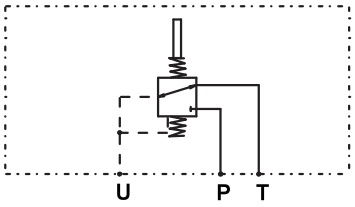
HYDRAULIC CIRCUIT DIAGRAM



TECHNICAL DATA

Service ports	:	**P, T, U1, U2; 1/4" BSP**
Maximum inlet pressure	:	**Port P - 50 bar**
Maximum back pressure	:	**Port T - 3 bar**
Supply flow range	:	**from 5 up to 20 litres/minute**
Maximum Hysteresis	:	**+/- 0.5 bar**
Fluid	:	**Mineral Oils ISO, HM and HV**
Contamination class	:	**21/16/13 ISO 4406/1999**
Fluid temperature range	:	**from -20 up to +80°C**

HYDRAULIC CIRCUIT DIAGRAM



TECHNICAL DATA

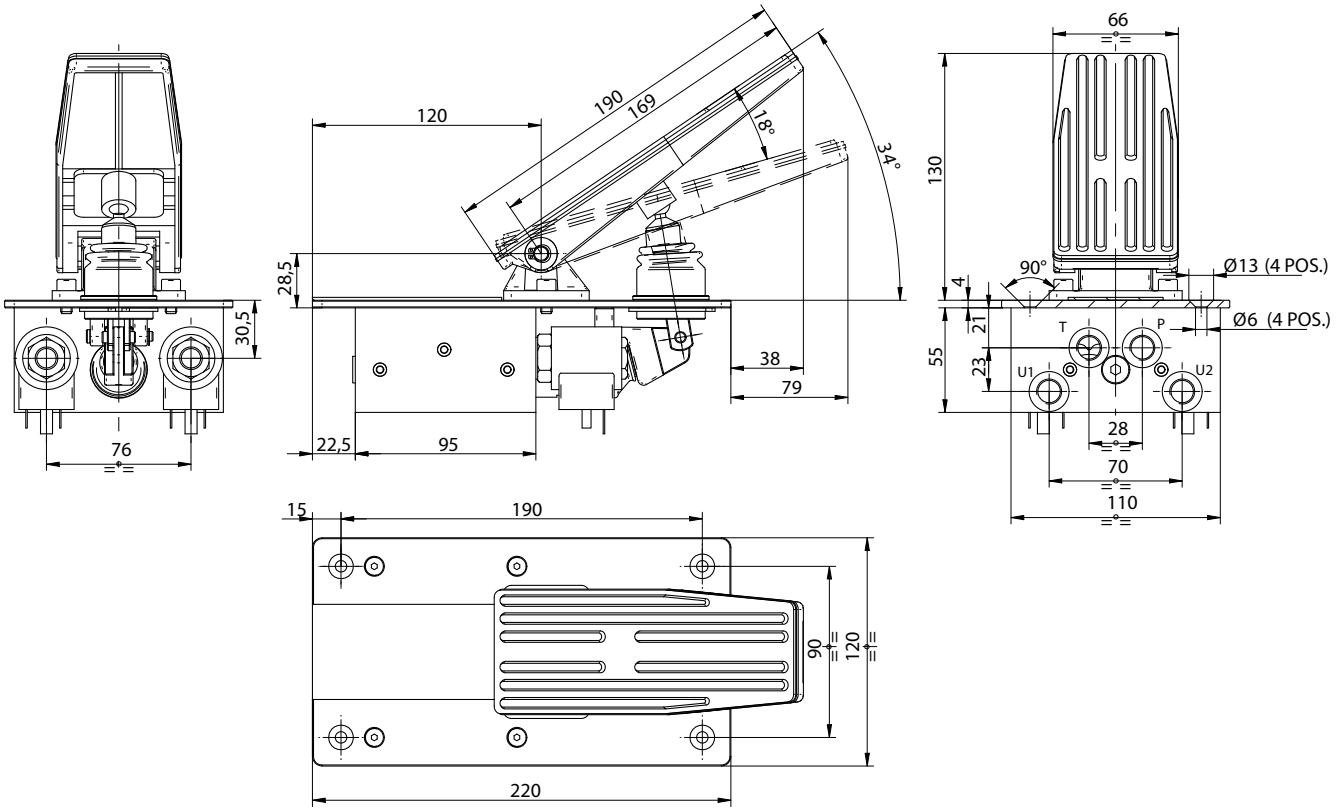
Service ports	:	**P, T, U; 1/4" BSP**
Maximum inlet pressure *	:	**Port P - 50 bar**
Maximum back pressure	:	**Port T - 3 bar**
Supply flow range	:	**from 5 up to 20 litres/minute**
Maximum Hysteresis	:	**+/- 0.5 bar**
Fluid	:	**Mineral Oils ISO, HM and HV**
Contamination class	:	**16/11 ISO 4406**
Fluid temperature range	:	**from -20 up to +80°C**

** Higher inlet pressures may be possible, please consult our Tech. Dept.*

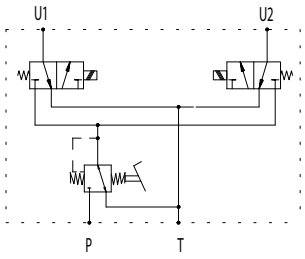
FOOT PEDAL HYDRAULIC PILOT CONTROL HPVP

Technical Data and Installation Drawing

HPVP04 SINGLE PEDAL WITH TWO SOLENOID VALVES (12 or 24 VDC**)



HYDRAULIC CIRCUIT DIAGRAM



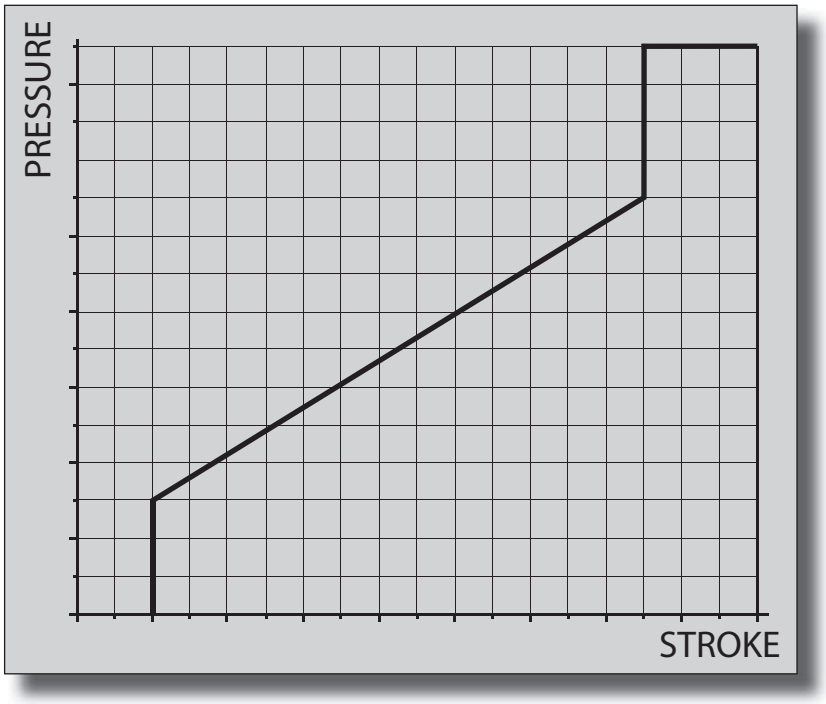
TECHNICAL DATA

Service ports	:	**P, T, U1, U2; 1/4" BSP**
Maximum inlet pressure *	:	**Port P - 50 bar**
Maximum back pressure	:	**Port T - 3 bar**
Supply flow range	:	**from 5 up to 20 litres/minute**
Maximum Hysteresis	:	**+/- 0.5 bar**
Fluid	:	**Mineral Oils ISO, HM and HV**
Contamination class	:	**21/16/13 ISO 4406/1999**
Fluid temperature range	:	**from -20 up to +80°C**

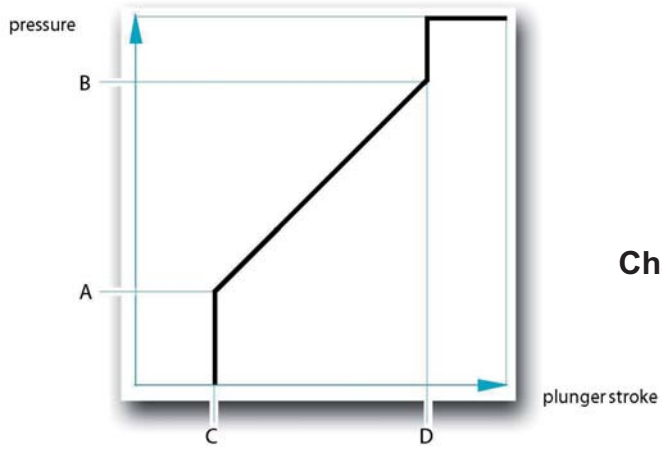
** Higher inlet pressures may be possible, please consult our Tech. Dept.*

*** Specify the voltage of the coils at the end of the model number Example:* ***HPVP04S015SK1 - 12 VDC***

CONTROL CURVE CHARACTERISTICS



CONTROL CURVE CHARACTERISTICS

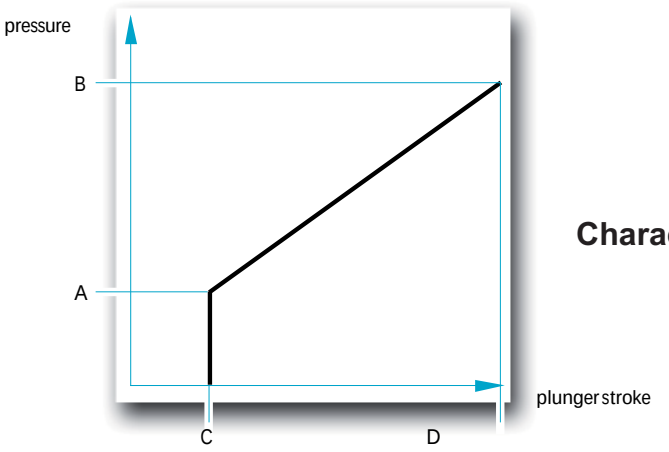


Characteristic - type B

PRESSURE (bar)		STROKE (mm)		ID No.
A	B	C	D	
0.0	13.0	0.5	8.5	CR027
0.5	4.0	1.8	8.5	CR009
0.5	6.5	2.0	8.5	CR010
0.5	11.4	1.8	8.5	CR047
0.5	18.4	1.0	8.5	CR076
0.8	29.0	1.4	3.5	CR097
1.0	8.0	1.0	8.5	CR011
1.0	12.0	1.0	8.5	CR034
1.5	8.5	1.0	8.5	CR069
2.0	11.5	1.0	8.5	CR012
2.0	11.5	2.0	8.5	CR025
2.0	8.0	0.5	6.5	CR042
2.0	13.0	1.0	8.5	CR045
2.0	20.5	0.9	8.5	CR077
2.0	27.5	1.0	8.5	CR080
2.0	14.2	1.0	8.5	CR163
2.4	16.4	1.0	8.5	CR078
2.8	14.9	1.0	8.5	CR123
2.8	4.7	1.0	8.5	CR129
3.0	9.0	2.0	8.5	CR021
3.0	10.0	1.0	8.5	CR051
3.0	8.0	1.0	8.5	CR125
3.0	21.7	0.9	8.5	CR121
3.2	11.7	1.8	8.5	CR048
3.2	17.2	1.0	8.5	CR062
3.2	15.4	1.0	8.5	CR041
3.4	29.4	1.0	8.5	CR030
3.5	13.0	1.0	8.5	CR101
3.7	29.2	1.0	8.5	CR104
4.0	21.5	0.9	8.5	CR090
4.3	15.2	1.0	8.5	CR049
4.3	13.8	1.0	8.5	CR122
4.4	17.0	1.8	8.5	CR107
4.4	30.4	1.0	8.5	CR138
4.5	18.0	0.9	8.5	CR095
4.5	27.0	1.0	8.5	CR108
4.9	18.9	1.0	8.5	CR018
4.9	17.5	1.0	8.0	CR117
5.0	14.5	1.0	8.5	CR019
5.0	12.0	1.0	8.5	CR023
5.0	21.0	1.2	6.5	CR038

PRESSURE (bar)		STROKE (mm)		ID No.
A	B	C	D	
5.0	21.5	1.8	7.3	CR099
5.0	24.5	1.8	8.5	CR109
5.0	23.0	1.0	8.5	CR116
5.0	15.9	1.0	8.5	CR026
5.1	19.1	1.2	8.5	CR112
5.5	24.2	0.9	8.5	CR028
5.5	25.0	1.0	8.9	CR139
5.7	17.8	1.0	8.5	CR137
5.8	22.0	1.8	8.5	CR015
5.8	19.0	1.8	7.3	CR016
5.8	19.0	0.9	6.5	CR017
5.8	19.0	1.6	7.3	CR029
5.8	22.4	0.9	8.5	CR082
5.8	22.0	0.9	8.5	CR088
5.8	19.8	1.0	8.5	CR106
5.8	26.0	1.0	8.5	CR115
5.9	12.9	1.0	8.5	CR065
6.0	22.5	2.0	6.5	CR002
6.0	25.0	2.0	7.3	CR006
6.0	21.7	2.0	6.5	CR007
6.0	16.3	1.6	7.3	CR008
6.0	17.4	1.0	7.3	CR050
6.0	28.7	1.0	8.5	CR150
6.5	14.0	1.0	8.5	CR020
6.5	28.0	1.0	8.5	CR063
6.6	20.7	1.0	8.5	CR043
6.7	16.2	1.0	8.5	CR127
7.0	21.0	1.5	7.3	CR081
7.0	26.7	0.5	8.5	CR135
7.2	15.3	1.0	8.9	CR100
7.6	24.6	0.5	8.5	CR136
8.0	24.2	0.9	8.5	CR024
8.0	20.7	1.8	8.5	CR044
8.2	24.4	1.8	8.5	CR013
8.2	24.5	1.0	8.5	CR014
8.4	50.0	1.0	8.5	CR073
8.4	21.1	3.2	8.5	CR098
8.4	27.9	1.8	8.5	CR120
9.0	15.5	2.0	8.5	CR084
9.8	26.0	1.8	8.5	CR032
14.0	29.0	1.0	8.5	CR031

CONTROL CURVE CHARACTERISTICS

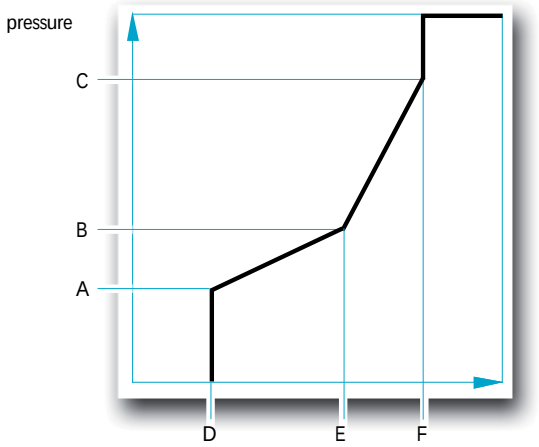


Characteristic - type A

PRESSURE (bar)		STROKE (mm)		ID No.
A	B	C	D	
0.0	64.0	2.0	9.0	CR022
0.0	115.0	2.0	9.0	CR033
0.0	38.0	0.9	9.0	CR061
0.0	130.0	1.0	9.0	CR143
0.5	12.2	1.8	9.0	CR087
0.7	30.0	1.0	9.0	CR071
1.4	11.5	1.0	9.0	CR072
1.4	12.2	1.0	9.0	CR155
1.5	9.0	1.0	9.0	CR086
1.5	39.5	0.9	9.0	CR093
2.0	8.0	2.0	9.0	CR004
2.0	15.0	0.9	9.0	CR060
2.0	52.5	1.0	9.0	CR092
2.8	5.9	1.0	9.0	CR157
3.0	10.0	0.8	9.0	CR165
3.0	23.0	0.9	9.0	CR058
3.0	14.0	1.0	9.0	CR162
3.2	18.0	1.0	9.0	CR053
3.2	20.0	0.0	9.0	CR096
3.2	16.2	1.0	9.0	CR153
3.8	23.7	0.9	9.0	CR074
4.0	10.0	2.0	9.0	CR005
4.0	8.0	1.0	9.0	CR054
4.0	16.0	1.0	9.0	CR057
4.3	10.0	1.0	9.0	CR158
4.4	21.6	0.9	9.0	CR126
4.7	27.6	0.8	9.5	CR132
5.0	10.5	1.0	9.0	CR066
5.0	18.0	2.0	9.0	CR079

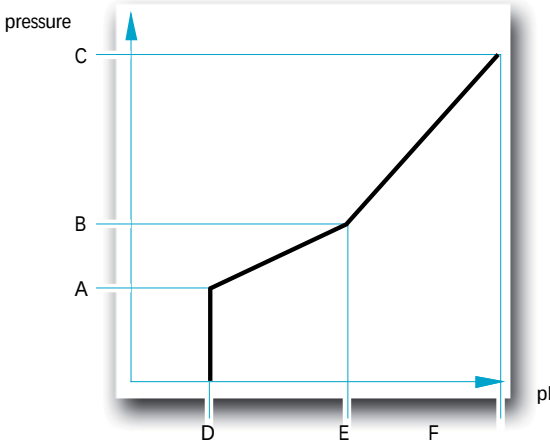
PRESSURE (bar)		STROKE (mm)		ID No.
A	B	C	D	
5.0	33.0	1.0	9.0	CR085
5.0	20.0	1.0	9.0	CR089
5.0	19.9	0.9	9.0	CR094
5.5	26.7	1.1	9.0	CR067
5.5	25.5	0.9	9.0	CR075
5.5	50.0	2.0	9.0	CR145
5.7	18.7	0.9	9.0	CR055
5.8	23.0	1.6	9.0	CR035
5.8	23.0	0.9	9.0	CR036
5.8	23.0	1.8	9.0	CR037
5.8	30.0	0.8	9.5	CR133
6.0	30.0	2.0	9.0	CR001
6.0	37.0	1.0	8.5	CR040
6.0	40.0	0.9	9.0	CR046
6.0	25.8	0.9	9.0	CR083
6.0	30.0	1.0	9.0	CR091
6.0	30.0	1.0	5.5	CR097
6.0	16.0	1.0	9.0	CR146
6.0	27.0	1.0	9.5	CR149
7.0	28.2	1.1	9.0	CR068
7.0	14.5	1.0	9.0	CR152
7.0	23.0	1.0	9.0	CR159
8.0	15.0	2.0	9.0	CR056
8.1	20.1	3.2	9.0	CR105
8.3	22.5	1.0	9.0	CR059
8.6	25.8	0.9	9.0	CR039
9.1	26.8	0.9	9.0	CR003
11.5	25.5	1.0	9.0	CR160

CONTROL CURVE CHARACTERISTICS



Characteristic - type D

PRESSURE (bar)			STROKE (mm)			ID No.
A	B	C	D	E	F	
0.2	2.8	8.4	0.5	5.7	8.5	CR102
1.0	4.5	9.0	1.0	7.5	8.5	CR114
1.0	8.3	14.0	1.1	7.0	8.5	CR118
1.1	4.0	11.0	0.6	5.4	8.5	CR111
1.5	8.0	15.0	2.0	7.0	8.5	CR103
2.0	5.0	8.0	1.0	7.0	8.5	CR164
2.0	7.0	20.0	1.0	5.0	8.5	CR174
2.0	10.0	13.5	1.0	7.5	8.5	CR110
5.0	9.5	21.5	1.3	5.0	8.5	CR154
6.0	15.0	28.0	1.0	6.0	8.5	CR156
7.5	15.0	28.0	1.8	6.0	8.5	CR134
7.5	15.0	32.0	1.0	6.0	8.5	CR151
7.5	15.0	20.7	1.2	5.4	6.5	CR184
7.5	12.0	24.2	1.0	5.2	8.5	CR161
8.5	12.5	32.0	1.0	3.0	8.5	CR144



Characteristic - type C

PRESSURE (bar)			STROKE (mm)			ID No.
A	B	C	D	E	F	
0.0	20.0	90.0	0.8	6.0	9.3	CR130
1.5	8.0	17.3	2.0	7.0	9.0	CR124
2.0	8.0	28.0	1.0	5.0	9.0	CR194
3.5	6.2	11.5	1.0	6.5	9.0	CR166
5.5	20.0	33.0	0.8	6.5	9.0	CR141
7.0	20.0	32.5	0.8	6.5	9.0	CR142
8.0	16.3	30.0	1.4	6.0	9.0	CR119

SUH SERIES
PILOT SUPPLY UNIT

PILOT SUPPLY UNITS SUH

The SUH is a direct acting pressure reducing valve which can be connected to either one or two main circuits via ports P1 and P2. Both ports feed through a shuttle valve to prevent circuit interaction. Reduced pressure is supplied to port P1 and P2.
A pre-set relief valve is fitted to prevent over pressure, and the unit is supplied with an accumulator connection for emergency power supply.
An solenoid attachment is available to act as a safety system and to maintain the accumulator charge for a longer period by preventing leakage downstream from the "U" ports.
Also a version is available with integral filter to protect the output line and hence downstream components.

BENEFITS

- Compact unit
- Optional accumulator for peak and emergency power
- Optional 2 way & 3 way, 12 or 24 V DC solenoid valves for safety and extended accumulator storage time
- Dual ports for maximum installation flexibility

TECHNICAL FEATURES

Input pressure P	: Min 8 bar, Max 350 bar
Output pressure (nominai)	: 30 bar
Max. pressure on drain port T	: 3 bar
Relief valve setting (nominal)	: 45 bar
Max. accumulator pressure	: 210 bar (Nitrogen pre-charge 13 bar)
Flow capacity at ports S	: 5 l/min. without accumulator up to 40 l/min. with accumulator
Hydraulic fluids	: ISO HM & HV bio-degradeable fluids
Fluid temperature range	: -20 to +80°C
Fluid viscosity	: 2.8 to 380 mm^2/sec
Maximum filter rating	: 25 µm (absolute)

Description	Weight (kg)
BASIC SUH VALVE	2.36
0.35 LITRE ACCUMULATOR	3.00
0.75 LITRE ACCUMULATOR	4.00
1.50 LITRE ACCUMULATOR	6.20
2 WAY SELECTOR	0.50
3 WAY SELECTOR	0.70

PILOT SUPPLY UNITS SUH

ORDER CODE

SUH XXX - XXX X XXX

Accumulator sizes

000	=	No accumulator
035	=	0.35 litre accumulator
075	=	0.75 litre accumulator
150	=	1.50 litre accumulator

Accumulator options

L	=	with accumulator
W	=	without accumulator
P	=	with provision for accumulator

Control options

A00	=	standard valve
A22	=	with 2 way selector 12 V DC solenoid
A24	=	with 2 way selector 24 V DC solenoid
A32	=	with 3 way selector 12 V DC solenoid
A34	=	with 3 way selector 24 V DC solenoid

Pressure setting

025	=	25 bar	**040**	=	40 bar
030	=	30 bar	**050**	=	50 bar
035	=	35 bar			

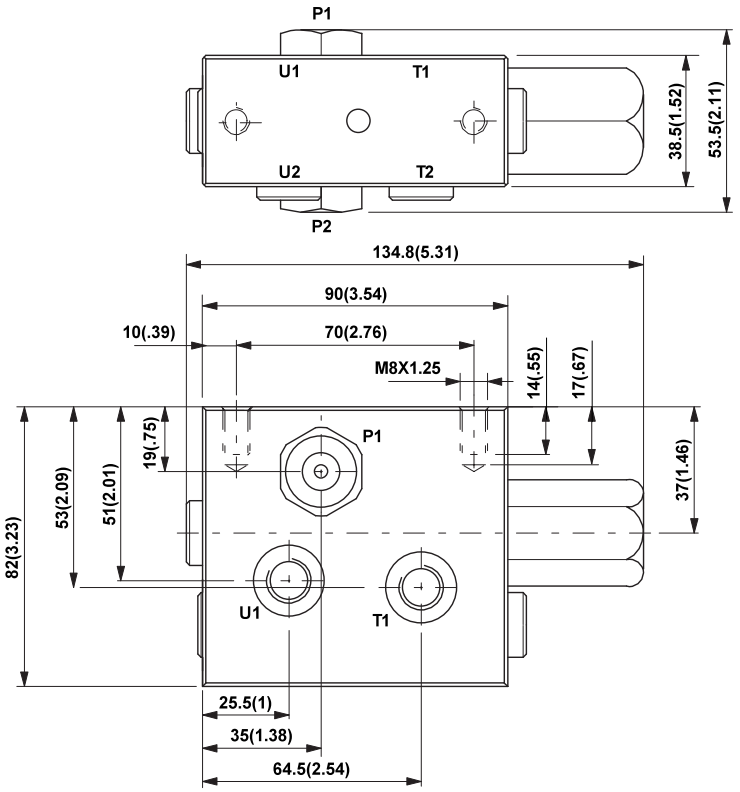
SUH	=	Supply unit - hydraulic

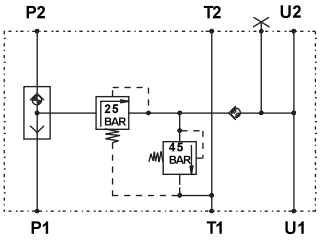
Example:
Standard valve set at 30 bar, with 12 Volt solenoid valve and 0.35 litre accumulator ordering number:
SUH 030 A22 L 035

PILOT SUPPLY UNITS SUH

Installation Drawing

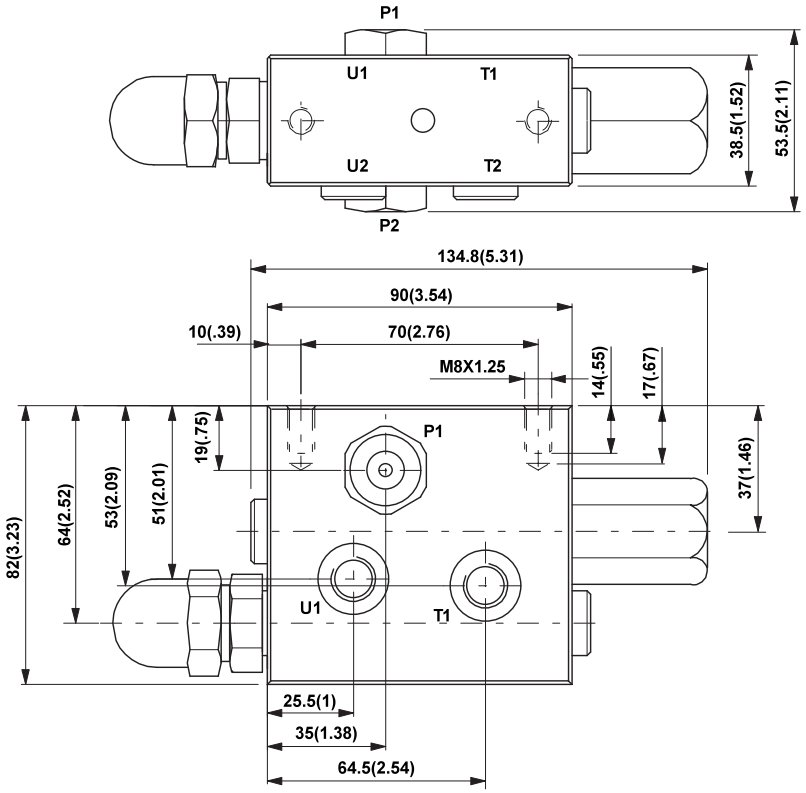
SUH-xxx-A00-W-000 standard valve with no accumulator and no provision for an accumulator

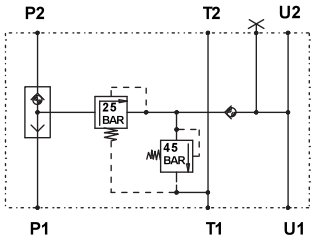




CIRCUIT DIAGRAM

SUH-xxx-A00-P-000 standard valve with no accumulator and with provision for an accumulator





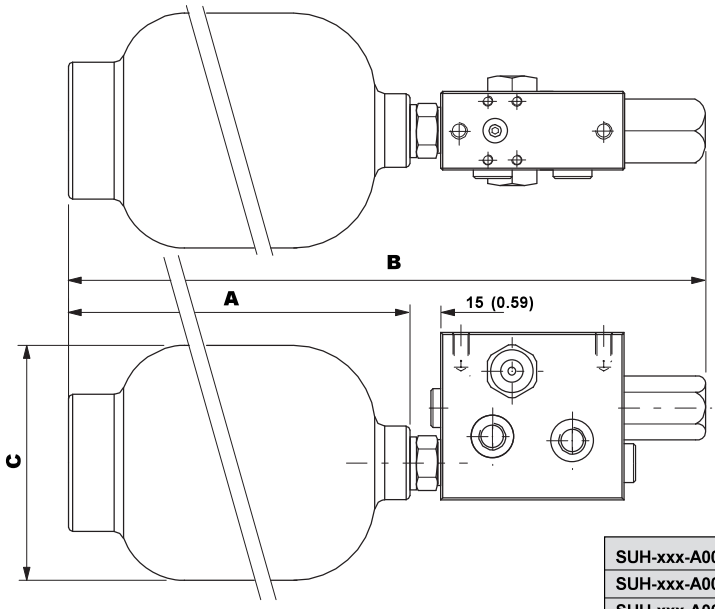
CIRCUIT DIAGRAM

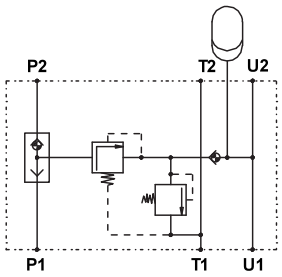
PILOT SUPPLY UNITS SUH

Installation Drawing

SUH-xxx-A00-L-xxx

standard valve with accumulator / with no solenoid





TYPICAL CIRCUIT DIAGRAM

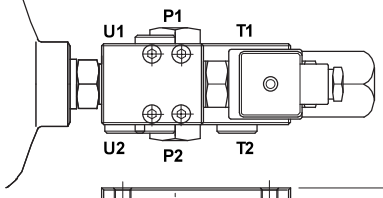
STANDARD VALVE
For dimensions see page 3

	A Accumulator Capacity	A Accumulator Length	B Overall Unit Length	C Maximum Diameter
SUH-xxx-A00-L-035	0.35 litres	162 (6.38)	302 (11.89)	99 (3.90)
SUH-xxx-A00-L-075	0.75 litres	200 (7.87)	340 (13.39)	115 (4.53)
SUH-xxx-A00-L-150	1.50 litres	295 (11.61)	435 (17.13)	115 (4.53)

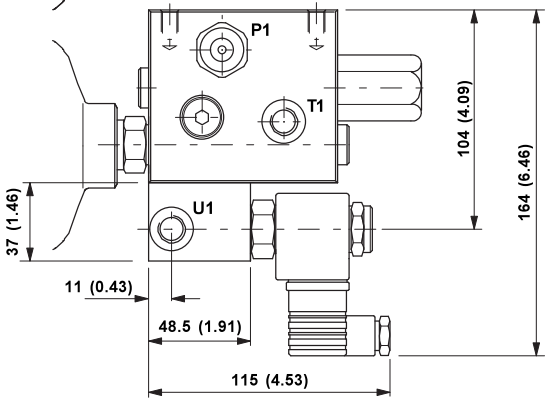
SUH-xxx-A22-L-xxx

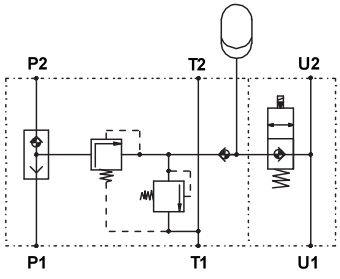
valve with accumulator and 12V DC 2-way solenoid

For dimensions including accumulators see above



STANDARD VALVE
For dimensions see page 3



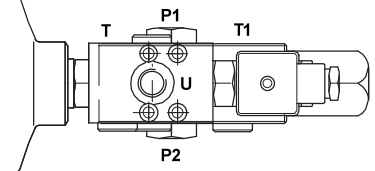


CIRCUIT DIAGRAM

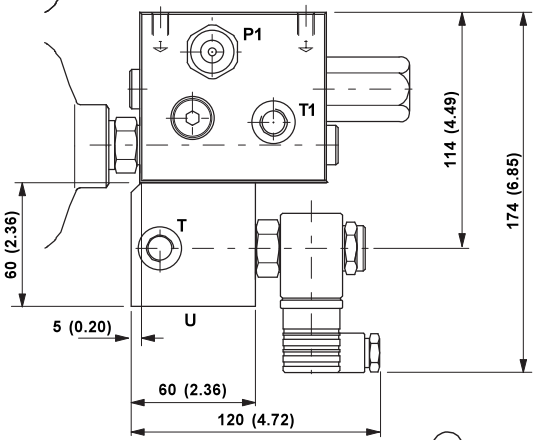
SUH-xxx-A34-L-xxx

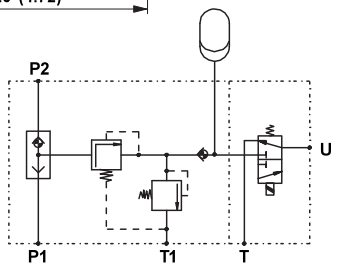
valve with accumulator and 24V DC 3-way solenoid

For dimensions including accumulators see above



STANDARD VALVE
For dimensions see page 3





CIRCUIT DIAGRAM

MFE

MULTIFUNCTION ERGONOMIC HANDLES AND KNOBS

HANDLES AND KNOBS

INTRODUCTION

The handles and knobs included in this catalogue are available for fitting either to the extensive range of our pilot valve or alternatively as a separate item for fitting to other type of product.
The materials are chosen to be suitable for either internal or external use and are resistant to ultra-violet effects. They are also suitable for a wide range of other environmental conditions.

The standard straight ergonomic handle is available with a range of switches and push-buttons, while the MFE handle range is available with a range of switches and push buttons to suit different operating and environmental conditions.
The MFE handle range can be configured to suit either left hand or right hand operation.

Different circuit arrangements can be accommodated within the handle and the wiring can be built into connectors to customer specifications.

BENEFITS

- Range of knobs for individual lever control
- Range of straight levers, with and without switches, for dual axis controls
- Extensive range of stylish multi-functional lever options
- Extensive range of electrical switch and button options
- Adaptable to both Hansa-Tmp and other manufacturers equipment
- Circuits and connectors to customer requirements
- Switch options allow left hand or right hand operation
- Tolerant many environmental conditions
- High durability, low maintenance

MODEL CODING

K - — **K SERIES KNOBS**

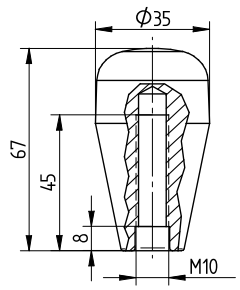
- **KB** = Duroplast Knob
- **KC** = Technopolymer knob
- **KD** = Duroplast knob with switch
- **KK** = Knob with rubber cap
- **KL** = Knob with len
- **KP** = Spherical knob
- **KW** = Knob with switch

S - — **S SERIES ERGONOMIC**

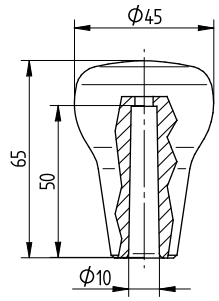
- **SA** = Handle without electric switch
- **SD** = Handle with electric switch
- **SS** = Handle with electric switch to close and safety button
- **SX** = Handle with electric switch to close
- **SY** = Handle with electric switch dual rocker type

KNOBS - TECHNICAL DATA

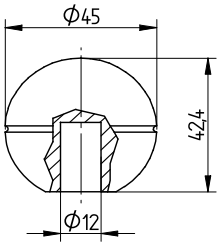
KB Duroplast knob



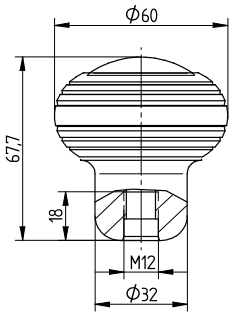
KC Technopolymer knob



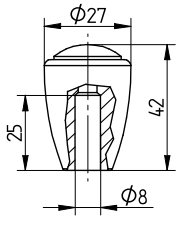
KP Spherical knob



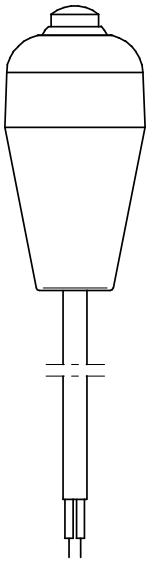
KK Knob with rubber cap

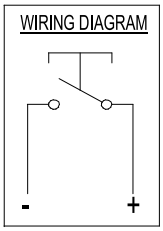


KL Knob with len



KD Duroplast knob with switch

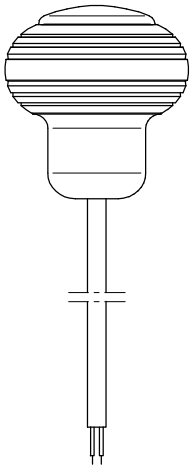


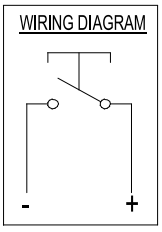


Protection: IP64
Rating current: 1 A
Input voltage: 30 VDC
Electrical life: 10^6 cycles

For installation dimension see knob KB

KW Knob with switch



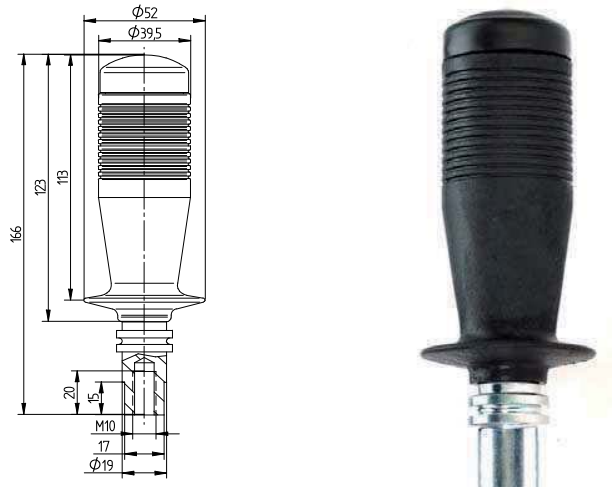


Protection: IP54
Rating current: 5 A
Input voltage: 250 VAC
Electrical life: 10^5 cycles

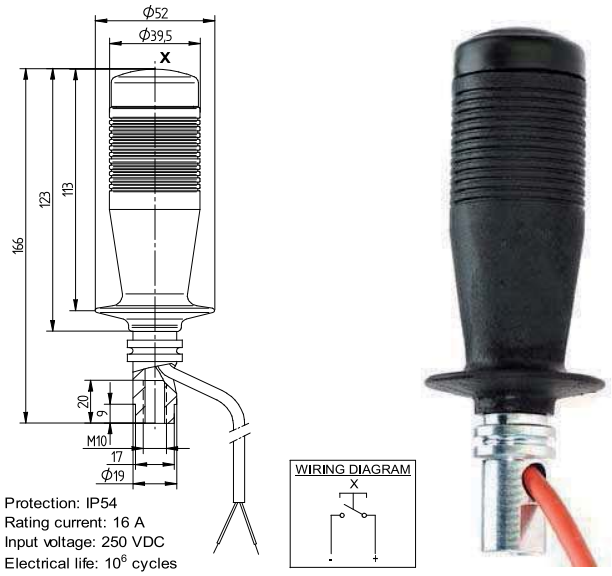
For installation dimension see knob KK

STRAIGHT HANDLES - TECHNICAL DATA

SA Without switch

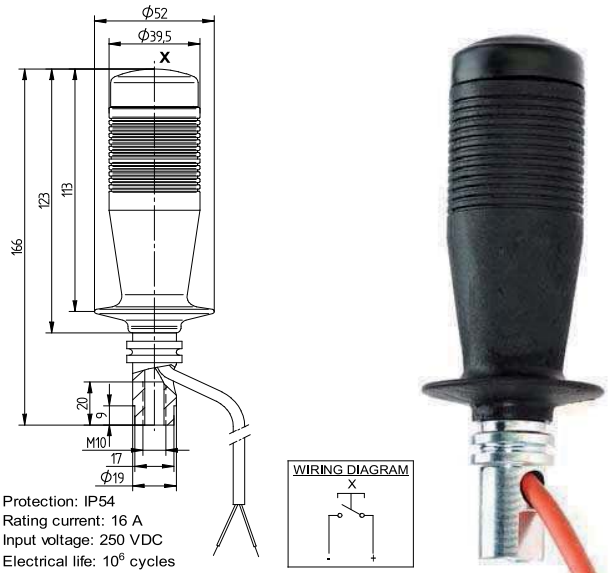


SX With one switch on the top



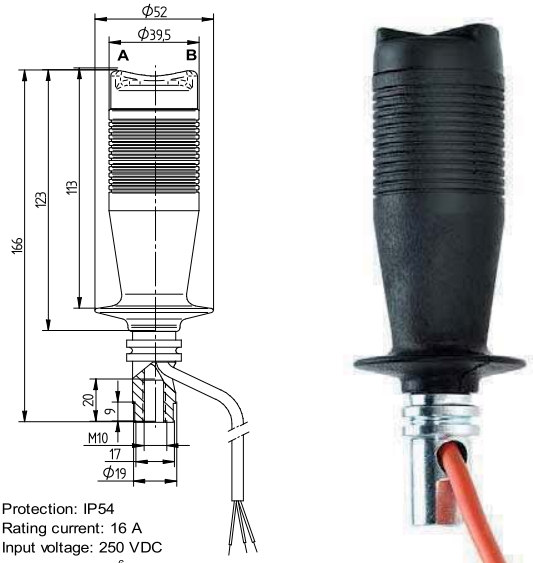
Protection: IP54
Rating current: 16 A
Input voltage: 250 VDC
Electrical life: 10^6 cycles

SS With one switch on the top with safety cage

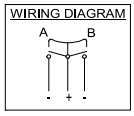


Protection: IP54
Rating current: 16 A
Input voltage: 250 VDC
Electrical life: 10^6 cycles

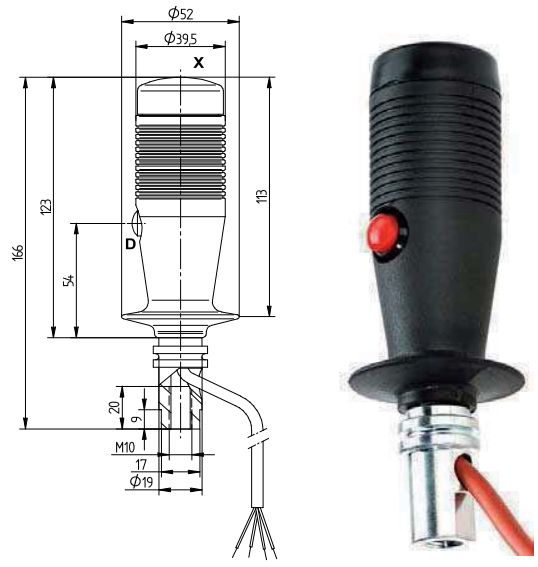
SY With one 3 position rocker switch on the top spring centered



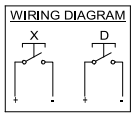
Protection: IP54
Rating current: 16 A
Input voltage: 250 VDC
Electrical life: 10^6 cycles



SD With one switch on the top and one switch on the side



Protection: IP54
Rating current: 16 A on X, 1 A on D
Input voltage: 250 VDC on X, 30 VDC on D
Electrical life: 10^6 cycles



MULTIFUNCTION ERGONOMIC HANDLES - MODEL CODING

MFE - X - XXXXXX - XX - X X X X - XXX

Rocker switch option

omit if not required

Mounting adapter

0	=	standard straight M10x1.5
1	=	tilted 15° forward
2	=	tilted 15° right (LH handle)
3	=	tilted 15° left (RH handle)
4	=	combined tilted 15° forward and 10° right (LH handle)
5	=	combined tilted 15° forward and 10° left (RH handle)
6	=	with spherical joint, adjustable from 0° up to 20° in any direction

Gaiter collar

0	=	basic version without provision for protection boot
R	=	with provision for round boot
S	=	with provision for square boot

Wiring termination

0	=	flying leads
2	=	with connector (maker and model number to be specified on order)

Safety trigger in position 7

X	=	no safety trigger
T	=	with standard safety trigger
TCAP	=	with capacitive safety trigger

Push button/switch in position 8 ÷ 17

For each push button/switch, insert ID position numbers and colours (see 1÷6 position) and omit ones that are not required (i.e. 8R10G = red push button/switch in position 8 and green push button/switch in position 10)
Note: push button/switch in pos.13-14-15 are available only type C
push button type A and B are not available in pos.8

Push button/switch in position 1 ÷ 6

Insert ID letter for each button/switchchosen on the following list and in progressive sequence from position 1 up to position 6:
Note: Type C not available in pos.1 and 4

X	=	no button switch
B	=	blue
G	=	green
R	=	red
Y	=	yellow
W	=	white (available only for type C and E)
L	=	signalling led

Push button/switch option

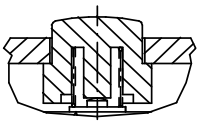
A	=	Plastic push button with microswitches rated 3A at 30 VDC
B	=	Sealed push button with microswitches rated 3A at 30 VDC
C	=	Insulated push button with microswitches rated 0.4A at 30 VDC
E	=	Serviceable sealed push button with microswitches rated 3A at 30 VDC

MFE = Multifunction-Ergonomic

MULTIFUNCTION ERGONOMIC HANDLES - PUSHBUTTONS TYPE

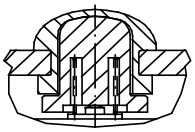
A PLASTIC PUSH BUTTON

Protection: IP67
Rating current: 3 A
Input voltage range 30 VDC
Electrical life: 10^6 cycles



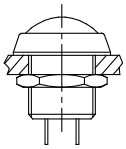
B SEALED PUSH BUTTON

Protection: IP67
Rating current: 3 A
Input voltage range 30 VDC
Electrical life: 10^6 cycles



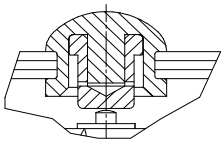
C ISOLATED PUSH BUTTON

Protection: IP67
Rating current: 0,4 A
Input voltage range 30 VDC
Electrical life: 10^6 cycles



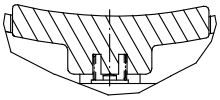
E SEALED SERVICEABLE PUSH BUTTON

Protection: IP67
Rating current: 3 A
Input voltage range 30 VDC
Electrical life: 10^6 cycles



T SAFETY TRIGGER

Protection: IP67
Rating current: 3 A
Input voltage range 30 VDC
Electrical life: 10^6 cycles

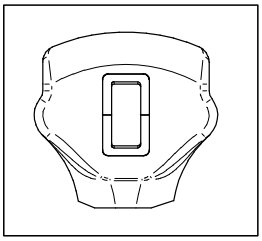


TCAP CAPACITIVE SAFETY TRIGGER

Protection: IP54
Rating current: 2,6 A
Input voltage range 10-30 VDC
Electrical life: $3x10^6$ cycles
EMC tested

MULTIFUNCTION ERGONOMIC HANDLES - ROCKER SWITCH OPTIONS

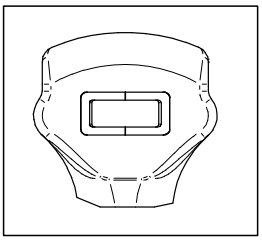
S TYPE	Waterproof rocker switch	R TYPE	Long life rocker switch
Protection: IP68 Rating current: 10A (28 VDC) Life: $5x10^4$ Cycles		Protection: IP67 Rating current: 0.25A (28 VDC) Life: 10^6 Cycles	



Vertical mounted

S1B: IP68 3 Position momentary rocker switch
S2B: IP68 3 position latched rocker switch

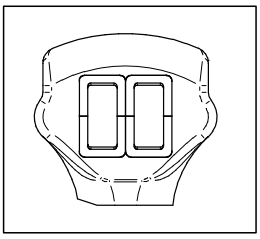
R1B: Long life position momentary rocker switch
R2B: Long life 3 position latched rocker switch



Horizontal mounted

S1A: IP68 3 Position momentary rocker switch
S2A: IP68 3 position latched rocker switch

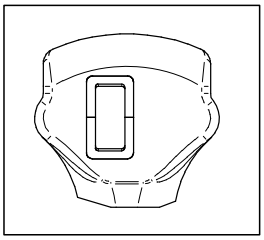
R1A: Long life position momentary rocker switch
R2A: Long life 3 position latched rocker switch



Two vertical mounted

S4A: IP68 3 Position momentary rocker switch
S4B: IP68 3 position latched rocker switch

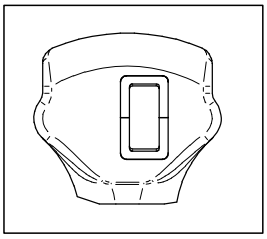
R4A: Long life position momentary rocker switch
R4B: Long life 3 position latched rocker switch



Vertical mounted left offset

S1C: IP68 3 Position momentary rocker switch
S2C: IP68 3 position latched rocker switch

R1C: Long life position momentary rocker switch
R2C: Long life 3 position latched rocker switch



Vertical mounted right offset

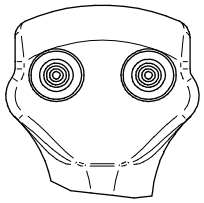
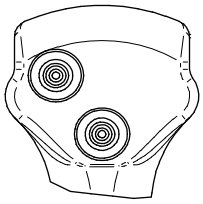
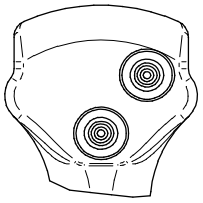
S1D: IP68 3 Position momentary rocker switch
S2D: IP68 3 position latched rocker switch

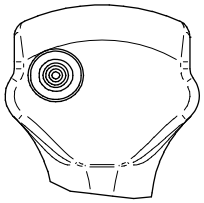
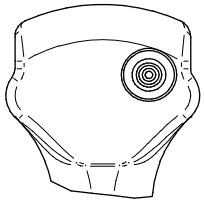
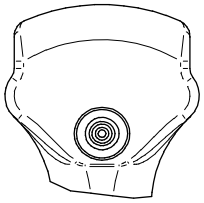
R1D: Long life position momentary rocker switch
R2D: Long life 3 position latched rocker switch

MULTIFUNCTION ERGONOMIC HANDLES - OTHER SWITCH OPTIONS

D 4 WAY ON-OFF SWITCH

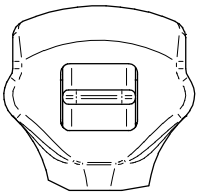
Protection: IP68
Rating current: 1A (28 VDC)
Electrical life: 10^5 cycles

DLDRDB 3 switches	DLDR 2 switches top	DLDB 2 switches left	DRDB 2 switches right
			

DL 1 switch left	DR 1 switch right	DB 1 switch center
		

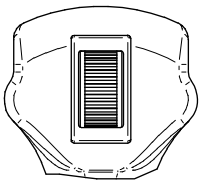
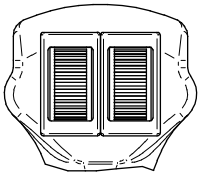
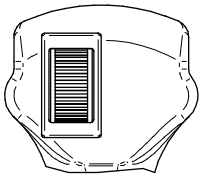
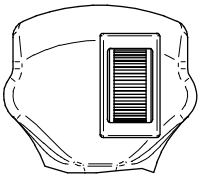
R3 PROPORTIONAL ANALOGUE ROCKER

Protection: IP65
Rating current: 0,01 A
Input voltage range 8-30 VDC
Output signal 0,5-4,5 VDC with 2,5V in neutral position
Electrical life: $2x10^6$ cycles



RP PROPORTIONAL ROLLER

Protection: IP68
Rating current: 0.028 A (5 VDC MAX)
Output signal 0,5-4,5 VDC
with 2,5V in neutral position
Electrical life: 2x106 cycles

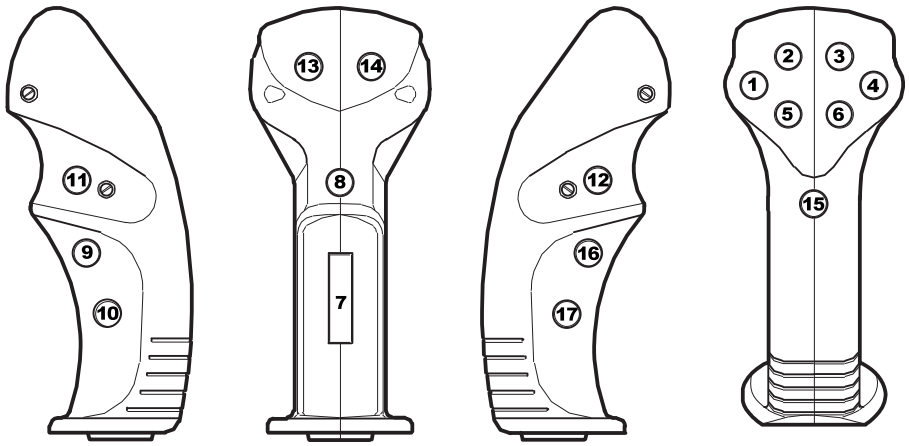
RP One centered	2RP Two centered	RPS One left offset	RPD One right offsey
			

MULTIFUNCTION ERGONOMIC HANDLES - COMPATIBILITY TABLE

KEY

available combination

not available



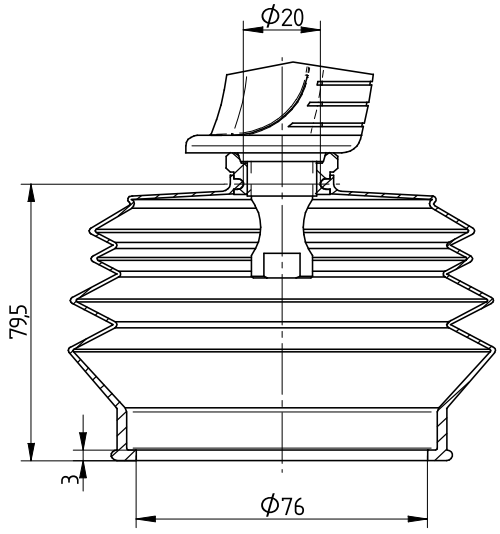
		PUSH BUTTONS (SEE PAGE 6)																ON-OFF ROCKER SWITCH POSITIONS (SEE PAGE 7)					4 WAY SWITCH POSITIONS (SEE PAGE 8)							PROPORTIONAL ROCKER (SEE PAGE 8)				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	S(R)1B S(R)2B	S(R)1A S(R)2A	S(R)4A S(R)4B	S(R)1C S(R)2C	S(R)1D S(R)2D	DLDRDB	DLDR	DLDB	DRDB	DL	DR	DB	R3	RP	2RP	RPS	RPD
PUSH BUTTONS (SEE PAGE 6)	1																				*													
	2																																	
	3																																	
	4																				*													
	5																																	
	6																																	
	7																																	
	8																																	
	9																																	
	10																																	
	11																																	
	12																																	
	13																																	
	14																																	
	15																																	
	16																																	
	17																																	
ON-OFF ROCKER SWITCH POSITIONS (SEE PAGE 7)	S(R)1B S(R)2B																																	
	S(R)1A S(R)2A																																	
	S(R)4A S(R)4B	*			*																													
	S(R)1C S(R)2C																																	
	S(R)1D S(R)2D																																	
4 WAY SWITCH POSITIONS (SEE PAGE 8)	DLDRDB																																	
	DLDR																																	
	DLDB																																	
	DRDB																																	
	DL																																	
	DR																																	
	DB																																	
PROPORTIONAL ROLLER (SEE PAGE 8)	R3																																	
	RP																																	
	2RP																																	
	RPS																																	
	RPD																																	

* AVAILABLE ONLY TYPE A

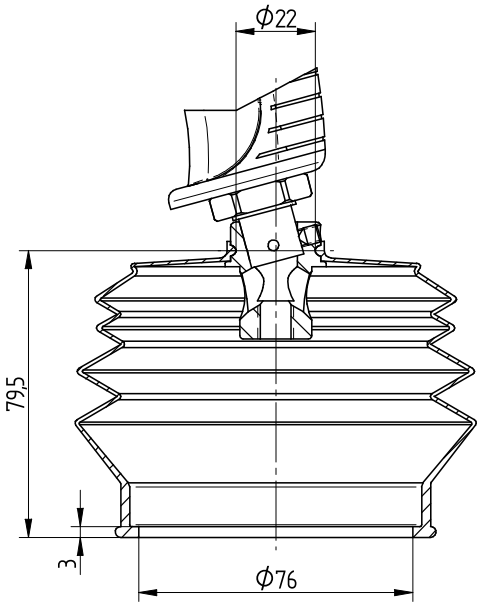
MULTIFUNCTION ERGONOMIC HANDLES - PROTECTIVE BOOTS

R ROUND PROTECTION BOOT

GAITER COLLAR FOR
STANDARD STRAIGHT
MOUNTING ADAPTOR

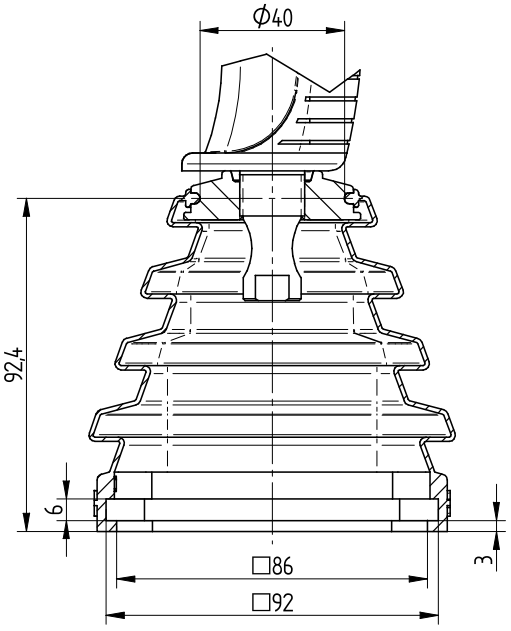


GAITER COLLAR FOR
TILTED MOUNTING ADAPTOR

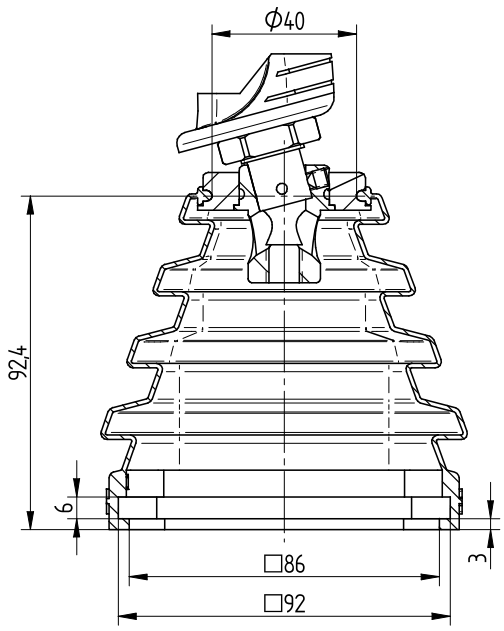


S SQUARE PROTECTION BOOT

GAITER COLLAR FOR
STANDARD STRAIGHT
MOUNTING ADAPTOR

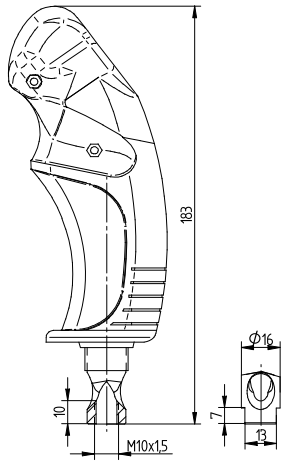


GAITER COLLAR FOR
TILTED MOUNTING ADAPTOR

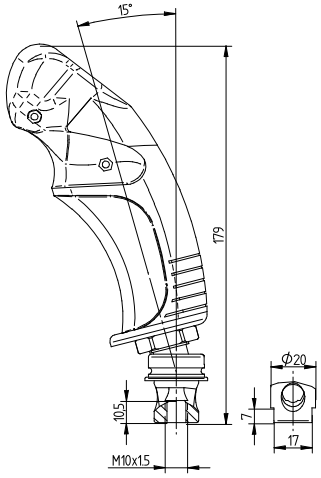


MULTIFUNCTION ERGONOMIC HANDLES - MOUNTING ADAPTERS

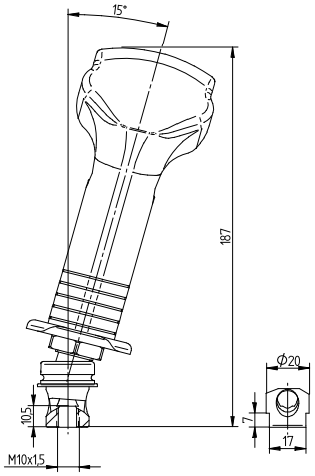
0 STANDARD STRAIGHT



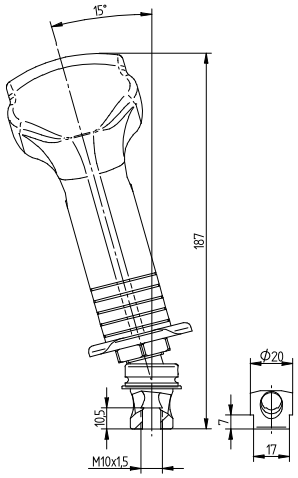
1 TILTED 15° FORWARD



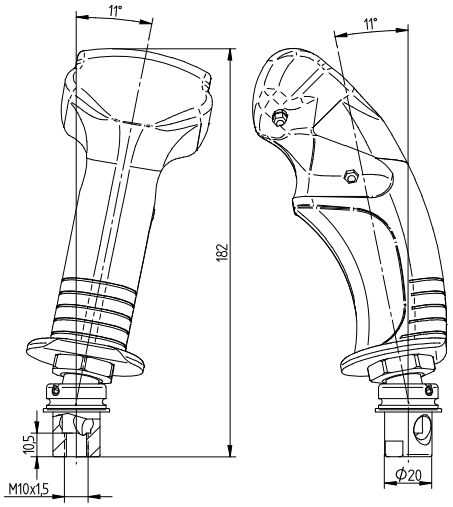
2 TILTED 15° RIGHT HAND



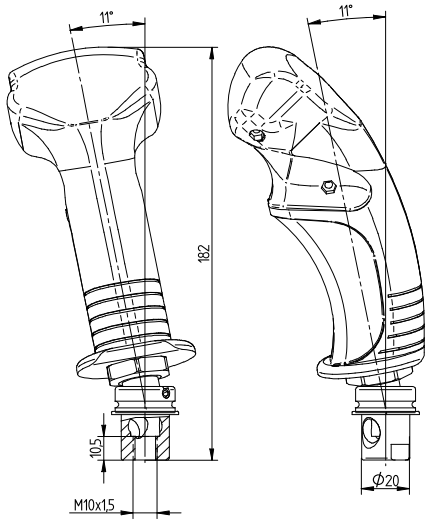
3 TILTED 15° LEFT HAND



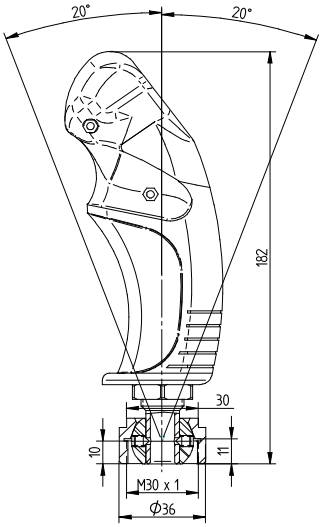
4 COMBINED TILTING RIGHT HAND



5 COMBINED TILTING LEFT HAND



6 WITH BALL JOINT



MFE2

MULTIFUNCTION ERGONOMIC HANDLE

MULTIFUNCTION ERGONOMIC HANDLES MFE2

INTRODUCTION

The MFE2 handle is fully customizable with a wide range of digital and analog controls, to meet customer needs. Now the free space has been increased to control more function on mobile machines.
Safety functions can be managed with standard safety trigger switch or using the Safe-T Grip® system, with a capacitive sensor that allow to control safety function in comfortable way.

BENEFITS

- Ergonomic design for comfortable usage
- Wide range of controls available
- Rugged construction for long operating life
- Spare parts available for maintenance
- Suitable for arm rest of console mounting
- Compatible with a wide range of product
- Stylish good looks suitable for modern cabs
- Ready for CANBUS applications
- Safety Trigger or Safe-T Grip® available
- Optional electronic card inside for custom functions

CONTROLS AVAILABLE *

Push Button type C
Protection: IP67
Rating: 5 Amps resistive @ 28VDC
Color available: Black, White, Blue, Yellow, Orange, Gray, Green, Red
Options available: Internal Led, Latched action
Mechanical life: 100000 cycles

Proportional Roller
Protection: IP68S
Supply voltage: 5 VDC
Output Voltage: 0.5 -4.5 V with 2.5 V in neutral position
Options available: Spring return to center, Frictioned, With lever
Mechanical life: 1000000 cycles

Rocker Switch
Protection: IP68S
Rating: 10 Amps resistive @ 28VDC
Colors available: Black, Red
Options available: Led, Latched or momentary action, 2 or 3 position
Mechanical life: 100000 cycles

Four Ways switch
Protection: IP68S
Rating: 1 Amp inductive, 10 mA resistive @ 28VDC
Electrical life: 100000 cycles

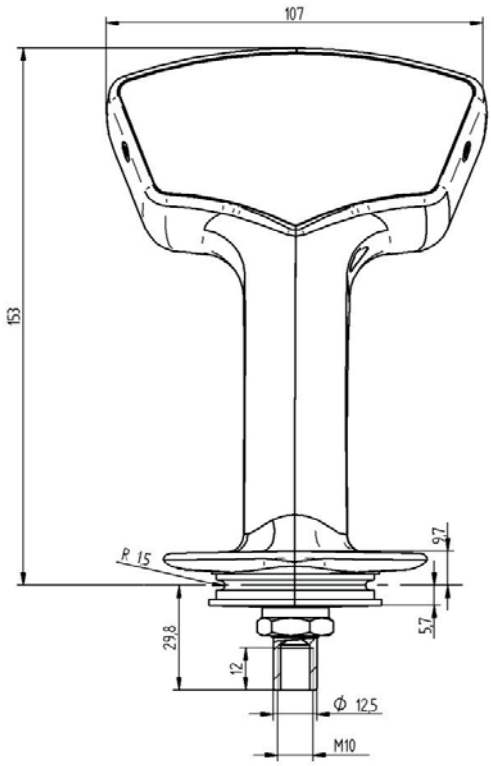
Signaling Led
Colors available: White, Red, yellow, Green, Blue
Supply voltage 12 or 24 VDC
Mounted on panel with support

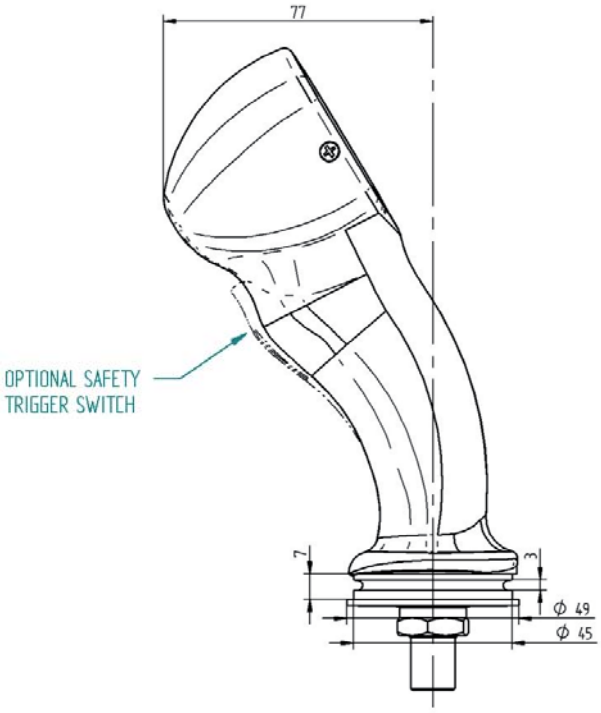
Four Ways proportional mini-joystick
Protection: IP6 8S
Linear hall effect sensors, 2 Axis
Supply voltage: 5 VDC
Output Voltage: 0.5-4.5 V with 2.5 V in neutral, for each axis
Mechani cal life: 100000 cycles

* Other controls available on request.

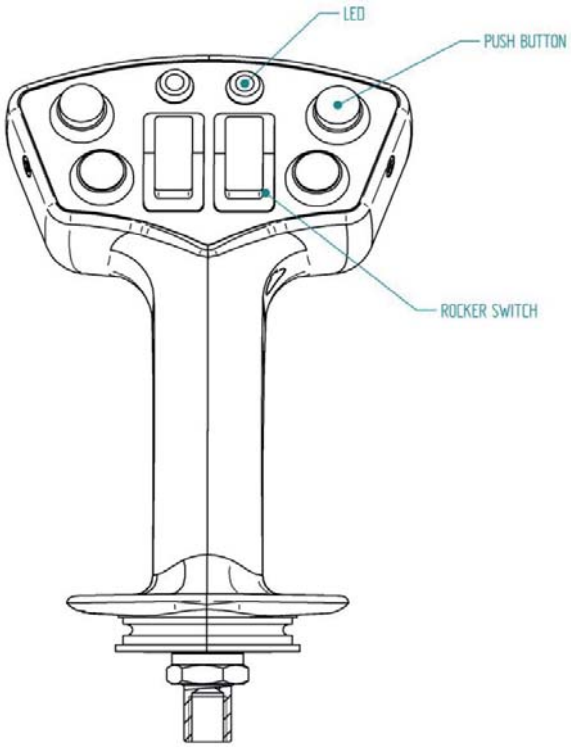
MULTIFUNCTION ERGONOMIC HANDLES MFE
INSTALLATION DRAWING

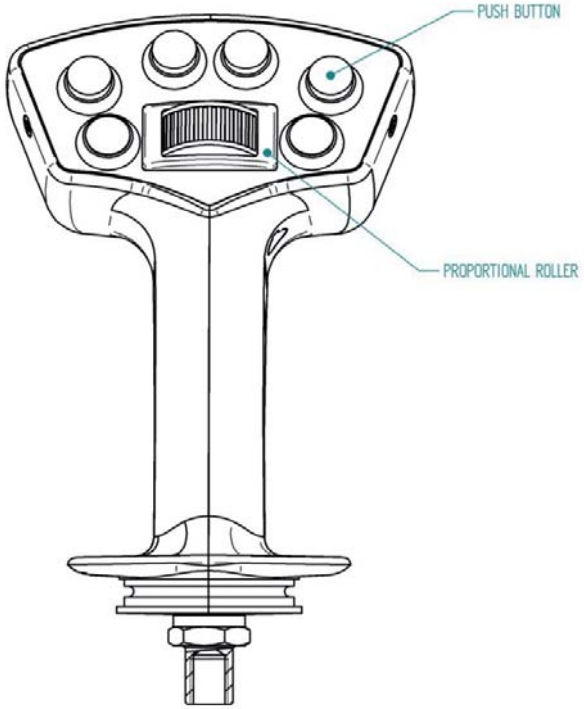
HANDLE DIMENSION





CONFIGURATION EXAMPLES





MULTIFUNCTION ERGONOMIC HANDLES MFE2
ORDER CODE

MFE2 - XX - XXX - X X

Wiring termination

0	=	flying leads
2	=	with connector (maker and model number to be specified on order)

Safety trigger

X	=	no safety trigger
T	=	with standard safety trigger
TCAP	=	with capacitive safety trigger

Rocker switch or Roller in positions A ÷ L

G R1	=	R1 Rocker in position G

First letter= position, other 2 letters: control type. Repeate if necessary.

RL = Proportional Roller with lever; RP = Proportional roller without lever; RF = Proportional roller frictioned without lever; R1 = Latched rocker switch 3 position; R2 = Latched rocker switch 2 position; R3 = Momentary rocker switch 3 position.

Push button/switch in positions 1 ÷ 9

For each control selected, insert position number and ID letter chosen on the following list. Example : For a push button blue in pos 2 and a minijoystick in pos 5, type 2B 5J

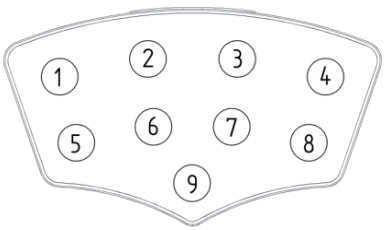
X	=	no button switch	Y	=	yellow push button
B	=	blue push buton	A	=	gray push button
K	=	black push button	R	=	red push button
G	=	green push button	W	=	white push button
O	=	orange push button	L	=	signalling led
D	=	four ways switch	J	=	four ways proportional

MFE2	=	Multifunction Ergonomic Handle

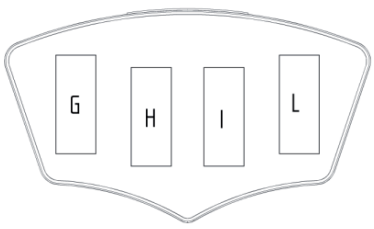
** For special configuration, please contact us

POSITIONS FOR CONTROLS

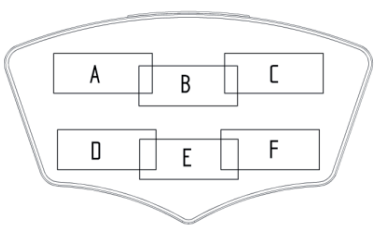
Standard positions for push button, led, four ways switch and prop. mini joystick



Standard positions for rocker and proportional roller, vertical mounted



Standard positions for rocker and proportional roller, horizontal mounted



safeTgrip®

MULTIFUNCTION ERGONOMIC HANDLE

With inbuilt capacitive sensor technology
for safety trigger function

safeTgrip® MULTIFUNCTION ERGONOMIC HANDLE

INTRODUCTION

- **SAFETY**
  Cannot be overriden since there is no switch to manipulate.

- **SELF SCANNING**
  There is no adjustments needed by the user or machine builder since the device adjust itself to the environment at start-up which leads to increased reliability.

- **DOUBLE REDUNDANCY**
  With this feature you get improved reliability and it reduces risk of future issues.
  It is truly a safe trustworthy device that personalise the phrase “Fit & Forget”.
  Virtually no future maintenance will be required.

- **SELF CONTAINED CONTROLS IN HANDLE**
  No extra space is required outside the handle for additional control boards that could require additional assembly and additional cables.
  This solution has lower total cost than such products.
  Since it ts current equipment it is easy to replace old models and it simplies maintenance.

- **CONTROL CURRENT = 3 AMPS**
  No need for a relay in majority of applications simplifying the signal circuitry.

- **EFFORT FREE AND COMFORTABLE FOR USER**
  Reduces risk of operator fatigue since there is no button to push.
  This in turn leads to improved safe operation of machine.
  Operator feels no stress in hands which enables limitation of risk for future problems / issues / injuries.
  Giving same level of working comfort whole day.

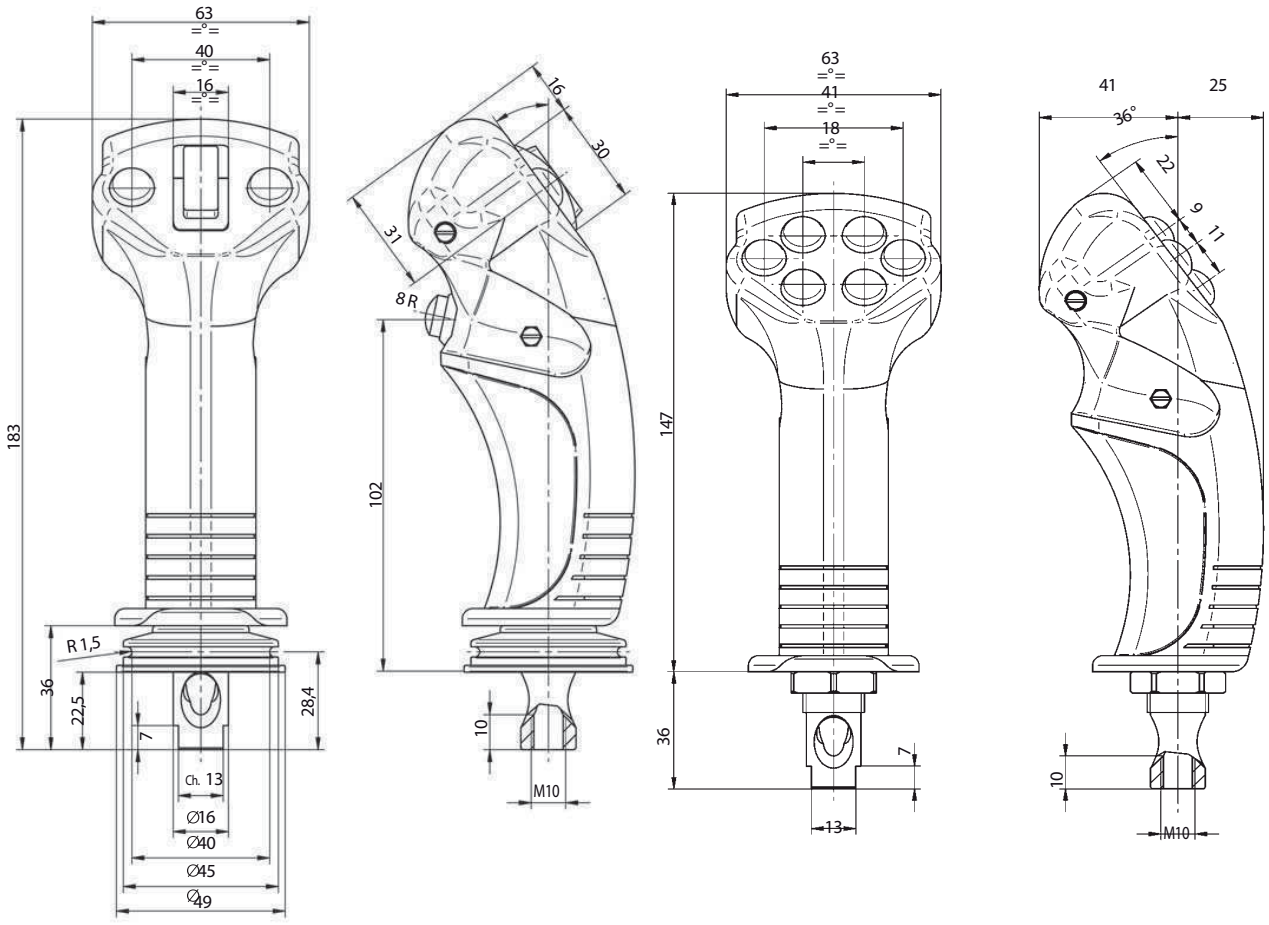
- **WORKS WITH OR WITHOUT GLOVES ON**
  Keep your hands protected at all times and reduces uncertainty of switch being operated or not.

- **NO MOVING PARTS IN SAFETY CIRCUIT**
  No moving part that potentially can break and there is no trigger to put tape around... therefore it cannot be overridden.... leading to improved safety on a device with smoth surface making it cleanable and potentially more hygienic.

safeTgrip® MULTIFUNCTION ERGONOMIC HANDLE

Supply Voltage (cont)	12 and 24 Volts
Max voltage (peak)	30 Volts
Rated Current	3.0 Ampere
Temperature range	-40 to +80 °C
Humidity	100% rel.

- Switch type A
  Current ..... 3.0 Ampere
  Protection ..... IP 67
- Switch type C
  Current ..... 0.4 Ampere
  Protection ..... IP 67
- Switch type D
  Current ..... 2.0 Ampere
  Protection ..... IP 68
- Switch type E
  Current ..... 3.0 Ampere
  Protection ..... IP 67
- Rocker Switch
  Current ..... 10.0 Ampere
  Protection ..... IP 68
- Proportional Rocker Switch
  Current ..... 0.18 Ampere
  Protection ..... IP 65



As HANSA-TMP has a very extensive range of products and some products have a variety of applications, the information supplied may often only apply to specific situations.

If the catalogue does not supply all the information required, please contact HANSA-TMP.
In order to provide a comprehensive reply to queries we may require specific data regarding the proposed application.

Whilst every reasonable endeavour has been made to ensure accuracy, this publication cannot be considered to represent part of any contract, whether expressed or implied.

The data is this catalogue refer to the standard product. The policy of HANSA-TMP consists of a continuous improvement of its products. It reserves the right to change the specifications of the different products whenever necessary and without giving prior information.

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