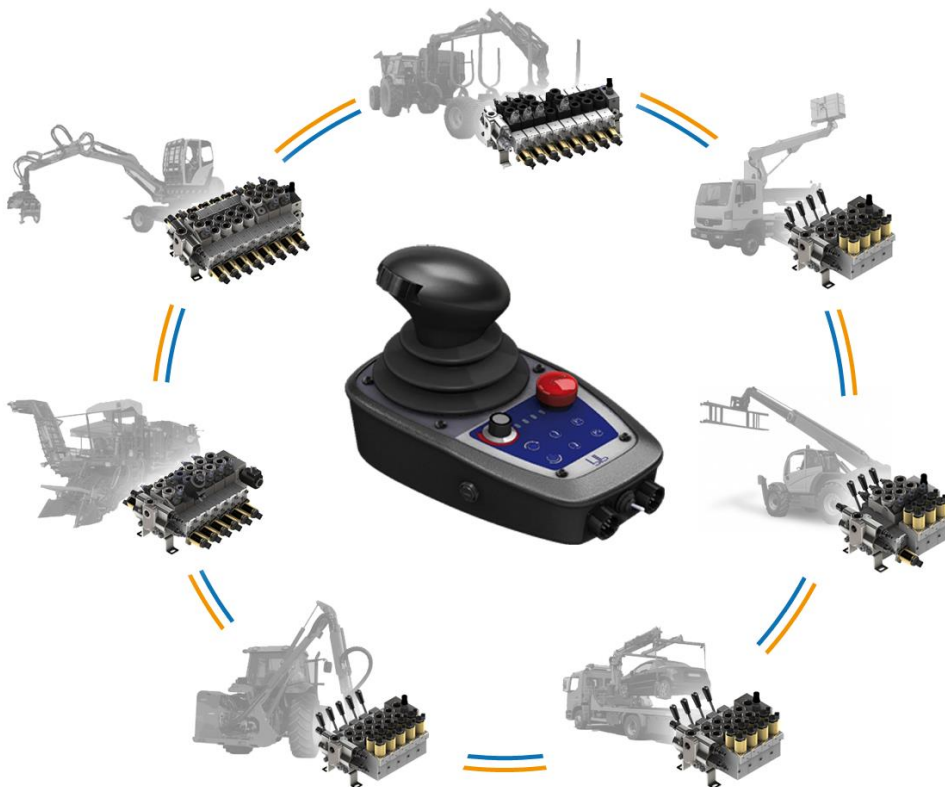
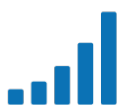


UPGRADE YOUR HYDRAULIC CONTROL



Enhances the user comfort



Improves the sensitivity of the machine



Versatile and easy to configure



Easy and fast to install



Improves safety



Service and quality at the highest level

WHO NEEDS



a – Forest cranes



b – Harvesting machines



c - Transporters



d - Hedge mowers



e- Unifeed



f - Cranes



g - Breakdown trucks



h - Front telescopic loaders



i - Harvesters



j – Front loaders



k - Aerial work platforms



l - Loaders

KPF - ELECTRO-HYDRAULIC PROPORTIONAL VALVE

MAIN FEATURES

KPF is an **open centre** hydraulic **directional control valve** controlled by the **electro-hydraulic proportional actuator**.

Specifically Designed for mobile applications with fixed displacement pumps, **KPF** has the following main features:

- ✓ Electro-hydraulic actuation with integrated pressure reducing valve adjustable from 15 to 35 bars
- ✓ Parallel circuit with auxiliary anti-shock, anti-cavitation and combined valves
- ✓ Electric adjustment of the in-use flow from 0 to 50 l / min with compensated hydrostatic device
- ✓ Spool circuits available: double acting, single acting with open centre to control the motors, floating, regenerative and closed centre
- ✓ Total protection against the weathering with galvanizing treatment of cast iron bodies and all components
- ✓ Electrical connections to the coils with AMP Junior connectors, quick and safe
- ✓ Manual safety operation with mechanical lever in case of lack of electricity
- ✓ High pressure carry-over (power beyond)
- ✓ Small footprint
- ✓ No external connections needed for the pilot signal

The simplicity of interface connections with **KOBI** and the easy adjustment of the sensitivity of proportional functions makes it extremely versatile. Control the machine will be as natural as moving your hand.



CARATTERISTICHE TECNICHE GENERALI

MAX FLOW	70 [l/min]
MAX PRESSURE	320 [bar]
WORKING TEMPERATURE	-20 /+80 [°C]
NUMBER OF SECTIONS	Da 1 a 10
ELECTRO-HYDRAULIC ACTUATOR	18 [W]

MAIN COMPONENTS

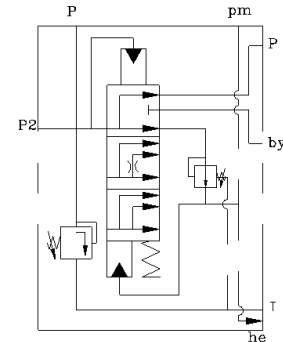
INLET ELEMENT - TE



The inlet element, as all KPF elements, is protected from oxidation by zinc plating. It consists of:

- ✓ A compensated spool for pilot line preload.
- ✓ A pressure reducer valve
- ✓ A working pressure control valve
- ✓ A pressure gauge 3/8 " outlet
- ✓ A 1/4" outlet for auxiliary external controls and setting control of pilot lines

Weight 3.10 [kg]



WORKING ELEMENTS

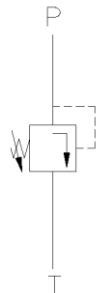
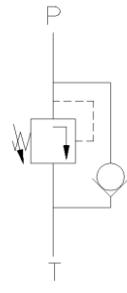


- ✓ All elements are fully protected from oxidation by trivalent zinc treatment (chromium III) compliant with ROHS regulations
- ✓ They are electro hydraulically operated through 12 or 24 [V] coils
- ✓ The manual control is standard
- ✓ Seals for high temperatures in FPM (Viton)

For all elements the following spool types and circuits are available:

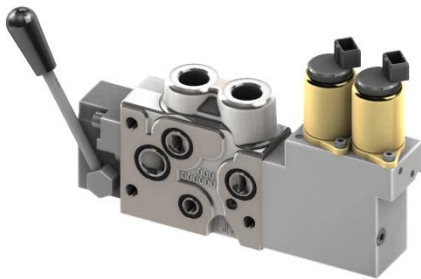
SPOOL TYPES

A	B	D
<p>4/3 (4-way / 3 positions)</p>	<p>3/3 (3-way / 3 positions)</p>	<p>4/3 (4 way / 3 positions)</p>
<p>Allows operation and control of double-acting actuators. In position 0, A and B ports are closed: flow goes to tank through the by-pass. In position 1 or 2, the pump sends oil to port A or B.</p>	<p>Allows operation and control of single acting actuators. In position 0, A and B ports are closed: flow goes to tank through the by-pass. In position 1 flow goes to tank through the by-pass and in position 2 the pump sends oil to port A.</p>	<p>Allows operation and control of double or single acting actuators. Most common application is the bidirectional motors. In position 0, ports A and B are open to tank, allowing the motor to stop by inertia. The pump flow goes to tank the by-pass. In position 1 or 2, the pump sends oil in A or B ports, reversing the direction of motor rotation.</p>

For all elements with valves the following auxiliary valves are available:

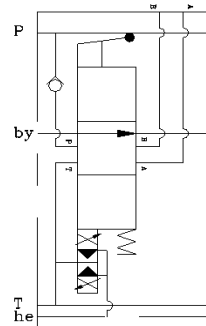
AUXILIARY VALVES	
ANTISHOCK - VL	ANTI-SHOCK AND ANTI-CAVITATION VALVE - VLC
	
	
<p>VL anti-shock valve are direct acting pressure relief valves with conical shutter: they preserve the hydraulic system from unwanted pressure increases or peaks that could damage the components.</p>	<p>VLC are combined anti-shock and anti-cavitation valves: they keep the circuit protected against accidental shocks and eliminate the cavitation caused by fast movement of the actuators.</p>

STANDARD ELEMENT - KPF

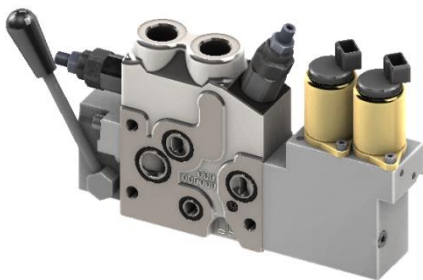


When at rest the oil is free to circulate through the bypass channel. During operation flow is sent to A or B ports. Combined with the spools (A B or D), allows all uses that do not require auxiliary work ports valves.

Weight 3.80 [kg]

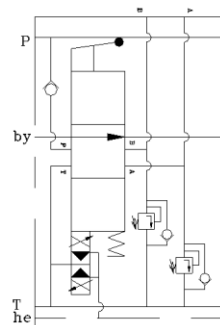


ELEMENT WITH VALVES - KPFV

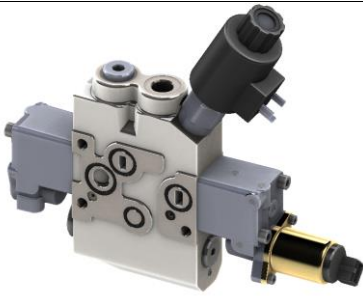


It differs from the standard element (KPF), for the housing for work ports auxiliary valves (VL and VLC). Recommended in applications where it is necessary to adjust users working pressure at a different rate than general maximum pressure. Examples of use: front shovels, telescopic front loaders, forest cranes and cranes for trucks.

Weight 4.20 [kg]

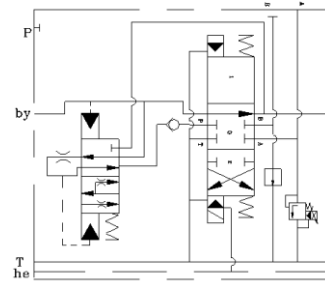


"SUSPENSION-EFFECT" ELEMENT - KPFP

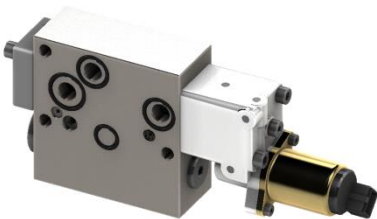


Element provided with electric valve for the control of the work port pressure. It allows the load control by varying the working pressure on the cylinder. Typical applications are hedge mowers and sweepers.

Weight 4.50 [kg]

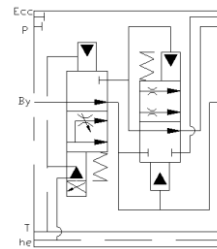


FLOW CONTROL ELEMENT - KPFRFP

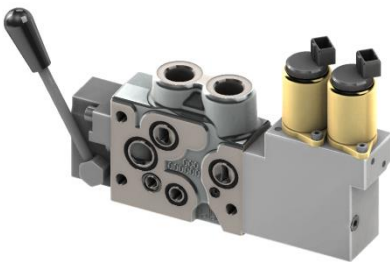


Allows the flow adjustment and divides the flow into priority and exceeding. It can be electrically operated through the **KOBI** potentiometer. After a flow control section one or more priority elements are needed (KPFP or KPFPV). The excess oil can be used with a recuperation element (KPFR or KPFRV) or simply go to tank. Allows simultaneous movements.

Weight 3.00 [kg]

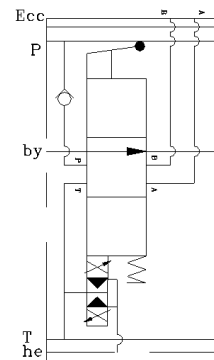


PRIORITY ELEMENT - KPFP

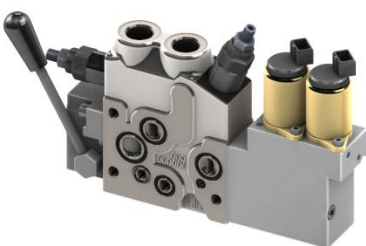


It is used after a flow control section. With the spool in centre position, the flow is free to circulate (by-pass). When one of the electro-hydraulic controls is operated, the flow regulated by the KPFRFP element, goes to A or B port.

Weight 3.80 [kg]

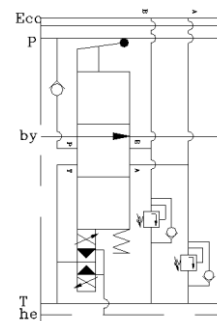


PRIORITY ELEMENT WITH VALVES - KPFPV

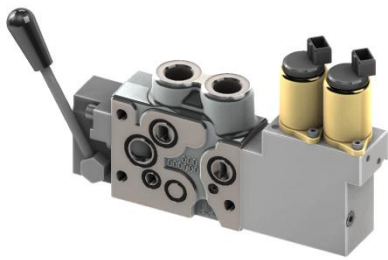


It differs from the KPFP priority element for the housing for work ports auxiliary valves (VL and VLC).

Weight 4.20 [kg]

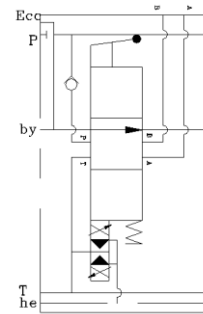


RECUPERATION ELEMENT - KPFR

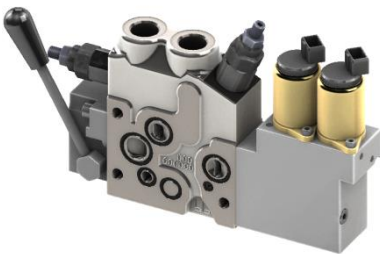


It is used after a priority element (KPPF) and provides the exceeding oil flow also to the following elements. It works with full flow if the preceding priority element is not actuated. It work with the excess flow if the priority element is actuated.

Weight 3.80 [kg]

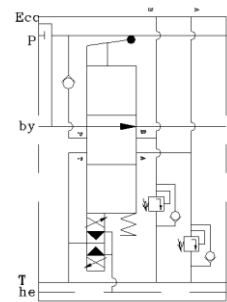


RECUPERATION ELEMENT WITH VALVES - KPFRV



It differs from the KPFR recovery element for the housing for work ports auxiliary valves (VL and VLC).

Weight 4.20 [kg]

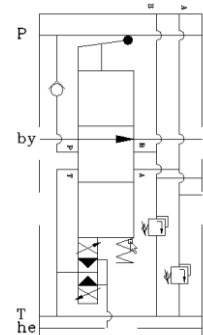


FLOATING ELEMENT - KPFRVU



Combined with the TUF outlet, allows to control equipments that need to follow and adapt to the ground. Typical applications are snow blades, hedge mowers and sweepers. It can have auxiliary work ports valves (VL and VLC). To be mounted as last element in the valve, before the specific outlet section (TUF).

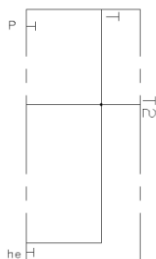
Weight 4.20 [kg]



OUTLET ELEMENTS

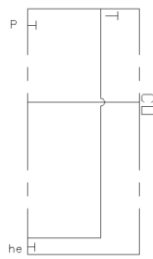
It is the last element of the valve and all versions have the following connection options:

CA



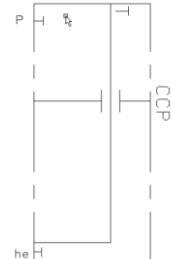
Open Centre

CO



Carry Over

CCP



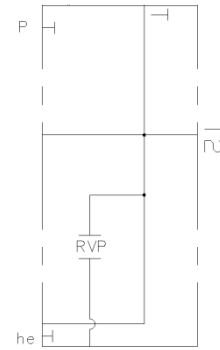
Closed Centre

STANDARD OUTLET - TU



By selecting the appropriate components, it allows all configurations (CA, CO, CCP).

Weight 1.00 [kg]

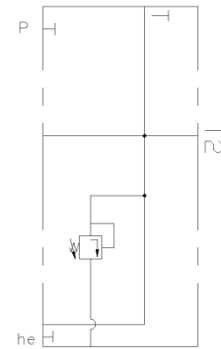


OUTLET WITH PROTECTION VALVE - TUV

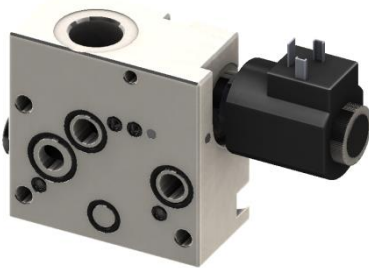


It differs from the standard outlet as it carries a relief valve on the tank line which protects the solenoid valves. It allows all configurations (CA, CO, CCP), by adding the appropriate components.

Weight 1.10 [kg]

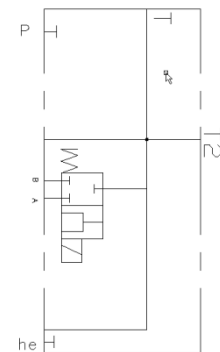


FLOATING OUTLET - TUF



It differs from the standard outlet as it mounts a solenoid valve to actuate the floating circuit of the last element. It is used when the floating element is foreseen in the valve configuration (KPFVFU). It allows all configurations (CA, CO, CCP), by adding the appropriate components.

Weight 1.50 [kg]



KPF SPARE PARTS AND ACCESSORIES

SPARE PARTS FOR INLET SECTION

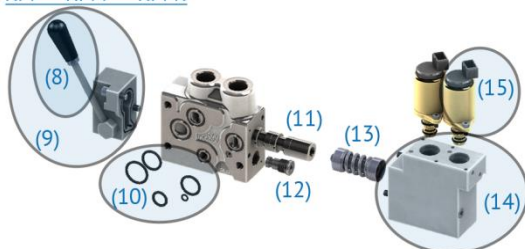
KPF TE - (1)



ID	CODE	DESCRIPTION	WEIGHT [Kg]
1	805244	INLET KPF TE G	3.10
2	803134	Main relief valve	0.25
3	803139	Pressure reducer valve	0.30
4	561071	Seal kit for pressure reducer valve	ND
5	019011	Gauge connection	0.10
6	015009	Plug TDG002 1/4" Gas	0.02
7	832080	Spring holder plug	0.10

SPARE PARTS FOR ELEMENTS

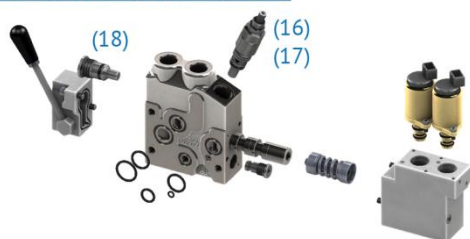
KPF - KPFP - KPFR



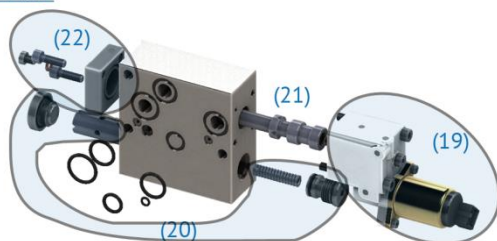
SPARE PARTS FOR KPF-KPFP-KPFR-FPFV-KPFV-KPFRV-KPFVU

ID	CODE	DESCRIPTION	WEIGHT [Kg]
8	561118	Lever	0.05
9	561131	Manual Operator	0.20
10	561134	Seal kit for element	ND
11	560878	Kit spool type A	0.22
11	560924	Kit spool type B	0.23
11	560866	Kit spool type D	0.21
12	560569	Kit non-return valve VNR	0.02
13	561133	Kit spool control	0.10
14	561132	Magnet holder block with seals	0.60
15	025807	Magnet 12 [V]	0.25
15	025808	Magnet 24 [V]	0.25
16	803026	Relief valve VL U 80-250 [bar]	0.15
16	803107	Relief valve VL K 150-320 [bar]	0.15
17	803084	Combined relief and anticavitation valve VLC U	0.15
17	803086	Combined relief and anticavitation valve VLC K	0.15
18	832096	Relief valve plug RVP	0.10

KPFV - KPFVU - KPFRV - KPFVU



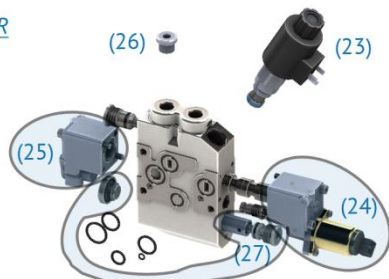
KPFRFP



SPARE PARTS FOR KPFRFP ELEMENT

ID	CODE	DESCRIPTION	WEIGHT [Kg]
19	801313	Actuator kit 12 [V]	0.50
19	801325	Actuator kit 24 [V]	0.50
20	561166	Cursor kit for KPFRFP	0.19
21	201336	Spool for KPFRFP	0.16
22	561167	Plug kit KPFRFP	0.65

KPFPR

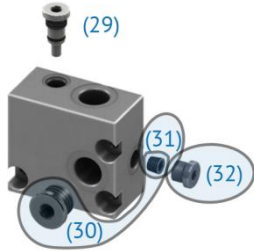


SPARE PARTS FOR "SUSPENSION EFFECT" KPFPR ELEMENT

ID	CODE	DESCRIPTION	WEIGHT [Kg]
23	025810	"Suspension Effect" electric valve 12 [V]	0.70
23	025816	"Suspension Effect" electric valve 24 [V]	0.70
24	801222	Actuator kit 12 [V]	0.50
24	801223	Actuator kit 24 [V]	0.50
25	801250	Spool control for KPFPR	0.30
26	015008	Plug TDG003 3/8" Gas	0.03
27	561129	Cursor kit for KPFPR	0.16

SPARE PARTS FOR OUTLET SECTIONS

KPF TU - (28)



SPARE PARTS FOR STANDARD OUTLET TU

ID	CODE	DESCRIPTION	WEIGHT [Kg]
28	805251	KPF TU RVP G	1.10
29	832155	Relief valve plug RVP 20-35 viton	0.05
30	015026	Carry-over CO	0.01
31	832177	Closed center plug CCP	0.10
32	015008	Plug TDG003 3/8" Gas	0.03

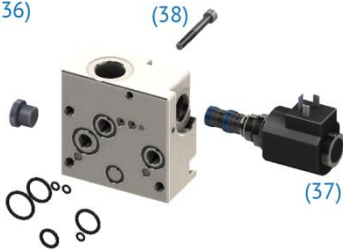
KPF TUV - (33)



SPARE PARTS FOR OUTLET TUV

ID	CODE	DESCRIPTION	WEIGHT [Kg]
33	805243	KPF TU VL G	1.10
34	803108	Relief valve for pilot line protection	0.10
35	020027	Plumbing plug	0.01

KPF TUF - (36)



SPARE PARTS FOR OUTLET TUF

ID	CODE	DESCRIPTION	WEIGHT [Kg]
36	805249	KPF TU FLOAT NC 12 G	1.50
36	805250	KPF TU FLOAT NC 24 G	1.50
37	025095	2 way electric operated valve 12 [V]	0.45
37	025126	2 way electric operated valve 24 [V]	0.45
38	011089	Screw TCEI M6X50 8.8 ZB UNI5931	ND

BRACKETS AND TIE RODS



ID	CODE	DESCRIPTION	WEIGHT [Kg]
39	560893	Brackets	0.40

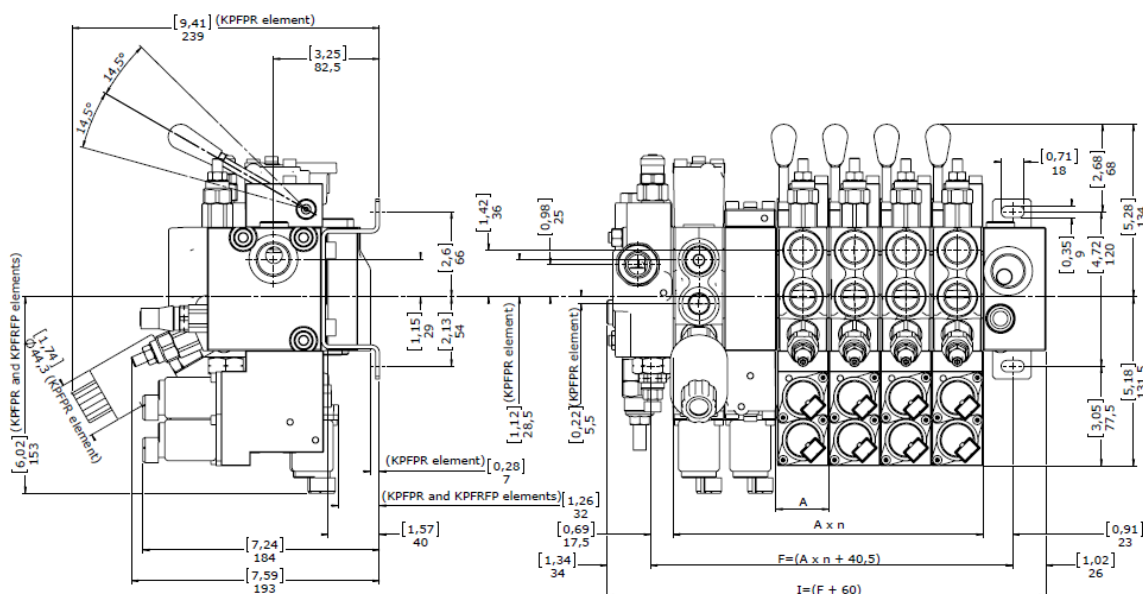
ID	CODE	DESCRIPTION	WEIGHT [Kg]	TORQUE
40	560788	Kit tie rods for 1 section	0.20	25 [Nm]
40	560789	Kit tie rods for 2 sections	0.24	25 [Nm]
40	560790	Kit tie rods for 3 sections	0.28	26 [Nm]
40	560791	Kit tie rods for 4 sections	0.32	28 [Nm]
40	560792	Kit tie rods for 5 sections	0.36	28 [Nm]
40	560793	Kit tie rods for 6 sections	0.40	31 [Nm]
40	560794	Kit tie rods for 7 sections	0.44	31 [Nm]
40	560795	Kit tie rods for 8 sections	0.48	31 [Nm]
40	560796	Kit tie rods for 9 sections	0.52	32 [Nm]
40	560797	Kit tie rods for 10 sections	0.56	33 [Nm]

KPF TECHNICAL SPECIFICATIONS

MECHANICAL AND HYDRAULIC CHARACTERISTICS

CARATTERISTICA	SI	US
Max flow	70 [l/min]	18 US [gpm]
Max working pressure	320 [bar]	4500 [PSI]
Max pressure on ports	340 [bar]	5000 [PSI]
Max pressure on tank port T	10 [bar]	145 [PSI]
Pilot flow	Self-regulated by the system	
Standard pilot pressure	20 ⁺⁵ [bar]	290 ⁺⁷² [PSI]
Max pilot pressure	35 [bar]	508 [PSI]
Max number of sections	10	10
Working temperature range	-20 ÷ +80 [°C]	-4 ÷ +176 [°F]
Spool stroke - spool covering	5,5 + 5,5 [mm] ; negativo	0.2165 + 0.2165 [inc]
Spool actuating force (with standard spring)	44 ÷ 286 [N]	10 ÷ 64,5 [lb]
Internal leakage (100 bars, 40°, oil viscosity 32 mm ² / s)	4 ÷ 8 [cc/min]	0.98 ÷ 1.96 [cu.in./min]
P-P2-A-B-T ports threads	G 1/2"	7/8"-14 UNF-2B
T2thread	G 3/4"	1"1/16"-12 UNF-2B
Pilot external coupling thread	G 1/4"	1/2"-20 UNF-2B
Pressure gauge coupling thread	G 3/8"	3/4"-16 UNF-2B
Circuit characteristics	Connections: parallel; single; parallel-single	
Surface protection	Trivalent zinc plating (chromium III) compliant with ROHS regulations	
Tie rods tightening torque	See the table	
Installation - Position	All	
Standard setting of the relief valves (at 14 l / min)	U 140 [bar]; K 200 [bar]	

DIMENSIONS



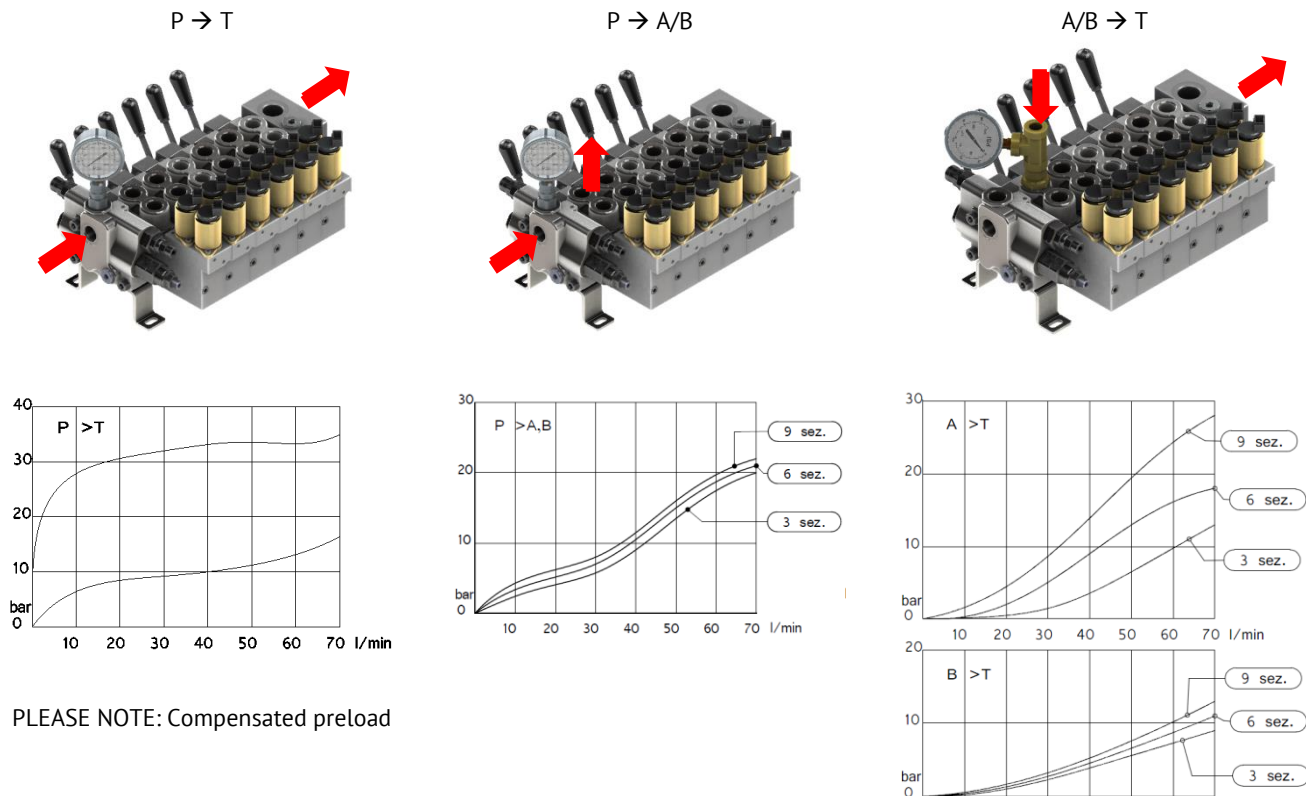
A = 40 [mm] A=1,57 [inch]

n = number of elements

F = centre distance between mounting holes [mm] [inch]

I = longitudinal overall dimensions [mm] [inch]

PRESSURE DROP DIAGRAMS



All data and diagrams contained in this catalogue were tested with VG32 oil at a temperature of 30°C.

ELECTRIC ACTUATOR SPECIFICATIONS

CHARACTERISTICS	SI
Electro-hydraulic actuator voltage	12 V / 24 [V]
Power used	18 [W]
Type of connector	AMP Junior Power Timer
Max voltage 12V/24V	1,5 / 0,75 [A]
Min voltage 12V / 24V	0,6 / 0,3 [A]
Coil resistance at 20°C 12V / 24V	5,3 Ω / 21,2 [Ω]
Protection level	IP65/IPX7
Insulation class	H
Max pressure	50 [bar]
Max supply pressure	35 [bar]
Working flow	Self-regulated by the system
Use	ED 100%
PWM frequency	100 [KHz]
Weight	~230 [g]
Installation - Position	All

FLOATING SOLENOID VALVE SPECIFICATIONS

CHARACTERISTICS	SI
Actuator voltage	12 / 24 [V]
Power used	26 [w]
Type of connector	ISO4400
Protection level (with connector mounted properly)	IP65
Insulation class	H-180-VDE-0580
Weight	0.42 [Kg]
Installation - Position	All
Use	ED 100%

SPECIFICATIONS OF ELECTRIC VALVE FOR PRESSURE CONTROL

CHARACTERISTICS	SI
Actuator voltage	12 / 24 [V]
Power used	22 [W]
Type of connector	ISO4400
Max voltage 12V/24V	1600/800 [mA]
MIn voltage 12V / 24V	60[mA]
Protection level (with connector mounted properly)	IP65
Insulation class	F-155-VDE-0580
Weight	0.62 [Kg]
Installation - Position	All
Use	ED 100%

KOBI – CONTROL CONSOLE

MAIN FEATURES

KOBI is a new generation console designed to control directional control valves systems with proportional electro-hydraulic actuation. Combined with **KPF** directional control valve, **KOBI** allows to significantly improve the control of the machines.

It is configurable to meet different applications. It can control both electro-proportional and on-off type actuators. Both types may be present with a specific configuration for the application. The setting of the sensitivity of controls is pre-configured for the most common needs. However, it can be customized by the operator without requiring specialized assistance.

The ergonomic design of the handle ensures a secure grip and reduces operator fatigue. The panel layout has been optimized to allow maximum control.

Compact, durable and protected, it may be installed inside small-sized cabins and, if necessary, mounted at the outside.

The connection between **Kobi** and the connectors on the valve takes place through tear-resistant and fast installation wires, ensuring every intermediate devices: **all the electronics is integrated into the console.**

It is equipped with emergency button and human presence sensor (optional).

Kobi is usable in applications and equipments subjected to European directives on safety (DM, PED, BT, EMC).



GENERAL TECHNICAL CHARACTERISTICS

POWER	60 [w]
POWER SUPPLY VOLTAGE	5 ÷ 30 [V]
PROTECTION	IP 65
NUMBER OF CONTROLS	16
OVERALL DIMENSIONS	234 x 164 x 131 [mm]
WEIGHT	1.3 [Kg]

MAIN COMPONENTS

CONTROL PANEL	BOX
	
<ul style="list-style-type: none"> ✓ 2 On-Off buttons ✓ 2 On-Off buttons with adjustable ramp (max 0.8 [s]) ✓ 2 programming buttons ✓ 1 potentiometer (0-1000 [K ohm]) ✓ Emergency button NC with manual reset ✓ 4 LEDs ✓ Stainless steel plate 	<ul style="list-style-type: none"> ✓ Power switch with fixed positions lever ✓ 6 Fuse [A] ✓ CPC-9 connectors ✓ Power cord
JOYSTICK	CABLE
	
<ul style="list-style-type: none"> ✓ 10 proportional functions ✓ 1 On-Off function 	<ul style="list-style-type: none"> ✓ Terminations with AMP-J type connectors (optional adapter ISO4400) and CPC-9 ✓ Length 4.5 [m] ✓ Conductors cross-section 0.3 [mm²]

KOBI SPARE PARTS

		
<p>Joystick dx 561318</p>	<p>Joystick sx 561317</p>	<p>Printed circuit board 025148</p>
		
<p>Box 561319</p>	<p>Emergency butto 025147</p>	<p>Panel 561320</p>
		
<p>Left cable (blue) 025141</p>	<p>Right cable (red) 025143</p>	<p>Adaptor AMP-J/ISO4400 025142</p>

TECHNICAL SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

KOBI	
Supply voltage	5-30 V
Self consumption 12 V / 24 V	70 mA / 35 mA
Outlets	16 of which a maximum of 13 are proportional
Proportional output voltage 12 V / 24 V	from 0 to 1500 mA / from 0 to 750 mA
ON/OFF output voltage 12 V / 24 V	1500 mA / 750 mA
Activation/Deactivation current adjusting ramp	0 - 0,2 - 0,4 - 0,6 - 0,8 sec
Human presence safety	Optional
Output max current	6 A
Output max voltage	30 V
Working temperature	-20/+50 °C
Emergency button	N.C. contacts to be re-engaged
Weight	1.35 [Kg]
Size	234 x 164 x 131 [mm]

DIMENSIONS

