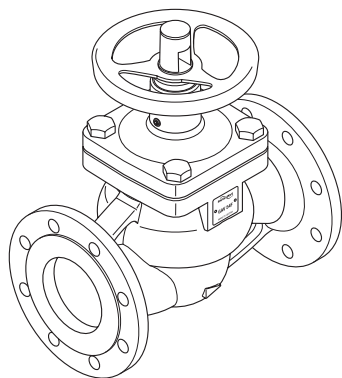




GESTRA



Shut-Off Valve

**GAV 54F**

**EN**  
English

Installation & Operating  
Instructions **819025-00**

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## Important Notes

### Usage for the intended purpose

Use the shut-off valve GAV 54 F only for isolating and throttling neutral gases, steam, vapours and liquids within the specified pressure and temperature ratings and check the corrosion resistance and chemical suitability for the application in question.

### Safety note

The equipment must only be installed and commissioned by qualified and competent staff. Retrofitting and maintenance work must only be performed by qualified staff who – through adequate training – have achieved a recognised level of competence.



#### Danger

The valve is under pressure during operation.

When loosening flanged connections, sealing plugs or stuffing box connections, hot water and steam will escape.

This presents the risk of severe scalding all over the body!

Before carrying out installation and maintenance work make sure the system is depressurized. Isolate the valve from both upstream and downstream pressure.

The valve becomes hot during operation. Risk of severe burns to hands and arms.

Before carrying out installation and maintenance work make sure that the steam trap is cold.

Sharp edges on parts present a danger of cuts to hands.

Always wear industrial gloves when replacing valves or parts of valves.

Danger of bruising! During operation moving parts can pinch one's hands or fingers, causing severe injuries. Do not touch moving parts.



#### Attention

The name plates specify the technical properties of the devices.

Do not commission or operate any item of equipment that does not bear its specific name plate.

### PED (Pressure Equipment Directive)

The equipment fulfills the requirements of the Pressure Equipment Directive PED 97/23/EC. For use with fluids of group 1 and 2.

With CE marking (apart from equipment that is excluded from the scope of the PED as specified in section 3.3).

### ATEX (Atmosphère Explosible)

The equipment does not have its own potential source of ignition and is therefore not subject to the ATEX Directive 94/9/EC. Applicable in Ex zones 1, 2, 21, 22 (1999/92/EC).

The equipment is not Ex marked.

### Scope of supply

#### GAV 54F

1 Shut-off valve GAV 54F

1 Installation manual

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### Description

Maintenance-free bellows-sealed shut-off valve with straight-through body, flanged to EN 1092-2. The shut-off valve is equipped with a stainless steel bellows seal and a safety stuffing box made from pure graphite.

Shut-off valves from DN 15 to DN 100 are fitted with a throttling plug as standard.

DN125 to DN300 valves come with a flat plug as standard. The handwheel features a non-rising stem and a locking device.

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### Function

To close the shut-off valve turn handwheel to the right and to open it turn handwheel to the left. Direction symbols are found on the top of the handwheel.

The valve stem is sealed off by means of a stainless steel bellows and a safety stuffing box made from pure graphite.

Use the locking device to lock the handwheel in place by turning it to the right until it hits the stop. When supplied the handwheel is not locked in place.



### Attention

Incorrect operation of the valve may have a substantial impact on the entire system, for example:

- ▶ Leakage of the fluid
- ▶ System / machine brought to a standstill
- ▶ Impairment / reduction / increase of the system's / machine's function / effect



### Danger

When delivered ex factory, the safety stuffing box is not fully tightened. In the event of the bellows failure, the stuffing box screws (safety stuffing box) must be tightened in order to avoid fluid leakage (observe danger note on page 4!). The stem seal with bellows is maintenance free.

Pressure & temperature ratings

GAV 54F, flange PN 16, EN 1092-2							
P <sub>S</sub> (max. admissible pressure)	[barg]	16	16	14.4	12.8	11.2	9.6
T <sub>S</sub> (max. admissible temperature)	[°C]	20	120	150	200	250	300
P <sub>S</sub> (max. admissible pressure)	[psig]	232	232	208	185	162	139
T <sub>S</sub> (max. admissible temperature)	[°F]	68	248	302	392	482	572
ΔP (admissible differential pressure)	[bar]	16					
	[psi]	232					



Attention

If the following differential pressures are exceeded, a pressure balance plug is required.

	DN	200	250	300
ΔP (admissible differential pressure)	[bar]	12	9	6
	[psi]	174	130	87

The pressure balance plug only takes effect when pressures builds up above the valve plug. As a consequence, the flow through the valves is reversed. Note that the embossed flow direction arrow is reversed.

Corrosion resistance

If the equipment is used for the intended purpose, its safety is not impaired by corrosion.

## GAV 54F

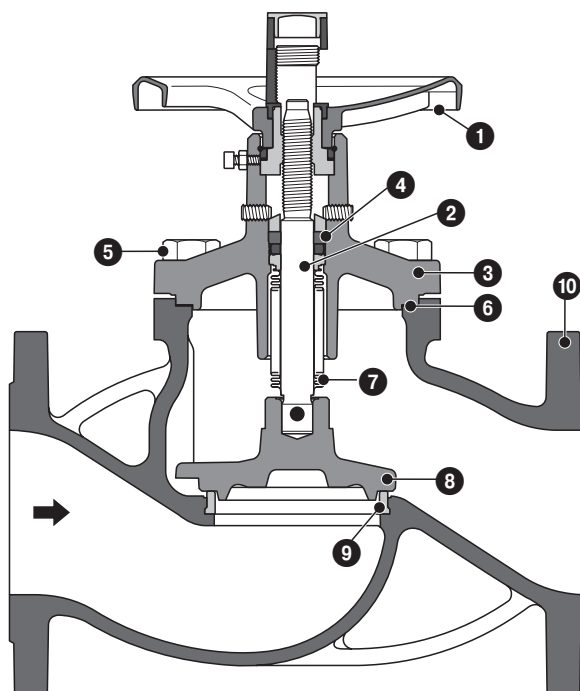


Fig. 1

### Key

- |                       |              |
|-----------------------|--------------|
| 1 Handwheel           | 6 Joint ring |
| 2 Stem                | 7 Bellows    |
| 3 Body cover          | 8 Valve plug |
| 4 Gland packing       | 9 Seat ring  |
| 5 Hexagon-head screws | 10 Body      |

### GAV 54F

Responsibility for positioning and installing the valves always lies with the engineering company, construction company or operator/user. Planning and installation errors may impair the reliable function of the valves and pose a substantial safety hazard.

For this reason it is particularly important to observe the following:



#### Attention

The piping must be laid such that detrimental thrust and torsional forces are kept away from the valve body during installation and operation to avoid both leakage and damage to the body.

The caps on the connection ports, if any, shall be removed immediately prior to installation. The mating flange faces must be clean and undamaged .



#### Danger

The gaskets on the flange faces must be properly centered.

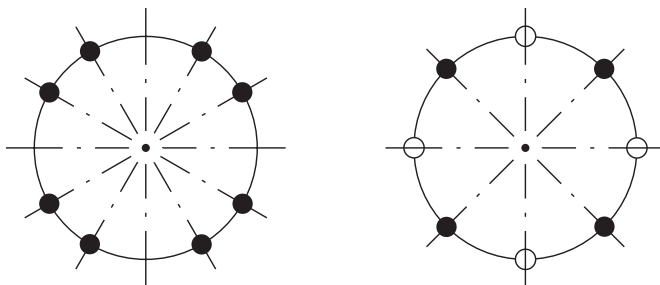
Only fasteners (for ex. to DIN EN 1515-1) and flange gaskets (for ex. to DIN EN 1514) made of materials suitable for the respective valve size may be used.

For the flange connection between valve and pipe use all flange bolt holes provided.

#### Attention

When using steel flanges to DIN EN 1092-1 in conjunction with cast iron valves with flanges machined to DIN EN 1092-2, make sure that for nominal diameter DN 65 the mating flanges are fitted offset by 22.5° to prevent an oblique position of the valve.

This procedure is required by the difference in the number of bolt holes: DIN EN 1092-1 specifies 8 holes for steel, whereas DIN EN 1092-2 specifies only 4 holes for cast iron.



**Fig. 2**

#### **DN 65 (steel / steel):**

DIN EN 1092-1 with DIN EN 1092-1,  
Bolts through 8 holes

#### **DN 65 (steel / cast iron):**

DIN EN 1092-1 with DIN EN 1092-2,  
Bolt hole circle to DIN EN 1092-1 turned  
through 22.5°, bolts through 4 holes,  
4 holes free





### Attention - continued -

When the valve is installed outdoors, sufficient weather protection must be provided to prevent corrosion and other damage caused by penetrating moisture.

When painting pipes or equipment, do not apply paint to the stem and plastic components (valve function will be impaired).

If construction work is still in progress, the valves must be protected against dust, sand and building material (cover with suitable material).

Neither the valve nor its actuating elements (e. g. handwheel, actuator, cover) must be subjected to excessive loads (e. g. used as footholds).

The valve body and/or cover must not be subjected to any sudden impacts (with tools, for example) as they could be destroyed.



### Danger

For safety reasons, valves and piping systems operated at high ( $> 50\text{ }^{\circ}\text{C}$ ) or low ( $< 0\text{ }^{\circ}\text{C}$ ) temperatures must be insulated, or a warning sign must point out the risk of personal injury involved when touching the hot or cold components.



### Attention

If there is a risk of condensation water or ice formation, for example in air-conditioning, cooling and refrigerating systems, it is important to ensure that the complete valve including handwheel, if required, is provided with a proper diffusion-tight insulation. The formation of ice introduces the risk of actuator blocking.

## Installation Notes

Flow through shut-off valves should be in the direction of the embossed arrow on the valve body. An alternating direction of flow is permissible with the standard plug but not with the pressure balance plug. If equipment from DN 200 exceeds the following differential pressures, a pressure balance plug is required.

	DN	200	250	300
$\Delta P$ (admissible differential pressure)	[bar]	12	9	6
	[psi]	174	130	87

The pressure balance plug only takes effect when pressures builds up above the valve plug. As a consequence, the flow through the valves is reversed (the embossed flow direction arrow is reversed).



### Danger

The valves should not be installed with the stem pointing downwards to prevent dirt deposits between the folds of the bellows which might cause valve failure.

In steam service, the valve must not be installed with the stem pointing downwards (risk of steam hammer due to condensate collecting in the valve neck).

Shut-off valves must be installed in the line so that the fluid enters the valve beneath the disc and flows out above the disc. However, they can also be installed in lines with alternating flow.

If the valves are to be used for throttling applications, a throttling valve disc (standard variant DN 15 – 100) must be used.

In valves with pilot plug, the flow direction must correspond to the direction indicated by the arrow on the valve. Valves with pilot plug must always be installed so that the pressure to be sealed off lies above the plug.

## Commissioning Procedure

### GAV 54F

Prior to commissioning / start-up compare the material, pressure and temperature data on the valves with the operating conditions of the piping to check the material's chemical resistance and stability under load.



### Danger

Venting the valve by undoing the bonnet / cover bolting or removing the stuffing box packing is dangerous and therefore not permitted.

It is generally not allowed to use lamellar graphite cast iron (EN-JL1040) in systems where surge pressures might develop, since this material does not withstand pressure surges and, therefore, the valves may be damaged or destroyed. In such cases valves made of nodular cast iron (EN-JS1025) or steel shall be used.

In new systems and particularly after repair, the complete piping must be thoroughly flushed with the valves fully opened so that particles and/or welding beads that might damage the seat/disc interface are removed.

#### Valve actuation

Viewed from above, the valve is closed with a clock-wise turn of the handwheel, and opened with a counter-clockwise turn.

Direction symbols are found on the top of the handwheel.



### Attention

As the valve can be damaged by applying excessive forces, it is not allowed to use additional levers to move the handwheels of nominal valve sizes up to and including DN 125.

On all nominal sizes greater than DN 125, suitable additional levers may be used up to the following torque limits:

DN	150	200	250	300	350
M <sub>t</sub> [Nm]	120	200	200	200	200
Hex. head WAF	36	46	46	46	46

The above values do not apply in the event of foreign matter or fluid deposits in the seat/disc interface.

Note that additional levers must not be used in the immediate vicinity of the position indicator.

Shut-off valves are normally used in such a way that they are either fully open or fully closed.

For intermediate positions, variants with throttling disc should be fitted, unless throttling discs are installed as a standard feature.

Performing throttling operations without a throttling disc may result in an excessive noise level, excessive wear or even destruction of the valve by cavitation.



### Functional test

The following functions must be checked:

- ▶ Check the shut-off function of the installed valve prior to commissioning / start-up by opening and closing it several times.
- ▶ The bonnet/cover bolting shall be checked for tightness after the first loading or heating up of the valves.
- ▶ If required, the bonnet bolting must be gradually re-tightened cross-wise and evenly in a clock-wise direction.

### Attention

Before tightening the bonnet bolting open the valve by approximately two full turns of the handwheel to avoid stress or distortion.

Re-tightening the bonnet/cover bolting is particularly important for valves installed in heat transfer systems.

### GAV 54F

Repair and maintenance work must only be performed by skilled, properly trained personnel.

It is imperative that the following safety instructions and the danger note on page 4 be observed for all servicing and maintenance work to be performed.



#### Attention

Always use suitable tools and original spare parts — even if sudden emergencies arise — to ensure proper functioning of the valve.

##### Valve dismantling

Before removing the complete valve from the pipeline or before repairing or servicing the valve, i. e.

- ▶ before undoing the flange bolting between valve and pipe
- ▶ before undoing the bonnet bolting
- ▶ before undoing the stuffing box screw at the stuffing box ring
- ▶ if the bellows is defective or there is fluid leakage in this area
- ▶ before removing any sealing, opening or vent plugs

valve pressure must be released and the valve must be allowed to cool down such that the temperature is below the fluid's vaporization temperature in all areas in contact with the fluid in order to effectively prevent any risk of scalding.



#### Danger

Danger to life: Never open a valve under pressure!

If toxic or easily inflammable fluids were handled, or fluids whose residues may cause corrosion in conjunction with humidity, drain the valve and flush or vent it. If required, wear safety clothing and a protective mask!

Depending on the installation position, fluid residues may be left in the valve; these must be collected and properly disposed of.

Prior to any transport, flush and drain the valve thoroughly.

All valve components have been designed to be largely maintenance-free.

The materials of the moving parts have been selected for minimum wear. To ensure operating reliability and to reduce repair costs, all valves should however be checked regularly, i. e. they should be actuated (opened/closed) at least once or twice a year, in particular those valves which are rarely used or difficult to access.

The operator / user is responsible for fixing appropriate inspection and servicing intervals as required by the service conditions of the valves. The service life of valves can be prolonged by:

- ▶ Lubricating the moving parts such as stem and stem nut using standardized lubricants to DIN 51825.

## Spare Parts

### GAV 54F

No spare parts are available for shut-off valves up to DN 150.

A faulty shut-off valve must be discarded and replaced by a new one.



### Attention

All repair and maintenance work shall be performed by skilled, properly trained personnel using suitable tools and original spare parts. We recommend to have this work performed by our service personnel. For more information please contact us or go to [www.gestra.de](http://www.gestra.de).

## Decommissioning



### Danger

The equipment is under pressure and hot during operation. Risk of severe injuries and burns to the whole body.

Before loosening flanged connections, stuffing box unions or sealing plugs make sure that all connected lines are depressurized (zero bar) and cooled down to room temperature (20 °C).

Sharp edges on parts present a danger of cuts to hands.

Always wear industrial gloves when servicing the equipment.

In the event of prolonged shutdowns, fluids which change their physical condition due to changes in concentration, polymerization, crystallization, solidification, etc. must be drained from the piping system.

If required, flush the piping with the valves fully opened.

### Disposal

For the disposal of the equipment observe the pertinent legal regulations concerning waste disposal.

### Transport

The valves are closed when supplied and, if required, the line connection ports are capped. The valves are ready for operation upon delivery.



### Attention

For transport and interim storage, the valves must always be kept in the closed position, and the line connection ports must be covered with suitable material (e. g. caps, foil) to avoid damage to the seat/disc contact faces.

In order to avoid damage or personal injury the valve must never be suspended from the handwheel during transportation. Please observe the hoisting instructions on page 15.

After delivery and prior to installation, check the valve for potential damage acquired in transit. Damaged valves must not be installed.

### Storage

Storage / interim storage of the valves must ensure that even after a prolonged period of storage the valves' function is not impaired and damage to the plastic coating is prevented.

The following requirements must be met:

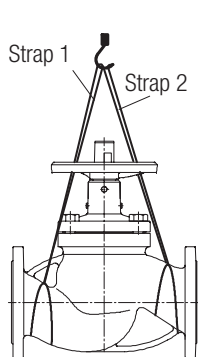
- ▶ Storage is performed with the valve in closed position (to protect the seat/disc contact faces against damage)
- ▶ Measures are taken to protect the valves against dirt (dust, sand, mortar and/or building material), frost and corrosion by using foils or caps, for instance.
- ▶ The storage room shall be dry, free from dust and moderately ventilated. The ambient temperature must not exceed +25 °C.
- ▶ As mentioned above, the valves are required to be stored in closed position.

If these storage requirements cannot be met please contact GESTRA.

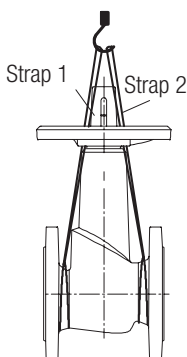
## Hoisting the valve for installation into horizontal pipeline

Straps 1 and 2 must be tied around the valve body. To hold the valve in the position shown below and to avoid tilting, both straps should be routed to the lifting hook between the handwheel arms. **Fig. 3, Fig. 4**

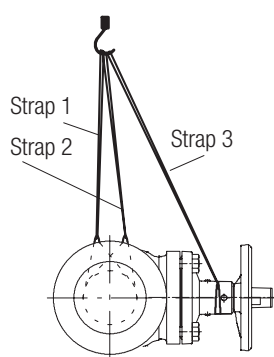
Straps 1 and 2 must be tied around the valve body. The third strap serves to keep the valve in horizontal position. **Fig. 5, Fig. 6**



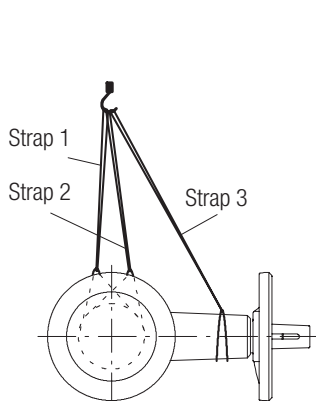
**Fig. 3**



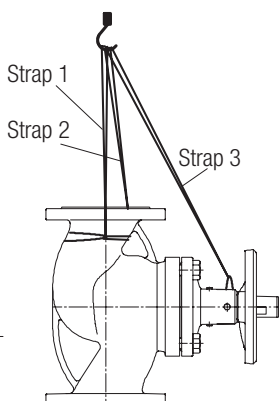
**Fig. 4**



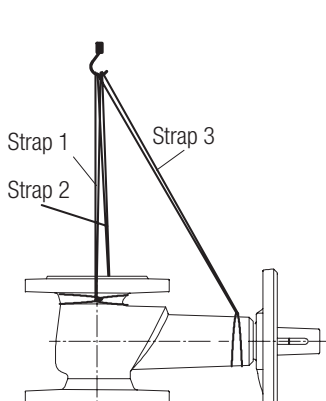
**Fig. 5**



**Fig. 6**



**Fig. 7**



**Fig. 8**



**GESTRA**

Agencies all over the world: **[www.gestra.de](http://www.gestra.de)**

Branch offices:

### **España**

#### **GESTRA ESPAÑOLA S.A.**

Luis Cabrera, 86-88

E-28002 Madrid

Tel. 0034 91 / 5 15 20 32

Fax 0034 91 / 4 13 67 47; 5 15 20 36

E-mail: [gestra@gestra.es](mailto:gestra@gestra.es)

### **Polska**

#### **GESTRA POLONIA Spolka z.o.o.**

Ul. Schuberta 104

PL - 80-172 Gdansk

Tel. 0048 58 / 3 06 10 - 02

0048 58 / 3 06 10 - 10

Fax 0048 58 / 3 06 33 00

E-mail: [gestrapolonia@flowserve.com](mailto:gestrapolonia@flowserve.com)

### **Great Britain**

#### **Flowserve GB Limited**

Abex Road

Newbury, Berkshire RG14 5EY

Tel. 0044 16 35 / 46 99 90

Fax 0044 16 35 / 3 60 34

E-mail: [gestraukinfo@flowserve.com](mailto:gestraukinfo@flowserve.com)

### **Portugal**

#### **Flowserve Portuguesa, Lda.**

Av. Dr. Antunes Guimarães, 1159

Porto 4100-082

Tel. 00351 22 / 6 19 87 70

Fax 00351 22 / 6 10 75 75

E-mail: [jtavares@flowserve.com](mailto:jtavares@flowserve.com)

### **Italia**

#### **Flowserve S.r.l.**

Flow Control Division

Via Prealpi, 30/32

I-20032 Cormano (MI)

Tel. 0039 02 / 66 32 51

Fax 0039 02 / 66 32 55 60

E-mail: [infoitaly@flowserve.com](mailto:infoitaly@flowserve.com)

### **USA**

#### **Flowserve GESTRA U.S.**

2341 Ampere Drive

Louisville, KY 40299

Tel. 001 502 / 267-2205

Fax 001 502 / 266-5397

E-mail: [FCD-Gestra-USA@flowserve.com](mailto:FCD-Gestra-USA@flowserve.com)

## **GESTRA AG**

P. O. Box 10 54 60, D-28054 Bremen

Münchener Str. 77, D-28215 Bremen

Telephone 0049 (0) 421 / 35 03 - 0

Fax 0049 (0) 421 / 35 03 - 393

E mail [gestra.ag@flowserve.com](mailto:gestra.ag@flowserve.com)

Internet [www.gestra.de](http://www.gestra.de)

