



Single axis pilot control lever

ESJ01A

section with 35 mm pitch

ESJ01B

section with 39 mm pitch

ESJ01C

section with 42 mm pitch

Hydraulic remote control - Single service port

ESJ01V

Rev. 02 • May, 2023

TECHNICAL CATALOGUE



.....
Servocontrols



HISTORY OF REVISIONS

DATE	PAGE	CHANGED	REV.
December, 2018	-	First edition	00
March, 2019	15 - 23	Modified sequence choices	01
May, 2023	13 - 14 - 16 - 19 - 20 - 21 - 22 23 - 24 - 25	Updated controls schema and metering curves. Added EHS8 lever. Added ESJ01B, ESJ01C and ESJ01V versions.	02

ABOUT THE MANUAL

This manual contains the technical instructions for the servocontrol ESJ01A, ESJ01B, ESJ01C and ESJ01V. All information given in this manual is current and valid according to the information available at the time of publication. The data specified above only serve to describe the product. EBI Motion controls reserves to modify or revise the instructions without prior notice.

EBI Motion controls is not responsible for any damage caused by an incorrect use of the product. Please visit www.ebimc.com for the most recent version of this manual.

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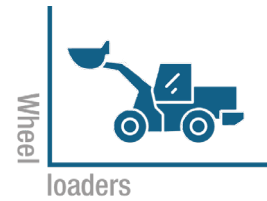
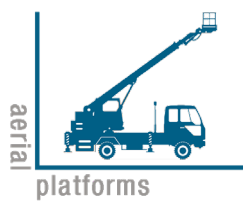
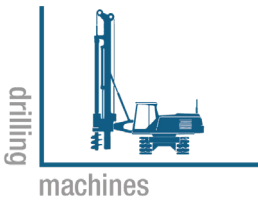
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INTRODUCTION

SERVOCONTROLS

EBI motion controls servocontrols (joysticks and foot pedals) are used to control the work and drive hydraulics of modern mobile machines with high accuracy, safety and optimal performance. EBI motion controls servocontrols are maintenance free and have a long life cycle, are suited for specialized applications for a variety of mobile equipment such as:

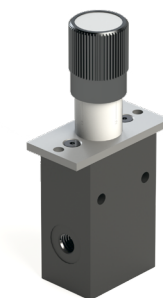


This Image represents a ESJ01A.

ESJ01A - ESJ01B - ESJ01C

SECTIONAL HYDRAULIC CONTROL DEVICE SINGLE AXIS LEVER

- Compact and light weight.
- Progressive and sensitive operation.
- Precise pressure control.
- Low operating effort.
- Optimised angular movements of joystick.
- Control element protected with rubber bellow.
- High durability and Maintenance free.



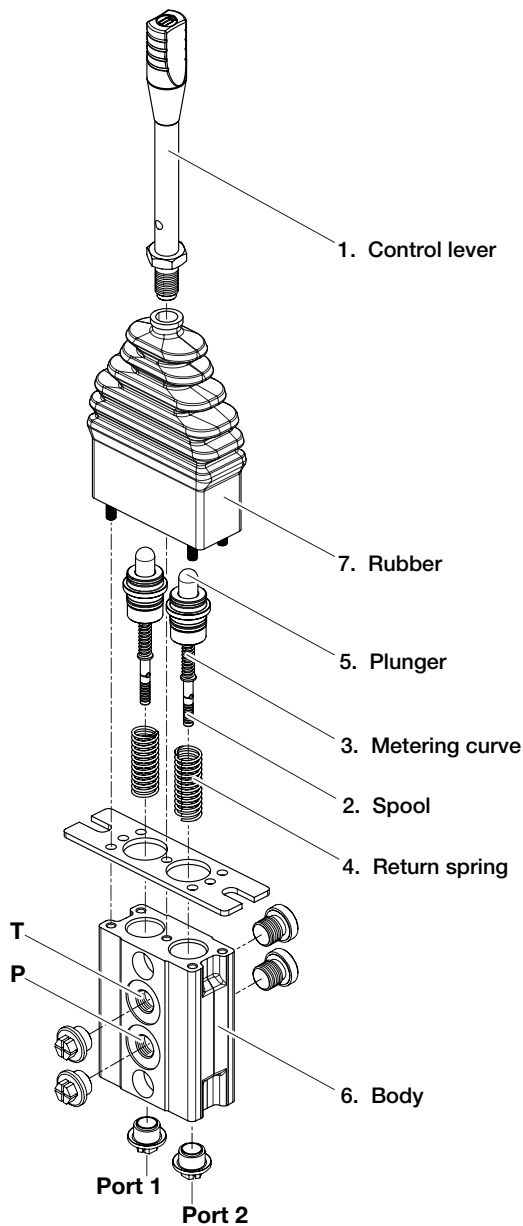
This Image represents a ESJ01V.

ESJ01V

HYDRAULIC REMOTE CONTROL SINGLE SERVICE PORT

- Compact and light weight.
- Precise pressure control.
- Low operating effort.
- High durability and Maintenance free.

GENERAL INFORMATION

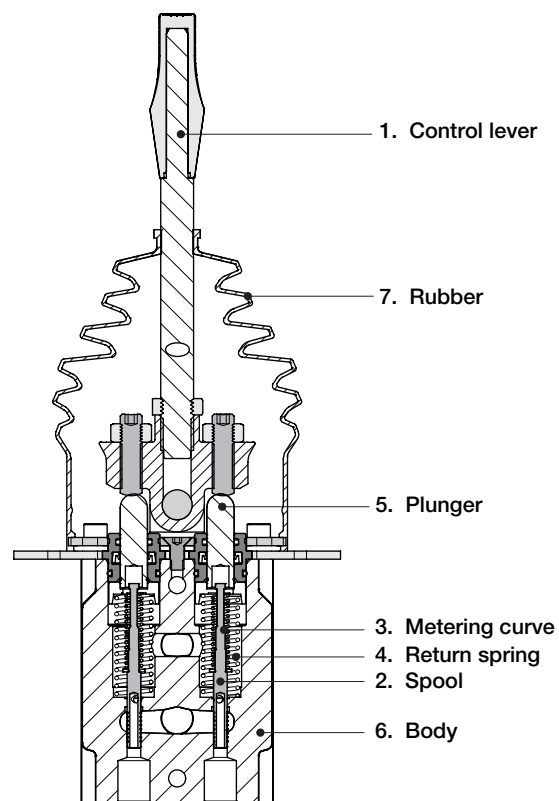


HYDRAULIC OPERATING PRINCIPLE

Sectional hydraulic control device operates on the basis of direct operated pressure reducing valves.

The control device basically comprises a control lever (1), two pressure reducing valves and a body (6). Each pressure reducing valve consists of a control spool (2), a metering curve (3), a return spring (4) and a plunger (5).

In the non-actuated condition, the control lever is held in the neutral position by the return spring. The control ports (1 and 2) are connected to tank port T via the drilling.



When the control lever is deflected, the plunger is pressed against the return spring and the metering curve. The metering spring initially moves the control spool downwards and closes the connection between the relevant port and tank port T. At the same time, the relevant port is connected to port P via the drilling.

The control phase starts as soon as the control spool finds its balance between the force from the metering curve and the force resulting from the hydraulic pressure in the relevant ports (ports 1, 2).

As a result of the interaction of the control spool and the metering curve the pressure in the relevant ports is proportional to the stroke of the plunger and thus to the position of the control lever.

This pressure control as a function of the control lever position and the characteristics of the metering curve enables the proportional hydraulic control of directional valves and high response control valves for hydraulic pumps and motors.

A rubber bellow (7) protects the mechanical parts in the housing against contamination and ensures that the control device can also be used for the arduous applications.

GENERAL INSTRUCTIONS

INTENDED USE

Servocontrol ESJ01A, ESJ01B, ESJ01C and ESJ01V are designed for industrial use.

WARRANTY

Check the package and the product for transport damage when receiving goods. The package is not meant for long term storage; protect the product appropriately.

Do not dismantle the product. The warranty is void if the product has been disassembled.

The manufacturer is not responsible for damages resulting from misinterpreted, noncompliance, incorrect, or improper use of the product that goes against the instructions given in this document.

GENERAL SAFETY INSTRUCTIONS

The following instructions apply to all procedures associated with the product. Read these instructions carefully and follow them closely.

- Use necessary personal protective equipment when working with the product.
- Support the product properly; make sure the product cannot fall over or turn around by accident.
- Use only appropriate equipment and attachments for lifting and transferring the product.
- Always use the lifting equipment properly and check the load-bearing capacity.
- Prevent unintended use of the product during installation and maintenance procedures.

WARNING SYMBOL

The following symbols can be used in this manual:



Note:
Useful information



Danger:
Danger of death or injury



Attention:
May cause damage to the product

PRODUCT IDENTIFICATION

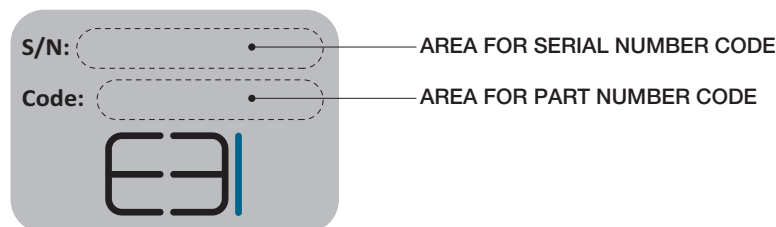
The product identification data can be found on the identification plate attached to the EBI product.

SERIAL NUMBER

all manufacturing data and all sales data can be found with the serial number

PART NUMBER CODE

It is a number univocally identifying the configuration and pressure setting of a valve



Note:
Serial number and part number code have 9 characters (letters and numbers).

PORT DETAILS

The connection port size is indicated by an ordering code common for all EBI products. Following tables show all available connections.

BSP THREADS ISO 1179-1	D	C		B		A		CODE
	UNI-ISO 228	mm	in	mm	in	mm	inc	
	G 1/4	13	0.51	19	0.75	1	0.094	1B
	G 3/8	13	0.51	25	0.98	1	0.04	2B
	G 1/2	15	0.59	29	1.14	1.5	0.06	3B
	G 3/4	17	0.67	36	1.42	1.5	0.06	4B
	G 1	19	0.75	45	1.77	2	0.08	5B

UN/UNF THREADS ISO 11926-1	D	C		B		L		M		K	A		CODE
	ASA-B1-1	mm	in	mm	in	mm	in	mm	in		mm	in	
	9/16-18 UNF (SAE6)	13	0.51	26	1.02	15.6	0.61	2.5	0.098	12°	1	0.04	1S
	3/4-16 UNF (SAE8)	15	0.59	30	1.18	20.6	0.81	2.6	0.102	15°	1.5	0.06	2S
	7/8-14 UNF (SAE10)	17	0.67	34	1.34	23.9	0.94	2.6	0.102	15°	1.5	0.06	3S
	1"1/16-12 UNF (SAE12)	20	0.79	41	1.61	29.2	1.15	3.3	0.13	15°	1.5	0.06	4S
	1"5/16-12 UNF (SAE16)	20	0.79	50	1.97	35.5	1.40	3.3	0.13	15°	2	0.08	5S

UNITS OF MEASURE - CONVERSION FACTORS

LENGHT	FLOW RATE	MASS	FORCE WEIGHT	PRESSURE
1 mm = 0,0394 in	1 l = 0,2200 gal UK	1 kg = 2,205 lb	1 Nm = 0,1020 Kgf	1 bar = 100000 Pa
1 in = 25,4 mm	1 l = 0,2642 gal US	1 lb = 0,4536 kg	1 Kgf = 9,8067 Nm	1 bar = 14,5 psi
	1 gal UK = 4,546 l			1 Pa = 0,0001 bar
	1 gal UK = 1,2010 gal US			1 Pa = 0,00014 psi
	1 gal US = 3,785 l			1 psi = 0,0689 bar
	1 gal US = 0,8327 gal UK			1 psi = 6890 Pa



TECHNICAL DATA

All performances in this catalogue are obtained using mineral based hydraulic oil 46 cSt viscosity at 40°C (ISO VG 46 viscosity class). All joystick servocontrols go through functional testing at these conditions before shipment.

HYDRAULIC STANDARD SPECIFICATIONS

Maximum input pressure	100 bar - [1450 psi]
Maximum back pressure on tank line	3 bar - [43,5 psi]
Control max flow on ports.....	15 l/min - [4 GPM]
Hysteresis	< 1 bar - [< 14,5 psi]
Hydraulic fluid	Mineral Oil HL, HLP (DIN 51524) phosphate ester (HFD-R)
Fluid temperature range	-20°C +80°C [-4°F +176°F]
Fluid viscosity range	10 ÷ 380 cSt
Max contamination level	9 (NAS 1638) - 20/18/15 (ISO 4406:1999)
Recommended filtration	B10 > 75 - (ISO 16889:20008)
Leakage (single port)	3 cm³/min - (with 100 bar of pressure)

MATERIAL STANDARD SPECIFICATIONS

Body material	Cast iron
Plunger material	Stainless steel
Plunger guide material	Brass

GENERAL STANDARD SPECIFICATIONS

Type of connection	BSP thead (ISO 1179-1) - SAE thead (ISO 11926-1)
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SEALS

O-Rings: **Buna N** (acrylonitrile butadiene), also named **NBR** (according to ASTM), compatible with fluids having mineral oil base, water in oil emulsions, and water glycol fluids.

These seals are standard for temperatures within the range -20°C and +80°C

Back-up rings and Slide rings: **strengthened PTFE** (Politetrafluoroetilene like Teflon®, Lubriflon®, Ecoflon®, or similar).

Special FPM (Viton®) seals are available on request.

Note: the seal materials are compatible with the fluids normally used in hydraulic systems; in case of special fluids, if you suspect incompatibility between the fluid used and the standard seals, contact the EBI motion controls service network.

HYDRAULIC FLUID

Mineral oil based hydraulic fluids suitable for hydraulic systems can be used; they should have physical lubricating and chemical properties as specified by:

MINERAL OIL BASED HYDRAULIC FLUIDS HL (DIN 51524 part 1)

MINERAL OIL BASED HYDRAULIC FLUIDS HLP (DIN 51524 part 2)

For use of environmentally friendly fluids (vegetable or polyglycol base), or other fluids, please contact EBI.

OIL AND SOLUTIONS - ISO 6743/4	(°C) MIN	(°C) MAX	COMPATIBLE SEAL
Mineral Oil HL, HM or HLP	-25	+80	NBR
Oil in water emulsion HFA	+5	+55	NBR
Oil in water emulsion HFB	+5	+55	NBR
Polyglycol-based aqueous solution HFC	-10	+60	NBR

Hydraulic fluids are available in different viscosity classes identified by the ISO VG number, which corresponds to the kinematic viscosity at 40°C. Here is a table showing typical viscosity changes between 0°C and 100°C for mineral oil based fluids having various viscosity classes. The fluid should be selected with the aim to achieve an appropriate operating viscosity at the expected working temperature.

VISCOSITY CLASS AND FILTRATION DATA			
Viscosity class	kinematic viscosity (cSt)		
	maximum (0° C)	medium (40° C)	minimum (100° C)
ISO VG 10	90	10	2.4
ISO VG 22	300	22	4.1
ISO VG 32	420	32	5.0
ISO VG 46	780	46	6.1
ISO VG 68	1400	68	7.8
ISO VG 100	2560	100	9.9

FLUID CLEANLINESS REQUIREMENTS

The cause of malfunctions in hydraulics is often found to be excessive fluid contamination. The hard contaminant particles in the fluid wear the hydraulic components and prevent the poppets from re-seating, with consequent internal leakage and system inefficiency. For the correct operation it is necessary to adopt filtration methods which guarantee for life the specified fluid cleanliness level. It is important to ensure that hydraulic fluids are brought to the appropriate cleanliness level prior filling up the systems, and, when in doubt, also to flush the hydraulic components prior to installation.

FILTRATION RATIO $BETA_x$:

It is the ratio between the number of particles before and after the filter with diameter larger than X micron.

ABSOLUTE FILTRATION RATIO ISO 4572:

It is the diameter X of the largest particle with $BETA_x \geq 75$.

**CONTAMINATION CLASS ISO 4406:**

It is expressed by 3 scale numbers representing respectively: the number of particles equal to or larger than 4µm, the number of particles equal to or larger than 6µm, the number of particles equal to or larger than 14µm contained in 1 ml of fluid.

CONTAMINATION CLASS NAS 1638:

it's expressed by one scale numbers representing the number of particles of different size ranges contained in 1 ml of fluid.

FILTRATION RECOMMENDATION				
Type	Nominal filtration (micron)	Absolute filtration rating ISO 4572 (BETA _x ≥75)	Contamination class	
			ISO 4406	NAS 1638
System/components operating at <i>HIGH PRESSURE > 250 bar</i> <i>HIGH DUTY CYCLE APPLICATIONS</i> Systems/components with <i>LOW dirt tolerance</i>	10	X = 10... 12	19/17/14	8
System/components operating at <i>MEDIUM HIGH PRESSURE</i> <i>HIGH DUTY CYCLE APPLICATIONS</i> Systems/components with <i>MODERATELY dirt tolerance</i>	15	X = 12... 15	20/18/15	9
System/components operating at <i>LOW PRESSURE < 100 bar</i> <i>LOW DUTY CYCLE APPLICATIONS</i> Systems/components with <i>GOOD dirt tolerance</i>	25	X = 15... 25	21/19/16	10

**Attention:**

If the filtration demands are not met, the valve poppets can jam in the open position, with the result that the valve remains actuated. It is not possible to force back jammed poppets mechanically.

APPLICATION AND SAFETY GUIDELINES

STORAGE OF NEW PRODUCTS

Encapsulated by a protective wrapping, the products shall not be exposed to direct sunlight nor to source of heat or ozone and kept in a dry place at a temperature between -20°C $+50^{\circ}\text{C}$.

SAFETY GUIDELINES

During any operation on servocontrols, it is recommended to pay attention to components surfaces temperature.

The circuit functions are to be so designed that uncontrolled machine movements, caused by the application, are prevented and that it is possible to switch from one function to another.

Take into account all of the application limits, particularly those application limits stated within this technical catalogue.

It is recommended to follow these steps and only trained and competent personnel may carry out any work on EBI motion controls servocontrols:

- Do not direct the jet of a pressure washing unit directly to the unit.
- During operation protection via the rubber boot must be ensured.
- Ensure that all matching surfaces are clean, without contamination.
- Ensure that all seals and back-up rings for the matching surfaces are flawless and correctly placed.
- Do not put any sealing material other than the standard seals.
- During the assembly of the complete servocontrol and/or the group of servocontrol, refer to the hydraulic scheme and to the name assigned to each port.
- Do not hang the servocontrol and/or the group of servocontrol to the hydraulics pipes, but always use the specific fixing holes.
- Place in position the servocontrol, then, by hand, insert the fittings and the locating screws.
- Finally tighten with a calibrated torque wrench and torque up to the specifications shown in the catalogue.
- Use gloves in order to avoid accidental injuries during installation or maintenance.
- Do not grab / handle product from moving parts (i.e. cables, levers,...etc.)
- All servocontrols or groups of servocontrols are attributable to pressure vessels. It's always recommended to place the components in a closed but ventilated compartment, able to protect the environment and users in case of accidental ejection of material under pressure (fittings, pipes, plugs expander... etc.)
- Do not tamper with the servocontrol.
- Before removing or disassembling the complete servocontrol or allowed parts (as pressure gauge ports, purge plugs, ...etc) it is strongly recommended to vent all hydraulic pressure from the system.
- During the first start of the machine, please ensure that the grounding system is connected and stay away from moving parts.
- In case of allowed adjustments on the valve, any maximum value indicated in catalogue must not be exceeded.

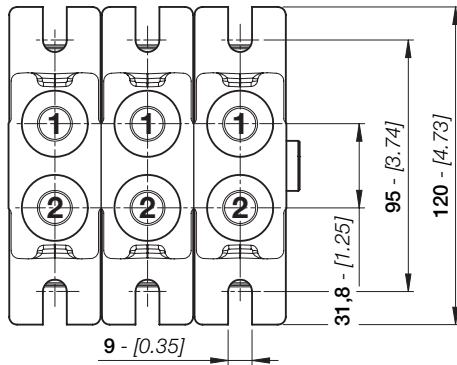


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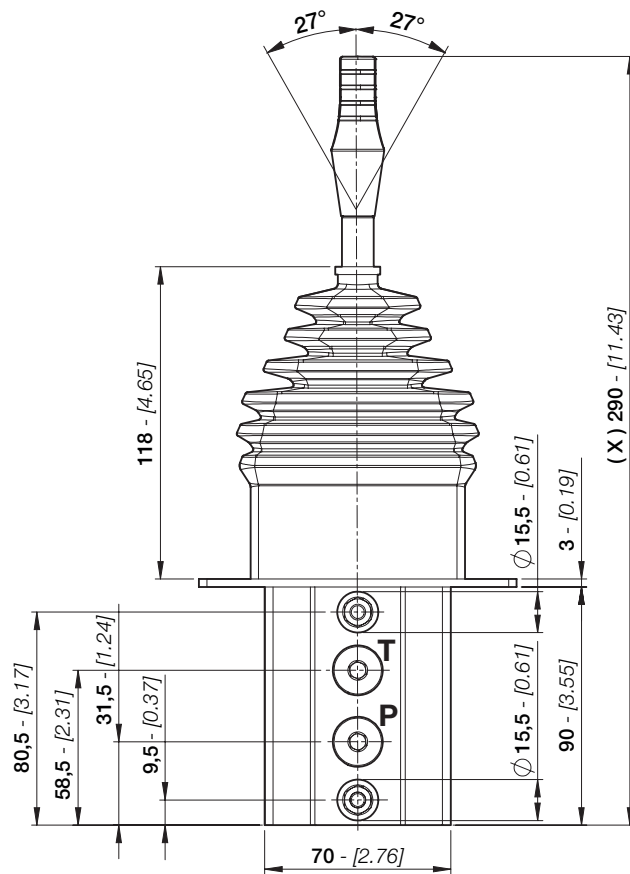
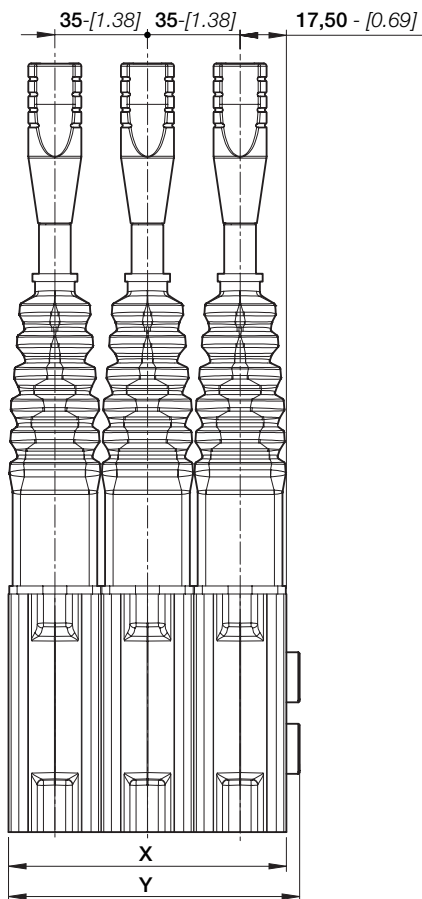
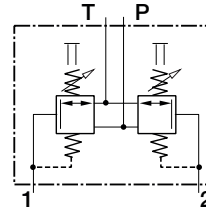
These guidelines are not intended to be considered as complete

DIMENSIONS - HYDRAULIC SYMBOL

This drawing represents a ESJ01A with 3 sections, standard assembly and BSP configuration.



HYDRAULIC SYMBOL
Single function configuration



STANDARD CONNECTIONS FOR ESJ01A - ESJ01B - ESJ01C

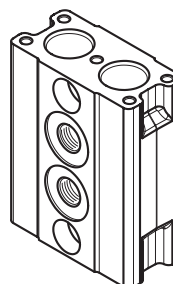
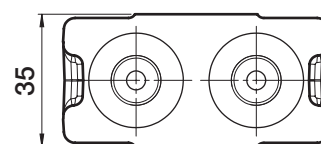
TYPE	BSP ISO 1179-1	UN-UNF ISO 11926-1
INLET - P	G 1/4	9/16-18 UNF
PORTS - 1/2	G 1/4	9/16-18 UNF
OUTLET - T	G 1/4	9/16-18 UNF

DIMENSIONAL (X)

HANDLE TYPE	X mm - [in]
EHS1	290 - [11.43]
EHS3	290 - [11.43]
EHS5	290 - [11.43]
EHS6	281 - [11.07]

TECHNICAL SPECIFICATIONS - ESJ01A

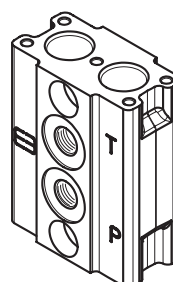
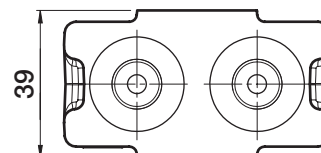
TYPE	X mm - [in]	Y mm - [in]	WEIGHT kg - [lb]
ESJ01A/1	35 - [1.38]	40 - [1.58]	1,80 - [3.97]
ESJ01A/2	70 - [2.76]	75 - [2.96]	3,60 - [7.94]
ESJ01A/3	105 - [4.10]	110 - [4.33]	5,40 - [11.25]
ESJ01A/4	140 - [5.50]	145 - [5.71]	7,20 - [15.88]
ESJ01A/5	175 - [6.90]	180 - [7.09]	9,00 - [19.85]
ESJ01A/6	210 - [8.27]	215 - [8.47]	10,80 - [23.81]
ESJ01A/7	245 - [9.65]	250 - [9.85]	12,60 - [27.78]
ESJ01A/8	280 - [11.03]	285 - [11.23]	14,40 - [31.75]
ESJ01A/9	315 - [12.41]	320 - [12.61]	16,20 - [35.72]
ESJ01A/10	350 - [13.79]	355 - [13.99]	18,00 - [39.70]
ESJ01A/11	385 - [15.17]	390 - [15.37]	19,80 - [43.66]
ESJ01A/12	420 - [16.55]	425 - [16.75]	21,60 - [47.63]



ESJ01A
PITCH = 35 mm

TECHNICAL SPECIFICATIONS - ESJ01B

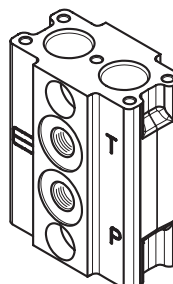
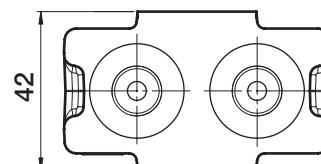
TYPE	X mm - [in]	Y mm - [in]	WEIGHT kg - [lb]
ESJ01B/1	39 - [1.54]	54 - [1.73]	1,88 - [4.15]
ESJ01B/2	78 - [3.07]	83 - [3.27]	3,76 - [8.30]
ESJ01B/3	117 - [4.61]	122 - [4.81]	5,64 - [12.45]
ESJ01B/4	156 - [6.15]	161 - [6.34]	7,52 - [16.60]
ESJ01B/5	195 - [7.68]	200 - [7.88]	9,40 - [20.75]
ESJ01B/6	234 - [9.22]	239 - [9.42]	11,28 - [24.90]
ESJ01B/7	273 - [10.76]	278 - [10.95]	13,16 - [29.5]
ESJ01B/8	312 - [12.29]	317 - [12.49]	15,04 - [33.20]
ESJ01B/9	351 - [13.83]	356 - [14.03]	16,92 - [37.5]
ESJ01B/10	390 - [15.37]	395 - [15.56]	18,80 - [41.50]
ESJ01B/11	429 - [16.90]	434 - [17.10]	20,68 - [45.65]
ESJ01B/12	468 - [18.44]	473 - [18.64]	22,56 - [49.80]



ESJ01B
PITCH = 39 mm

TECHNICAL SPECIFICATIONS - ESJ01C

TYPE	X mm - [in]	Y mm - [in]	WEIGHT kg - [lb]
ESJ01C/1	42 - [1.65]	47 - [1.85]	1,95 - [4.30]
ESJ01C/2	84 - [3.31]	89 - [3.51]	3,90 - [8.60]
ESJ01C/3	126 - [4.96]	131 - [5.16]	5,85 - [12.90]
ESJ01C/4	168 - [6.62]	173 - [6.82]	7,80 - [17.20]
ESJ01C/5	210 - [8.27]	215 - [8.47]	9,75 - [21.50]
ESJ01C/6	252 - [9.93]	257 - [10.13]	11,70 - [27.80]
ESJ01C/7	294 - [11.58]	299 - [11.78]	13,65 - [30.10]
ESJ01C/8	336 - [13.24]	341 - [13.44]	15,60 - [34.40]
ESJ01C/9	378 - [14.89]	383 - [15.09]	17,55 - [38.70]
ESJ01C/10	420 - [16.55]	425 - [16.75]	19,50 - [43.00]
ESJ01C/11	462 - [18.20]	467 - [18.40]	21,45 - [47.30]
ESJ01C/12	504 - [19.85]	509 - [20.05]	23,40 - [51.60]



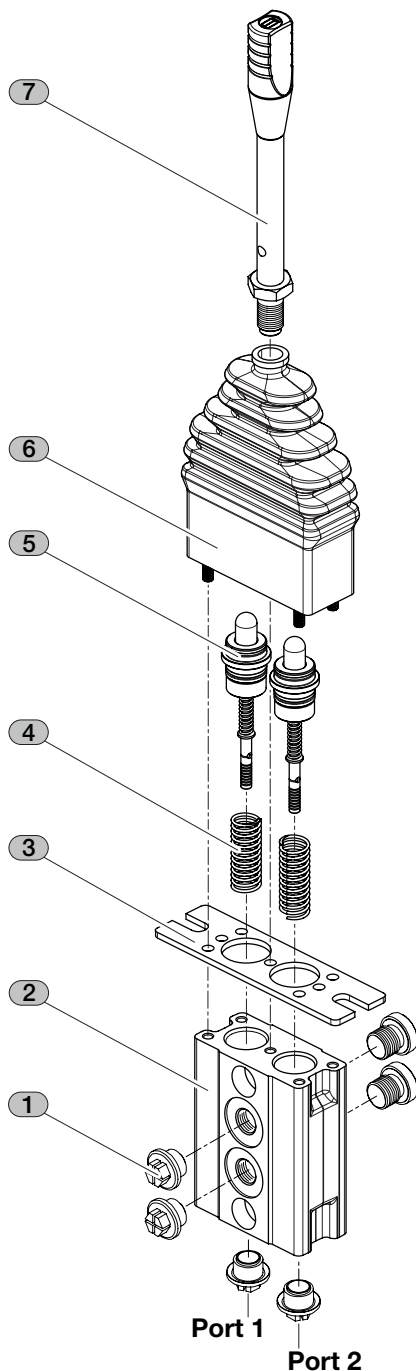
ESJ01C
PITCH = 42 mm

ORDERING CODES

The order code below provides an example of servocontrol ESJ01A with standard configuration.

This example represents a ESJ01A with single section; you can configure a ESJ01A, ESJ01B and ESJ02C up to 12 sections. See pages 15 - 23 for more information about the different options available.

product	1	2	3	4	5	4	5	6	7
E S J 0 1 A	N 1 S	B J A 1 1 S	F P 1	S 1	M V 0 1	S 1	M V 0 1	C 0 1	E H S 1



PRODUCT	DESCRIPTION
ESJ01A	Single axis lever - Pitch = 35 mm
ESJ01B	Single axis lever - Pitch = 39 mm
ESJ01C	Single axis lever - Pitch = 42 mm

POSITION	CODE	DESCRIPTION	PAGE
1	N1S	Assembly section	15
2	BJA11S	Body classification	16
3	FP1	Fixing plate	17
4	S1	Return spring (port 1)	18
5	MV01	Metering curve (port 1)	19
4	S1	Return spring (port 2)	18
5	MV01	Metering curve (port 2)	19
6	C01	Control actuation	21
7	EHS1	Control lever	23



Note:

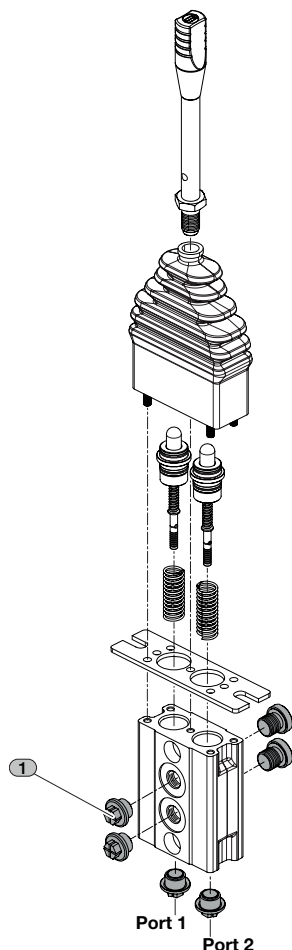
Ordering code from position 2 to 7, must be repeated for each section.

EXAMPLE OF ESJ01A WITH 3 SECTION:

ESJ01A N3S
BJA11S FP1 S1 MV01 S1 MV01 C01 EHS1
BJA11S FP1 S1 MV01 S1 MV01 C01 EHS1
BJA11S FP1 S1 MV01 S1 MV01 C01 EHS1

ASSEMBLY SECTION

product	1	2	3	4	5	4	5	6	7
ESJ01A	N1S	BJA11S	FP1	S1	MV01	S1	MV01	C01	EHS1



All servocontrols ESJ01A, ESJ01B and ESJ01C include an assembly section kit. Assembly kit for single section is composed by 2 port plug and 4 plastic plug. Assembly kits with up to 12 sections also contain tie rods, nuts, growers and o-rings.

CODE	DESCRIPTION	CODE	DESCRIPTION
N1B	Assembly for single section	N1S	Assembly for single section
N2B	Assembly for 2 sections	N2S	Assembly for 2 sections
N3B	Assembly for 3 sections	N3S	Assembly for 3 sections
N4B	Assembly for 4 sections	N4S	Assembly for 4 sections
N5B	Assembly for 5 sections	N5S	Assembly for 5 sections
N6B	Assembly for 6 sections	N6S	Assembly for 6 sections
N7B	Assembly for 7 sections	N7S	Assembly for 7 sections
N8B	Assembly for 8 sections	N8S	Assembly for 8 sections
N9B	Assembly for 9 sections	N9S	Assembly for 9 sections
N10B	Assembly for 10 sections	N10S	Assembly for 10 sections
N11B	Assembly for 11 sections	N11S	Assembly for 11 sections
N12B	Assembly for 12 sections	N12S	Assembly for 12 sections

ONLY WITH BSP PORT

ONLY WITH SAE PORT

EXAMPLE OF SERVOCONTROL WITH 3 SECTIONS

These assembly sections including:

- 2 tie rods
- 8 plastic plugs
- 2 port plugs
- 4 O-rings.

Tie rod's length depends on the number of sections.

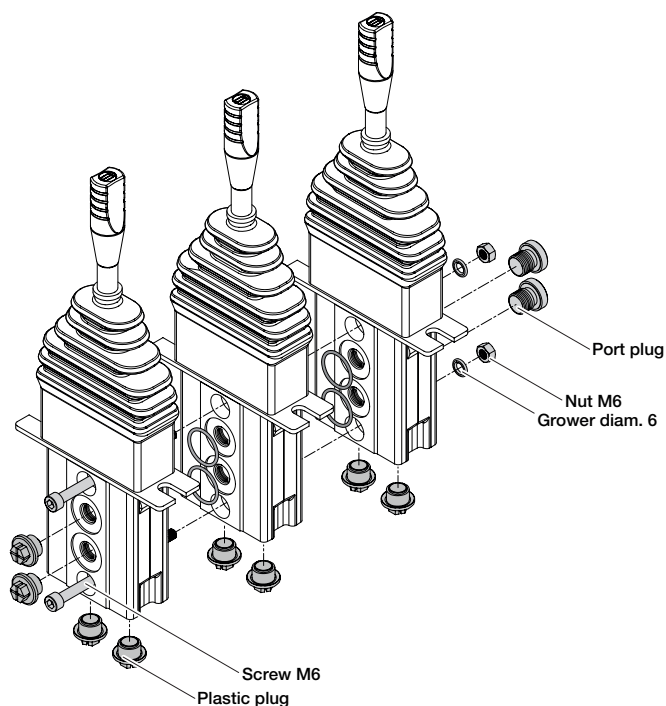
The quantity of O-ring depends on the number of sections (there are 2 O-rings each 2 sections).

The quantity of plastic plugs depends on the number of sections.



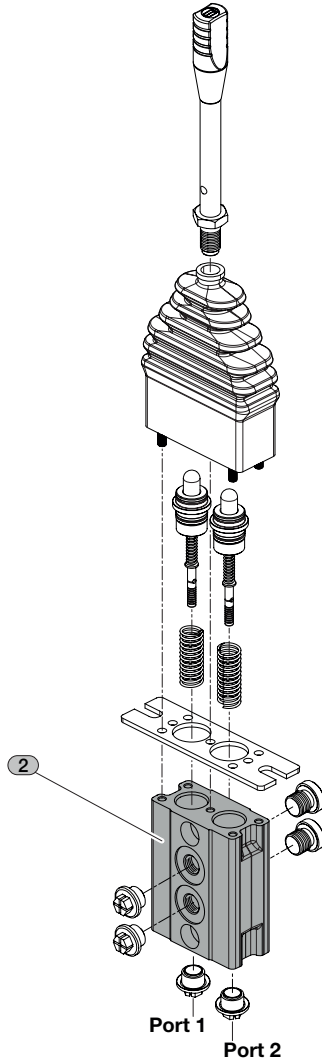
Note:

In some cases the tie rod can be replaced by a commercial screw M6 (see exploded view on the right).



BODY CLASSIFICATION

product	1	2	3	4	5	4	5	6	7
ESJ01A	N1S	BJA11S	FP1	S1	MV01	S1	MV01	C01	EHS1



Body arrangement is available in two configurations:
SAE thread or BSP thread.

For different applications, contact our Sales Office.



Note:

To space the sections and allow the correct control of the handles, it is possible to set up the joystick with an intermediate spacer. It is identified by the code BJA0 (see the following example).

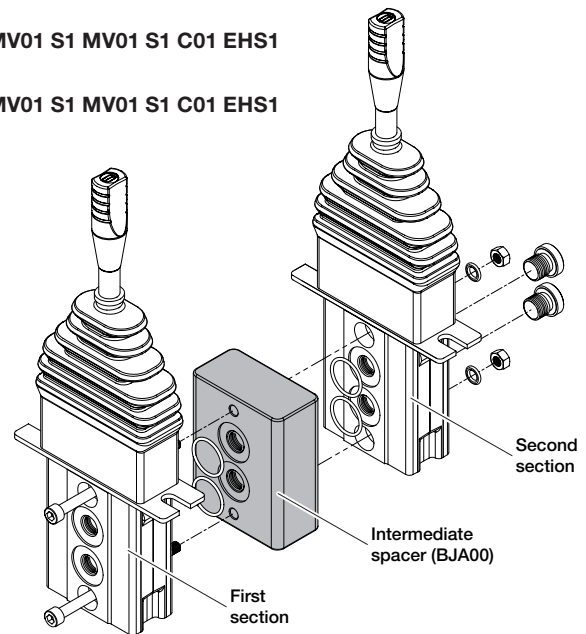
EXAMPLE OF ESJ01A WITH INTERMEDIATE SPACER:

ESJ01A N3S

BJA11S FP1 MV01 S1 MV01 S1 C01 EHS1

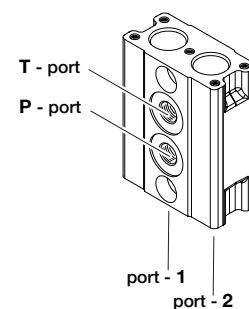
BJA0

BJA11S FP1 MV01 S1 MV01 S1 C01 EHS1



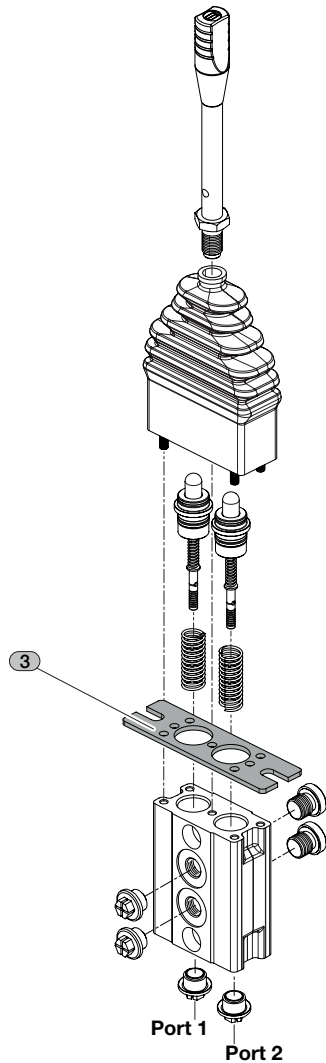
PRODUCT	CODE	DESCRIPTION
ESJ01A	BJA11S	Standard body P-T lower with ports 9/16"-18 UNF (SAE6)
ESJ01B	BJB11S	
ESJ01C	BJC11S	
ESJ01A	BJA11B	Standard body P-T lower with ports G 1/4
ESJ01B	BJB11B	
ESJ01C	BJC11B	

DRAWING



FIXING PLATE

product	1	2	3	4	5	4	5	6	7
ESJ01A	N1S	BJA11S	FP1	S1	MV01	S1	MV01	C01	EHS1

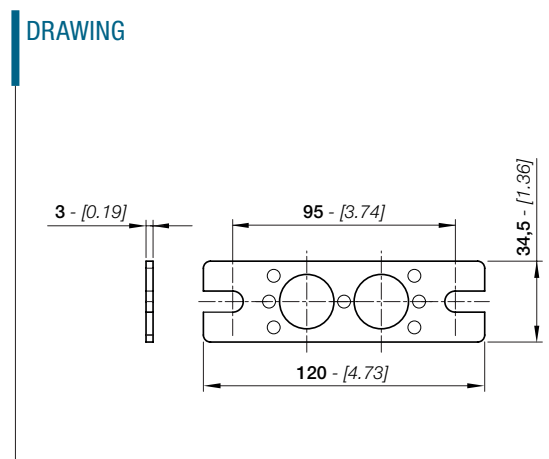


The fixing plate allows the correct installation of the servocontrol on the customer machine system.

The following is the standard fixing plate (FP1).

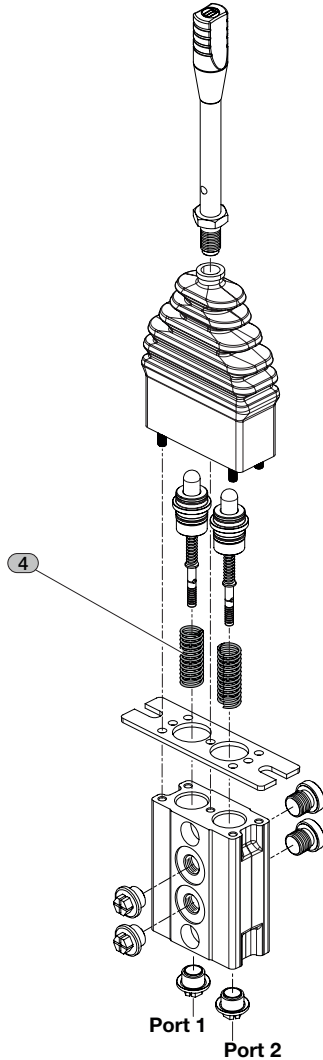
For different dimensions or special applications, contact our Sales Office.

CODE	DESCRIPTION
FP1	Standard fixing plate



RETURN SPRING

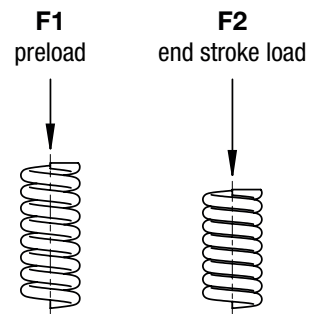
product	1	2	3	4	5	4	5	6	7
E S J 0 1 A	N 1 S	B J A 1 1 S	F P 1	S 1	M V 0 1	S 1	M V 0 1	C 0 1	E H S 1



All servocontrols are equipped with 2 return springs (one spring each service port).

Two types of springs are available; the relative values are shown here below.

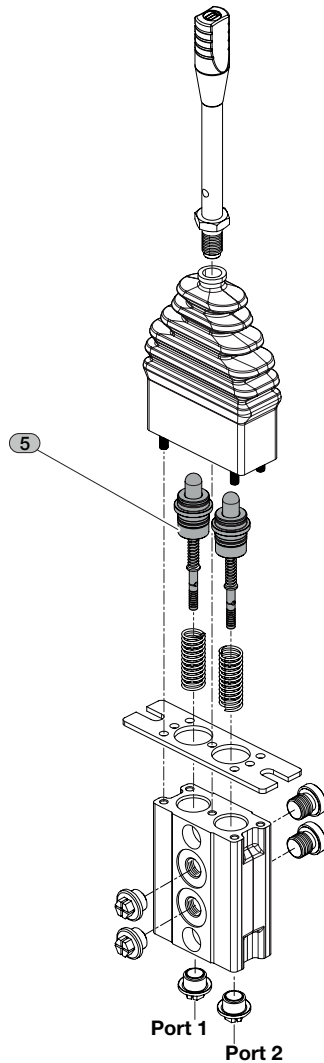
For different values or different applications please contact our Sales Office.



CODE	PRELOAD		END STROKE LOAD	
	Nm	Kgf	Nm	Kgf
S1	15	1,53	28	2,86
S2	24	2,45	40	4,08

METERING CURVE

product	1	2	3	4	5	4	5	6	7
E S J 0 1 A	N 1 S	B J A 1 1 S	F P 1	S 1	M V 0 1	S 1	M V 0 1	C 0 1	E H S 1



All servocontrols are equipped with 2 metering curves (one metering curve each service port).

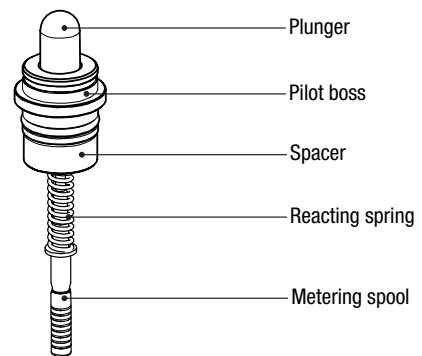
The metering curve classification depends on the working pressure (bar - *psi*) and stroke length (mm - *in*).

Currently two types of metering curves are available:

- Linear curve with step (MV type)
- Linear curve without step (MZ type)

All metering curves are interchangeable.

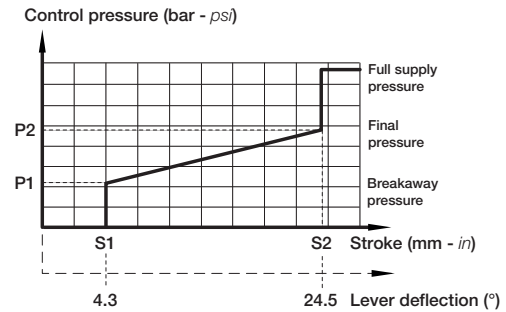
For different values or different applications please contact our Sales Office.





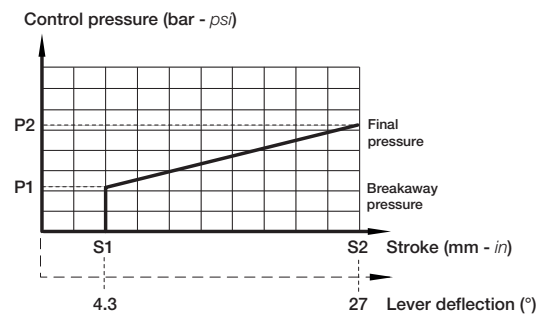
CODE	PRESSURE				STROKE			
	P1		P2		S1		S2	
	bar	psi	bar	psi	mm	in	mm	in
MV01	5	72,5	25	362,5	1.2	0,05	7.2	0,28
MV02	5.8	84,1	19.5	282,7	1.2	0,05	7.2	0,28
MV03	5	72,5	22	319	1.2	0,05	7.2	0,28
MV04	5	72,5	15	217.5	1.2	0,05	7.2	0,28
MV05	5	72,5	20	290	1.2	0,05	7.2	0,28
MV06	7.5	108,8	29	420,5	1.2	0,05	7.2	0,28
MV07	8	116	28	406	1.2	0,05	7.2	0,28
MV08	2	29	18	261	1.2	0,05	7.2	0,28
MV10	7	101.5	17	246.5	1.2	0,05	7.2	0,28
MV11	3	43.5	22.2	321.9	1.2	0,05	7.2	0,28
MV12	6.8	98.6	23.5	340.8	1.2	0,05	7.2	0,28
MV13	3	43.5	28	406	1.2	0,05	7.2	0,28
MV14	14.7	213.2	28.4	411.8	1.2	0,05	7.2	0,28
MV16	2	29	11.5	166.8	1.2	0,05	7.2	0,28
MV21	5.8	84.1	18.3	265.4	1.2	0,05	7.2	0,28
MV22	3.5	50.8	13.5	195.8	1.2	0,05	7.2	0,28
MV26	2	29	26	377	1.2	0,05	7.2	0,28
MV35	5	72.5	13.8	200.1	1.2	0,05	7.2	0,28
MV36	5	72.5	18.2	263.9	1.2	0,05	7.2	0,28
MV37	10	145	20	290	1.2	0,05	7.2	0,28
MV40	6	87	40	580	1.2	0,05	7.2	0,28

MV
linear curve with step



CODE	PRESSURE				STROKE			
	P1		P2		S1		S2	
	bar	psi	bar	psi	mm	in	mm	in
MZ01	5	72,5	25	362,5	1.2	0,05	8	0,32
MZ02	5.8	84,1	19.5	282,7	1.2	0,05	8	0,32
MZ03	5	72,5	22	319	1.2	0,05	8	0,32
MZ04	5	72,5	15	217.5	1.2	0,05	8	0,32
MZ05	5	72,5	20	290	1.2	0,05	8	0,32
MZ06	7.5	108,8	29	420,5	1.2	0,05	8	0,32
MZ07	8	116	28	406	1.2	0,05	8	0,32
MZ08	2	29	18	261	1.2	0,05	8	0,32
MZ15	5	72.5	16.3	236.4	1.2	0,05	8	0,32
MZ23	1.2	17.4	18.9	274.1	1.2	0,05	8	0,32
MZ25	4	58	18	261	1.2	0,05	8	0,32
MZ27	5.5	79.8	29	420.5	1.2	0,05	8	0,32
MZ28	3	43.5	24.8	359.6	1.2	0,05	8	0,32
MZ33	2	29	19.3	279.9	1.2	0,05	8	0,32

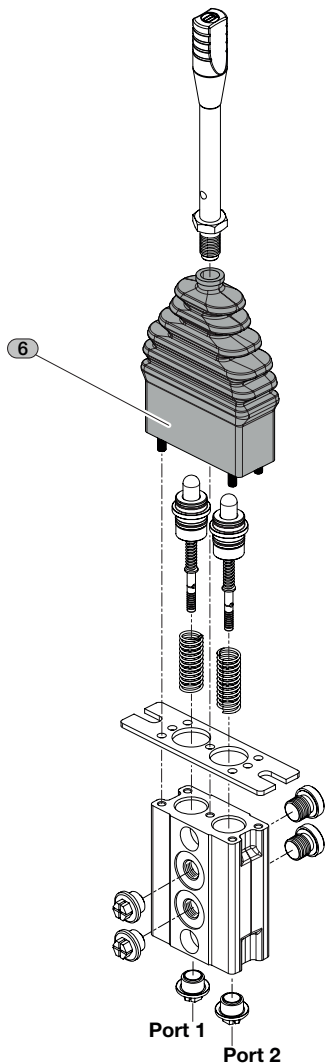
MZ
linear curve without step



On request are available broken line metering curves with step and broken line metering curves without step. For different values or different applications please contact our Sales Office.

CONTROL ACTUATION

product	1	2	3	4	5	4	5	6	7
ESJ01A	N1S	BJA11S	FP1	S1	MV01	S1	MV01	C01	EHS1



Several different types of controls actuation are available; the controls shown correspond to standard arrangement, for different applications please contact our Sales Office.

Linear levers can be equipped with a detent that locks the lever in the fully actuated position (for one or both control-pressure ports)

All controls actuation type are interchangeable.

CODE	DESCRIPTION	HYDRAULIC SYMBOL	CODE	DESCRIPTION	HYDRAULIC SYMBOL
C01	Return spring in neutral		C03	Mechanical detent in 1	
C02	Mechanical detent in 1-2		C04	Mechanical detent in 2	

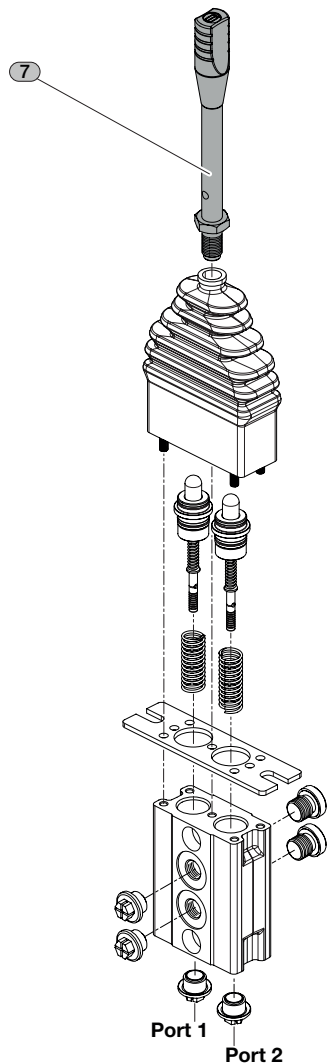
CODE	DESCRIPTION	HYDRAULIC SYMBOL	CODE	DESCRIPTION	HYDRAULIC SYMBOL
C11	Mechanical detent in N (arch version)		C15	Friction (arch version)	
C12	Mechanical detent in 1-2 (arch version)		C16	Mechanical detent in 1-N-2 (arch version)	
C13	Mechanical detent in 1 (arch version)		C17	Friction and security function in neutral (arch version)	
C14	Mechanical detent in 2 (arch version)		C18	Friction and Mechanical detent in 1-N-2 (arch version)	

CONTROL ACTUATION AND CONTROL LEVER COMPATIBILITY

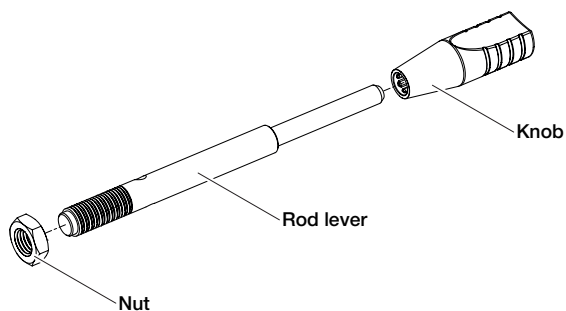
code	EHS1	EHS3	EHS5	EHS6	EHS8
C01	•		•		•
C02	•		•		•
C03	•		•		•
C04	•		•		•
C11		•			
C12		•			
C13		•			
C14		•			
C15				•	
C16		•			
C17		•			
C18		•			

CONTROL LEVER

product	1	2	3	4	5	4	5	6	7
E S J 0 1 A	N 1 S	B J A 1 1 S	F P 1	S 1	M V 0 1	S 1	M V 0 1	C 0 1	E H S 1



Each rod lever kit includes a rod lever, a nut and a knob. This example shows a rod lever kit EHS1.



All servocontrols are equipped with a customized control lever.

CODE	DESCRIPTION	DRAWING
EHS1	Handle with slim knob	
EHS3	Handle with lens (arch version WITH friction)	
EHS5	Handle with lens	
EHS6	Handle with lens (arch version for C15 friction)	
EHS8	Bent lever with lens	

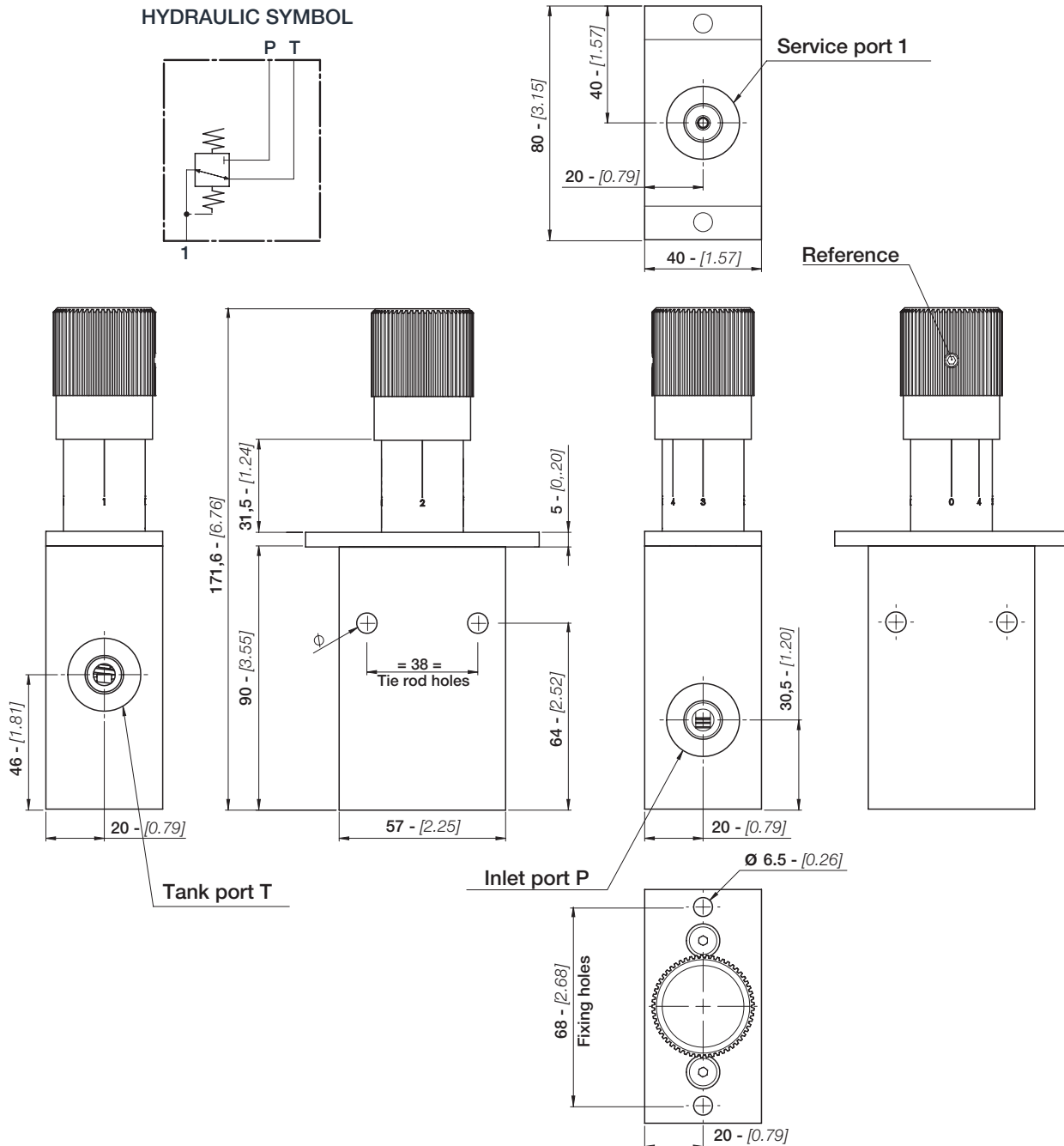


Note:

Actuation control kits with arch version are set up with rod lever EHS3 or EHS6.

DIMENSIONS - HYDRAULIC SYMBOL - ESJ01V

This drawing represents a ESJ01V with standard assembly and BSP configuration.



STANDARD CONNECTIONS ESJ01V

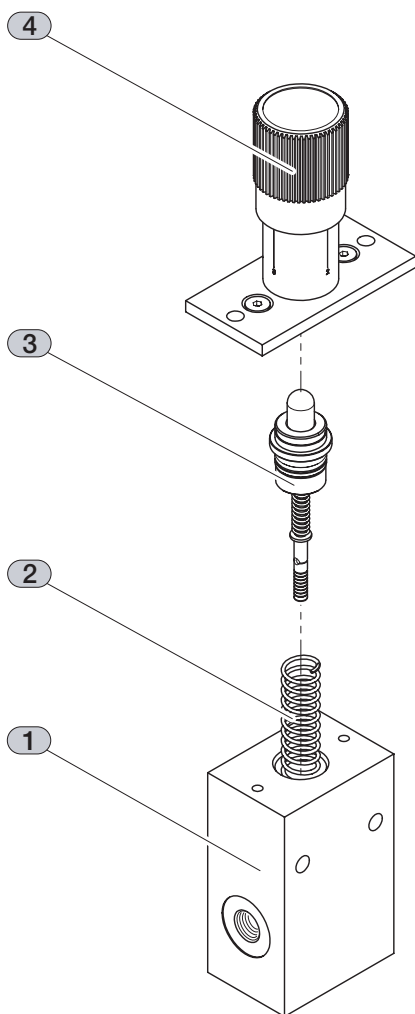
TYPE	BSP ISO 1179-1	UN-UNF ISO 11926-1
INLET - P	G 1/4	9/16-18 UNF
SERVICE PORT - 1	G 1/4	9/16-18 UNF
OUTLET - T	G 1/4	9/16-18 UNF

ORDERING CODES - ESJ01V

The order code below provides an example of servocontrol ESJ01V with standard configuration. ESJ01V is a general purpose single user remote control. It can be delivered with wheel operated hydraulic remote control. See pages 18 - 19 for more information about the different options available.

product					1					2		3			4					
E	S	J	0	1	V	B	J	V	1	1	B	S	1	M	V	0	1	C	2	4

POSITION	CODE	DESCRIPTION	PAGE
	ESJ01V	product	
1	BJV11B	Body classification	25
2	S1	Return spring (port 1)	18
3	MV01	Metering curve (port 1)	19
4	C24	Control actuation	25



Note:

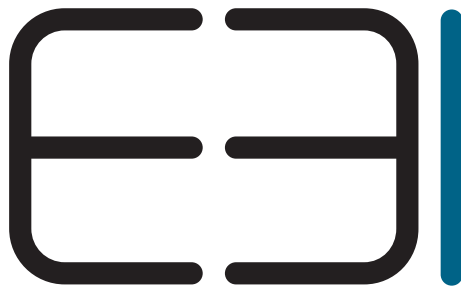
All servocontrols ESJ01V are equipped with 1 return spring and 1 meetering curve.

BODY CLASSIFICATION

CODE	DESCRIPTION	DRAWING
BJV11S	Standard body P-T with ports 9/16"-18 UNF (SAE6)	
BJV11B	Standard body P-T with ports G 1/4	

CONTROL ACTUATION

CODE	DESCRIPTION	HYDRAULIC SYMBOL
C24	Wheel operated hydraulic remote control	
C26	Without control	



engineering beyond imagination

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