



CSA waterworks line

Upstream pressure relief
Rapid acting valve

Mod. GEMINA

Introduction

This manual will provide you with the information to properly install and maintain CSA Rapid reacting valves GEMINA series. The contents and the procedure are intended for technicians in charge of CSA valves only, prior to a theoretical and practical training by CSA qualified personnel only.

Safety

All safety messages in the instruction manual are flagged with the following symbol meaning danger, caution and warning. This means and makes reference to procedures that may lead to equipment and system damage and to severe injury or death for the personnel involved.



WARNING!

Personnel involved in the installation or maintenance of valves should always be alert to potential emission of water and pipeline material and take the necessary safety precautions. Always wear the suitable protection like helmets, gloves, googles, when dealing and handling hazardous pipelines and valves.

Inspection

Your valve GEMINA series has been packaged to provide protection during shipment, however it can be damaged during transport. Please carefully inspect the unit for damages or discrepancies with the order upon arrival and report a claim immediately before unloading the goods.

Parts

Recommended spare parts for each components are listed on the respective assembly drawings depicted on the following pages. These parts should be stocked to minimize delays in case of malfunction. All CSA products and spare parts can be supplied by CSA official distributors or directly from CSA. When ordering spare parts please make reference to the assembly drawing and identification plate present on the valve.

CSA Service

CSA service personnel are highly qualified to maintain and repair all CSA products, CSA also offers customized training program and consultation services.

For more information, please contact CSA or visit the web site www.csasrl.it constantly updated.

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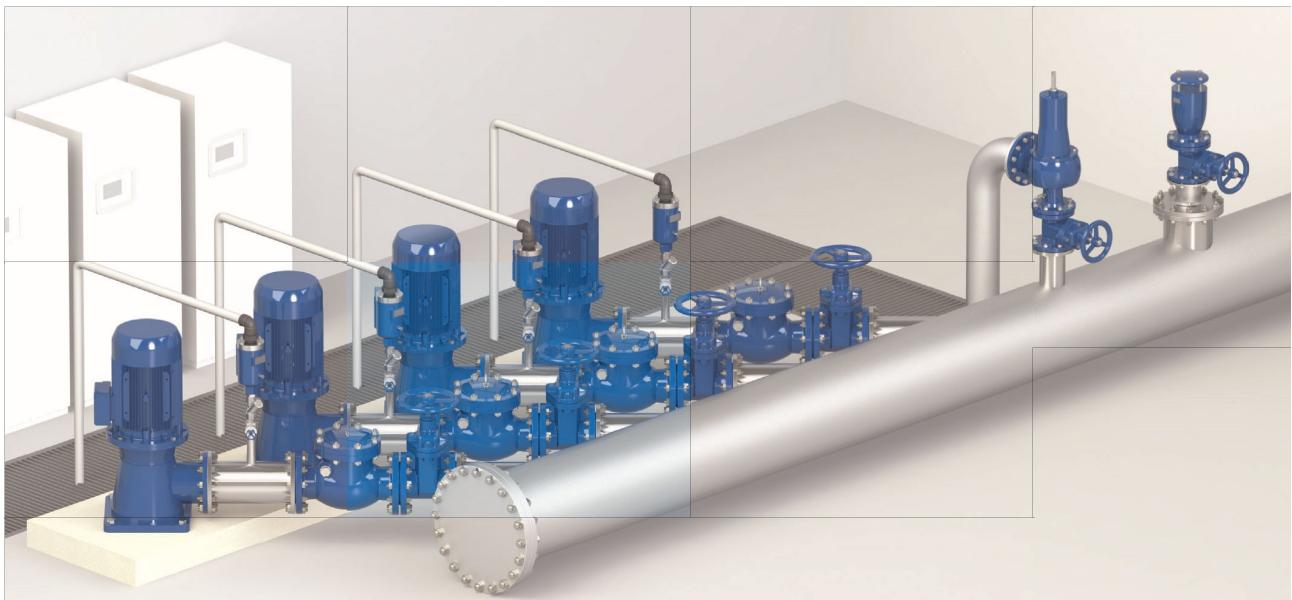
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Description

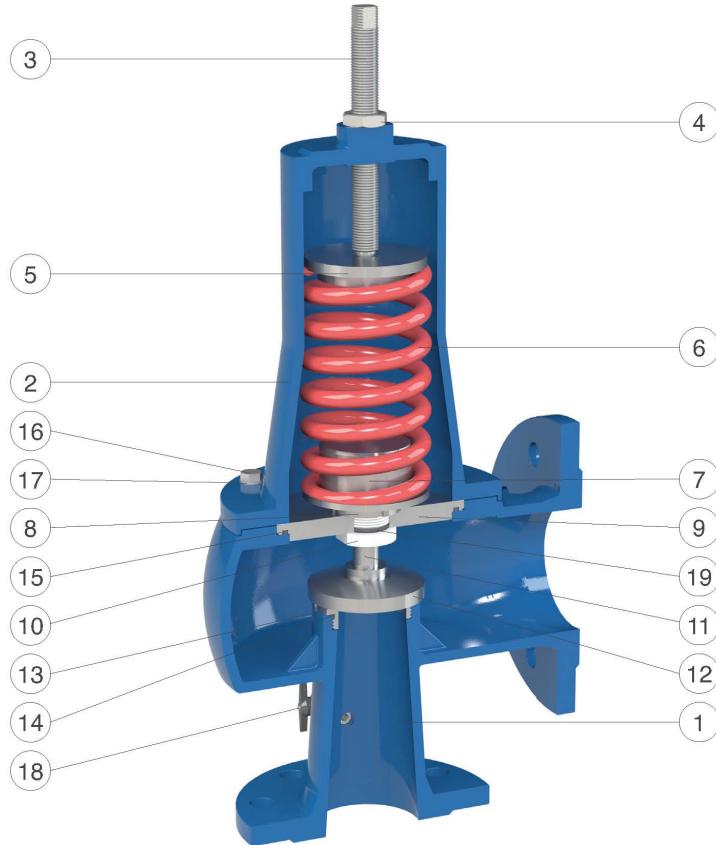
The fast-reacting valve GEMINA series which relieves the excessive upstream pressure when it rises above the pre-set and adjustable value.

The valve must be placed in derivation from the main line, downstream of pumps and check valves. A piped outlet has to be expected to discharge the excess of pressure caused by the pump failure in order to guarantee the best protection of the system.

Note to the engineer: the valve does not have any effect in protecting the system against negative pressure conditions coming from pump failures events, users is invited to send CSA pipeline profiles and consider the installation of CSA combination anti surge air valves and/or CSA anti surge tanks.

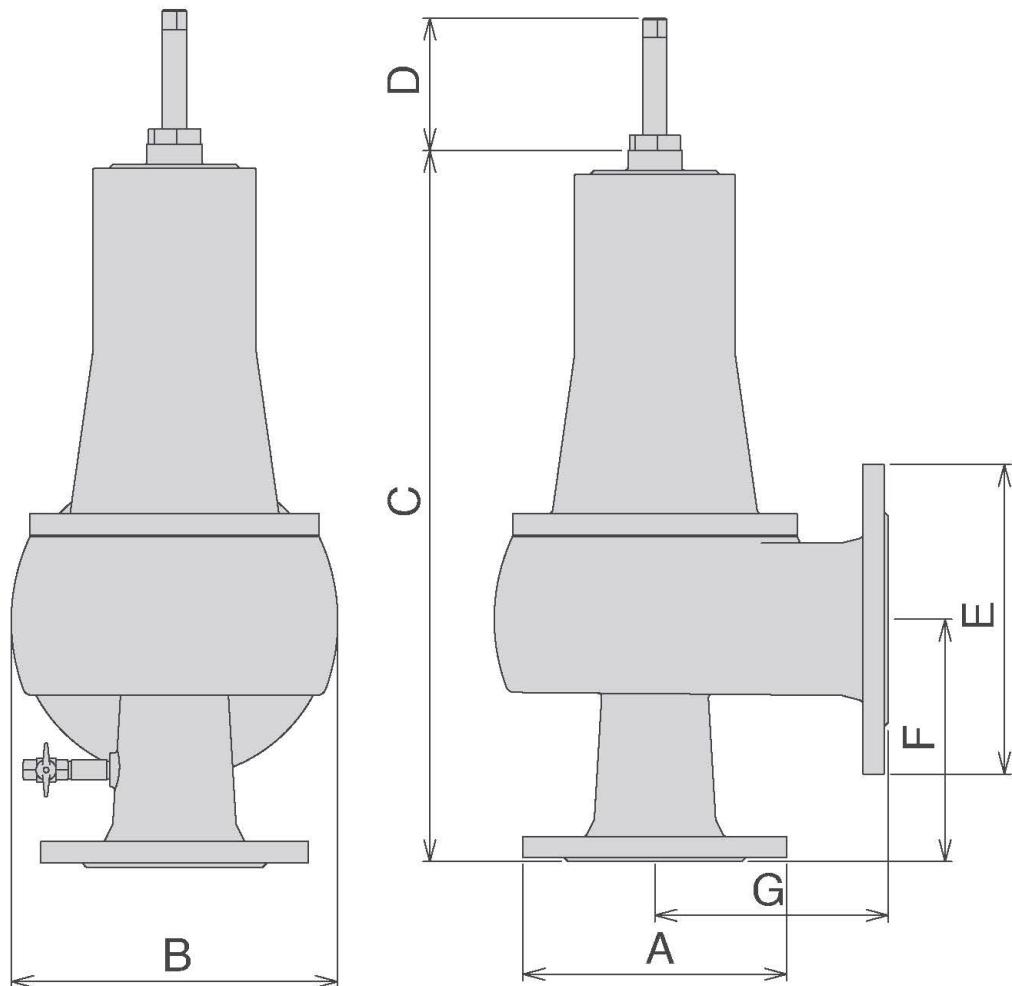


Technical details



N.	Component	Standard material	Optional
1	Body	ductile cast iron GJS 450-10	
2	Cap	ductile cast iron GJS 450-10 and painted steel	
3	Driving screw	stainless steel AISI 304	stainless steel AISI 316
4	Nut	stainless steel AISI 304	stainless steel AISI 316
5	Spring support	stainless steel AISI 303 (304 for DN 150-200)	stainless steel AISI 316
6	Spring	spring painted steel 52SiCrNi5	
7	Spring housing	stainless steel AISI 303 (304 for DN 150-200)	stainless steel AISI 316
8	Ring	stainless steel AISI 304	stainless steel AISI 316
9	Separation plate	s.s. AISI 304 (painted steel for DN 150-200)	stainless steel AISI 316
10	Driving sleeve with O-ring	Delrin (s. s. AISI 304 for DN 150-200) and NBR	
11	Shaft	stainless steel AISI 304	stainless steel AISI 316
12	Obturator with plane gasket	st. st. AISI 303 (304 for DN 150-200) and polyurethane	stainless steel AISI 316
13	Sealing seat	stainless steel AISI 304 (303 for DN 50/65)	stainless steel AISI 316
14	O-ring	NBR	EPDM/Viton
15	O-ring	NBR	EPDM/Viton
16	Screws	stainless steel AISI 304	stainless steel AISI 316
17	Washers	stainless steel AISI 304	stainless steel AISI 316
18	Ball valve 1/4"	nickel-plated brass	stainless steel AISI 316
19	O-ring	NBR	EPDM/Viton

The list of materials and components is subject to changes without notice.



Inlet DN mm	A mm	B mm	C mm	D mm	E mm	F mm	G mm	Seat DN mm	Outlet DN mm	Weight Kg
50/65	185	188	418	100	200	130	150	43,5	80	20
80	200	244	542	130	235	184	177	60	100	36
100	235	244	567	130	270	196,5	177	75	125	41
150	300	409	758	165	360	235	335	100	200	111

Values are approximate, consult CSA service for more details.

Handling and storage

Lifting the valve improperly may damage it and the equipments around. It is mandatory not to fasten the valve around the circuit, fittings, pipes, solenoids or position indicators. Valves must be lifted only by cables, chains, located around the body, through the flanges holes or eyebolts. During hoisting always consider that the center of mass depends on the circuitry and pilots installed. If installation will be delayed place the valve indoors in a secure watertight storage. Should that be unavailable use a vermin proof rain cover around the valve to keep off rain, mud, humidity. Place the valve on a solid and well drained surface base to prevent moisture, flood from reaching the body.



WARNING!

Lifting the valve in the wrong way may cause malfunctioning, emission of water spurts, injuries to the personnel and permanent damages of the valve.

Maintenance

CSA Rapid reacting valve GEMINA series have been designed with a sturdy and reliable construction to minimize servicing and possible malfunctioning. However, we recommend to inspect them at least twice per year checking the plane gasket especially for frequent usage. We recommend a thorough inspection and maintenance with complete disassembly every 4 years.

Installation (ref picture 1 on page 5)

The Rapid reaction valve GEMINA must be always installed in a vertical position. Gate valves or other sectioning devices must be installed upstream and downstream of CSA control valves to allow for maintenance.

- The operating fluid must be free of air, air valves (CSA Mod. FOX 3F AS combination anti-slam) should be installed do upstream. This to avoid the accumulation of air pockets during working conditions, allow air discharge during pipe filling and valves' commissioning.
- If not included in the order install pressure gauges upstream (and downstream if necessary), a flow measurement device is always recommended to make sure hydraulic conditions remain within the values used for sizing.
- A Y strainer with average mesh grid should be installed upstream to protect internal components from debris, particles and foreign material.
- Sufficient space should be provided around the valve for disassembly.
- Check direction of flow and make sure it is according to the marking on the valve's casting.
- Make sure the flanges and pipes connection are according to the valve's standard. The nuts and bolts setting has to be conducted in the proper way, gradual and symmetrical, in order not to produced additional stress and deformation.

Set up (ref picture 1 on page 5)

For the proper set up of GEMINA FF reader is advised to proceed as follows



WARNING!

The set up and valve regulation has to be carried out by qualified personnel only, or directly from CSA service. Improper actions can lead to permanent damages to the valve, its internal components and system equipments along with possible injuries of the people involved.



WARNING!

The difference in pressure generated by the valve during the pressure relief function will produce a thrust proportional to the pressure itself.

Anchorage blocks and way of preventing valve's movement or shifting need to be taken into account.



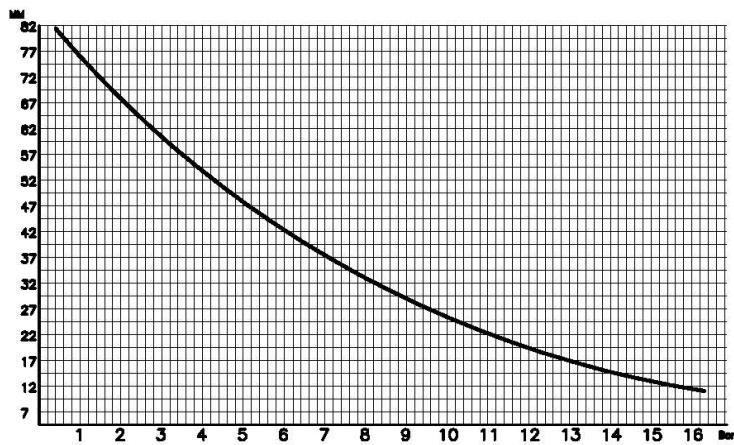
WARNING!

Regulations has to be carried out slowly to avoid unwanted pulsations and pressure surges. Failing in setting the upstream pressure relief will cause premature opening and risk of depressurization and/or absence of opening when requested with risk of damages to the system

- The valve is at first isolated from the main line with a sectioning device underneath, closed.
- The valve is provided with a male vertical threaded connection to the placed on then inlet and female threaded connection, horizontal, the outlet.
- The purpose of the valve is to discharge any excess in pressure above a preset and adjustable limit.
- The regulation screw (2) allows for the compression and decompression of the spring (4), the more it is compressed turning clockwise the higher is the opening pressure and viceversa
- The setting should be always at least 1 bar above the maximum operating value of the system
- Compress the spring (4) almost completely by acting on the screw (2) turning it clockwise
- Open the isolation device below the Gemina valve
- Read the pressure on the pressure gauge and reach the maximum operating pressure
- Read the graph below showing the correspondence between the pressure and length of the screw

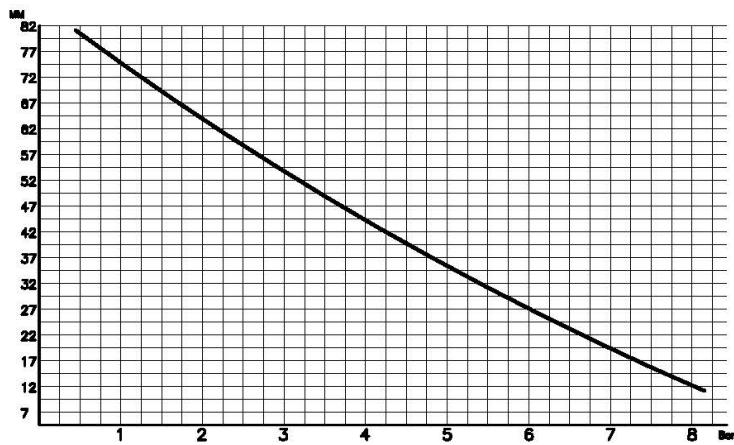
ZML02C0400

Spring Gemina 50–65 (8–16 bar)



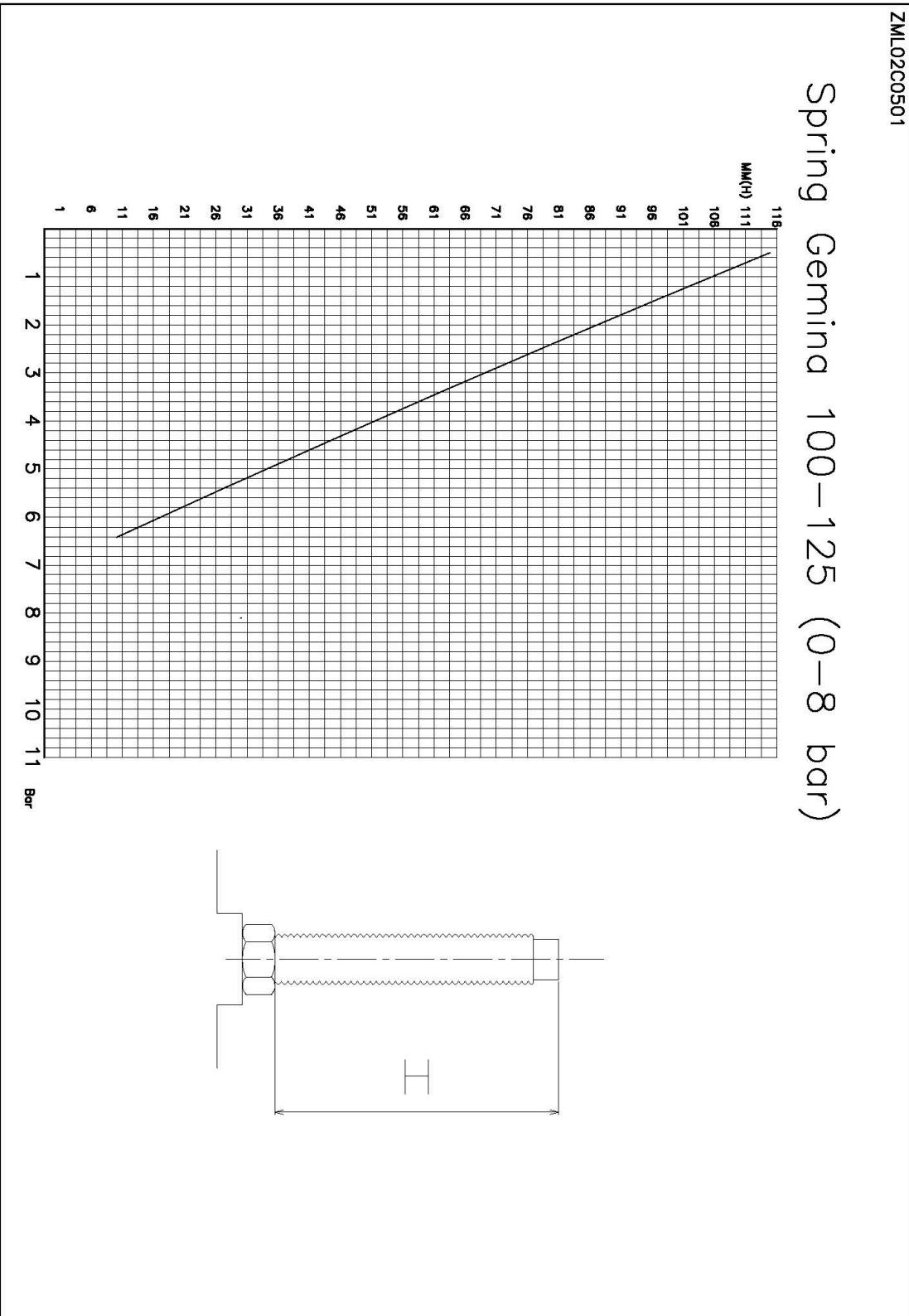
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Spring Gemina 50–65 (0–8 bar)

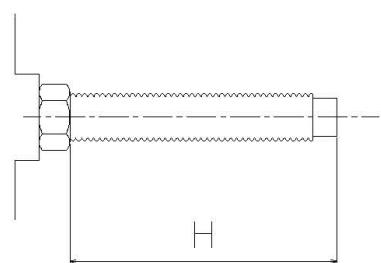
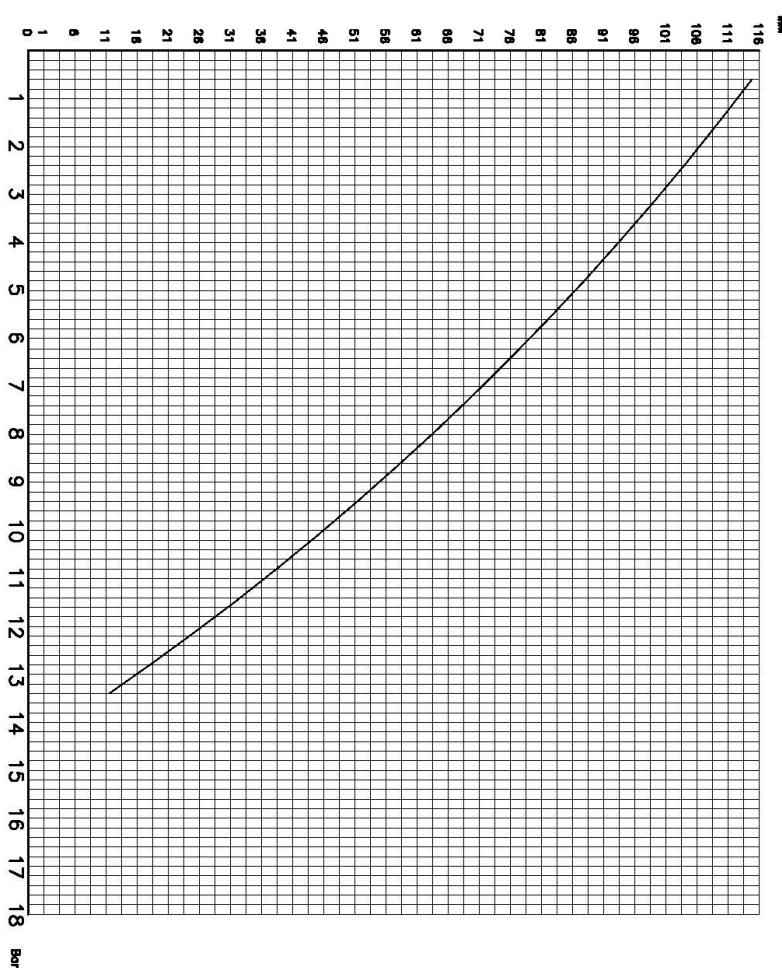


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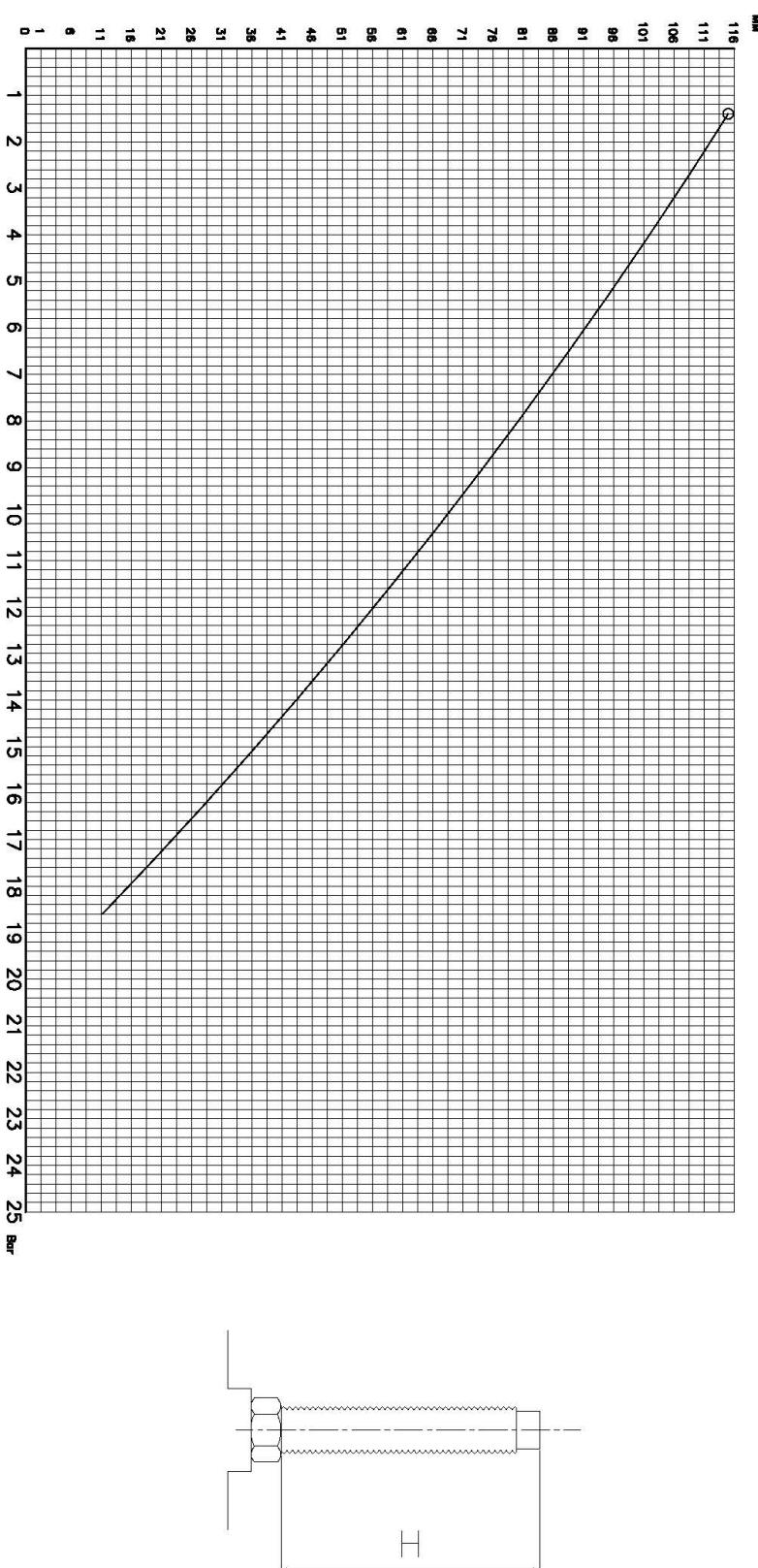
Spring Gemina 100–125 (0–8 bar)



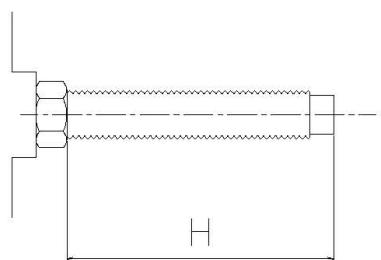
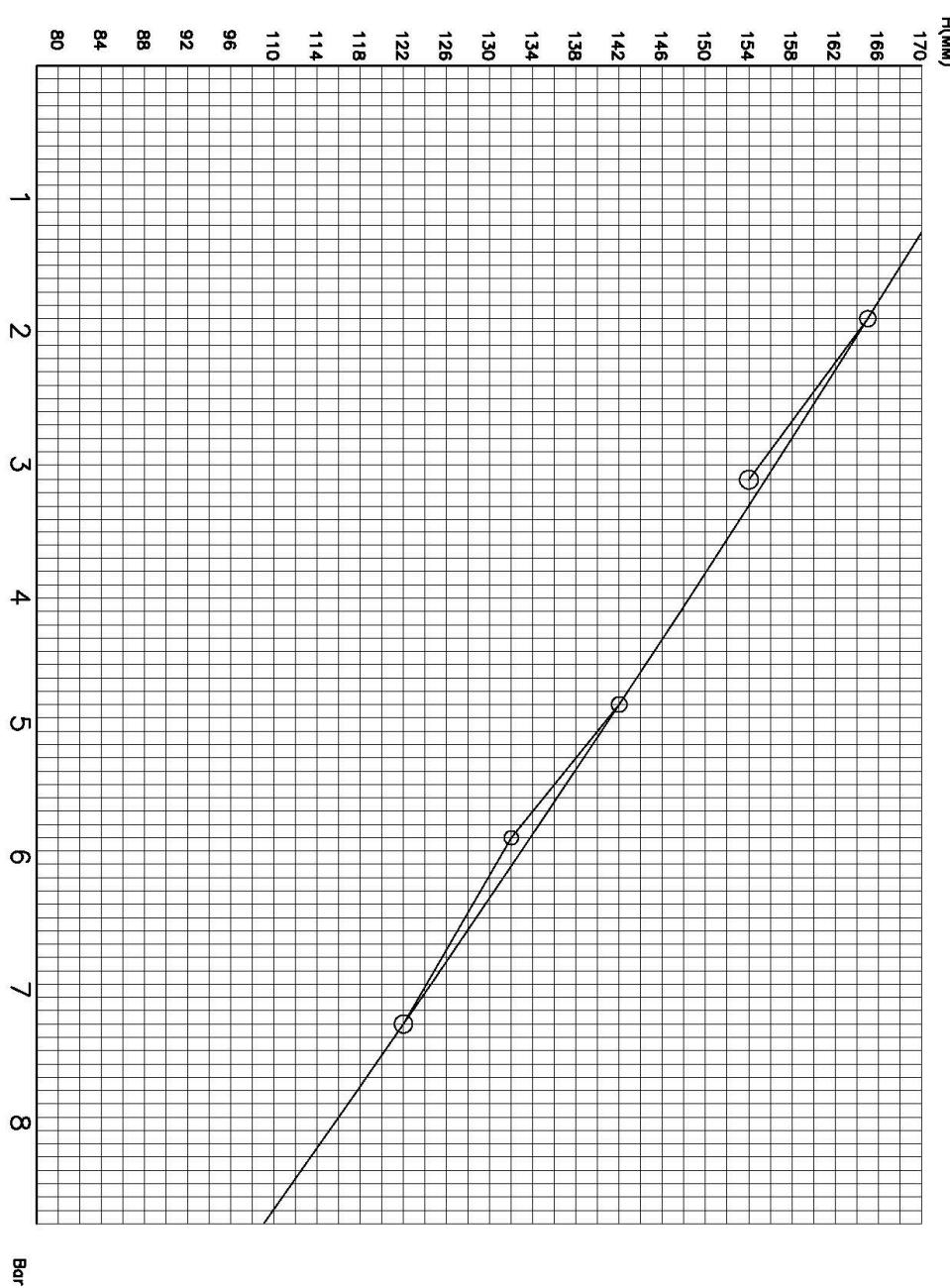
Spring Gemina 100–125 (8–16 bar)



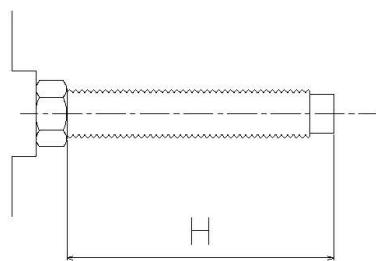
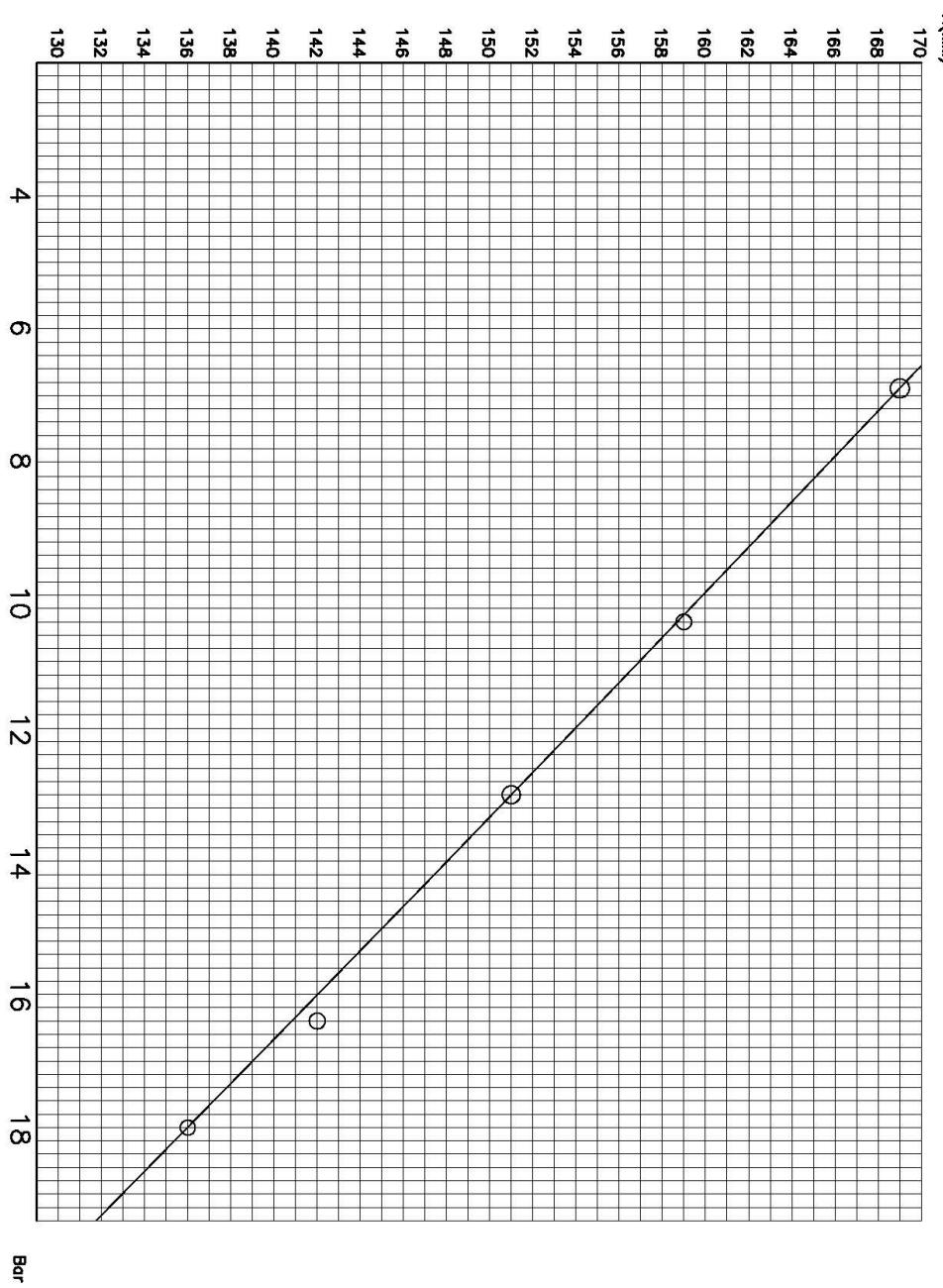
Spring Gemina 100–125 (16–25 bar)



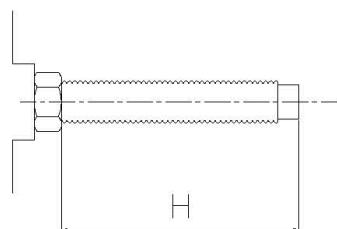
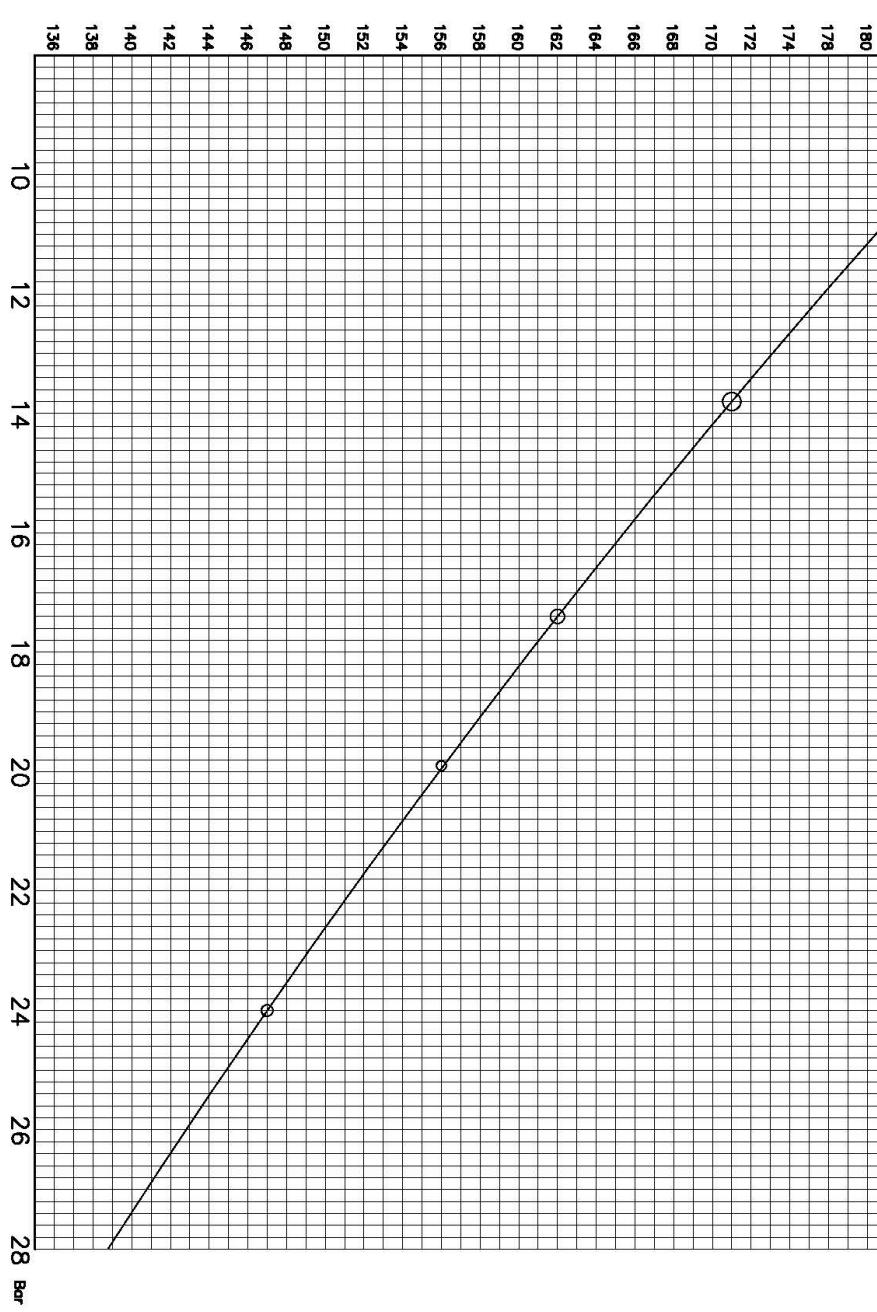
Spring Gemina 150–200 (0–8 bar)



Spring Gemina 150–200 (8–16 bar)



Spring Gemina 150–200 (16–25 bar)



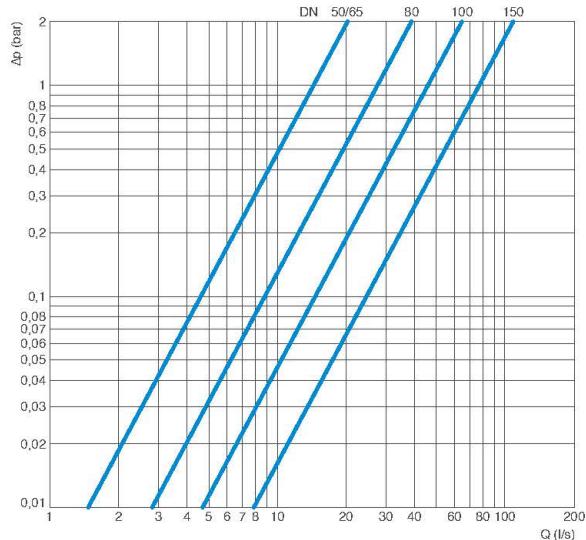
- Set the opening at least 1 bar above the maximum operating pressure

Technical data

DN (mm)	50/65	80	100	150
Kv (m ³ /h)	50	101	158	273
Stroke (mm)	17	21	23,5	35

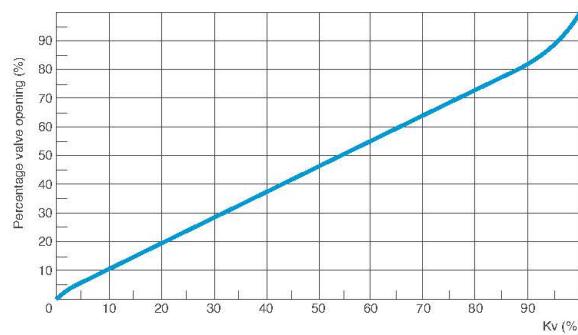
Head loss coefficient

Kv coefficient representing the flow rate which is flowing through the valve fully open, and producing a head loss of 1 bar.



Head loss chart

The chart indicates the head loss of the valves fully open versus flow rate in l/s.



Kv to valve opening chart

The chart aside shows the opening percentage of the valves versus the Kv.

Problems solving

Problem	Cause	Solution
The main valve doesn't close	The setting pressure is too low	Increase the set point
	The plane gasket is damaged	Replace the plane gasket
	The mobile block is stuck due to corrosion, deposits, cavitation	Clean the plane gasket and obturator and all components affected by deposit or corrosion
	The mobile block is stuck due to stones, pebbles, trapped inside the main body	Remove the material from the valve
	The sealing seat is ruined	Replace the sealing seat

Problem	Cause	Solution
The main valve doesn't open	The setting pressure is too high	Decrease the set point
	There is not pressure in the system	Check for pressure on the pressure gauge on the system underneath the valve
	The mobile block is stuck due to corrosion, deposits, cavitation	Clean the plane gasket and obturator and all components affected by deposit or corrosion
	The mobile block is stuck due to stones, pebbles, trapped inside the main body	Remove the material from the valve
	The isolation valve below the valve is closed	Open the isolation valve

General sales conditions

1. ORDERS AND ORDER CONFIRMATION – The Order is accepted by us and the sales contract concluded at the moment when a copy of our order confirmation indicating all conditions regulating the supply of goods is returned to us duly signed or if we receive no response within the next 48 hours, from the date of submittal of our order confirmation, as we will interpret that an approval and confirmation of the conditions and clauses hereby stated.
2. PRICES – The prices confirmed remain valid until delivery indicated by us and refer to goods which are normally ready, ex works with normal packaging included (unless stated otherwise and unless a special packaging will be needed for the supply). After the emission of the order confirmation and until the moment of product delivery, CSA srl reserves the right to change the indicated prices when cost increases of raw materials, labor, energy sources or production can be proven to have taken place and are justified.
3. TERMS OF DELIVERY – The terms of delivery, of presentation at testing and shipment, however and wherever indicated, are intended as indicative forecasts of set-up times and are to be used only as guidelines, with no commitment for our company. Eventual delays cannot therefore in any case lead to compensation for damages, to requests for fines or to the cancellation of the contract, even partially, unless those consequences have been expressly accepted by us at the moment the order was placed.
4. PACKING - Normal packaging is always included in the price. Any special packaging, expressly requested by the client, will be charged at cost. Our company provides packaging according to its experience and habits and remains explicitly exonerated from any type of responsibility for loss or damage.
5. RENDERING – Unless otherwise agreed all our sales are intended as ex works at our warehouse our loading on means of transport. The sale ex works or destination limits its effects to the inclusion into the price of shipping cost materials; said shipping consequently is performed at the buyer's risk and peril, it being understood that materials themselves are also intended in such a sale, delivered in our warehouse. Eventual agreements with shippers, including the total amount and payment of the cost of transport, are to be considered concluded and carried out on behalf of the buyer who accepts and confirms our action at this time. The nominal weights and dimensions reported in our catalogues are indicative and liable to variations without prior notice and are not considered binding in regards to CSA srl.
6. GUARANTEE – All CSA srl products conform to the standards quoted on our catalogues and successive modifications, tested individually at the plant and regularly certified are covered by guarantee for a period of one year from the date of invoice. The guarantee is limited to the substitution and to the repair free of charge of parts which compose the product and which have resulted as defective due to faults in manufacturing. See the disclaimer notice section also available on line for more information
7. DEFECTS AND COMPLAINTS – Eventual complaints regarding products which do not correspond to what is specified in our order confirmation will not be considered valid if not presented by registered letter within the maximum term of eight days after receiving the goods. This limit is extended to ninety days for the notification of hidden defects. If the complaint is prompt and well-founded, the obligation of our company is limited to the substitution of the goods which have been recognized as not consistent, in the same delivery place as per the original provision, prior return of this, excluding any right on the part of the buyer to request the cancellation of the contract and compensation for damages and reimbursement of costs sustained for any reason. The replacement of materials will not take place if the buyer does not immediately suspend the operation or use of the materials that are the object of dispute. Eventual complaints or protests do not entitle the buyer under any circumstances to suspend or delay the payments of the goods supplied.
8. DAMAGES – All CSA srl products are covered by insurance. Eventual damages caused by product malfunctioning must be reported within 24 hours with indications of the approximate amount of damages and the name of the damaged party. The imputed product and all documentation of said damage must be at the disposal of CSA and the Insurance company until the case has been closed. CSA srl disclaims every responsibility for eventual damages to people, animals or things deriving from the incorrect installation of materials supplied by CSA or in any way deriving from the use of equipment without observing the safety rules or without the prior execution of the expected controls and maintenance. In addition to possible repair, substitution or reimbursement, the buyer accepts that CSA srl will not be responsible for any loss, cost or damage of any type deriving from the product, its use, installation or substitution, marking, the maintenance pamphlet attached, the technical brochure and from any other documentation in paper or electronic form issued by CSA srl and either directly or indirectly connected to CSA srl.
9. RETURNED MATERIALS – The buyer cannot for any reason return the product without our explicit written authorization and in this affirmative case the material must be returned ex work to our plant.
10. PAYMENT – Payment of our invoices must be made within the established expiry terms. Delay of invoice payment, even if partial, puts the application of late interest rates into effect at the measure corresponding to the Prime Rate ABI increased by 4 percentage points. In case of default on the part of the buyer our company will have the right, pending every other action, to demand payment in advance of remaining provisions to settle every contract and to suspend the shipment of remaining orders also if relative to other contracts without detriment to its right to reimbursement of damages.
11. RESERVED PROPERTY – Goods are to be considered as sold on the condition of reserved property and therefore they will remain the property of CSA srl until the entire price has been paid.
12. RENUNCIATION – In addition to cases of circumstances beyond our control or others foreseen by law including state of alarm, mobilization, blockades or wars, strikes, agitations, plant occupations, closings, fires, public disaster, etc

our company has the right to renounce in part or entirely from the sales contract definitely concluded, as well as those in process, when facts and circumstances that substantially alter the state of the markets, currency value and the conditions of Italian industry occur. In these cases, in the event that our company withdraws from the contract for impediments that do not depend on its own deed or fault, the buyer will not have the right to compensation and must, if requested by our company, pay for goods which have already been prepared.

13. **DISPUTE** – Every contract is regulated by Italian law. The Court of Parma is responsible for the examination and resolution of any dispute or controversy resulting from business involving our company.

14. **DISCLAIMER NOTICE** – CSA srl products and solutions are warranted for one year from date of shipment against manufacturing defects in material and workmanship that develop in the service for which they are designed, provided the products are installed and used in accordance with all applicable instructions and limitations issued by CSA srl. Within the terms of such warranty period we will repair or replace defective material, free of charge, that is returned to our factory, transportation charges prepaid, if upon inspection, the material is found to have been defective at time of original shipment. This warranty is expressly conditioned on the purchaser's providing written notification to CSA srl immediate upon discovery of the defect.

This warranty shall not apply if the product has been altered or repaired by others, CSA srl shall make no allowance or credit for such repairs or alterations unless authorized in writing by CSA srl. The foregoing warranty is exclusive and in lieu of all other warranties and representations, whether expressed, implied, oral or written, including but not limited to any implied warranties or merchantability or fitness for a particular purpose. All such other warranties and representations are hereby cancelled.

CSA srl shall not be liable for any incidental or consequential loss, damage or expense arising directly or indirectly from the use of the product. CSA srl shall not be liable for any damages or charges for labour or expense in making repairs or adjustments to the product. CSA srl shall not be liable for any damages or charges sustained in the adaptation or use of its engineering data and services, reports, sizing provided, technical communication by any nature, movies and any kind of information which may be used for projects, engineering and installation purposes

No representative of CSA srl may change any of the foregoing or assume any additional liability or responsibility in connection with the product. The liability of CSA srl is limited to material replacements F.O.B. Salsomaggiore Terme (43039), Località Ponteghiara, Parma, Italy.

15. **LIMITATIONS OF USE / INSTALLATION AND LIMITS LIABILITY** - With the signature of the present:

A) the buyer is committed to not use in any way and/or install the products sold by CSA srl in the territory USA, Canada and Mexico.

B) the buyer is informed, that in case of use/installation of products CSA srl, also in the work of third parties, in violation of point a), CSA srl will not answer in any way of any damage also caused a third party to the products sold. If CSA srl pay the money according to the damages described here, the buyer with the signature of the present agree to refund CSA srl.

C) the buyer is informed that the insurance produced by CSA srl is not operating in the territories of the USA, Canada and Mexico states.

Sales and Service

For information about our service, approvals, certifications:

Web site: www.csasrl.it E-Mail : info@csasrl.it



CSA srl Inc. reserves the right to incorporate our latest design and material changes without notice or obligation.

Design features, materials of construction and dimensional data, as described in this manual, are provided for your information only.

Rev. 2 – 2/2021