A Member of the
COLFAX PUMP GROUP

# Bypass Valve
## Type

# GA

**GA 1102 GB**

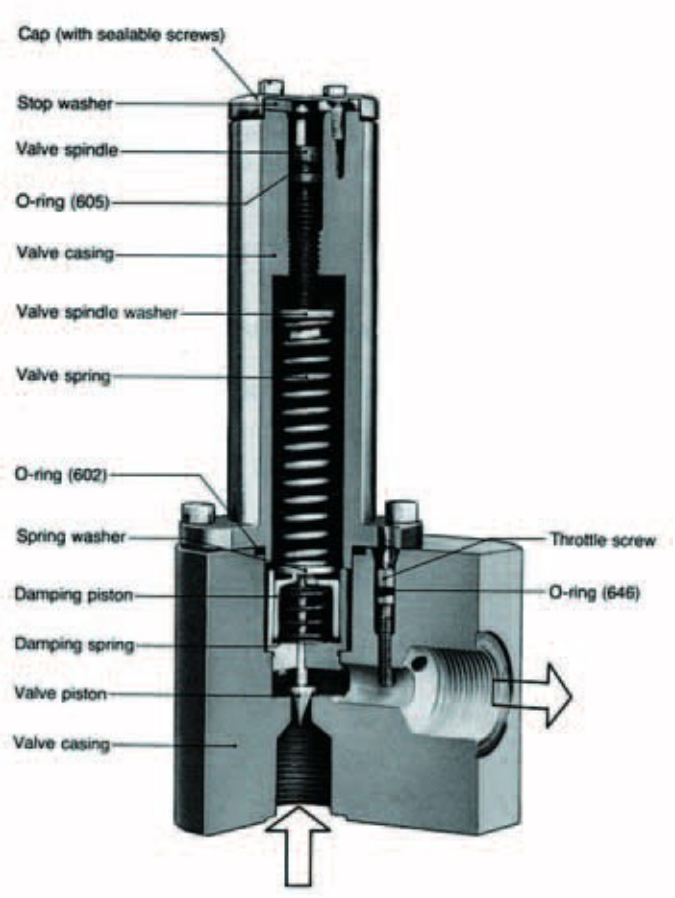
Max pressure: 10 MPa
Max flowrate: 15 dm³/s (900 l/min)

## APPLICATIONS

Bypass valve type GA is intended for use as a pressure-relief valve in hydraulic systems, oil circulation circuits, oil firing systems, etc.
The valve is intended for mineral oils and liquids with similar properties and must not be used for water, steam, corrosive liquids or the like.

## MODE OF FUNCTION

Bypass valve type GA is direct-acting and is distinguished by its high speed during the opening process, enabling pressure surges in the event of sudden changes in volumetric flow to be kept at a low level.
The valve features a built-in, automatically acting hydraulic pressure compensation device which endeavours to keep the pressure rise as small as possible within the flow rate range area specified for the valve (cf. pressure rise in response to increasing flow for a purely spring-loaded valve) During the closing process, the pressure largely coincides with the pressure during the opening process. For fine adjustment of the valve characteristics, the valve is provided with a throttling screw at the outlet which, upon delivery, is factory set and which does not usually require subsequent adjustment.




## VERSIONS

The bypass valve type GA is available in the following versions:
**GAR** with valve casing for threaded pipe connections
**GAS** with valve casing for SAE-flanged pipe connections
**GAD** with valve casing for DIN-flanged pipe connection

## MATERIAL

| | |
|---|---|
| **Valve casing** | - steel for types GAR and GAS |
| | - nodular iron for type GAD |
| **Spring casing** | - steel for sizes 012, 015, 020, 034 |
| | - nodular iron for sizes 025, 040, 065, 100, 112 |
| **O-rings** | - Viton rubber |
| **Other parts** | - steel |

## Model Code

**Valve series** — G A

**M** **o** **d** **e** **l**

R = Threaded pipe connections
S = SAE-flanged pipe connections
D = DIN-flanged pipe connections

**Size** (size code according to type specification overleaf)

**Design specification** (upon deviation from standard design - 0 indicates standard design)

**Design modification** (1 - indicates original design)

**Valve spring** (code according to type specification overleaf)
or
**Special variant** (max. opening pressure determined by the variant)

**Example:** GAS 04001 T040, valve with SAE-flanged connections dia. 40 mm in standard design with spring for max. 4.0 MPa opening pressure.

# INSTALLATION

A bypass valve is to be installed in the outlet line as close as possible to the unit which is to be protected against excessively high pressure by the valve. No components liable to block the flow and prevent the valve from releasing liquid when the opening pressure has been attained may be installed in the return line from the valve. Overflowing liquid should be returned to tank enabling the heat evolved in overflowing to be distributed among the largest possible liquid volume. Bypass valve type GA may be mounted in any position. In order for the damping device incorporated in the valve to function satisfactorily, the valve must, however, be entirely filled with liquid. It is therefore appropriate for the valve to be fitted so that the liquid is not emptied out of it when it is no longer in action. The tightness of the system may not be hydrostatic pressure tested with water; this involves a risk of residual water which gives rise to corrosion damage and may cause freezing damage when the valve is installed in outdoor plants during the winter season. A bypass valve may not be overloaded by connection to pumps or other units (eg accumulators, vertical weight loaded piston movements, etc.) which may evolve a larger volume of liquid than the specified maximum nominal volumetric flow for the valve. In the event of overcapacity, maintenance of pressure will be uncontrolled and a powerful lowering or raising of the pressure, depending on the circumstances, may result.

If long supply and return lines are connected to a bypass-valve, the result of controlling may be influenced by the frictional losses caused by the flow of the liquid in these lines. In accurate pressure control, it is therefore necessary for the diameter of the piping to be chosen in view of this. More detailed directions can be obtained from your IMO AB representative.

# TYPE SPECIFICATION

**Type GAR - valve with threaded pipe connections**

| Connection size | Ordering code Type | Size | Valve spring | Nominal pressure setting range MPa | Max. nominal flow rate l/s | l/min. |
|---|---|---|---|---|---|---|
| R 1/2" | GAR | 012 | T008 | 0.2 - 0.8 | 0.25 | 15 |
| | | | T040 | 0.6 - 4.0 | 0.42 | 25 |
| | | | T075 | 1.5 - 7.5 | 0.42 | 25 |
| | | | T100 | 3.0 - 10 | 0.42 | 25 |
| R 3/4" | GAR | 034 | T008 | 0.2 - 0.8 | 0.58 | 35 |
| | | | T040 | 0.6 - 4.0 | 1.25 | 75 |
| | | | T075 | 1.5 - 7.5 | 1.25 | 75 |
| | | | T100 | 3.0 - 10 | 1.25 | 75 |
| R 1" | GAR | 100 | T008 | 0.2 - 0.8 | 1.25 | 75 |
| | | | T040 | 0.6 - 4.0 | 2.50 | 150 |
| | | | T075 | 1.5 - 7.5 | 2.50 | 150 |
| | | | T100 | 3.0 - 10 | 2.50 | 150 |
| R 1 1/2" | GAR | 112 | T008 | 0.2 - 0.8 | 2.50 | 150 |
| | | | T040 | 0.6 - 4.0 | 5.00 | 300 |
| | | | T075 | 1.5 - 7.5 | 5.00 | 300 |
| | | | T100 | 3.0 - 10 | 5.00 | 300 |

**Types GAS and GAD - valves with flanged pipe connections**

| Connection size | Ordering code Type | Size | Valve spring | Nominal pressure setting range MPa | Max. nominal flow rate l/s | l/min. |
|---|---|---|---|---|---|---|
| 13 mm | GAS | 015 | T008 | 0.2 - 0.8 | 0.25 | 15 |
| | | | T040 | 0.6 - 4.0 | 0.42 | 25 |
| | | | T075 | 1.5 - 7.5 | 0.42 | 25 |
| | | | T100 | 3.0 - 10 | 0.42 | 25 |
| 20 mm | GAS | 020 | T008 | 0.2 - 0.8 | 0.58 | 35 |
| | | | T040 | 0.6 - 4.0 | 1.25 | 75 |
| | | | T075 | 1.5 - 7.5 | 1.25 | 75 |
| | | | T100 | 3.0 - 10 | 1.25 | 75 |
| 25 mm | GAS | 025 | T008 | 0.2 - 0.8 | 1.25 | 75 |
| | | | T040 | 0.6 - 4.0 | 2.50 | 150 |
| | | | T075 | 1.5 - 7.5 | 2.50 | 150 |
| | | | T100 | 3.0 - 10 | 2.50 | 150 |
| 40 mm | GAS | 040 | T008 | 0.2 - 0.8 | 2.50 | 150 |
| | | | T040 | 0.6 - 4.0 | 5.00 | 300 |
| | | | T075 | 1.5 - 7.5 | 5.00 | 300 |
| | | | T100 | 3.0 - 10 | 5.00 | 300 |
| 65 mm | GAD | 065* | T008 | 0.2 - 0.8 | 7.50 | 450 |
| | | | T040 | 0.6 - 4.0 | 15.0 | 900 |
| | | | T075 | 1.5 - 7.5 | 15.0 | 900 |
| | | | T100 | 3.0 - 10 | 15.0 | 900 |

* Valve GAD 06501 is identical to the valve previously designated GAD 60 mm S7B.

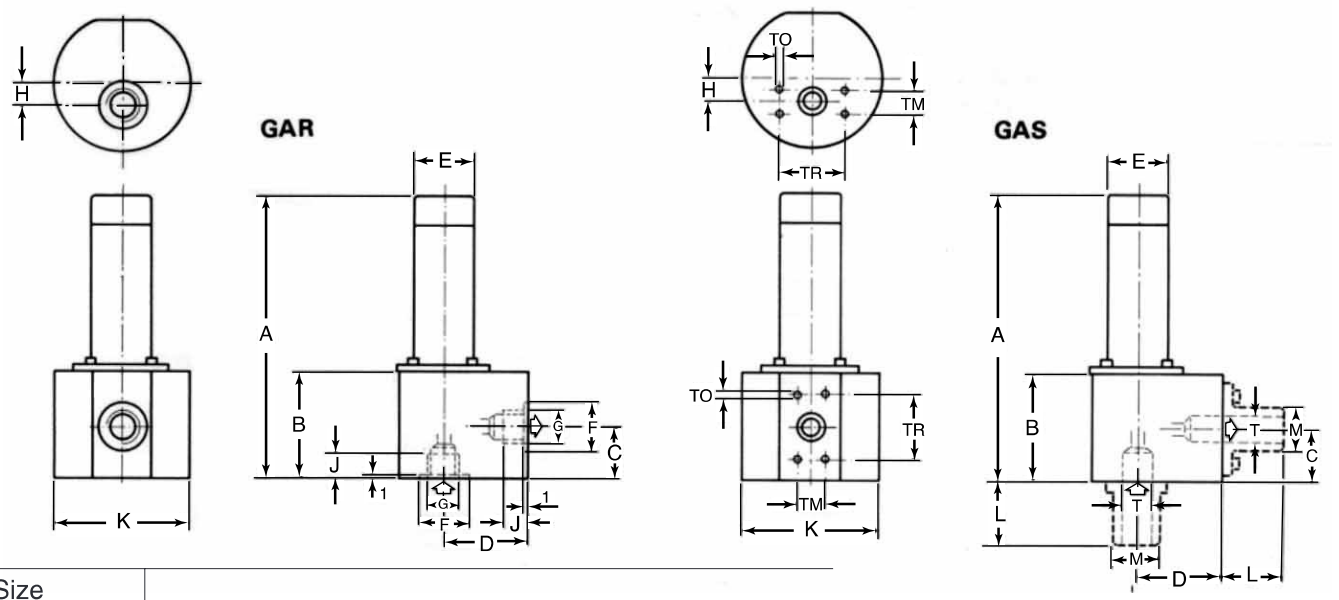
**Recommended set pressure:** 10 % above system working pressure.

**Viscosity range:** 2 - 400 $mm^2/s$

**Tempsrature range:** - 20 °C to + 90 °C (with O-rings of Nitrile rubber)
- 20 °C to + 150 °C (with O-rings in Viton)

# DIMENSIONS FOR VALVE TYPES GAR, GAS AND GAD

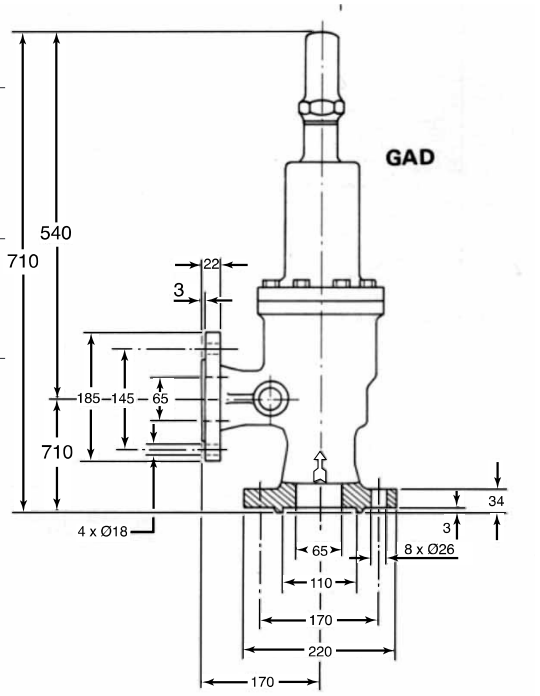
Dimensions in mm



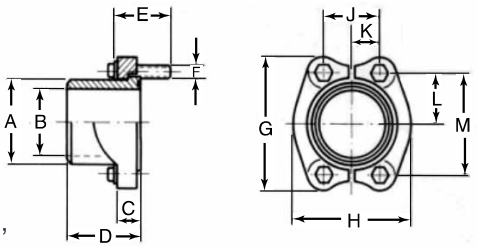

| Size | | | | | | |
|---|---|---|---|---|---|---|
| GAR | | 012 | 034 | 100 | 112 | – |
| GAS | | 015 | 020 | 025 | 040 | – |
| GAD | | – | – | – | – | 65 |
| Connection diameter | | | | | | |
| GAR | G | R 1/2" | R 3/4" | R 1" | R 1 1/2" | – |
| GAS | T | 13 | 20 | 25 | 40 | – |
| GAD | | – | – | – | – | 65 |
| Size counter-flange for GAS | | 1/2" | 3/4" | 1" | 1 1 /2" | – |
| A | | 172 | 214 | 259 | 373 | Dimensions as per dimension drawing |
| B | | 66 | 80 | 96 | 136 | |
| C | | 33 | 40 | 45 | 63 | |
| D | | 58* | 64* | 79 | 107 | |
| E | | 45 | 45 | 58 | 80 | |
| F | | 29 | 36 | 44 | 60 | |
| H | | 17 | 17.5 | 23 | 29.5 | |
| J | | 14 | 17 | 18 | 22 | |
| K | | 90 | 103 | 74** | 100** | |
| L | | 40 | 40 | 45 | 50 | |
| M | | 19 | 27 | 38 | 50 | |
| TM | | 17.2 | 22.4 | 26.2 | 35.8 | |
| TO | | M8 | M10 | M10 | M12 | |
| | Depth | 15 | 23 | 23 | 27 | |
| TR | | 38 | 47.8 | 52.4 | 69.8 | |
| Weight, kg approx | | 3.9 | 6.0 | 8.8 | 20 | 45 |

* Valve GAS 015 has D = 52 mm and valve GAS 020 has D = 61 mm.

** Circular body (dia.185 mm) planed on two sides to reduce weight.




Flanges according to DIN 2548 (pressure side) and DIN 2543 (delivery side)
Counter-flanges according to DIN 2637/2513 (pressure side) and DIN 2633 (delivery side)
Installation dimensions according to DIN 3202



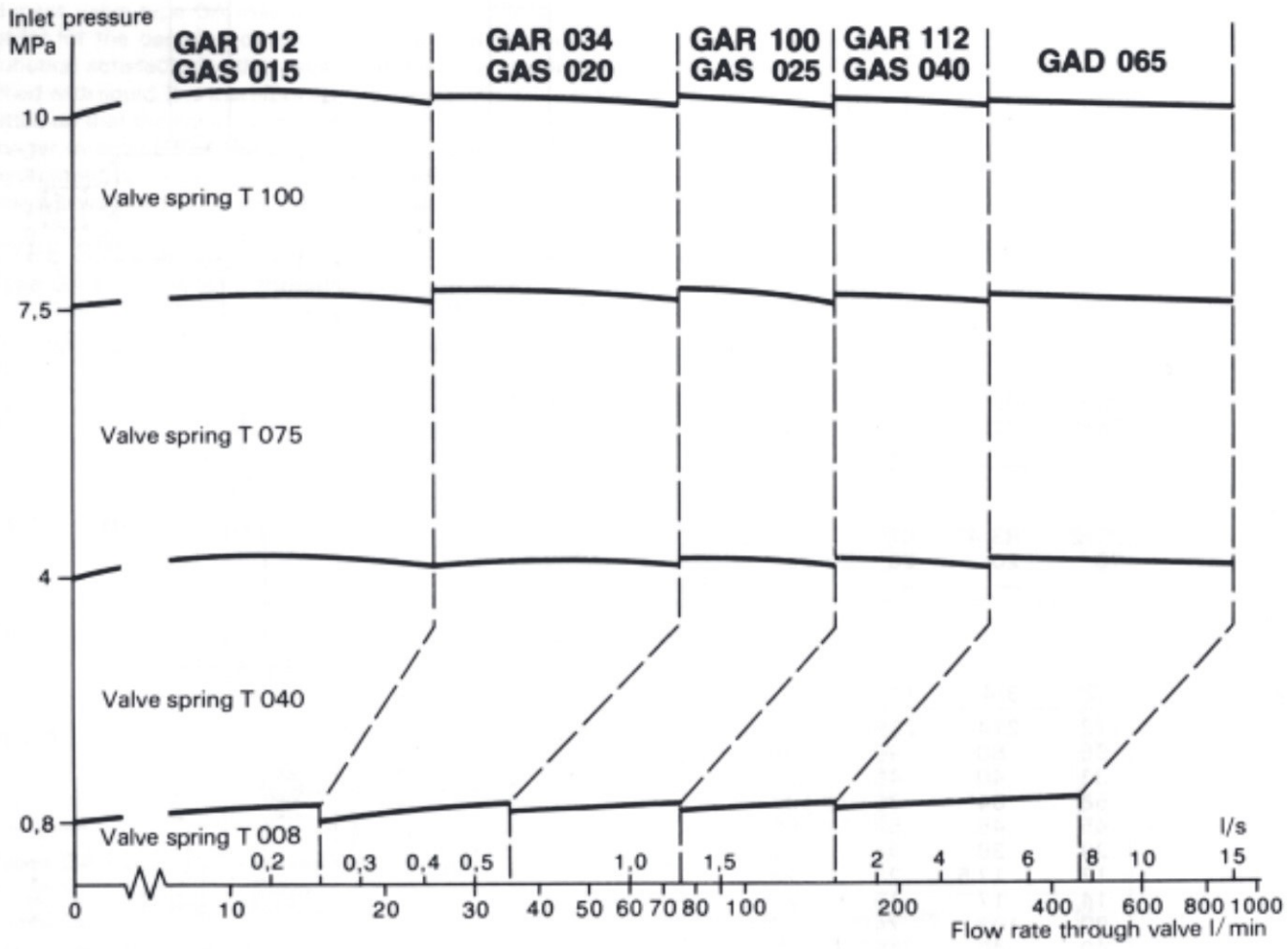

## DIMENSIONS - COUNTERFLANGES FOR GAS

Counterflange for welded pipe connection incorporating pipe weld nipple, O-ring, split SAE J518 flange and retaining bolts – bolts of steel in strength class ISO 8.8 with minimum length E.

| Flange Size | Article No. | A | B | C | D | E | F | G | H | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/2" | 136226 | 19 | 13 | 13 | 40 | 25 | M10 | 55 | 46 | 17.2 | 8.6 | 19 | 38 |
| 3/4" | 136234 | 27 | 20 | 14 | 40 | 35 | M10 | 66 | 52 | 22.4 | 11.2 | 23.9 | 47.8 |
| 1" | 140715 | 38 | 25 | 16 | 45 | 35 | M10 | 70 | 59 | 26.2 | 13.1 | 26.2 | 52.4 |
| 1 1 /2" | 130997 | 50 | 40 | 16 | 50 | 40 | M 12 | 94 | 84 | 35.8 | 17.9 | 34.9 | 69.8 |

## SELECTION DIAGRAM

The curves show approximations of the valve characteristics set upon delivery at maximum nominally adjustable opening pressure with valve springs T008, T040, T075 and T100 respectively. The pressure rise (accumulation) will not be more than 10% above the set pressure but will have a minimum value of 0.2 MPa.






.02 GB