***Gascat* –** Indústria e Comércio Ltda

GIPS – FC – Slam Shut-Off Valve Series
Installation, Maintenance and Operation Manual

INDEX

1 – INSTRUCTIONS PRIOR TO COMMISSIONING

It shall be clearly understood that the information given in the Commissioning Instructions that follows do not intend to revoke or substitute the instructions set by any pertinent entity. References will be made to applicable Standards and/or existing recommendations on the subject.

Before commissioning starts the execution of applicable "Cleaning and Purification Procedures" are implied, which are applicable to all instructions on "Pressurization" and the "Standards for Labor Health and Safety", which shall be strictly adhered to.

Valve supplier's advices such as: "open slowly", or "open very slowly", shall be strictly followed.

2 – HEALTH AND SAFETY

Regulators, valves and other pressurized components containing poisonous or flammable gases, or other hazardous products, are potentially dangerous if not correctly operated and maintained. It is mandatory that all users of such equipment are properly trained and guided on potential dangers, and assurance is necessary that all personnel responsible for installation, testing, commissioning, operation, and maintenance of the plant are qualified to do their jobs. Instruction manuals are provided to guide operators, but it is supposed that the same already have a basic knowledge level. If any doubt remains, or if there is ambiguity on the correct procedures, ask ***Gascat*** on the correct proceeding. We will be pleased to explain the corresponding instructions or provide the corresponding service. **TAKE NO RISKS**. Our telephone, fax number and e-mail follows:

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The comments below, although abridged, provide guidance on possible hazards to health and safety.

2.1 – Noise

Regulators, valves and other pressure reducers can produce high noise levels, which can be harmful to person exposed to them for long time periods. Users shall assure themselves that appropriate precautions are taken to provide safety to employees' health and/or third parties, according to applicable standards and recommendations in force.

2.2 – Installation

All equipments, piping and vessels are designed to support mechanical stresses, as torque and bending moment, in addition to the internal pressure. However, great care shall be exercised during installation not to apply excessive strain that could cause cracks that may result in serious break down when the regulator is put into operation. Excessive stress can also be caused by unbearable length of piping, which should be appropriately supported.

All regulators, shutoff valves, relief valves, etc., shall be installed with the correct flow direction.

Impulse lines are important components in any control system and it is essential for them to be correctly installed according to instructions.

Impulse lines should be appropriately supported to reduce excessive vibration, which can cause fatigue breaking. They should also be positioned in such manner that they cannot serve as support to feet or hands. Impulse lines shall have a slight slope for liquids and condensates drain towards the main piping.

Auxiliary systems should not be changed or modified without knowing the operation conditions and after permission of the responsible superior.

2.3 – Operation

Depending on the regulator type, its valve can be positioned as fully open. Consequently, when putting a regulator into operation, the shutoff valves shall be opened slowly so that the regulator valve to assume its regulating position. If valves are quickly opened, the upstream pressure can pass downstream through the regulator and over-pressurize downstream of the main line.

All regulators, etc., shall operate with the regulating spring specified by the manufacturer. That is particularly important in relief or shutoff valves operation, since incorrect springs can hinder a relief valve to open, or a shutoff valve to close.

Precautions should be taken to avoid water from entering through venting and breathing apertures.

2.4 – Maintenance

Regulators and valves restrain gases with pressures several times larger than the atmospheric pressure. Before trying to investigate any problem or performing maintenance service in the equipment, they should be safely depressurized. Furthermore, as most gases can be flammable, poisonous, corrosive, i.e. dangerous, it may be necessary to purge the installation with an inert gas, as nitrogen. Special precautions are necessary for operation with gases as oxygen or hydrochloric gas and the user shall be sure that appropriate procedures were implemented.

Eventually, it is not enough to isolate high-pressure device, since high pressures can be trapped downstream of the insulation valves. Do not try to remove covers, plugs, etc., before the item is properly freed. Even so, it is advisable to consider that high-pressure gas can be trapped when removing covers and plugs.

Most regulators use spiral springs as the loading device. It is important to reduce the load on these springs by moving their pressing device backward as much as possible. In some cases, a residual load may be left, even with the spring released to the end of its housing.

3 – INTRODUCTION

GIPS Series function is to protect the gas nets, equipments and downstream installations, of a over-pressure above of working pressure. It is also a **Fail Close** valve that, in case of drop pressure in the sensor (actuator), the valve will close immediately. This characteristic protects the installation of a drop pressure in the pipe line and also some damage in the sense line.

GIPS Series have instantaneous shut-off, complete tightness, manual reset, low load loss, wide regulation range, and easy installation.

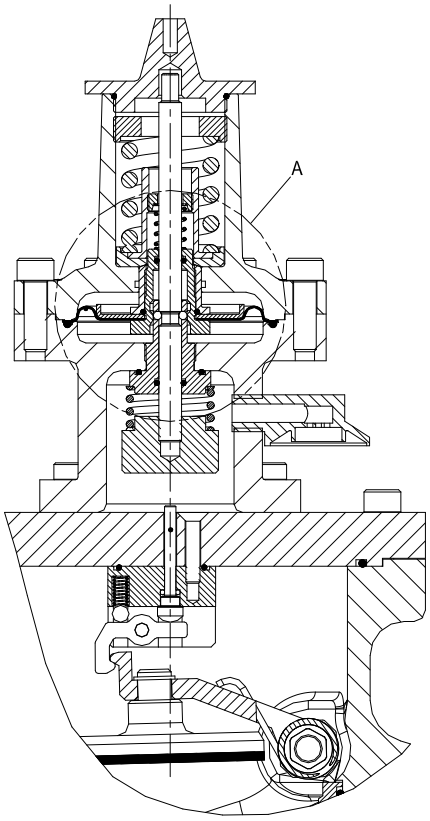
4 – WORKING PRINCIPLE

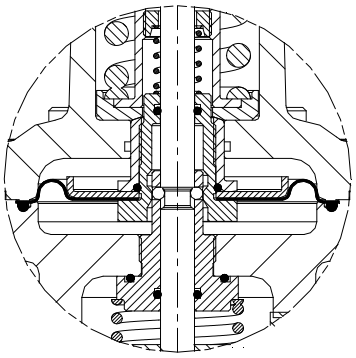
GIPS-FC Series have an actuator with spheres holder accomplish connected to the sensor element (diaphragm or piston) and this on is sensitive to the downstream pressure. For the following cases:

a) downstream increase pressure beyond the set limit (by over spring action);
b) diaphragm rupture (by under spring action);
c) sense tubing damage (by under spring action);
d) downstream pressure below the set limit (by under spring action),

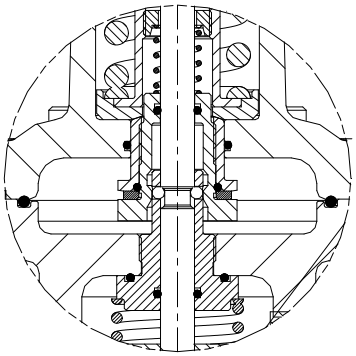
the tripping bush moves to the release position with the ball mechanism disengaging the valve stem to close the control element.

After normal external control pressure has been stored the valve must be manually reset to the open position; to able the reset the upstream and downstream must be equalized by an integral push bottom type which eliminates the need of a separate by-pass (avoiding leaks). This push bottom is at the closed position valve.





DETAIL A – GIPS-FC – H
(DIAPHRAGM)



DETAIL A – GIPS-FC – PH
(PISTON)

5 – CHARACTERISTICS

- ✓ Self-Operated by spring action;
- ✓ Manual Reset;
- ✓ Internal or External By-pass (depending on the valve classe rating and diameter);
- ✓ Connections: 1'', 2'', 3'', 4'', 6'', 8'' and 12'' flanged for 150#RF / 300#RF / 600# RF or RTJ, according to ANSI B.16.5, and 1" NPT female (BSP or BSPT – it is optional and under consult);
- ✓ GIPS-L: set pressure between 25mbar and 260mbar;
- ✓ GIPS-H: set pressure between 0.2 and 10 bar;
- ✓ GIPS-PH: set pressure between 10 and 70 bar;
- ✓ Actuators:
  - ✓ GIPS-L and GIPS-H: the actuators for these versions have diaphragm as sensor element for monitored pressure (see drawing above);
  - ✓ GIPS-PH: the actuators for these versions have a piston as sensor element for monitored pressure (see drawing above).

Note: The models DN6",DN8" and DN12" should not be installed in an vertical position

6 – INSTALLATION

6.1 – Filter

We recommended the installation of a basket type filter of 150 mesh (minimum), as close as possible to the inlet of the GIPS-FC valve. A careful filter installation is essential to the perfect operation of the equipment, because eventual particles

existing in the piping can lodge themselves between the seat and the shutter, damaging them and provoking direct flow passage.

6.2 – Cleaning

Check pipe cleaning before the regulator installation. We recommended a complete purge of the line with nitrogen or compressed air.

6.3 – Flow direction and recommended installation

Check the valve flow direction before installation.
Check in the schematic drawing below, the typical recommended assembly option.

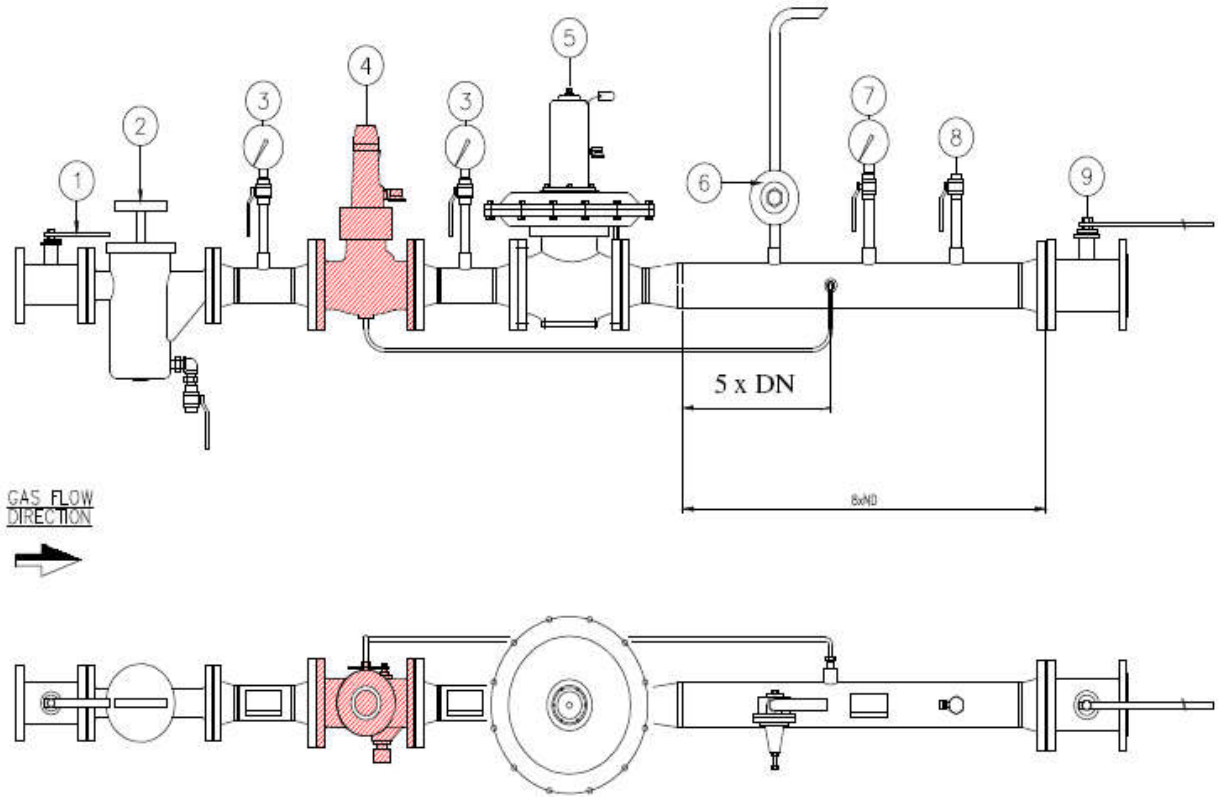
6.4 – Impulse Line

Install the GIPS impulse intake downstream of the pressure regulator (Ø 3/8" tube fitting) at a minimum distance of 3 times the nominal pipe diameter, in a piping section free from obstructions, at a pipe diameter position where the gas speed does not surpass 20 m/s (considering the minimum output pressure and maximum flow).

6.5 – Other important devices for a safe installation (see ABNT NBR 12313))

A safe installation shall contain, at least (see outline drawing proposed below):

1. Manual blocking valve (ball type, or similar).
2. Filter with drain.
3. Pressure gauge to read the input pressure.
4. Automatic shut-off valve (GIPS model).
5. Pressure regulator.
6. Partial relief valve (Gascat Junior model).
7. Pressure gauge to read the output pressure.
8. Purge valve, Ø ½".
9. Manual blocking valve (ball type, or similar).



7 – OPERATION (START UP)

GIPS-FC Series is supplied in the closed position and with the actuator of under pressure blocking disarmed. The springs for over and under pressure blocking are adjusted in Gascat.

7.1 - GIPS-FC 1" – 4"

7.1.1 – General Reset Procedure

To reset the valve to the open position (ready to work), the sense line should be connected in the actuator chamber (position 19 – page 18).

7.1.2 – Procedure to reset the valve in case of over shut off pressure

- ✓ Adjust the pressure of sensing line (actuator chamber) around 10-15% below to the under set-point.
- ✓ Pull up the stem obturator (position 16 – Page 18) until the upper position using the cover (position 18 – page 18).
- ✓ Open the by-pass valve or push button located in the GIPS-FC Series to equalize the internal pressure of the valve;
- ✓ Reset the valve turning the obturator stem ¼ of turn using the reset lever (external lever).

7.1.3 – Procedure to reset the valve in case of under shut off pressure

- ✓ Adjust the pressure of sensing line (actuator chamber) 10-15% above over set-point.
- ✓ Pull the actuactor stem (position 16 – page 18) until the upper position using the cover (position 18 – page 18).
- ✓ Open the by-pass valve or push button located in the GIPS-FC Series to equalize the internal pressure of the valve;
- ✓ Reset the valve using the obturator stem ¼ of turn using the reset lever (external lever).

7.1.4 – Procedure to adjust the set pressure (over and under set point)

To adjust the set pressure for over and under blocking follow the procedures below:

- ✓ Turn the spring loader (position 14 – page 18) to adjust the over set pressure.
- ✓ Turn the spring loader (position 11 – page 18) to adjust the under set pressure.

IMPORTANT NOTE:

- ✓ Do not try to reset the obturator stem before the actuator;
- ✓ In case of increase in pressure, do not try to reset the actuator if the pressue is below of 25% of over set pressure;
- ✓ In case of decrease in pressure, do not try to reset the actuator if the pressure is 25% above the under set pressure;
- ✓ We remember that, GIPS-FC Series is **Fail Close.** So, removing the under spring function the valve will no interrupt the gas flow in case of decrease in pressure, or diaphragm rupture or sense line rupture.

7.2 - GIPS-FC 6" – 12"

7.2.1 – General reset procedure

To reset the valve to the open position (ready to work), the sensing line should be connected in the actuator chamber (position 32 – page 24).

7.2.2 – Procedure to reset the valve in case of over shut off pressure

- ✓ Adjust the pressure of sensing line around 10-15% below under the set-point.
- ✓ Pull up the actuator stem (position 27 – page 24) until the upper position using the reset tool.
- ✓ Open the by-pass valve located in the GIPS-FC Series to equalize the internal pressure of the valve.
- ✓ Reset the valve turning the obturator stem ¼ of turn using the reset lever (external lever).

7.2.3 – Procedure to reset the valve in case of under shut off pressure

- ✓ Adjust the pressure of sensing line around 10-15% above the over set-point.
- ✓ Pull up the actuator stem (position 27 – page 24) until the upper position using the cover (position 25 – page 24).
- ✓ Open the by-pass valve located in the GIPS-FC Series to equalize the internal pressure of the valve.
- ✓ Reset the valve turning the obturator stem ¼ of turn using the reset lever (external lever).

7.2.4 – Procedure to adjust the set pressure (over and under set point)

To adjust the over and under set pressure follow the steps below:

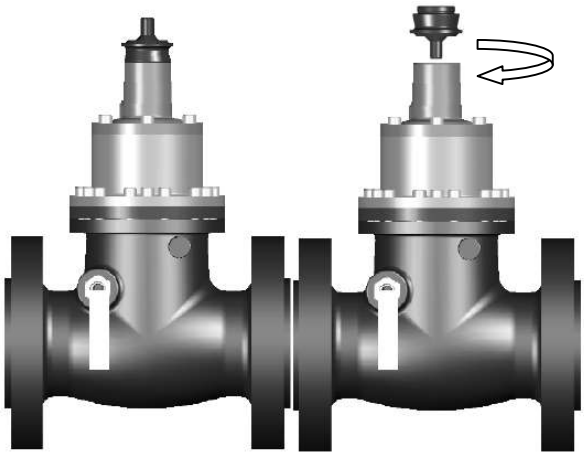
- ✓ Turn the spring loader (position 34 – page 24) to adjust the over set pressure.
- ✓ Turn the spring loader (position 22 – page 24) to adjust the under set pressure.

IMPORTANT NOTE:

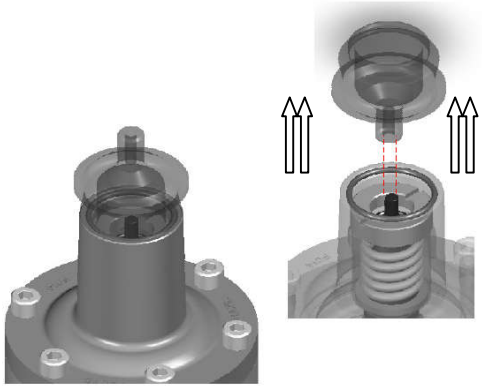
- ✓ Do not try to reset the obturator stem before the actuator;
- ✓ In case of increase in pressure, do not try to reset the actuator if the pressue is below of 25% of over set pressure;
- ✓ In case of decrease in pressure, do not try to reset the actuator if the pressure is 25% above the under set pressure;
- ✓ We remember that, GIPS-FC Series is **Fail Close.** So, removing the under spring function the valve will no interrupt the gas flow in case of decrease in pressure, or diaphragm rupture or sense line rupture.

7.3 – Reset Procedure (illustration) / Set Pressure Adjustment

The main indicator (visual) that the GIPS-FC is blocked is the lever position. The figure shows the valve in the shut off position. The lever has the same position of the obturator.

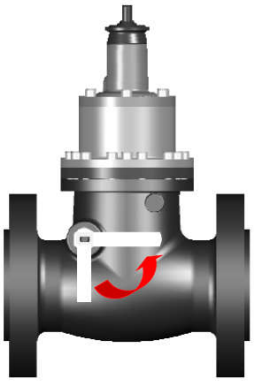


The upper cover of the actuator should be removed and connected in the actuator stem, exactly as the figure shows.



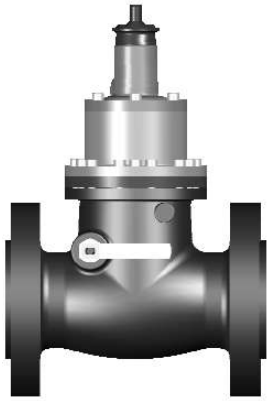
After connecting the cover in the actuator stem, the user should pull up the cover in the direction indicated in the figure to reset the actuator of under pressure blocking.

Attention: the sensing line of actuator chamber must be pressurized to allow reset the actuator – see procedures described previously.



After reset the actuator (last step) the user should reset the the obturator using the lever in the direction showed in the figure (left side).

After reset the lever will stay in the position indicated in the right figure.



8 – REMOVING THE VALVE OF THE PIPE

Usually valves contain gases internally with pressure for a long time. Before verify any kind of problem with the valve or to do a maintenance service in the equipment, the valve must be depressurized with security. Beyond this, as so many gases are inflammable, toxics, corrosives and dangerous, it can be necessary to purge the pipe installation using an inert

gas as nitrogen. Special precautions are necessaries to operations with gases as oxygen or hydrogen and the user / technician must assure that all appropriated procedures were implemented.

Sometimes, it can not be sufficient to isolate device of high pressure, because this high pressure can be located in the downstream of isolated valves. Don't try to remove covers, plugs etc, before this item had been released completely. Beyond this, is recommended to consider that high pressure can be located in covers and plugs. Many valves use spiral springs as loading devices. It is important to reduce the charge of these springs releasing the spring loader as possible. In some cases, a little chager can exist even that the spring had been totally released.

9 – STORAGE

Regulators and valves shall not suffer mechanical shocks, under risk of damaging internal components.

Regulators and valves shall be stored in a clean and dry place, protected from bad weather.

10 – MAINTENANCE

For the requested supply conditions to be maintained unaffected, the GIPS-FC Series should be submitted to preventive revisions, whose frequency will be a function of flow, the gas dirt, and the work regime of the installation.

Defect / Problem	Reason	Solution
Direct passage (increase in pressure even with the valve blocked)	Gas passage through the by-pass valve.	If the valve has an internal by-pass maybe the o'rings should be changed for new ones.
	Gas passage through seal o'ring: • Seat o'ring • Obturator stem o'ring	Change the rings.
	Gas passage between seat and obturator.	Clena the seat and obturator. Verify if there is any damage or deformation in these pieces. If confirmed, then change the damaged pieces.
Gas passage through the actuator vent	Piston rings or diaphragm damaged.	Change the respective o'rings or the diaphragm.

11 – WARRANTY

We warrant our products, for a 12 months period from the date of invoicing, if the products are in operation, extending the warrant up to 18 months, in case they are in stock. Such warranty only covers those cases for which the occurrence of production defects are evidenced, which remained unnoticed at the time the product delivery.

To present warranty is not valid if it is found that the defect or mishap was caused by accident, normal wear, inadequate installation, improper maneuvering or use, inadequate storage, assembly disregarding technical standards or if the buyer undertook repairs or changes in equipment by himself, without the manufacturer's previous authorization.

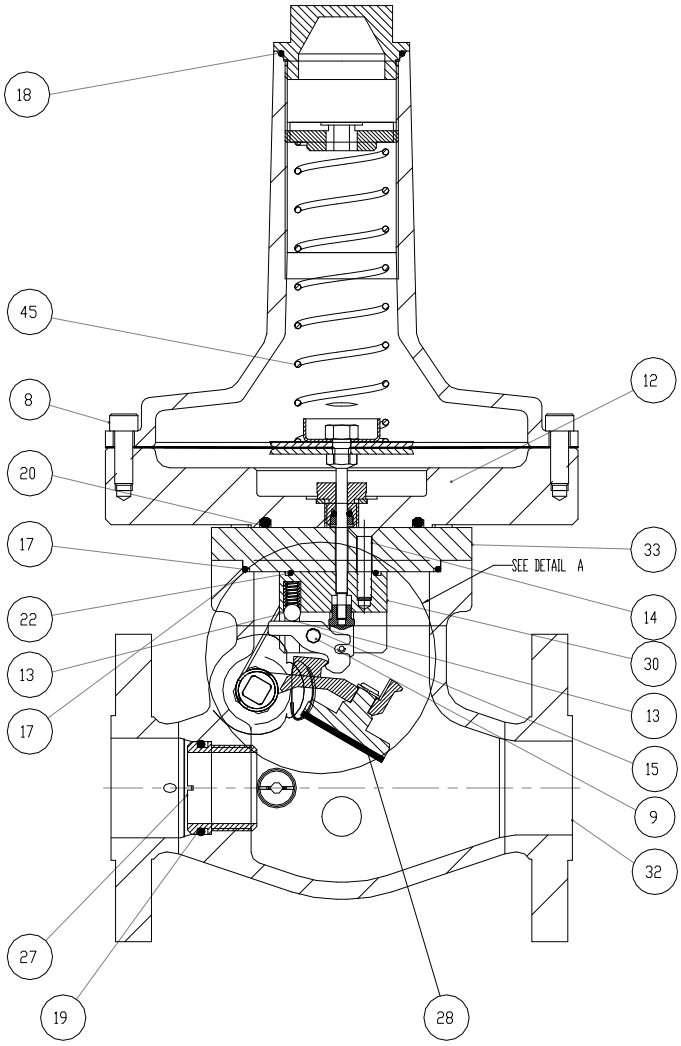
The information contained in this manual contains Gascat's supply conditions, independently of the verified performance.

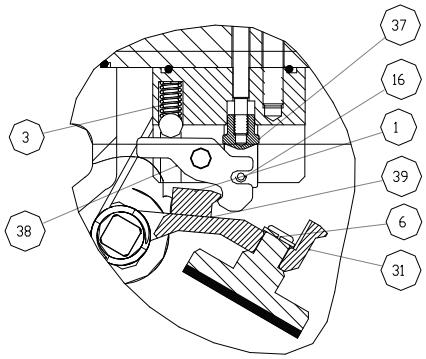
The information herein contained shall not be interpreted or suggest performance warranty in relation to the final products, or the system usage purpose, nor should they serve as usage recommendation for any product or process mentioned in the specifications. This system should only be operated by qualified technician trained for this purpose; and no changes that may affects the system safety can be executed without our previous authorization.

Gascat Ind e Com. Ltda. withholds the right to make changes without notice, introducing improvements in the described products drawings or specifications.

11 – DRAWINGS / PIECES LITS / REPAIR KIT COMPONENTS

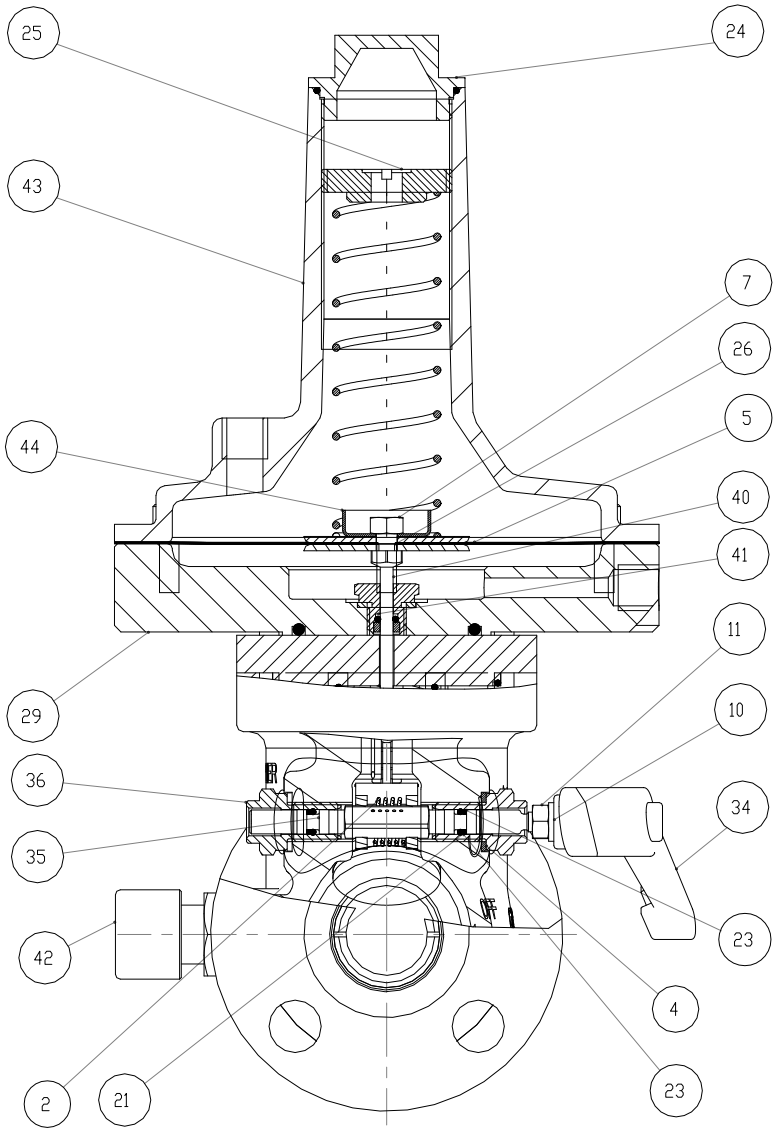
11.1 - GIPS-FC (L)





DETAIL A

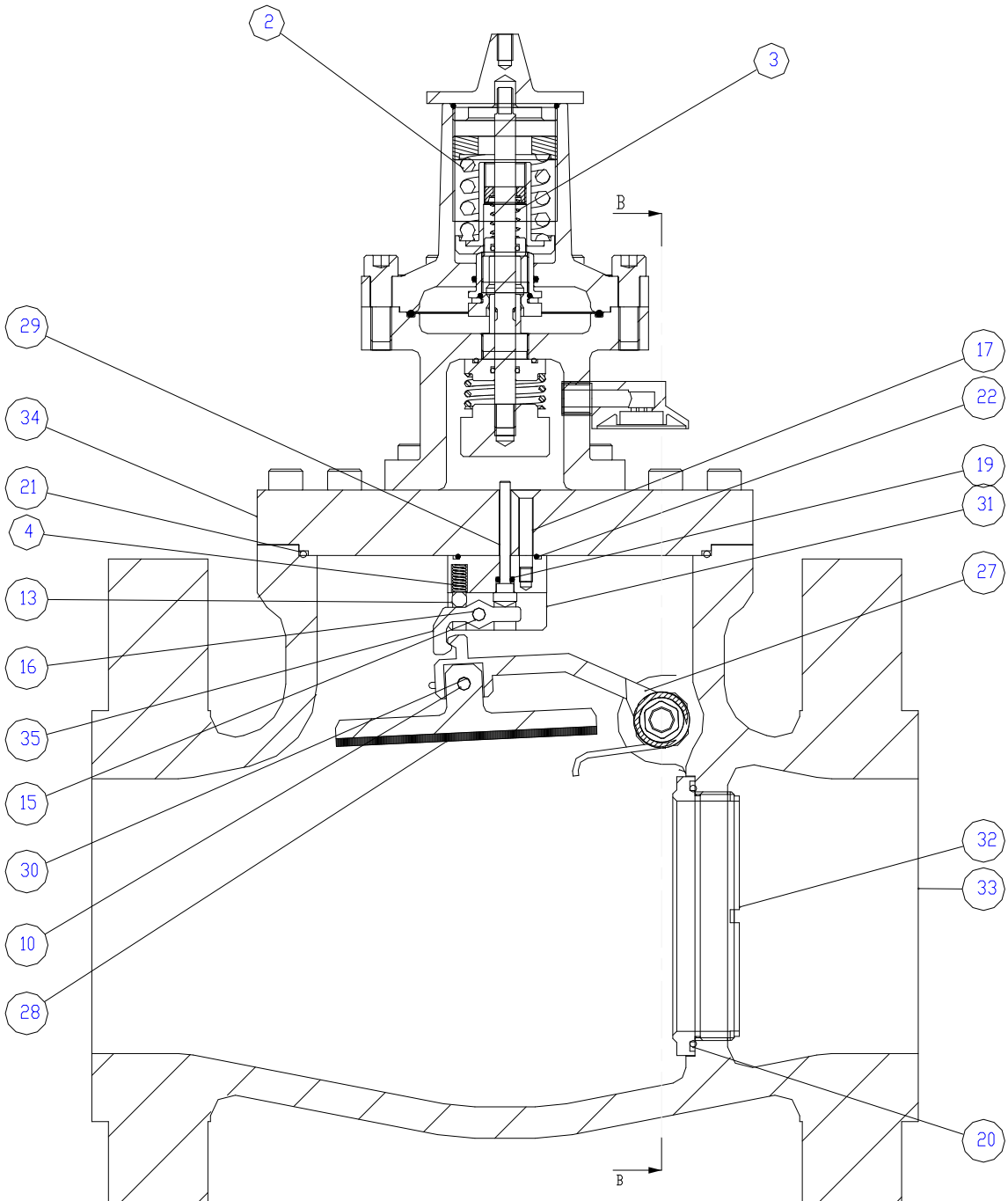
11.1 - GIPS-FC (L)



11.1 - GIPS-FC (L) – Components List

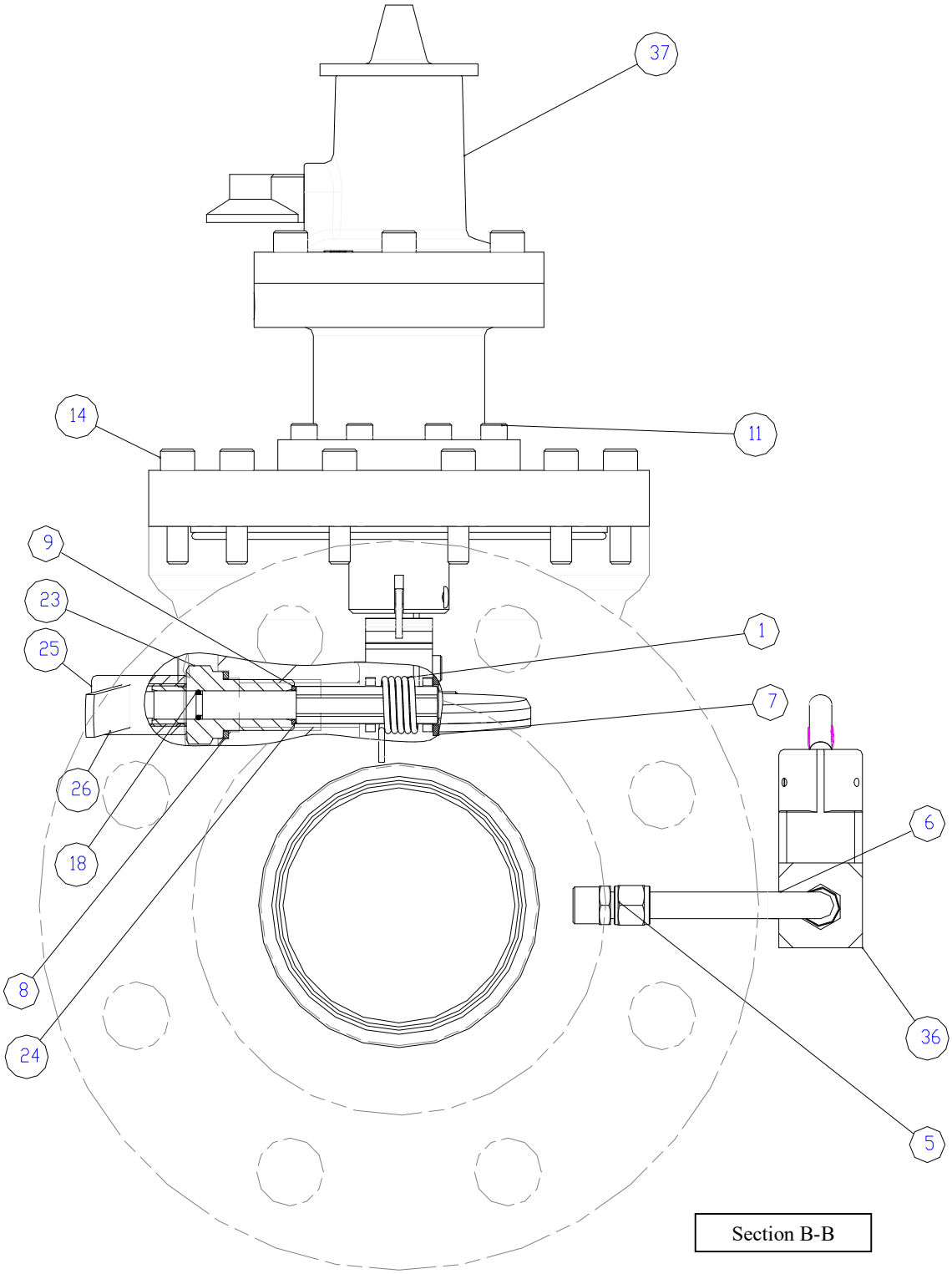
Repair Kit	Position	Qtty	Description	P/N – ND 1''-150#	Material
	1	2	Screw DIN 963 – M4x10		AISI 304
	2	1	Obturador Spring	01.49.05	AISI 302
	3	1	Return Spring	01.52.86	DIN 17233-C
●	4	3	Joint		Nylon
●	5	1	Diaphragm	04.50.09	Buna N
	6	1	Retainer Ring		-
	7	1	Nut – ¼" W	05.49.34	Carbon Steel
	8	6	Screw – ¼" x ¾	05.49.88	Carbon steel
	9	1	Screw DIN 913 – M6X10		-
	10	1	Pression Washer DIN 127 – M6	05.53.79	AISI 304
	11	1	Nut DIN 934 – M6	05.54.23	ISO 3506-A2-70
	12	-	See item 29	-	-
●	13	1	Sphere – 6mm	05.51.20	AISI 304
	14	3	Screw DIN 7991 – M5x25	05.67.06	-
	15	1	Pin DIN 7 – DN 5x16	05.67.07	Carbon Steel
●	16	1	Elastic Pin– 2.8 x 8	05.68.51	Spring Steel
●	17	1	O'ring – 1,75 x 63,40	06.50.55	Buna N
●	18	1	O'ring – 1,78 x 41,00	06.49.72	Buna N
	19	1	O'ring – 2,62 x 28,24	06.50.42	Buna N
●	20	1	O'ring – 50,39 x 3,53	06.50.43	Buna N
●	21	2	O'ring – 1,78 x 4,47	06.53.37	Buna N
●	22	1	O'ring – 1,78 x 28,30	06.53.52	Buna N
●	23	2	Parbak Ring	06.54.00	Buna N
	24	1	Actuator Chamber Cover	21.00.10	SAE 323
	25	1	Spring Loader	21.01.39	Brass
●	26	2	Diaphragm Plate	26.01.44	Brass
	27	1	Seat	26.01.73	316 S.S.
●	28	1	Obturator	26.02.61	316 S.S. / Polyurethane
	29	1	Intermediary	26.12.20	-
	30	1	Lever Support	26.12.42_50	ASTM B16
	31	1	Obturator Support	26.12.43G	ASTM A351 CF8
	32	1	Body	26.13.04_50	ASTM A216 Gr. WCB
	33	1	Intermediary Body	26.12.94	ASTM A516 Gr. 70
	34	1	Lever	26.13.47	Polyamide
	35	1	Stem Reset	26.01.75E	ASTM A276 TP 304
	36	2	Stem Guide	26.01.74_50	ASTM A276 TP 304
	37	1	Pin Pressioner	26.13.87	AISI 410
	38	1	Reset Lever (internal)		AISI 304
	39	1	Locker	26.14.00	AISI 304
	40	1	Diapragm Stem	26.13.91	AISI 304
	41	1	Stem Guide		Brass
	42	1	By-pass / Push-Bottom	-	-
	43	1	Spring Chamber	27.00.05	SAE 323
	44	1	Spring Guide	27.01.06	SAE 1020
	45	1	Regulation Spring	See table	AISI 304

11.2 - GIPS-FC (H / PH) 1" – 4"



Section B-B
(see page 16)

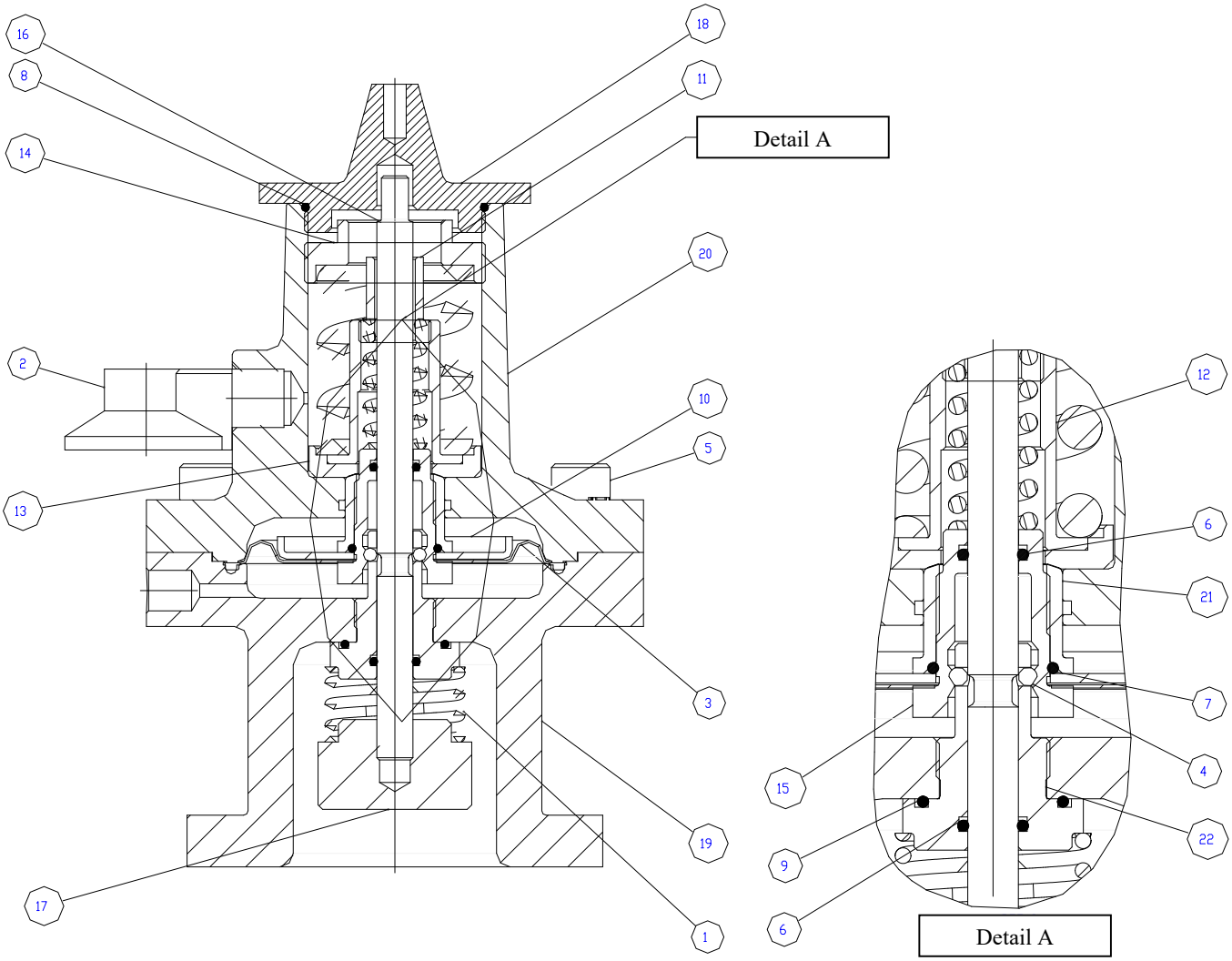
11.2 - GIPS-FC (H / PH) 1" – 4" (Detail B-B)



11.2 - GIPS-FC (H / PH) 1" – 4" - Lista de Componentes

Repair Kit	Item	Qtty	Description	P/N – ND 1''	Material
	1	1	Spring	01.49.05	AISI 302
	2	1	Over Regulation Spring	See Table	AISI 302
	3	1	Under Regulation Spring	See Table	AISI 302
	4	1	Return Spring	01.52.86	AISI 302
	5	4	Connector 10mm x ¼''	03.50.10D	Stainless Steel
	6	1	Tubbing OD 10mm	-	-
	7	1	Joint		
	8	1	Joint		
	9	1	Joint		
●	10	1	Obturator Body	26.12.46	
	11	8	Screw DIN 912	05.68.15	
●	12	6	Sphere – diameter 3mm	05.56.30	AISI 420
	13	1	Sphere – diameter 6mm		AISI 420
	14	12	Screw DIN 912		-
	15	1	Screw DIN 913		-
	16	1	Pin DIN 7 – 5x16	05.67.07	-
	17	3	Screw DIN 7991	05.67.06	-
●	18	3	O'ring 1,78 x 7,65		Buna N
●	19	1	O'ring 1,78 x 3,68	06.50.36	Buna N
	20	1	O'ring 2,62 x 94,92		Buna N
●	21	1	O'ring 2,62 x 152,07		Buna N
●	22	1	O'ring 1,78 x 28,30	06.53.52	Buna N
●	23	2	Bush	26.13.81	ASTM A276
	24	1	Stem	26.13.63	Stainless Steel
	25	1	Lever Protect Cover		
	26	1	Lever	26.13.47	Polyamide
	27	1	Obturator Support	26.12.43_50	Stainless Steel CF8M
●	28	1	Obturator	26.02.54	AISI 316 / Poliuretano
	29	1	Reset Stem		ASTM A276
	30	1	Pin		SAE 4340
	31	1	Releaser Lever Support	26.12.42_50	Brass
	32	1	Seat	26.01.76	AISI 316
	33	1	Body	26.13.04_50	ASTM A216 Gr. WCB
	34	1	Cover	26.13.05	ASTM A516
	35	1	Obturator Releaser	26.13.06	-
	36	1	By-pass	26.20.03	-
	37	1	Atuactor – Version H	26.20.38	-

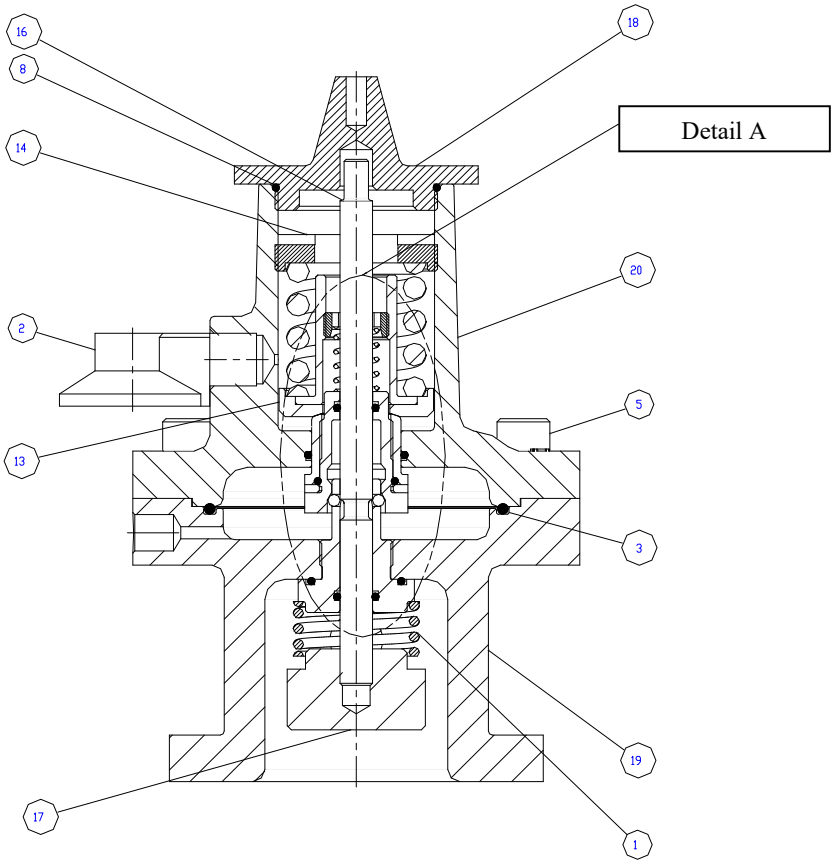
11.2.1 - GIPS-FC (H / PH) 1" – 4"- Actuator Version H

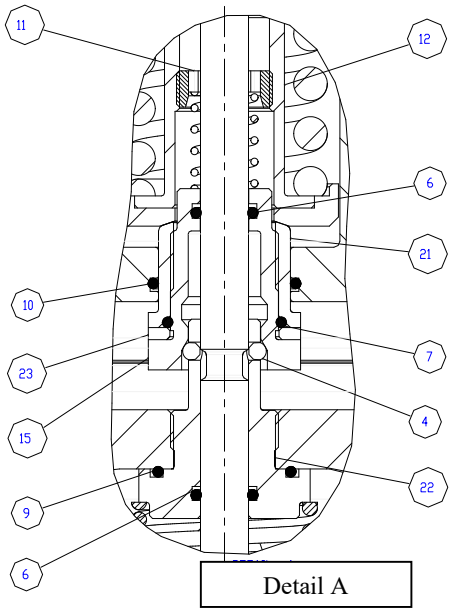

16
8
14
18
11
Detail A
20
2
10
5
13
3
19
17
1
12
6
21
7
4
15
9
22
6
Detail A

11.2.1 - GIPS-FC (H / PH) 1" – 4"- Actuator Version H –Components List

Kit	Position	Qtty	Description	Part Number	Material
	1	1	Piston Spring		AISI 302
	2	2	Vent ¼" NPT	03.49.10	-
●	3	1	Diaphragm	04.51.80_50	Buna N
●	4	6	Sphere – 3mm	05.56.30	Stainless Steel
	5	6	Screw DIN 912	05.68.14	-
●	6	2	O'ring – 1,78 x 7,65	06.52.88	Buna N
●	7	1	O'ring – 1,78 x 17,17		Buna N
●	8	1	O'ring – 1,78 x 37,82	06.50.77	Buna N
●	9	1	O'ring – 1,78 x 20,35	06.50.86	Buna N
	10	1	Diaphragm Plate	22.00.11E	-
	11	1	Spring Actuator		-
	12	1	Spring Guide		-
	13	1	Spring Support	26.13.29_50	-
	14	1	Over Spring Pressioner	26.13.30_50	-
	15	1	Diaphragm Support		-
	16	1	Stem	26.12.35_50	-
	17	1	Hammer		-
	18	1	Spring Chamber Cover	26.12.37_50	-
	19	1	Intermediary	26.12.38_50	-
	20	1	Actuator Body		-
	21	1	Diaphragm Nut		-
	22	1	Stem Guide	26.12.34_50	-

11.2.2 - GIPS-FC (H / PH) 1" – 4"- Actuator Verssion PH

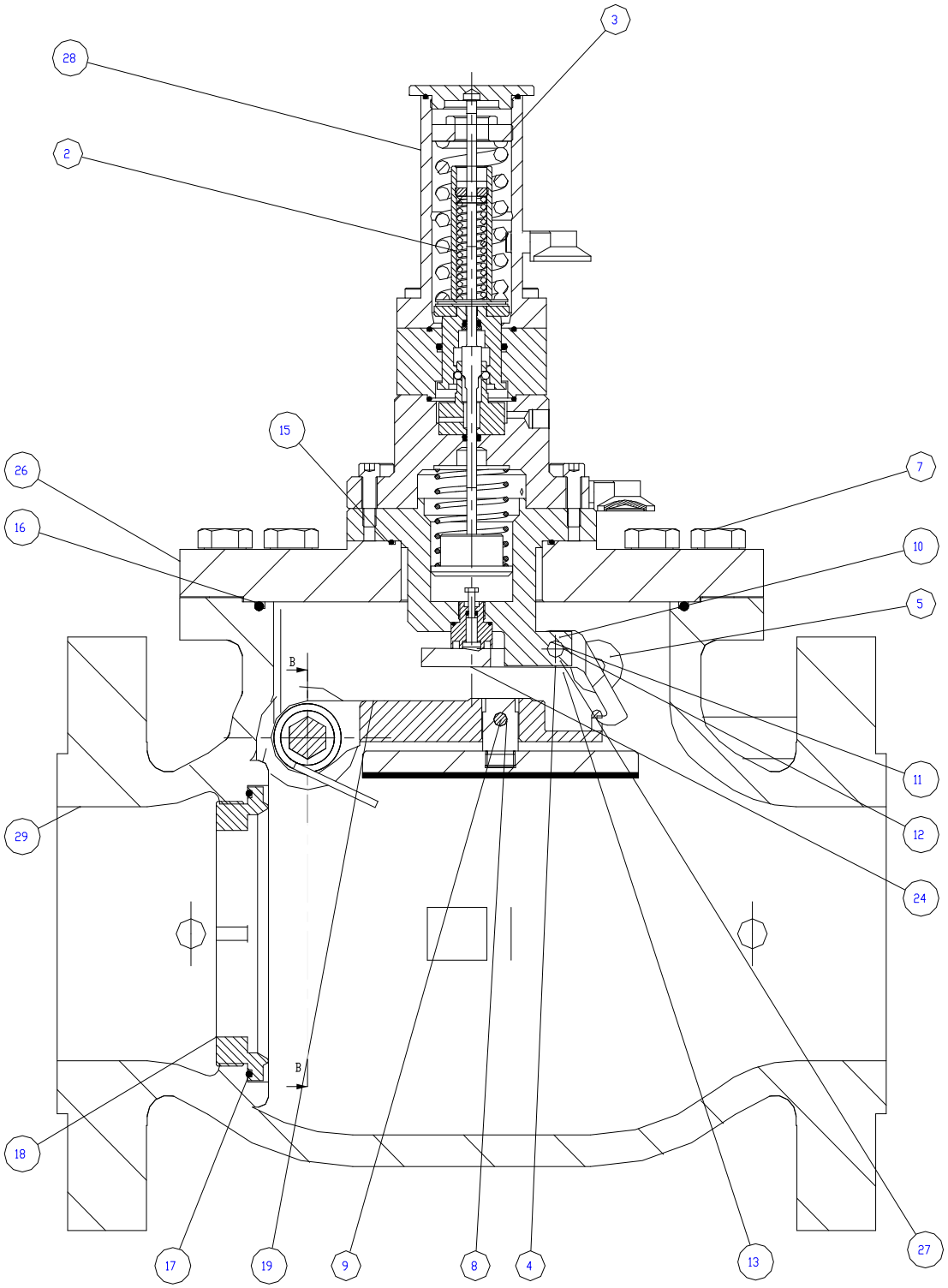




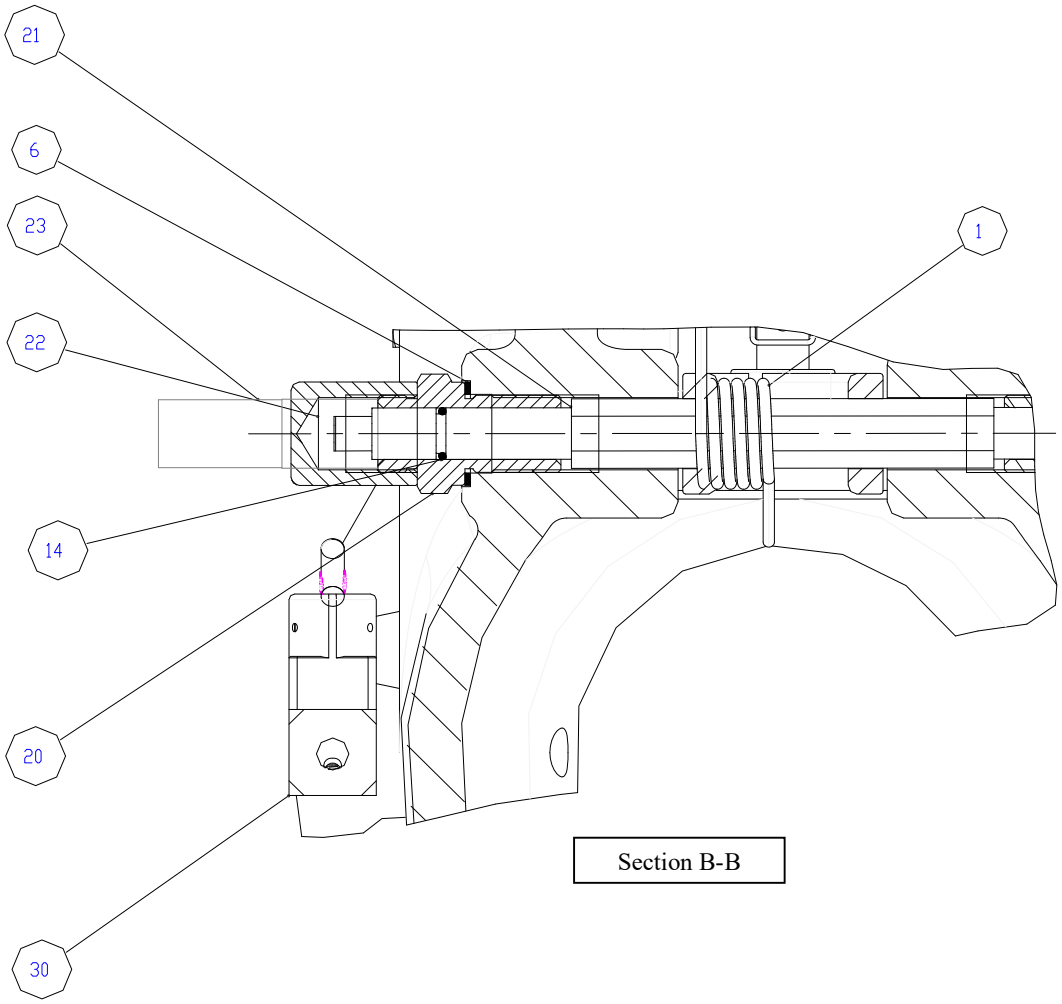
11.2.2 - GIPS-FC (H / PH) 1" – 4"- Actuator Verssion PH – Components List

Repair Kit	Position	Qtty	Description	Material
	1	1	Hammer Spring	AISI 302
	2	2	Vent ¼" NPT	-
●	3	1	O'ring – 2,62 x 69,52	Buna N
●	4	6	Sphere – 3mm	Stainless Steel
	5	6	Screw DIN 912	-
●	6	2	O'ring – 1,78 x 7,65	Buna N
●	7	1	O'ring – 1,78 x 17,17	Buna N
●	8	1	O'ring – 1,78 x 37,82	Buna N
●	9	1	O'ring – 1,78 x 20,35	Buna N
●	10	1	O'ring – 1,78 x 21,95	Buna N
	11	1	Spring Actuator	-
	12	1	Spring Guide	-
	13	1	Spring Support	-
	14	1	Spring Pressioner	-
	15	1	Piston	-
	16	1	Stem	-
	17	1	Hammer	-
	18	1	Spring Chamber Cover	-
	19	1	Intermediary	-
	20	1	Actuator Body	-
	21	1	Piston Nut	-
	22	1	Stem Guide	-
	23	1	Washer	-

11.3 - GIPS-FC (H / PH) 6" – 8"



11.3 - GIPS-FC (H / PH) 6” – 8” (Detail A-A)

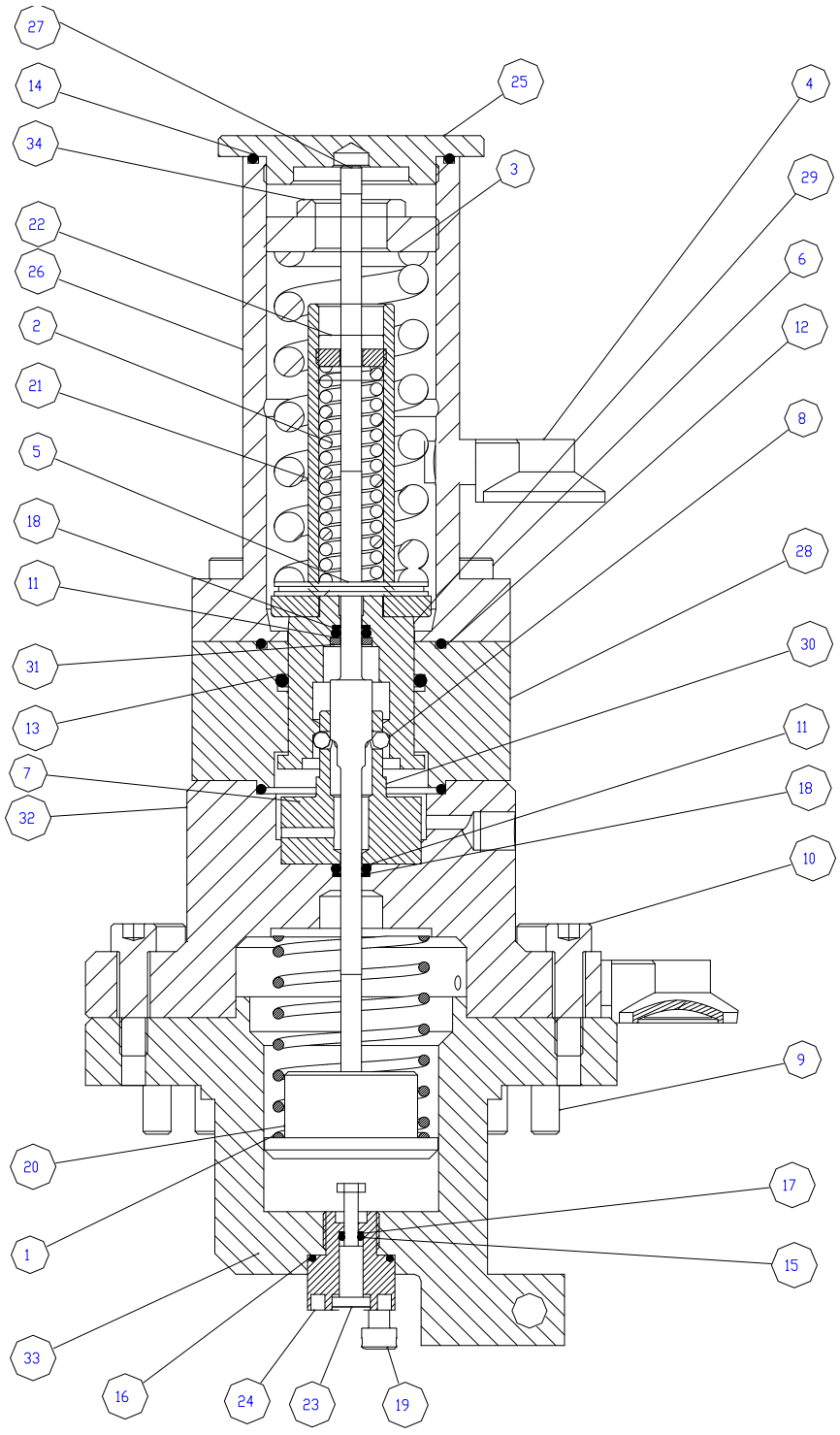


Section B-B

11.3 - GIPS-FC (H / PH) 6" – 8" – Components List

Repair Kit	Position	Qtty	Description	Material
	1	1	Obturator Spring Return	
	2	1	Under Spring Regulation	
	3	1	Over Spring Regulation	
	4	1	Spring	
	5	2	Cap ½" – NPT	
	6	2	Bush	
	7	12	Screw ¾" UNC x 2"	
	8	1	Pin	
	9	1	Obturator Fixer	
	10	2	Intermediary Body	
●	11	1	Joint	
	12	1	Pin	
●	13	1	Joint	
●	14	2	O'ring – 2,62 x 13,94	
●	15	1	O'ring – 2,62 x 94,92	
●	16	1	O'ring – 5,35 x 253,36	
	17	1	O'ring – 3,53 x 164,69	
	18	1	Seat	
	19	1	Obturator Support	
	20	2	Bush	
	21	1	Reset Stem (obturator)	
	22	2	Lever Cover	
	23	1	Reset Lever	
	24	1	Obturator Lever	
	25	1	Obturator	
	26	1	Cover	
	27	1	Bush	
	28	1	Atuator	-
	29	1	Body	ASTM A216 Gr. WCB
	30	1	By-pass	-

11.3 - GIPS-FC (H / PH) 6" – 8" – Actuator


27
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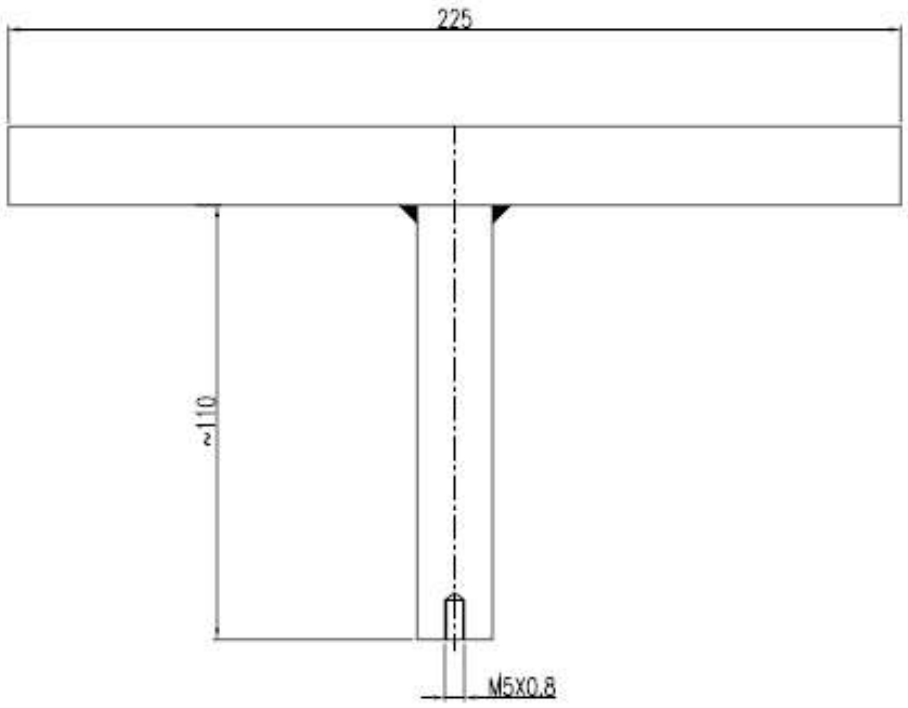
15

11.3 - GIPS-FC (H / PH) 6" – 8" – Actuator - Components List

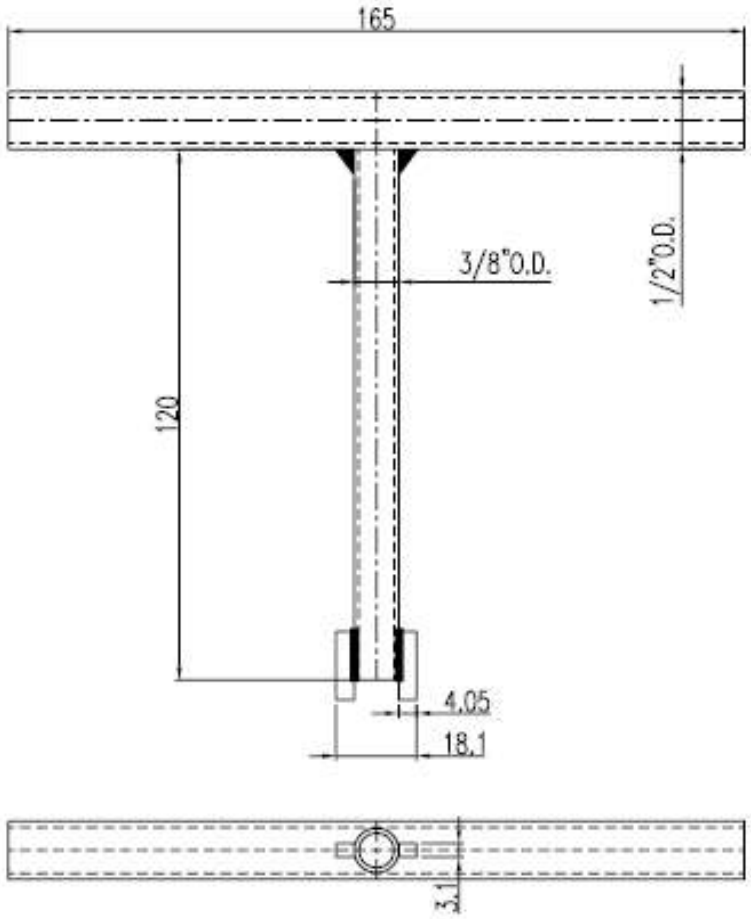
Repair Kit	Position	Qtty	Description	Material
	1	1	Piston Spring	AISI 302
	2	1	Under Regulation Spring	DIN 17223
	3	1	Over Regulation Spring	DIN 17223
	4	3	Vent ¼"	Buna N
	5	1	Limiter	-
	6	8	Screw DIN 912	ISO 3506-A2-70
	7	6	Screw DIN 912	ISO 3506-A2-70
●	8	6	Sphere	AISI 410
	9	12	Screw DIN 912	ISO 3506-A2-70
	10	12	Screw DIN 912 – M8	ISO 3506-A2-70
●	11	2	O'ring – 6,02 x 2,62	Buna N
●	12	2	O'ring – 2,62 x 48,90	Buna N
●	13	1	O'ring – 36,09 x 3,53	Buna N
●	14	1	O'ring – 2,62 x 53,64	Buna N
●	15	1	O'ring – 1,78 x 3,68	Buna N
●	16	1	O'ring – 1,78 x 20,35	Buna N
●	17	1	Parback Ring – 3,68 x 1,78	Buna N
●	18	2	Parback Ring – 6,02 x 2,62	Buna N
	19	1	Screw (special)	-
	20	1	Actuator Body	ASTM A276 TP 304
	21	1	Regulation Bush (extern)	SAE 1020
	22	1	Regulation Bush (intern)	SAE 1020
	23	1	Pin	AISI 4340
	24	1	Pin Guide	SAE 430 A/B
	25	1	Spring Chamber Cover	SAE 1020
	26	1	Spring Chamber	SAE 1020
	27	1	Stem	AISI 4340
	28	1	Intermediary	ASTM A36
	29	1	Piston	ASTM A276 TP 420
	30	1	Spheres Guide	SAE 430 A/B
	31	1	Bush	ASTM B16
	32	1	Base	ASTM A216 Gr. WCB
	33	1	Actuator Guide	ASTM A216 Gr. WCB
	34	1	Actuator Spring	SAE 430 A/B

11.4 - GIPS-FC – Tools

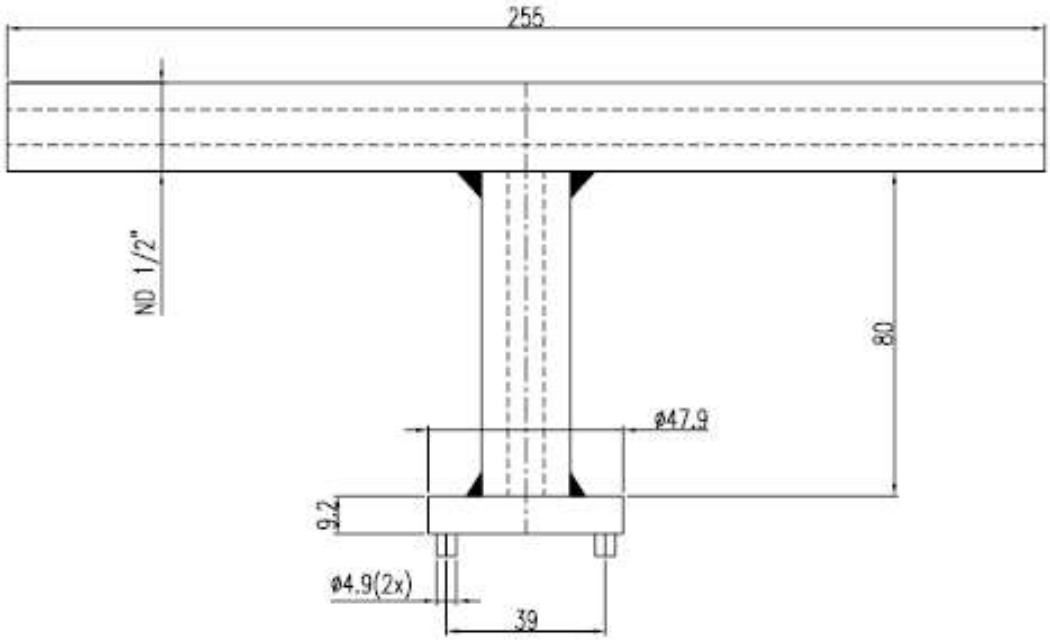
11.4.1 – Reset tool for under pressure



11.4.2 – Adjustment Tool for under pressure



11.4.3 – Adjustment Tool for high pressure


255
ND 1/2"
80
ø47.9
9.2
ø4.9(2x)
39