

INSTRUCTION MANUAL

CO – 3 WAY VALVE

INSTRUCTION MANUAL 2080



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13	30/10/2025	Changed template. Added "ADDENDUM 1: Additional safety precautions" – Rev.00. Added note for exhaust connections facing down.	D.Pasini	R.Valoti
12	05/10/2022	Added dust certifications table 7 and IECEx label section 4.1	M.Oberti	N.Zenoni
11	31/01/2022	Revised	M.Oberti	N.Zenoni
Revision	Date	Description	Issued by	Checked by

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1. GENERAL INFORMATION

1.1 GENERAL WARNING



This Instruction Manual is an integral part of the machine, it should be carefully read before carrying out any operation and it should be kept for future references.
The operators shall adopt the safety precautions required by the country where the product is installed.

1.2 GENERALITIES

IMI STI products are conceived, manufactured and controlled according to the Quality Control System in compliance with EN ISO 9001 International Standard.

1.3 MANUFACTURER

According to Machinery Directive 2006/42/EC, the Manufacturer of the described product is:

IMI STI, Via Dei Caravaggi 15
24040 Levate, Bergamo, Italy
Tel. +39 035 29282
Fax +39 035 2928247
imisti.sales@imi-critical.com
sti.support@imi-critical.com

1.4 TERMS AND CONDITIONS

IMI STI guarantees each single product to be without defects and to conform to current goods specifications. Unless otherwise stated on the purchased order, the warranty period is one year from the date of installation by the user, or eighteen months from the date of shipment to the first user, whichever occurs first. Additionally:

- The warranty does not cover products which have been subject to improper storage, improper installation, misuse, corrosion, or which have been modified or repaired by unauthorized personnel (it is not advisable that customer or end users modify the device characteristics).
- The warranty does not cover special products or components not covered by warranty in their turn by subcontractors.

1.5 MANUFACTURER'S LIABILITY

IMI STI declines all liability in the event of:

- The use of the product does not comply with local legislation on safety at work.
- Disregard or incorrect application of the instructions provided on the product label and/or in the instruction manual.
- Incorrect installation and/or use of the product.
- Modifications without STI's authorization and/or work done on the unit by unqualified or unsuitable personnel.

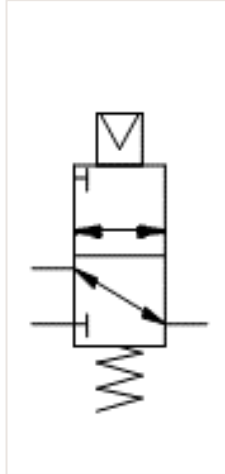
1.6 ABOUT THIS MANUAL

This manual is designed to thoroughly explain the functioning of the motion converter in all of its versions. The manual will provide a description of the product, as well as mounting and safety instructions.

2. DEVICE DESCRIPTION

2.1 GENERAL DESCRIPTION

CO 3 Way Valve (or Commutator) is designed for high flow applications. These pneumatic operating valves are available in sizes 1/4", 1/2", 1", 1 1/2" and 2". The valve can be used in one or more synchronous units piloted by a pneumatic pressure switch and/or solenoid valve, to achieve safety, trip or shut down function.



2.2 MODEL SELECTION

CO	-	S	-	M	-	P	-	T	-	C	-	O
----	---	---	---	---	---	---	---	---	---	---	---	---

S - SIZE	
04	1/4"
08	1/2"
16	1"
25	1 1/2"
32	2"

M - MATERIAL	
S0	Stainless Steel SS316
S1	Stainless Steel SS316 (Copper Free Execution)
A0	Aluminum
A1	Aluminum (Copper Free Execution)

P - PAINTING	
00	Not Painted
01	Standard Painting Cycle (CVA.01)
99	Customized Painting

T - TEMPERATURE RANGE	
H	-20°C / +85°C
S	-20°C / +70°C
L	-40°C / +70°C
E	-55°C / +70°C
U	-60°C / +100°C

C - CONNECTIONS	
1222	Pilot / Supply / Actuator / Exhaust
14P4	Pilot / Supply / Actuator / Exhaust
2PP6	Pilot / Supply / Actuator / Exhaust
2PPG	Pilot / Supply / Actuator / Exhaust
2TTT	Pilot / Supply / Actuator / Exhaust

O - OPTIONS	
S	Single Design
D	Double Design



Not all permutations are available as models. To discover which models are available, contact IMI STI at imisti.sales@imi-critical.com or sti.support@imi-critical.com

3. TECHNICAL DATA

SIZE	1/4" 1/2" 1" 1 1/2" 2"
BODY MATERIAL	Stainless steel 316 Alluminium
EXTERNAL PAINTING	Not painted Standard cycle painting (CVA.01) OPTION CUSTOMIZED PAINTING
EXTERNAL SURFACE TREATMENT	Anodized
GASKET MATERIAL	Nbr Viton Fluorosilicone
WORKING PRESSURE p min [Bar]	2,5
WORKING PRESSURE p max [Bar]	7
DESIGN PRESSURE p des [Bar]	10
WORKING TEMPERATURE T min [°C]	-20
WORKING TEMPERATURE T max [°C]	+85
EXTENDED TEMPERATURE T min [°C]	-60
EXTENDED TEMPERATURE T max [°C]	+100
STORAGE TEMPERATURE T min [°C]	-40
STORAGE TEMPERATURE T max [°C]	+95
PILOT PNEUMATIC CONNECTIONS	1/8" 1/4"
SUPPLY 1 PNEUMATIC CONNECTIONS	1/4" 1/2" Plug-in 40mm-45mm
ACTUATOR 1 PNEUMATIC CONNECTIONS	1/4" Plug-in 40mm-45mm
EXHAUST PNEUMATIC CONNECTIONS	1/4" 1/2" 1" 26mm-31mm 40mm-45mm
GREASE	-
THREAD LOCKER	-
ADHESIVE	-
FLUID	Air
CV IN MAX	0,6 2,5 6 10 30
CV OUT MAX	0,6 2,5 6 13 30
CV BYPASS MAX	-
INTERNATIONAL PROTECTION (IP)	-
LIFETIME	30 years

4. USER PROCEDURES

	Not performing the following procedures will invalidate the product warranty
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4.1 TRANSPORT

	Always wear protective clothing, gloves, and eyewear to prevent personal injury. The lifting and handling shall be made by qualified staff and in compliance with the laws and valid provisions.
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4.2 RECEPTION

Check if the model corresponds with the one reported on the purchase order and if no defects are visible on the product. Product related documents are furnished with documents accompanying the machinery where the product is mounted on. If the product is sold alone, contact IMI STI or download the documentation from IMI STI web site.

4.3 STORAGE

To maintain the product in perfect condition, proper attention must be observed to preserve the product during the storage period. Remember to:

- place the product on a wood surface pallet or on metallic support, avoiding direct contact with the ground;
- protect the product with appropriate covering;
- make sure that plastic plugs are present on the pneumatic connections. If stored outdoor, replace plastic plugs with metal plugs that guarantee perfect tightness;
- keep the product protected from weather conditions.

4.4 INSTALLATION



Always wear protective clothing, gloves, and eyewear to prevent personal injury. Check with your process or safety engineer for any additional measures that must be taken to protect against process media.

4.5 CHECKS TO BE PERFORMED BEFORE INSTALLATION

To allow a correct installation of the product, verify that the product outer surface is free from dust and dirt; if not, clean it and remove anything that might prevent a correct installation. Then, check if the coupling dimensions meet the specified ones and prepare all the necessary tools for the assembly and setting of the unit.



If the accessory is to be installed in a location which requires a certification, refer to ADDENDUM 1 of this manual.

4.6 DIMENSIONAL DRAWING

For dimensional drawings, sections and spare parts kits, refer to chapter 6.0 of this manual.

4.7 PNEUMATIC CONNECTIONS



Check that the supply pressure are lower than the product design pressure. Use appropriate pipes and fittings (type, rating, material and dimensions). The connection shall be made by qualified staff.

To guarantee the best performances, follow the instructions listed:

- properly deburr the ends of rigid pipes;
- properly clean the interior of pipes sending through them plenty of the supply fluid used in the system;
- mould and fasten the connection pipes in order to avoid overstress on the connection parts and to avoid loosening of the threaded connections;
- use the recommended quantity of pipe sealant, only on male threads (no-hardening sealant is strongly recommended);
- make the connections according to the machinery (i.e. actuator) pneumatic diagram;
- check that no leakage occurs from pneumatic connections. If necessary, tighten the fittings;
- collect tubing as indicated in the technical data table.
- It is recommended that, when possible, the accessory is mounted with exhaust connections facing down.

4.8 DISASSEMBLING



Before starting any disassembly operations, it is mandatory to disconnect the pneumatic power and exhaust the product (no fluid under pressure inside the product, fittings, tubing). The staff must be qualified for the required operation.

5. OPERATION AND USE



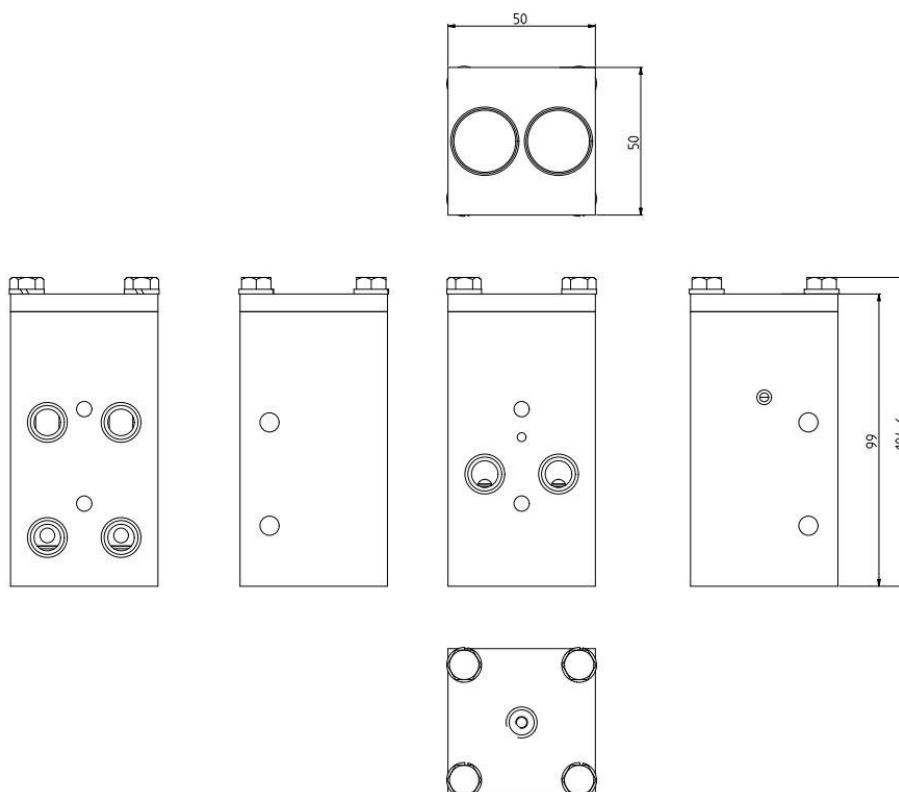
It is severely forbidden to use the product for purpose or application other than those for which it was designed and here above specified.
The product contains fluid under pressure: be careful when using it.

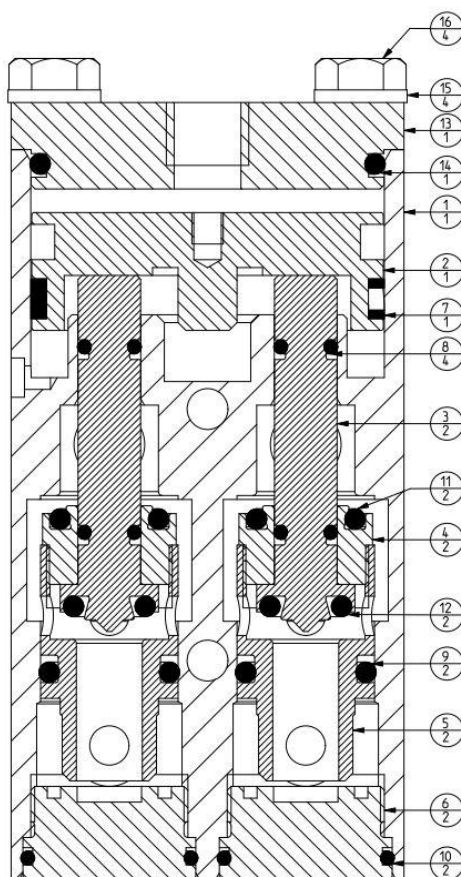
5.1 OPERATION DESCRIPTION

In the following paragraphs, for each available model, there will be information regarding:

- The dimensional drawings.
- The part list of each model currently available.
- The spare parts that can be supplied.

5.2 MODELS CO-04

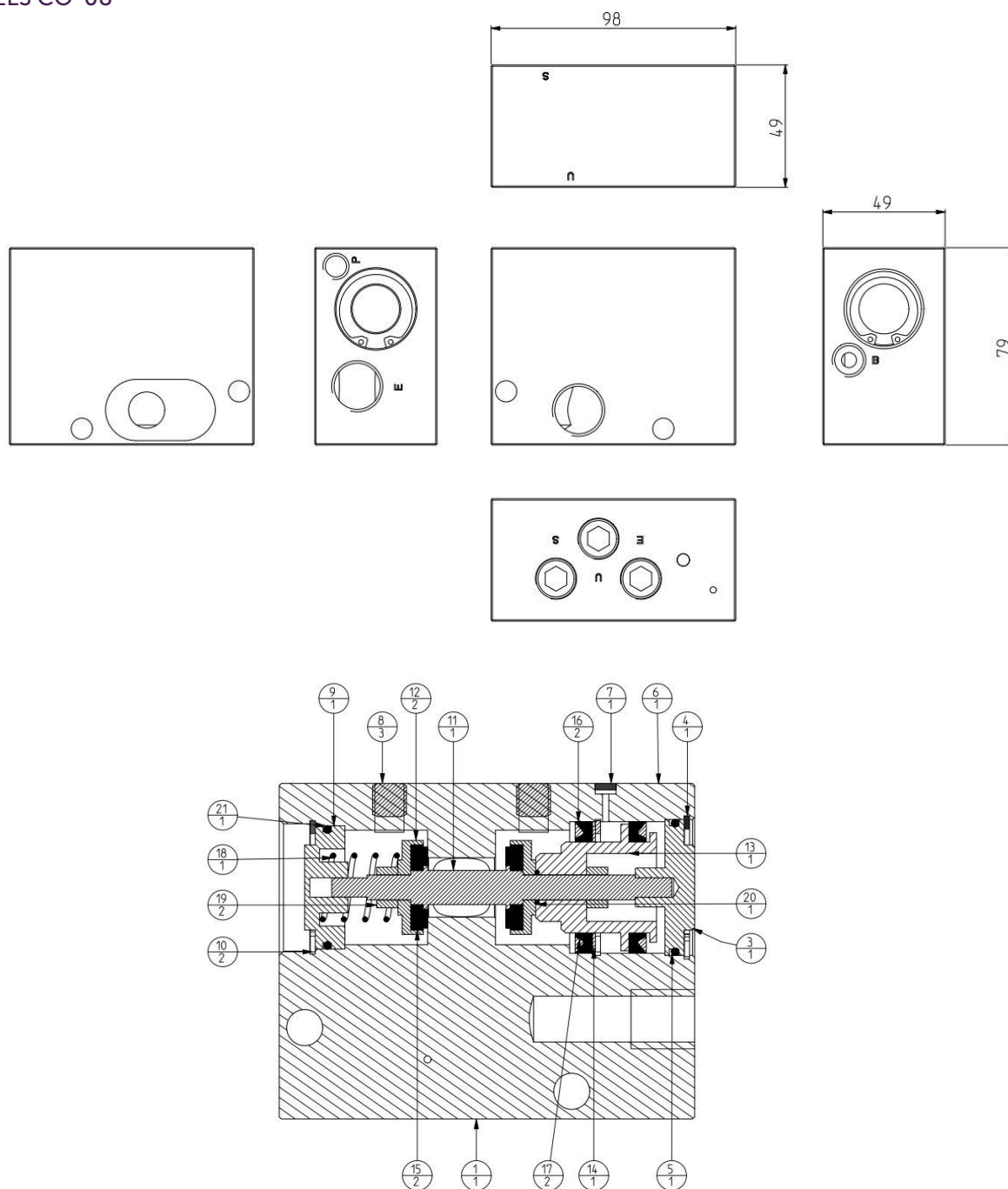




EXISTING PRODUCTS AND SPARE PARTS

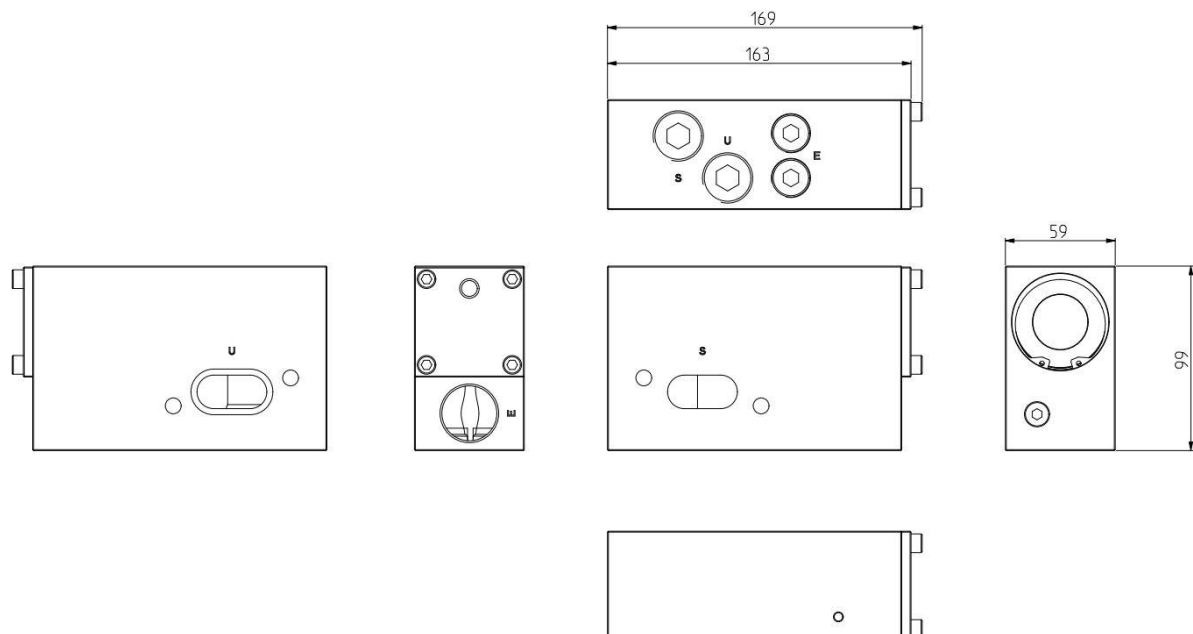
MODEL	PART NUMBER	SPARE	POSITION
CO-04-S0-00-H-1222-D	100324	100324	ALL
CO-04-A0-00-H-1222-D	74547	74547	ALL
CO-04-A0-01-H-1222-D	55910	55910	ALL
CO-04-A0-99-H-1222-D	91770	91770	ALL
CO-04-S0-00-S-1222-D	100324	100324	ALL
CO-04-A0-00-S-1222-D	74547	74547	ALL
CO-04-A0-01-S-1222-D	55910	55910	ALL
CO-04-A0-99-S-1222-D	91770	91770	ALL
CO-04-A0-00-L-1222-D	84467	84467	ALL

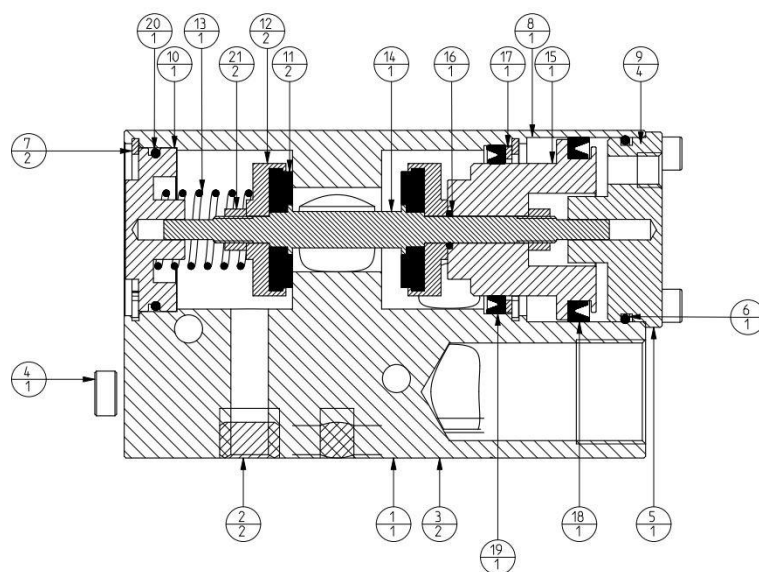
5.3 MODELS CO-08



EXISTING PRODUCTS AND SPARE PARTS			
MODEL	PART NUMBER	SPARE	POSITION
CO-08-S0-00-H-14P4-S	102051	181182	ALL
CO-08-A0-00-H-14P4-S	53467	181183	ALL
CO-08-A1-00-H-14P4-S	89111	181184	ALL
CO-08-A0-01-H-14P4-S	83972	181185	ALL
CO-08-A1-01-H-14P4-S	90969	181186	ALL
CO-08-S0-00-S-14P4-S	56029	181189	ALL
CO-08-A0-00-S-14P4-S	42788	55773	ALL
CO-08-A1-00-S-14P4-S	55953	181191	ALL
CO-08-A0-01-S-14P4-S	83972	181185	ALL
CO-08-A1-01-S-14P4-S	83236	181194	ALL
CO-08-A0-99-S-14P4-S	115325	181193	ALL
CO-08-S0-00-L-14P4-S	75292	181195	ALL
CO-08-A0-00-L-14P4-S	62603	181196	ALL
CO-08-A1-00-L-14P4-S	117313	181197	ALL
CO-08-A0-01-L-14P4-S	87514	73631	ALL
CO-08-A1-01-L-14P4-S	124629	131141	ALL

5.4 MODELS CO-16

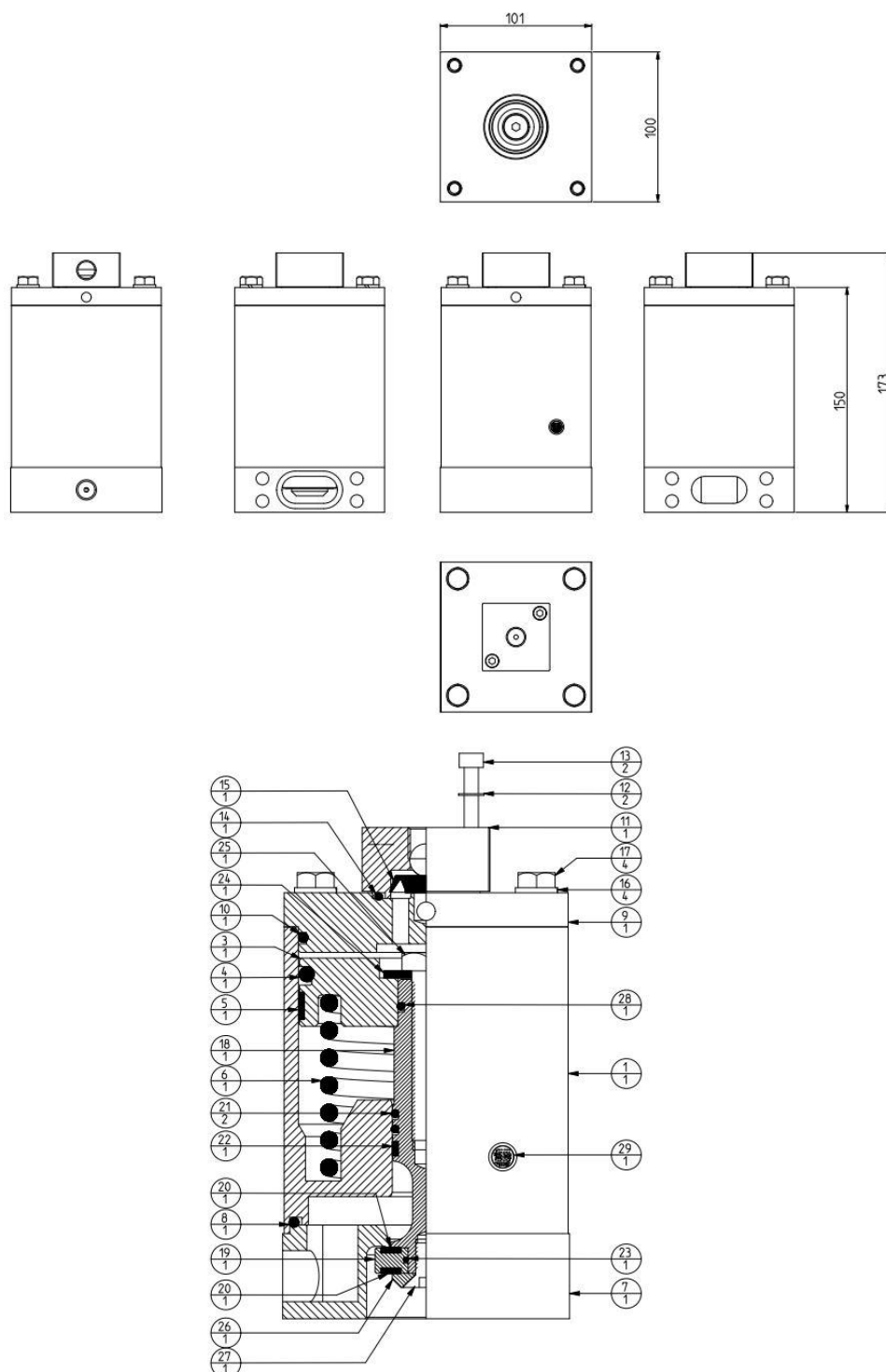


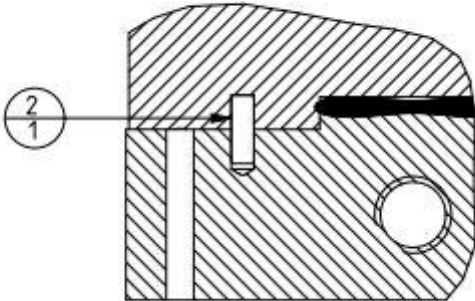


EXISTING PRODUCTS AND SPARE PARTS

MODEL	PART NUMBER	SPARE	POSITION
CO-16-S0-00-H-2PP6-S	63450	181214	ALL + OR3125
CO-16-A0-00-H-2PP6-S	72122	181215	ALL + OR3125
CO-16-A1-00-H-2PP6-S	90980	181216	ALL + OR3125
CO-16-A0-01-H-2PP6-S	98008	181217	ALL + OR3125
CO-16-A1-01-H-2PP6-S	90982	181218	ALL + OR3125
CO-16-S0-00-S-2PP6-S	63450	181214	ALL + OR3125
CO-16-A0-00-S-2PP6-S	42789	181219	ALL + OR3125
CO-16-A1-00-S-2PP6-S	83577	181220	ALL + OR3125
CO-16-A0-01-S-2PP6-S	61151	181221	ALL + OR3125
CO-16-A1-01-S-2PP6-S	124634	181222	ALL + OR3125
CO-16-S0-00-L-2PP6-S	123969	181223	ALL + OR3125
CO-16-A0-00-L-2PP6-S	71798	181224	ALL + OR3125
CO-16-A1-00-L-2PP6-S	124628	181225	ALL + OR3125
CO-16-A0-01-L-2PP6-S	98505	181226	ALL + OR3125
CO-16-A1-01-L-2PP6-S	124631	181227	ALL + OR3125

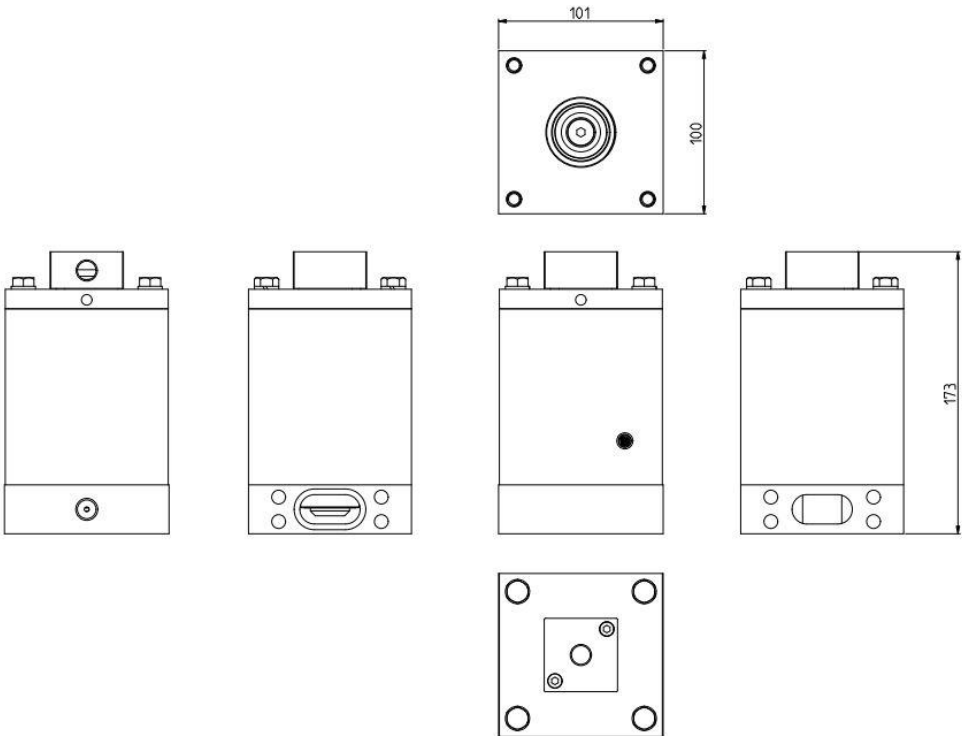
5.5 MODELS CO-25-A0-01-H/S

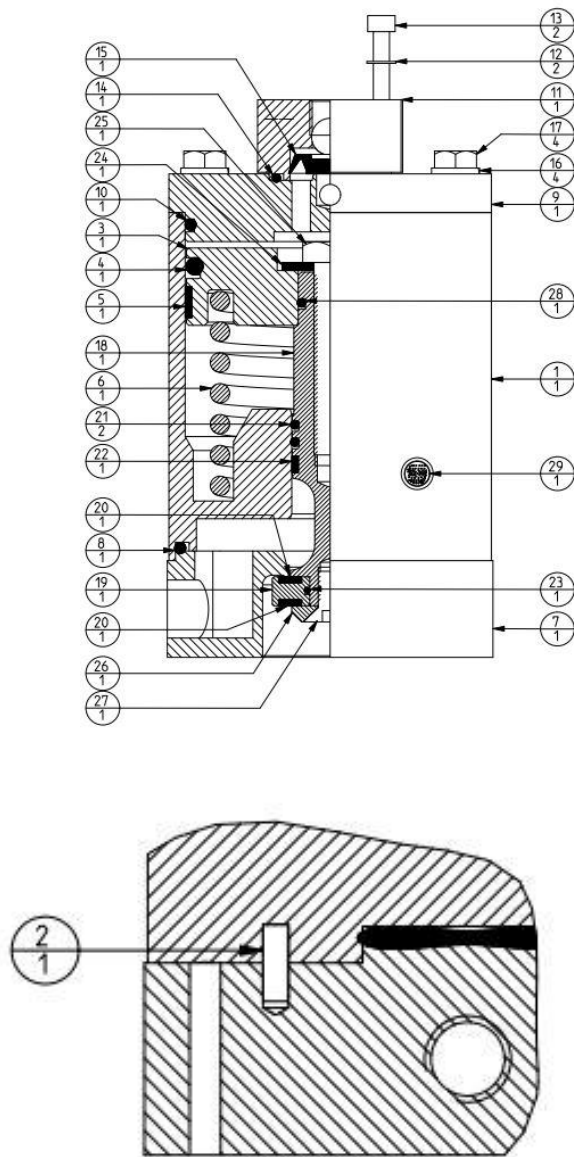




EXISTING PRODUCTS AND SPARE PARTS			
MODEL	PART NUMBER	SPARE	POSITION
CO-25-A0-01-H-2PPG-S	133936	181199	ALL + 2 OR3125 + OR3168
		174256	4-8-10-14-15-20-21-22-23-28+2 OR3125+OR3168
CO-25-A0-01-S-2PPG-S	133936	181199	ALL + 2 OR3125 + OR3168
		174256	4-8-10-14-15-20-21-22-23-28+2 OR3125+OR3168

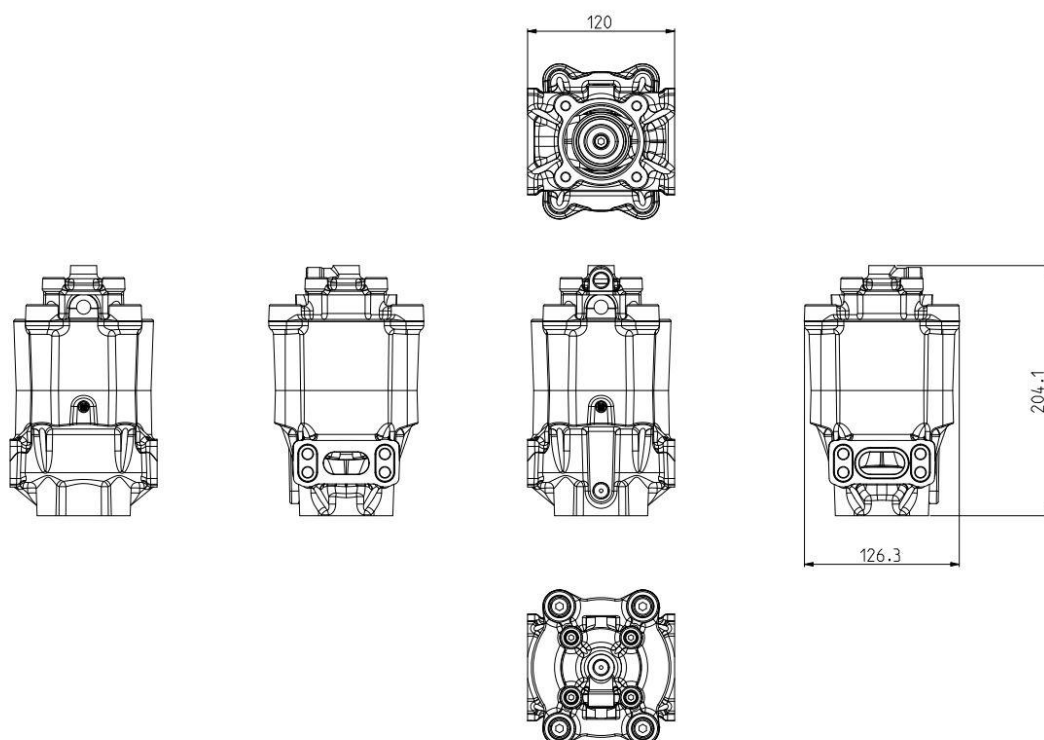
5.6 MODELS CO-25-A0-01-L/E/U

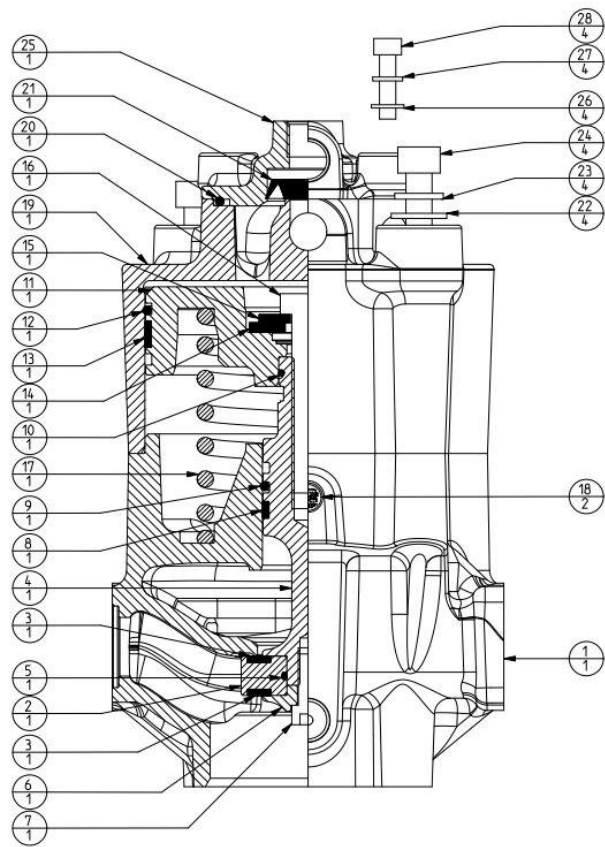




EXISTING PRODUCTS AND SPARE PARTS			
MODEL	PART NUMBER	SPARE	POSITION
CO-25-A0-01-L-2PPG-S	134237	181200	ALL + 2 OR3125 + OR3168
		181007	4-8-10-14-15-20-21-22-23-28+2 OR3125+OR3168

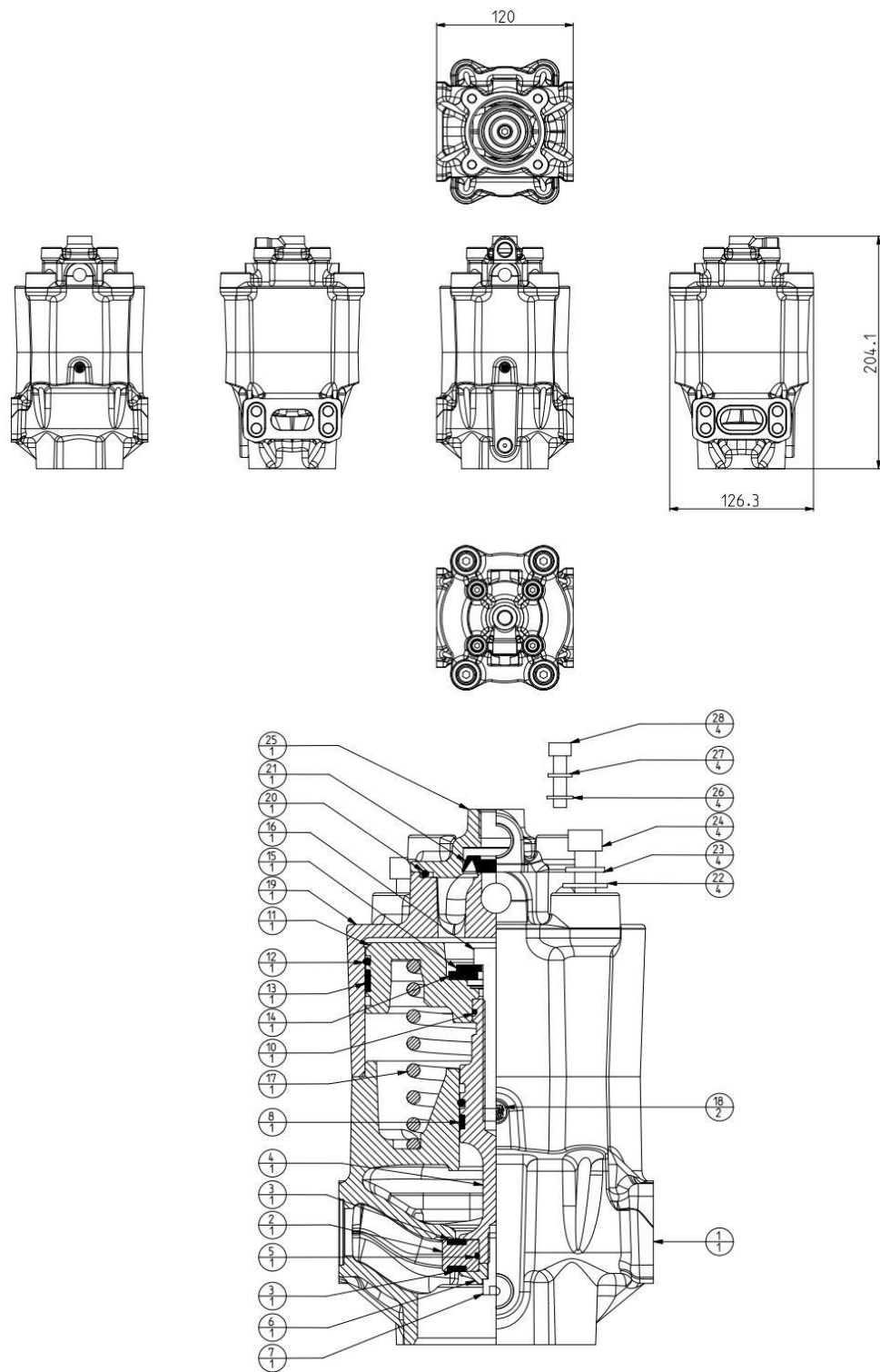
5.7 MODELS CO-25-S0-01-H/S





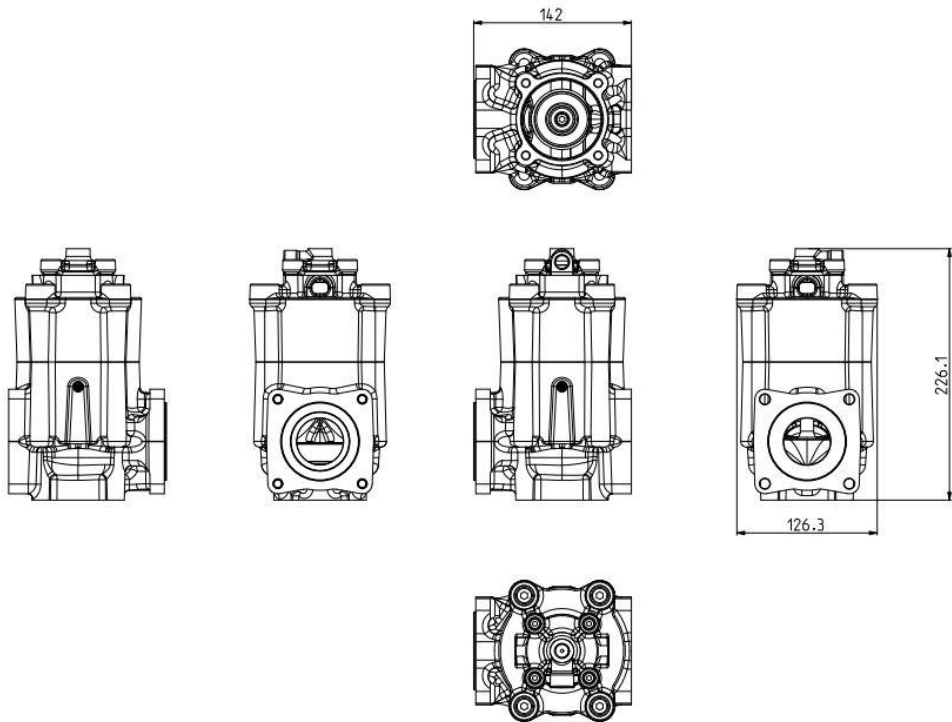
EXISTING PRODUCTS AND SPARE PARTS			
MODEL	PART NUMBER	SPARE	POSITION
CO-25-S0-00-H-2PPG-S	134207	181202	ALL + 2 OR3125 + OR4212
		181010	2-5-8-9-10-12-13-20-21+2 OR3125+OR4212
CO-25-S0-00-S-2PPG-S	134207	181202	ALL + 2 OR3125 + OR4212
		181010	2-5-8-9-10-12-13-20-21+2 OR3125+OR4212

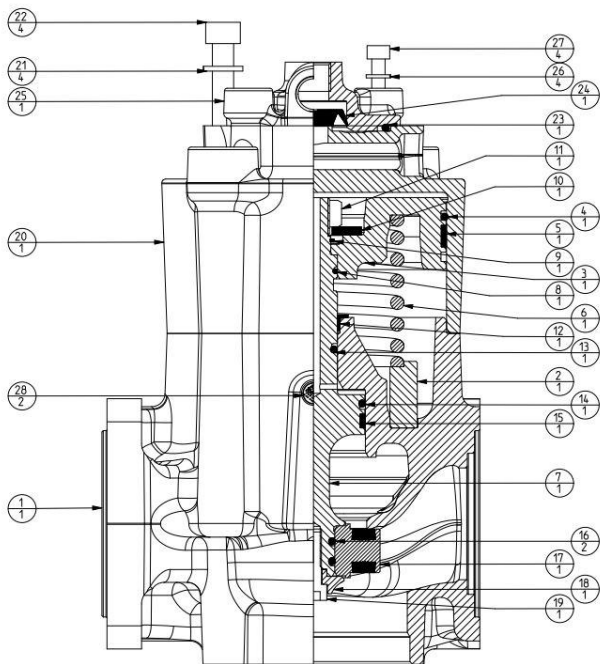
5.8 MODELS CO-25-S0-01-L/E/U



EXISTING PRODUCTS AND SPARE PARTS			
MODEL	PART NUMBER	SPARE	POSITION
CO-25-S0-00-L-2PPG-S	134211	181204	ALL + 2 OR3125 + OR4212
		181008	2-5-8-9-10-12-13-20-21+2 OR3125+OR4212

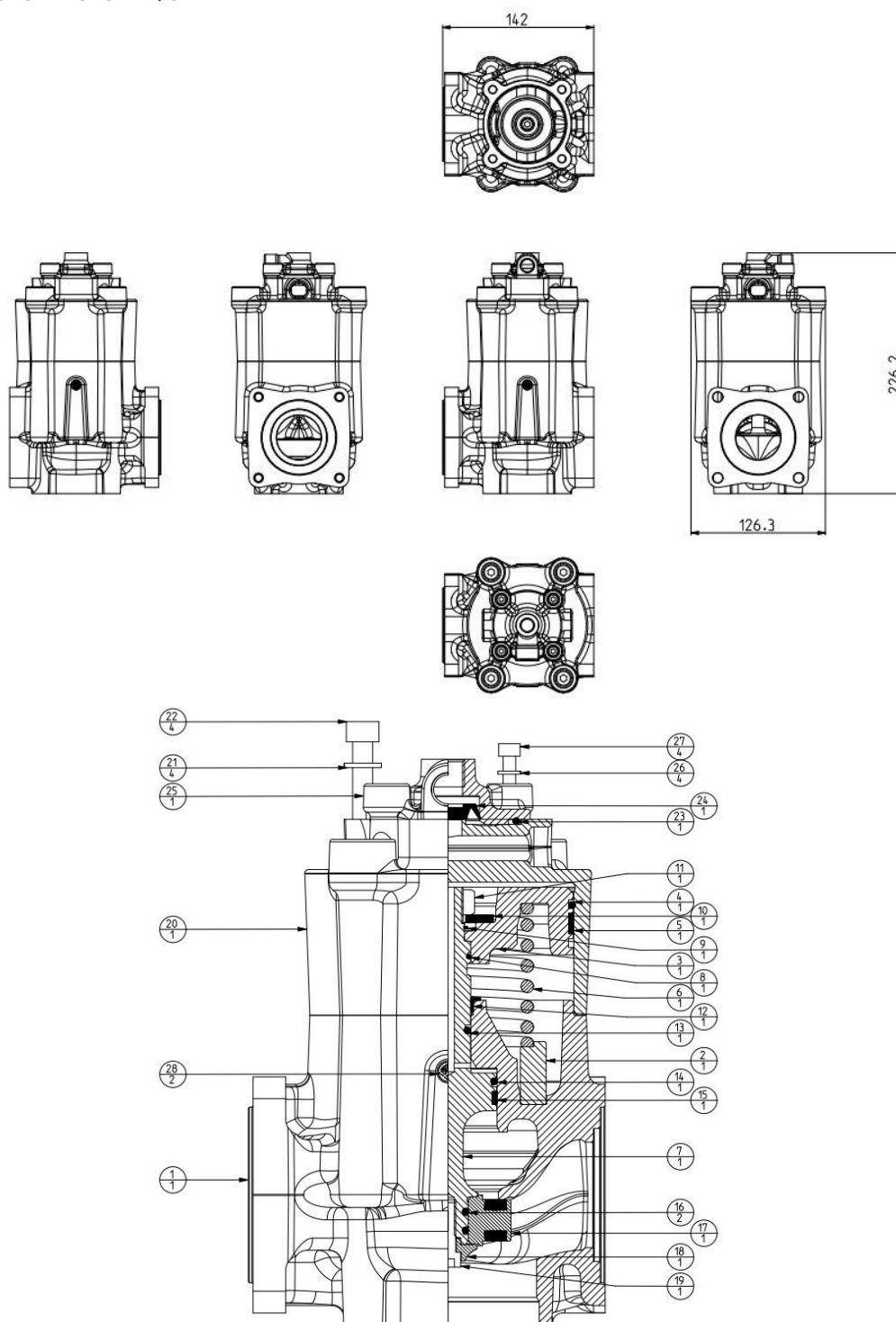
5.9 MODELS CO-32-A0-01-H/S





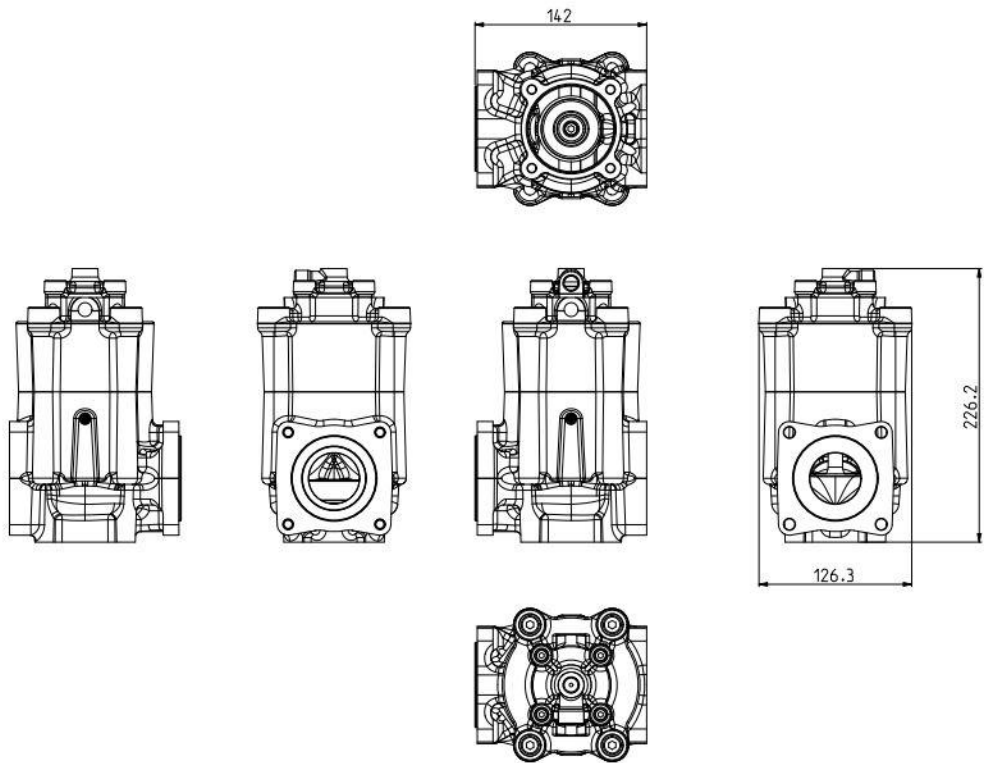
EXISTING PRODUCTS AND SPARE PARTS			
MODEL	PART NUMBER	SPARE	POSITION
CO-32-A0-01-H-2TTT-S	134282	181210	ALL + 2 OR150 + OR167
		178941	4-5-13-14-15-16-23-24+2 OR150+OR167
CO-32-A0-01-S-2TTT-S	134282	181210	ALL + 2 OR150 + OR167
		178941	4-5-13-14-15-16-23-24+2 OR150+OR167

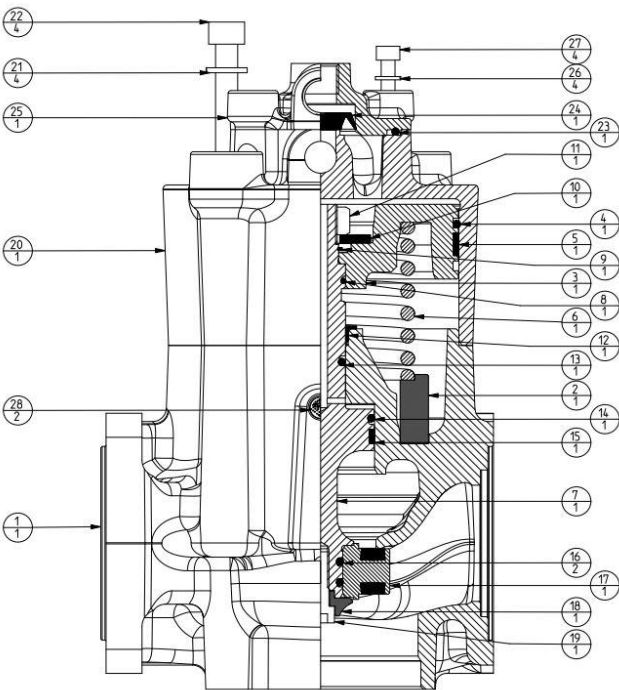
5.10 MODELS CO-32-A0-01-H/S



EXISTING PRODUCTS AND SPARE PARTS			
MODEL	PART NUMBER	SPARE	POSITION
CO-32-A0-01-L-2TTT-S	134285	181211	ALL + 2 OR150 + OR167
		181021	4-5-13-14-15-16-23-24+2 OR150+OR167

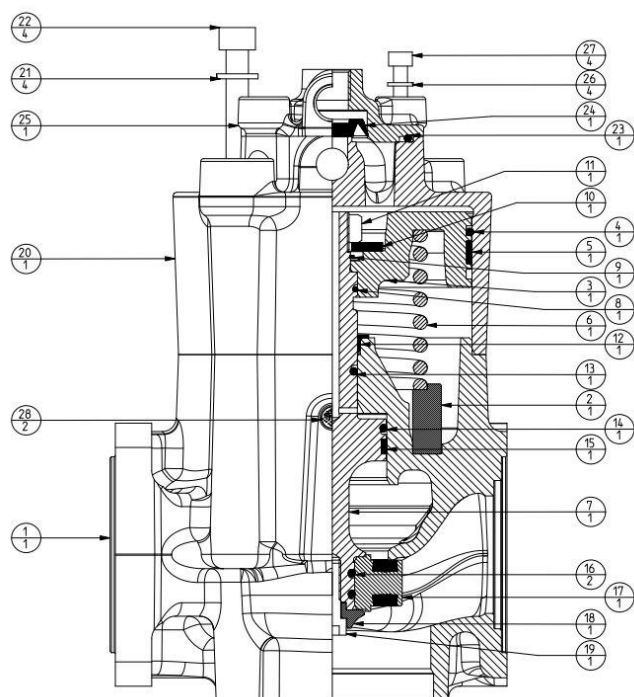
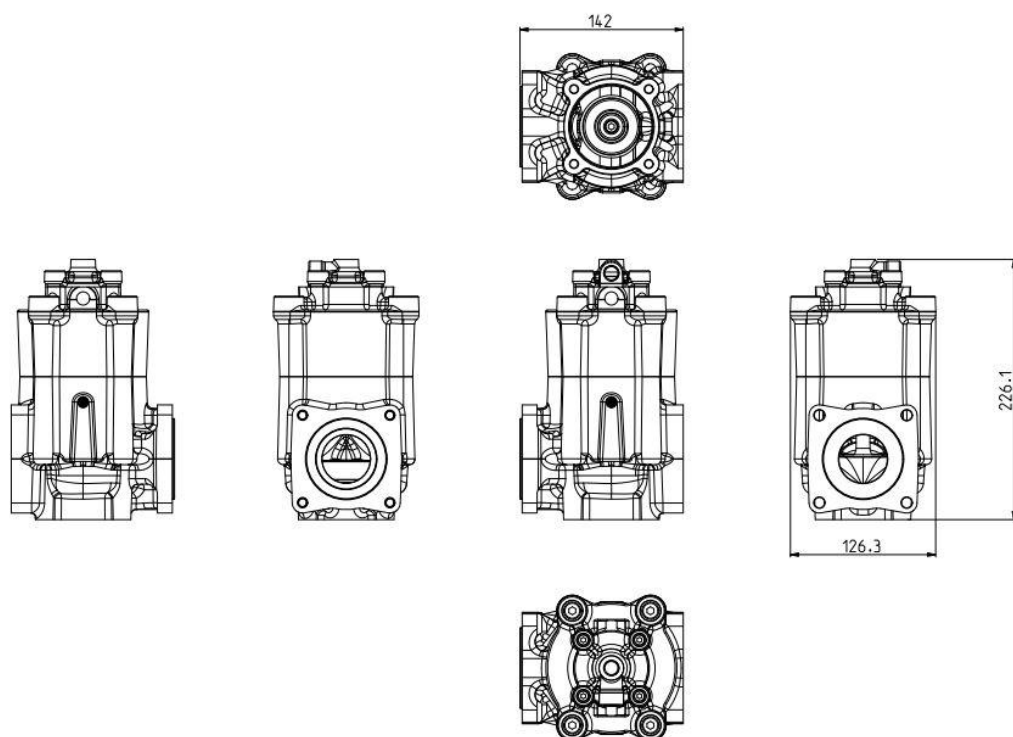
5.11 MODELS CO-32-S0-01-H/S





EXISTING PRODUCTS AND SPARE PARTS			
MODEL	PART NUMBER	SPARE	POSITION
CO-32-S0-00-H-2TTT-S	131737	181212	ALL + 2 OR150 + OR167
		178941	4-5-13-14-15-16-23-24+2 OR150+OR167
CO-32-S0-00-S-2TTT-S	131737	181212	ALL + 2 OR150 + OR167
		178941	4-5-13-14-15-16-23-24+2 OR150+OR167

5.12 MODELS CO-32-S0-01-L/E/U



EXISTING PRODUCTS AND SPARE PARTS			
MODEL	PART NUMBER	SPARE	POSITION
CO-32-S0-00-L-2TTT-S	134015	181213	ALL + 2 OR150 + OR167
		181021	4-5-13-14-15-16-23-24+2 OR150+OR167

5.13 INTEDED USE

IMI STI will not be liable for any possible damage or physical injury resulting from use in other than the designated applications or by lack of care during installation, operation, adjustment or maintenance. Such risks lie entirely with the user.

Considering that IMI STI has no direct control over applications, operation or maintenance conditions, it is the operator's responsibility to comply with all applicable safety rules: it is the sole responsibility of the operator to ensure that the local health and safety regulations are adhered to.

Depending on the specific working conditions, additional precautions may be requested.

Please inform IMI STI if you face unsafe situations not described in this Instruction Manual.

5.14 REASONBLY FORSEEABLE MISUSE

A short list of reasonably foreseeable misuse:

- installation in ambient with not planned conditions (i.e. climatic conditions different from the specified conditions);
- incorrect fluid under pressure inside the product;
- supply pressure out of required range.

5.15 OPERATING LIMITS

The product label and/or this manual indicate the main conditions of this product.

5.16 RESIDUAL RISKS

A short list of possible risks:

- risk due to movements of loads during mounting phase;
- crushing during assemblage servicing;
- extreme high or low surface temperature, as consequence of ambient temperature, has to be considered a risk of person injury in case of contact;
- hazardous fluid emission (i.e. when natural gas is used as fluid under pressure).

6. INSTRUCTION FOR THE OPERATOR

During the start-up of the product, proceed as follows:

- check that the pressure and quality of the air supply (filtering degree, dehydration) are as prescribed;
- check that there are not leaks in the pneumatic connections. If necessary, tighten the fittings;
- set the product according the schematic diagram.

7. MAINTENANCE

7.1 PERIODIC INSPECTIONS



Take care that a build-up of dust or dirt on the product can inhibit cooling and contribute to increase surface temperature. The user should plan and provide for a periodic cleaning / maintenance program that will maintain the external surface of the accessory free from excessive layer of dust.
Operation and maintenance shall be carried out by skilled staff.

7.2 SPECIAL MAINTENANCE

The product does not need special maintenance considering standard applications. If special maintenance is required, send back the device to IMI STI.

Product disassembling and reassembling shall be carried out only by IMI STI authorized operators.



For the available part lists of each accessory refer to 6.2 and subsequent paragraphs or contact imisti.sales@imi-critical.com or sti.support@imi-critical.com.

7.3 REPAIRS

Repairs shall be carried out by authorized operators. When needed, send back the device to IMI STI for any repairing.

Product disassembling and reassembling shall be carried out only by IMI STI authorized operators.



For the available part lists of each accessory refer to 6.2 and subsequent paragraphs or contact imisti.sales@imi-critical.com or sti.support@imi-critical.com.

8. TROUBLESHOOTING

Event	Possible cause	Remedy
Do not work properly	Lack of pneumatic supply	Check supply line
	Low supply pressure	Adjust supply pressure
	Uncorrected by-pass stem adjustment	See Instruction for the operator
	Defective internal component (shutter, piston, ecc.)	Call IMI STI S.r.l.
Leakages on pneumatic circuits	Deterioration and/or damage to gasket and/or loosed fittings	Call IMI STI S.r.l.
	Damage to fittings	Call IMI STI S.r.l.

9. DECOMISSIONING

Subject	Hazardous	Recyclable	Disposal
Metals	No	Yes	Use licensed recyclers
Plastics	No	Yes	Use specialist recyclers
Rubber (seals and O-rings)	Yes	No	May require special treatment before disposal, use specialist waste disposal companies
Oil and grease	Yes	Yes	May require special treatment before disposal, use specialist waste disposal companies



Before starting any disassembly operations, it is mandatory to disconnect the pneumatic power and exhaust the product (no fluid under pressure inside the product, fittings, tubing). The staff must be qualified for the required operation.



The product decommissioning shall be made by specialized operators. Check local authority regulation before disposal.

INSTRUCTION MANUAL

CO – 3 WAY VALVE

ADDENDUM 1: ADDITIONAL SAFETY PRECAUTIONS



IMPORTANT

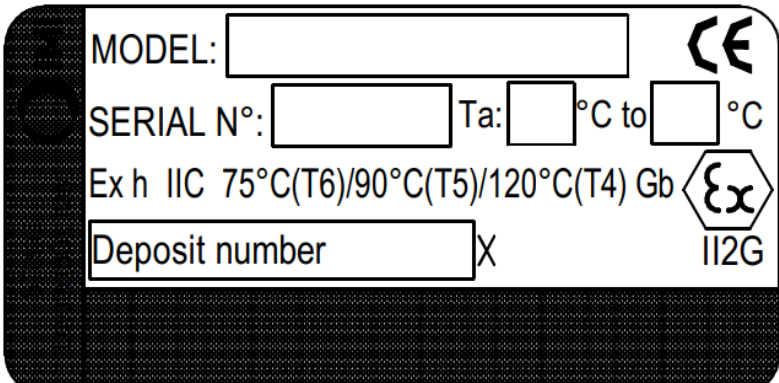


To be read, and understood, in conjunction with the rest of the manual

The CO accessory is ATEX certified under the following standards:

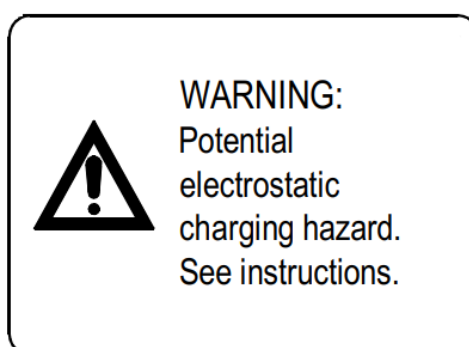
- DIRECTIVE 2014/34/UE.
- EN ISO 80079-36.
- EN ISO 80079-37.

When certified, the product will be marked with the following label (or a similar one with the same information):

Ex h IIB T4/T5/T6 Gb or Gc	Ex h IIC T4/T5/T6 Gb or Gc
	

Some residual risks are present. Therefore, it is mandatory to follow the following instruction:

- The accessory must be grounded. This can be performed in two ways:
 - Ensuring electrical continuity between the product and the actuator upon which it is mounted on. The actuator must be properly grounded.
 - If available, by using one of the available threaded holes to connect an earthing cable. The earthing cable shall be secured by employing proper means to avoid any unwanted unscrewing or rotation of the connector.
- For aluminum and stainless steel models, only if painting is requested, any charging mechanism stronger than manual rubbing must be avoided. When this must be respected, an additional label is positioned onto the casing:



Process Automation

IMI STI – 2080-r13_En rev.13 30/10/2025



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