

**"T" AND "Q"**  
PRESSURE  
RELIEF VALVE

**COMEM**®

The logo for COMEM is rendered in a bold, orange, sans-serif font. It is enclosed within a rounded rectangular border. Above the logo, a stylized orange spring graphic is depicted, consisting of several loops connected by a vertical line that extends upwards and then curves to the left.

**"T" PRESSURE RELIEF VALVE  
ACCORDING TO EN 50216-5/A2**



**125 T**



**50 T**



**125 T  
WITH CONVEYOR DUCT**

**PATENTED**

Comem "T" valves are used to control pressures inside tanks. They are used where accidental, instantaneous and uncontrolled increases in pressure may create the danger of explosion. They are designed to discharge the pressure increases that have taken place to the exterior in a very short time period (a few thousandths of a second). They are widely used in the metal tanks of oil-cooled electric transformers. Sudden and violent short circuits inside these tanks, in fact, instantly generate an enormous amount of gas with a great increase in interior pressures. If the pressure cannot discharge to the exterior there is danger that the transformer may explode, with all the possible harm and damages this may cause. This danger can be prevented by installing one or more valves with discharge sizes proportional to the volume of oil contained in the transformer. It is always good practice to install these valves in all situations where internal pressure values must not exceed specific safety limits.

### CONSTRUCTION

Our valves are totally protected against external corrosion and against penetration of foreign bodies between cover and protective cap. This ensures perfect operating efficiency even for extended periods of time.

### TYPE "T" VALVES

These consist of a flanged body and a corrosion-proof aluminium alloy disk. A brass rod that holds the spring is applied to the central part of the disk. There are two gaskets in the valve: a special shaped upper gasket and a lip seal.

When the valve is closed the upper gasket is pressed against the disk. The shape of the gasket permits a perfect seal even if the disk lifts 1-2 mm. The disk also makes a seal against the lip seal gasket as it moves upwards. If, due to interior pressure, the disk rises beyond this amount then the upper seal is no longer maintained while the lip seal remains. At this instant the surface of the washer invested by internal pressure is multiplied in area as is the total force applied on the spring. This causes total and instantaneous opening of the valve which consequently discharges excess pressures to the exterior.

When pressure has been discharged the disk, pushed back by the spring, lowers down and closes the valve. As the disk moves downwards it first closes against the side gasket and then against the upper gasket.

This latter gasket, because of its special shape, is pressed down 1-2 mm. and the disk moves further down, breaking the seal on the lip seal gasket. This releases any pressure that may have been trapped between the two gaskets. Now the valve is ready to intervene again.

### Total valve opening

Valve opening is total each time the valve operates for pressure settings between 20 and 90 kPa. The discharge opening area, for each valve operation, is equal to that for higher pressure settings even when pressure settings are lower than 20 kPa. If, however, pressures are generated inside the tank that are much higher than the setting then the spring, further compressed, allows the closing disk to create even larger discharge areas when it operates.

### Operating performance

**Nominal operating pressure:** the pre-fixed overpressure value shall be agreed between supplier and purchaser within the standard range from 20 up to 90 kPa, with 10 kPa steps, with a tolerance of - 5 kPa to + 7 kPa.

### Routine tests

It is necessary to carry on operational tests, with compressed air:

- to check the correct functioning of the device at the operating pressure value
- to check the functioning of the optic signal and of the electric contacts.

### TYPE "Q" VALVES

125 Q valves have the same operating principles as type "T" valves and, in particular, as type 125 T valves. They differ from these for their coupling flange where there are six 60° slots rather than 8 holes with a 235 mm. center to center drilling distance and a maximum diameter, including the guard, equal to 288 mm.

### INSTALLATION GUIDELINES

Our valves come in 4 sizes and have different discharge areas. This allows users to select the type that is best suited for the volume of oil contained in the tank. The following table gives guideline values:

| Volume of oil tank:         | Type of valve |
|-----------------------------|---------------|
| up to 3000 dm <sup>3</sup>  | 50 T*         |
| up to 9000 dm <sup>3</sup>  | 80 T*         |
| up to 25000 dm <sup>3</sup> | 125 T*        |
| up to 45000 dm <sup>3</sup> | 200 T*        |

\* These guideline sizes are based on experience.

We recommend using multiple valves when oil volumes exceed these levels. It is always good practice to use multiple valves with smaller discharge areas rather than a single valve with a large area. The reason for this, in the case of transformers, is that it is better to install one valve above each winding column since these are the points where maximum interior pressures are generated in case of a short circuit.

Instantaneous valve opening implies direct contact between the closing disk and oil. For this reason the valves are equipped with a screw to bleed out air that may accumulate during oil tank filling procedures.

### PRESSURE SETTINGS:

Standard pressure settings, for each type of valve, may vary from 20 to 90 kPa (approximately 0.2-0.9 Atm.).

Valves with non-standard pressure settings are manufactured on request.

### GUARD AGAINST JETS OF HOT OIL

It is good practice, to prevent harm to persons or property from violent jets of hot oil evacuating from the valve, for valve discharges to be directed towards points properly designed to receive the discharge. Our valves are furnished with a plastic protective cap for this purpose. This cap, which does not offer any impediment to the discharge, permits you to direct the discharge flow towards the point you desire.

The protection of the environment is one of the main aim which has to be pursued by any industry. In order to do this Comem has developed a new duct for safety devices type "T 50", "T 80" and "T 125". This duct allows to collect the oil drained from the valve following to an internal overpressure of the transformer.

The perfect hydraulic tightness of the system guarantees that not any drop of oil is dispersed in the environment, but carried through a pipe and then collected in a tank (not supplied). The oil duct is made of unpainted stainless steel and it is solely supplied along with the safety device.

Detailed assembling instructions are supplied with the equipment.

Please feel free to contact our Sales Dept and ask for a copy of the working test film.

### VISUAL SIGNAL THAT THE VALVE IS OPEN

Valves are equipped with a visual signal that shows when they have opened. This signal consists of a rod that protrudes from the central part of the protective cap when the valve has opened. Just press it down in order to make it go back to its normal position.

### ELECTRIC SIGNAL SWITCH

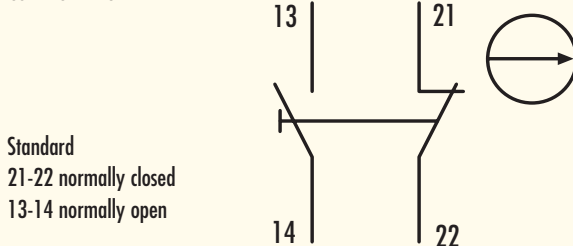
A "valve open signal" contact may be mounted on request. This is a fast tripping limit switch with switching contact contained inside a watertight casing. This contact is installed so that it acts simultaneous with the visual signal.

This switch has the following characteristics:

### SPECIFICATIONS:

| Breaking and making capacity (NO and NC contacts) |                                         |                                         |
|---------------------------------------------------|-----------------------------------------|-----------------------------------------|
| Voltage                                           | Uninterrupted current (making capacity) | Interrupted current (breaking capacity) |
| 24 VDC to 220 VDC                                 | 2 A                                     | 100 mA L/R<40 ms                        |
| 230 VAC                                           | 2 A                                     | 2 A cosφ > 0.5                          |

### CONTACT DIAGRAM

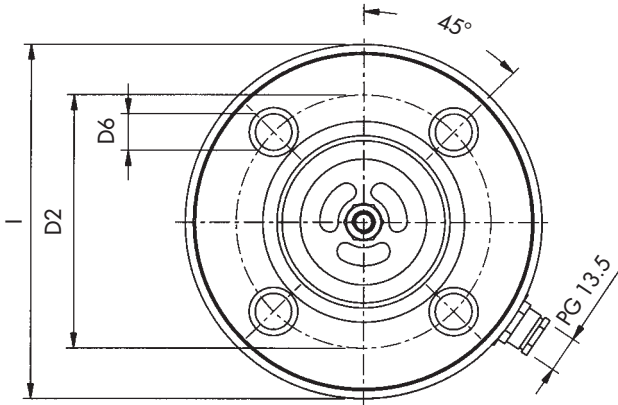


### EXTERNAL SURFACE PROTECTION

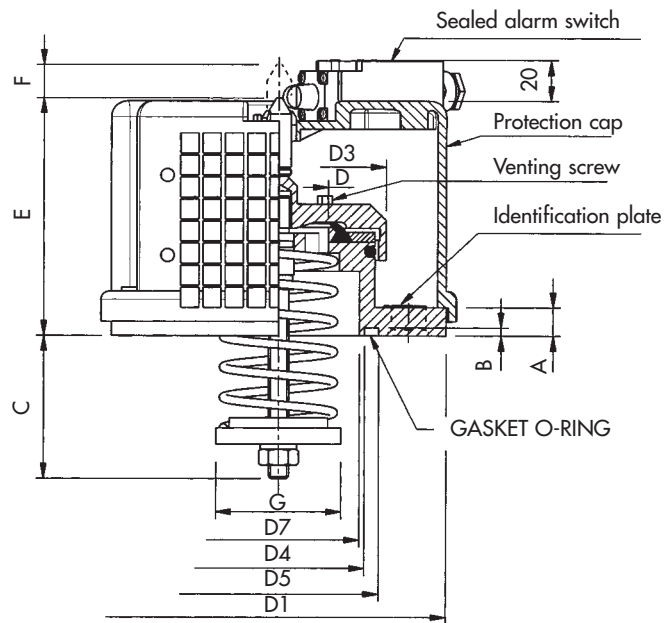
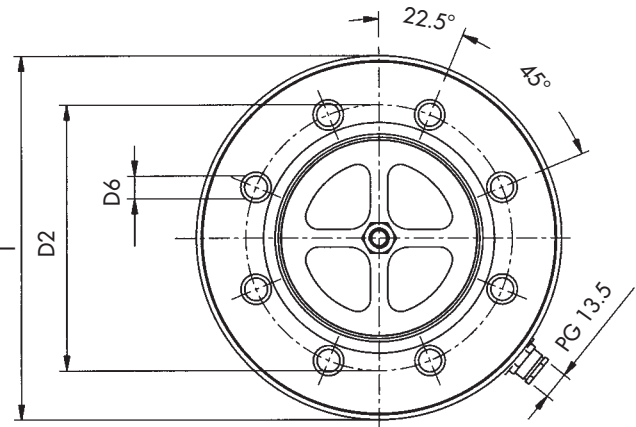
External surfaces are protected against weather corrosion. Aluminum alloy components are non-corroding and their surfaces are protected with a double layer of paint offering high level protection against all atmospheric agents and resisting temperature variations between -40 °C and +100 °C. The plastic protection cap and stainless steel screws offer further assurance of proper valve operation.

# PRESSURE RELIEF VALVE

**TYPE  
"50 ÷ 80 T"**



**TYPE  
"125 T"**

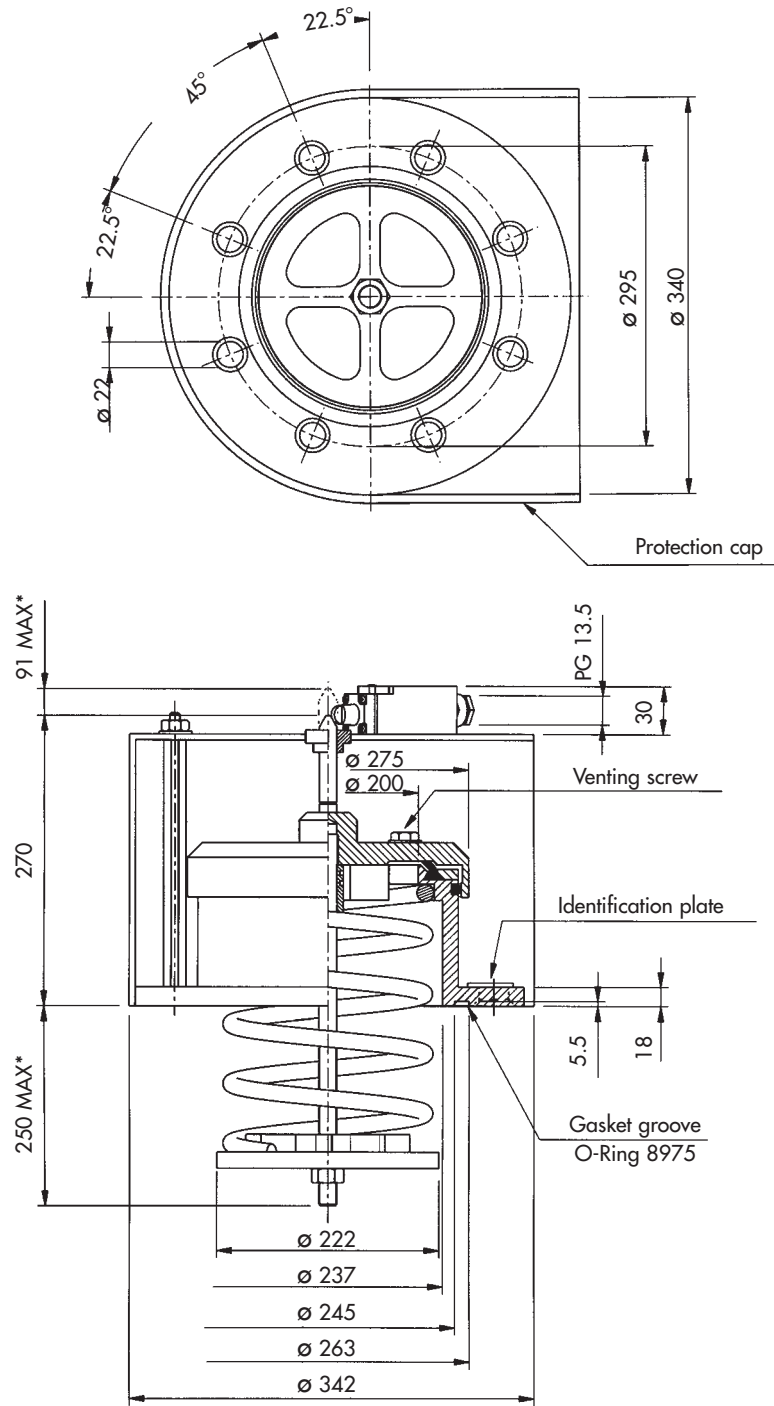


| Type  | G   | A  | D   | D <sub>1</sub> | D <sub>2</sub> | D <sub>3</sub> | D <sub>4</sub> | D <sub>5</sub> | D <sub>6</sub> | D <sub>7</sub> | B | C <sub>20KPA</sub> * | C <sub>70KPA</sub> * | E   | I   | F <sub>MAX</sub> * | O-ring | kg  |
|-------|-----|----|-----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|----------------------|----------------------|-----|-----|--------------------|--------|-----|
| 50 T  | 62  | 14 | 50  | 165            | 125            | 116            | 85             | 99             | 18             | 80             | 4 | 85                   | 45                   | 130 | 175 | 16                 | 6337   | 2.1 |
| 80 T  | 100 | 16 | 80  | 200            | 160            | 150            | 117            | 131            | 18             | 109,5          | 4 | 90                   | 50                   | 140 | 210 | 32                 | 199    | 3.8 |
| 125 T | 153 | 16 | 125 | 278            | 210            | 206            | 164            | 182            | 18             | 158            | 5 | 175                  | 80                   | 210 | 288 | 62                 | 227    | 6.7 |

\*C - F = THE DIMENSION VARIES WITH SET PRESSURE

# PRESSURE RELIEF VALVE

## TYPE "200 T"



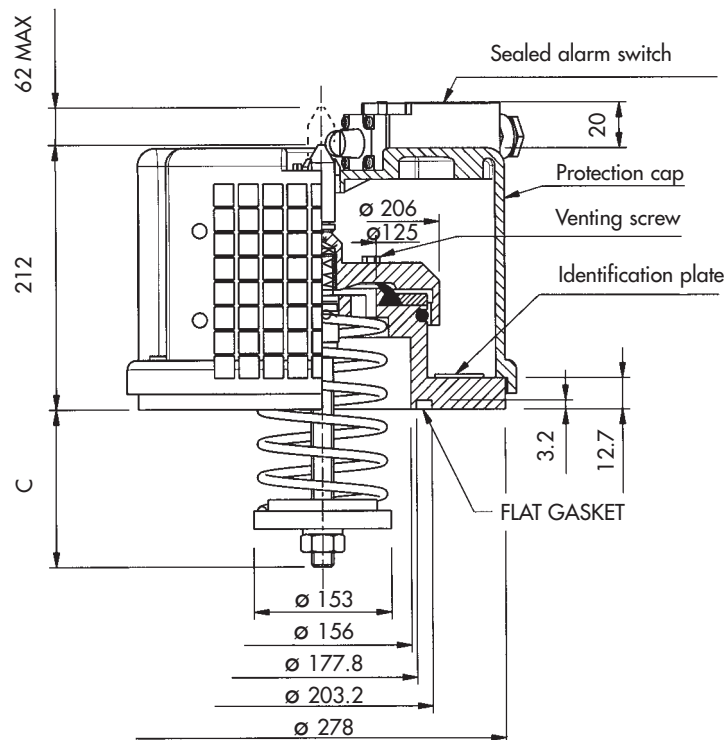
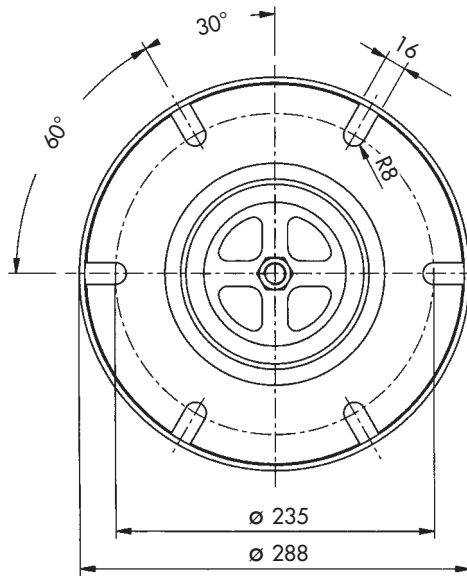
\* THIS DIMENSION VARIES WITH SET PRESSURE

Weight

kg 9.8

# PRESSURE RELIEF VALVE

## TYPE "125 Q"



Weight

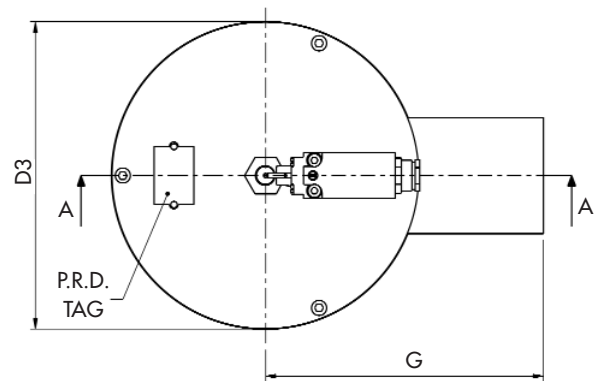
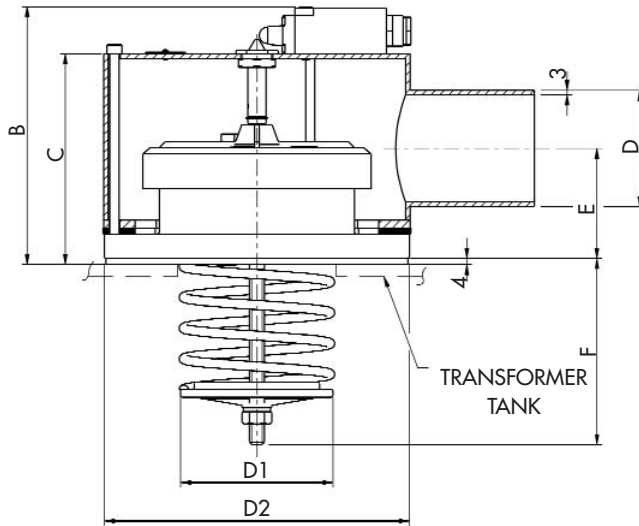
kg 7.5

| C   |      |      |       |
|-----|------|------|-------|
| mm  | 175  | 135  | 80    |
| bar | 0,20 | 0,5  | 0,70  |
| psi | 2,9  | 7,25 | 10,15 |

# PRESSURE RELIEF VALVE

## TYPE 50 T - 80 T - 125 T WITH DUCT

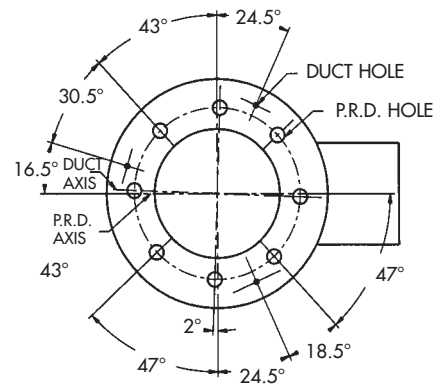
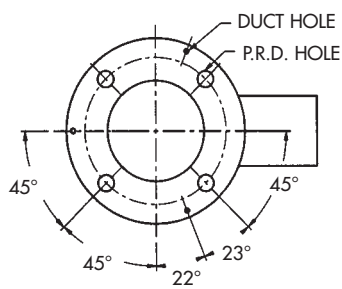
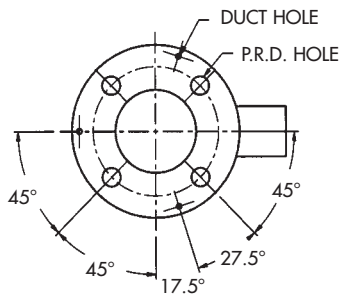
SECTION A - A



50T P.R.D.

80T P.R.D.

125T P.R.D.

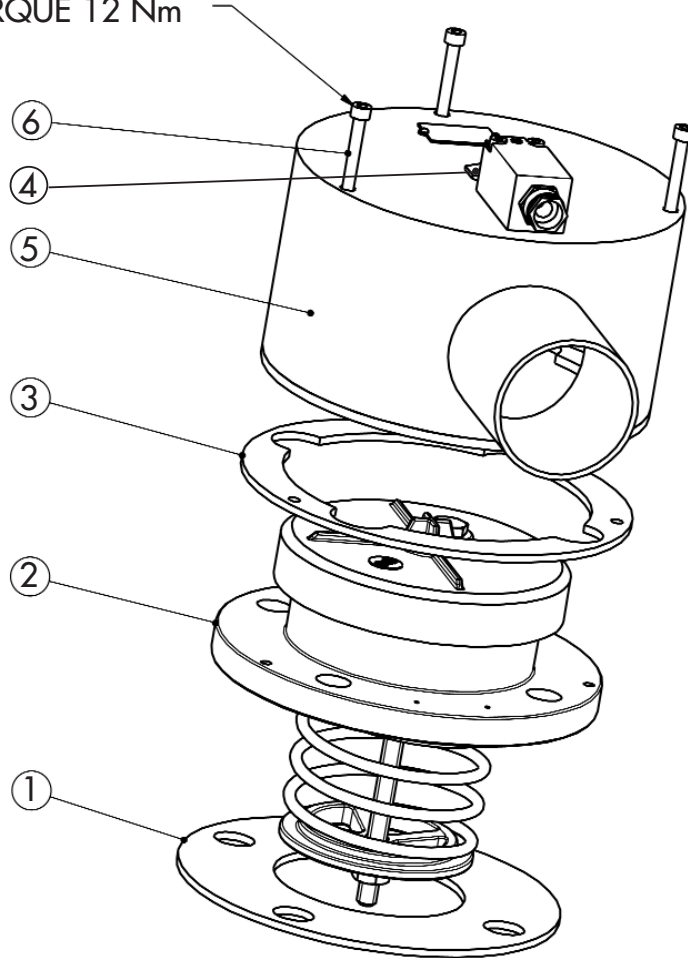


| Type  | B   | C   | D     | D1   | D2   | D3   | E    | F   | G   |
|-------|-----|-----|-------|------|------|------|------|-----|-----|
| 50 T  | 152 | 125 | ø48.3 | ø62  | ø165 | ø166 | 53.5 | 85  | 130 |
| 80 T  | 170 | 140 | ø76.1 | ø100 | ø200 | ø201 | 72   | 90  | 182 |
| 125 T | 260 | 225 | ø124  | ø153 | ø278 | ø278 | 99   | 175 | 230 |

## PRESSURE RELIEF VALVE

### 50 T - 80 T - 125 T WITH DUCT: ASSEMBLING SEQUENCE

RECOMMENDED TORQUE 12 Nm

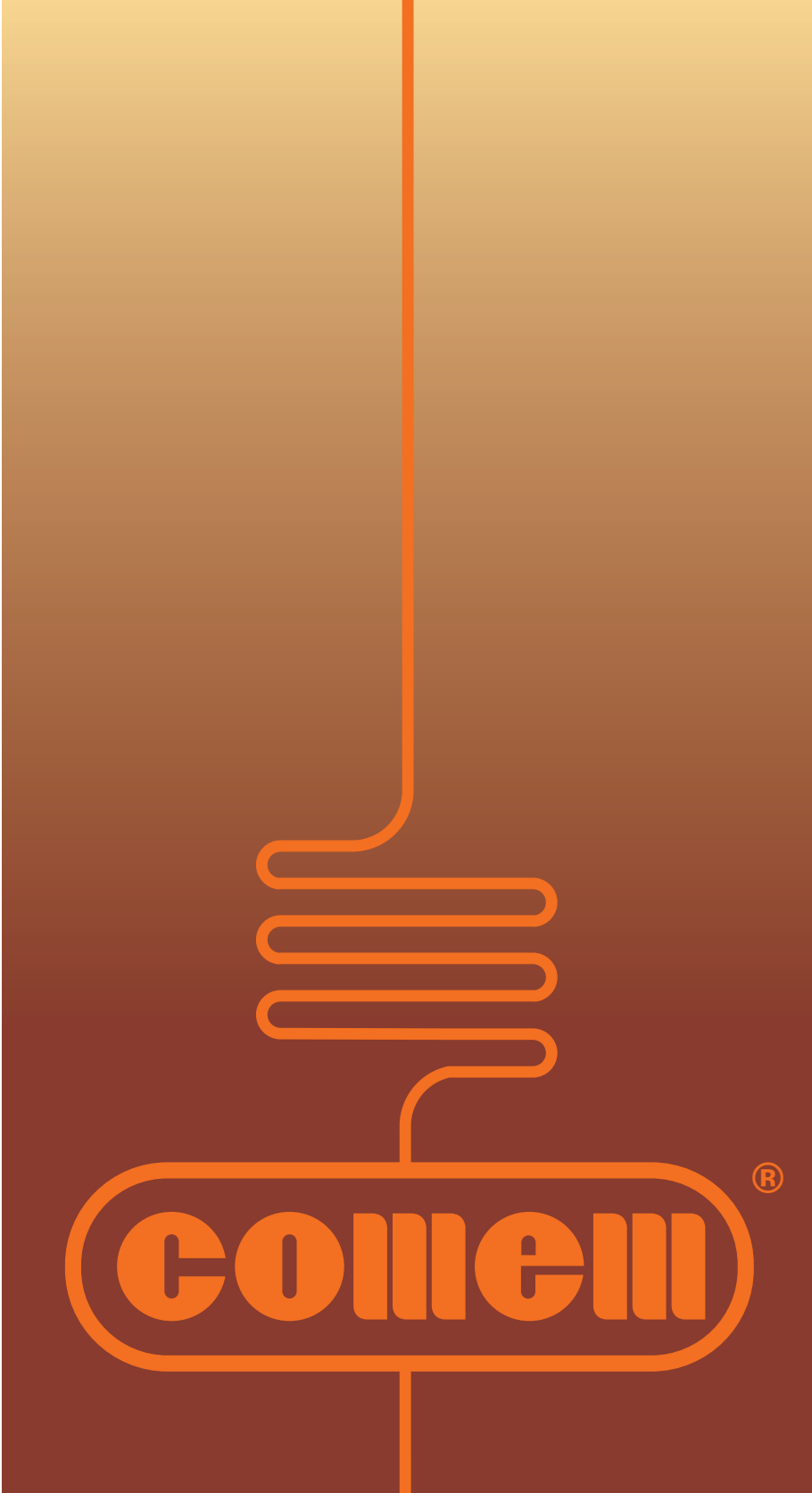


| Q. | 50T  |              | 80T                          |              | 125T                         |              |                            |
|----|------|--------------|------------------------------|--------------|------------------------------|--------------|----------------------------|
|    | CODE | DESCRIPTIONS | CODE                         | DESCRIPTIONS | CODE                         | DESCRIPTIONS |                            |
| 1  | 1    | 5COV412501   | 50T GASKET FOR TANK COVER    | 5COV412601   | 80T GASKET FOR TANK COVER    | 5COV452900   | 125T GASKET FOR TANK COVER |
| 2  | 1    | -            | 50T SAFETY VALVE             | -            | 80T SAFETY VALVE             | -            | 125T SAFETY VALVE          |
| 3  | 1    | 5COV452500   | 50T GASKET FOR DUCT          | 5COV451500   | 80T GASKET FOR DUCT          | 5COV452700   | 125T GASKET FOR DUCT       |
| 4  | 1    | 5COV455100   | VISUAL SIGNAL                | 5COV451400   | VISUAL SIGNAL                | 5COV453000   | VISUAL SIGNAL              |
| 5  | 1    | -            | 50T OIL DUCT                 | -            | 80T OIL DUCT                 | -            | 125T OIL DUCT              |
| 6  | 3    | 5V50606110   | UNI 5931 M6X110 FIXING SCREW | 5V50606130   | UNI 5931 M6X130 FIXING SCREW | 5V50606218   | M6x218 FIXING SCREW        |



## SAFETY VALVE ORDERING SHEET

|                                                                |                                                                  |                                                                                    |                                   |                                   |                                   |
|----------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| <b>SAFETY VALVE ORDERING SHEET</b>                             |                                                                  |                                                                                    |                                   |                                   |                                   |
| <b>Number of pieces</b>                                        | .....                                                            |                                                                                    |                                   |                                   |                                   |
| <b>Valve type</b>                                              | 50 T<br><input type="checkbox"/>                                 | 80 T<br><input type="checkbox"/>                                                   | 125 T<br><input type="checkbox"/> | 125 Q<br><input type="checkbox"/> | 200 T<br><input type="checkbox"/> |
| <b>Guard (plastic)</b>                                         | WITH <input type="checkbox"/>                                    |                                                                                    |                                   | WITHOUT <input type="checkbox"/>  |                                   |
| <b>Valve with conveyor duct (alternative to plastic guard)</b> | 50 T<br><input type="checkbox"/>                                 | 80 T<br><input type="checkbox"/>                                                   | 125 T<br><input type="checkbox"/> |                                   |                                   |
| <b>Contacts*</b>                                               | WITH<br><input type="checkbox"/><br><b>1</b> <b>2</b> <b>3</b>   |                                                                                    |                                   | WITHOUT <input type="checkbox"/>  |                                   |
| *If there are electric contacts, the guard is always supplied. |                                                                  |                                                                                    |                                   |                                   |                                   |
| <b>Pressure settings</b> 20÷90 kPa                             | <b>Value</b> .....<br><b>Other</b> .....                         |                                                                                    |                                   |                                   |                                   |
| <b>Applications in</b>                                         | - <b>Continental or tropical environment</b> (standard painting) |                                                                                    |                                   |                                   | <input type="checkbox"/>          |
|                                                                | - <b>Corrosive saline environment</b> (special painting)         |                                                                                    |                                   |                                   | <input type="checkbox"/>          |
|                                                                | - <b>Other</b> .....                                             |                                                                                    |                                   |                                   | <input type="checkbox"/>          |
| <b>Joint type</b>                                              | <b>VITON</b> <input type="checkbox"/>                            | - used with silicone oils and/or at high temperatures (temp. -10 °C up to +150 °C) |                                   |                                   |                                   |
|                                                                | <b>NBR -40 °C</b> <input type="checkbox"/>                       | - used with mineral oils and at low temperatures (temp. -40 °C up to +120 °C)      |                                   |                                   |                                   |



**comem<sup>®</sup>** - S.p.A

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