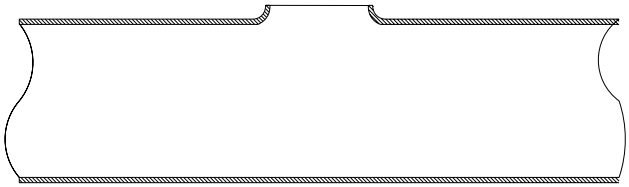
The welding result will be best if the following method is used:

A collar is made on the pipe section so that the valve has a flat contact face. This flaring must look like a T-piece, as shown in the example below.



- The pipe section and the valve's hose pieces are sealed with sponge rubber or similar.
- Purge gas such as Argon or Formier gas is fed through the valve body into the pipe section and the system is now filled with 6 times the estimated volume of the pipe section. All O_2 is thus expelled from the system and welding can commence.
- Welding can take place with the purge gas continually flowing in the system.
- The gas remains in the system until the item is lukewarm, after which the set-up can be dismantled.

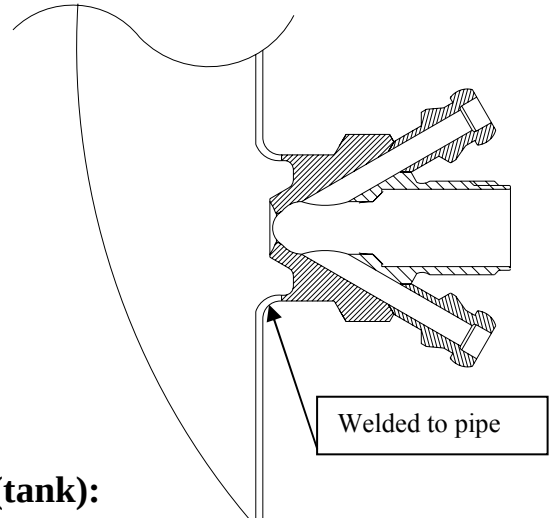
Guideline welding values:

M4 valve welded onto a 2 mm 3" dairy pipe:	40-50 Amp.
M4 valve welded onto a 1.25 mm 2" dairy pipe:	approx. 30 Amp.

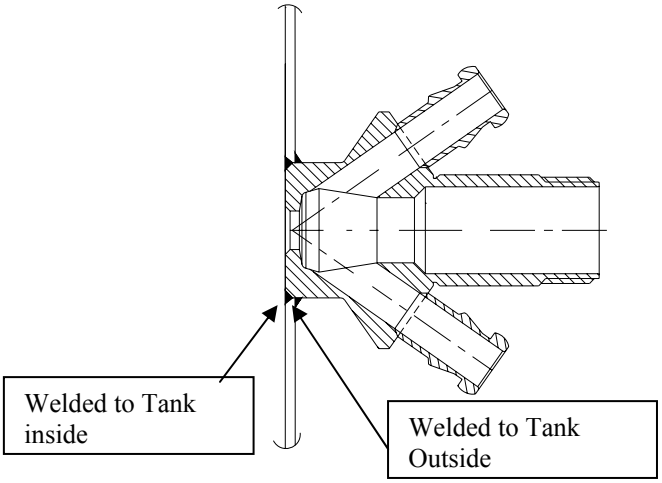
It should be noted that Keofitt can supply all P type valves welded onto a pipe section according to customer specifications. Flaring is thus avoided and only a girth weld is required.

Block diagram for welding to pipe and tank

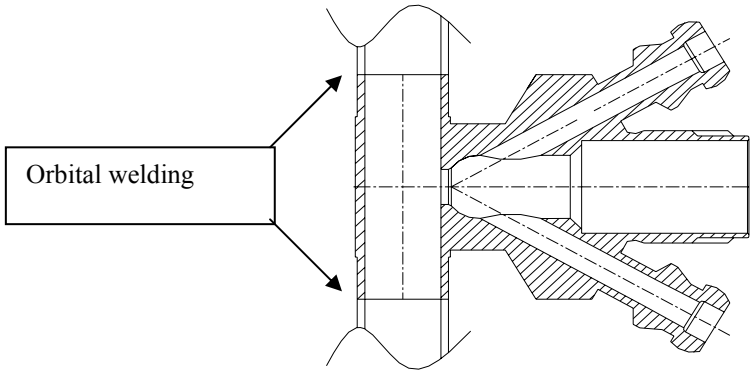
Keofitt valve type P (pipe):



Keofitt valve type T (tank):

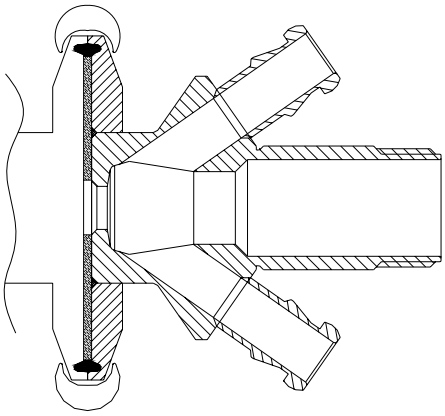


Keofitt valve type P (pipe connection vertical):

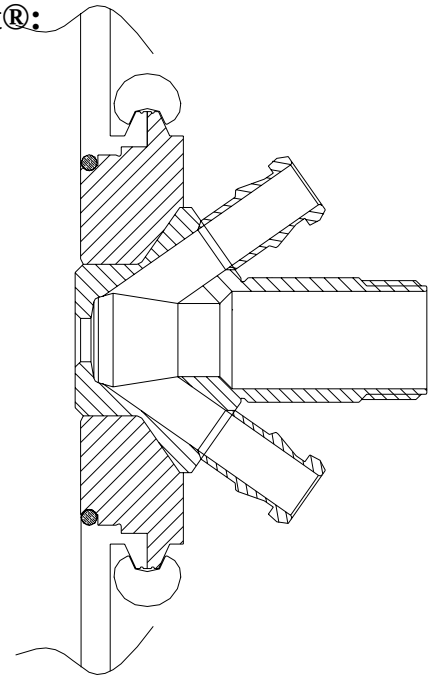


Block diagram for installation with Clamp, Varivent® and Thread.

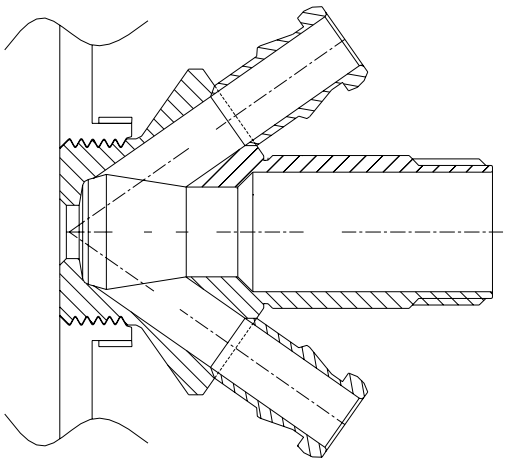
Keofitt valve Clamp connection:



Keofitt valve Varivent®:



Keofitt valve Thread:



Everyday use of the valve

Warning!: During sterilisation with steam the valve will become hot, and care should thus be taken when handling the valve.

Warning!: The valve is designed for use in working conditions of up to 6 bar and temperatures of up to 121°C. It is therefore important to be aware that the rubber plug (designed for max. 3 bar) or the steel plug (designed for max. 10 bar) can be forced out at high speed if not seated correctly.
Therefore always remember to use safety goggles when taking samples because of the risk to the eyes.

Warning!: For valve heads allowed for Group IIGD, Category 2 (zone 1) both handle and top of valve heads N and Q must be cleaned before use.

Sterilisation:

Remember! Use saturated steam without condensation at max. 2 bar. At higher pressures the membrane can be damaged/split.

The coaxial design ensures absolute cleanliness without the use of CIP or similar. If CIP is used, please refer to enclosed data sheet. If in doubt, contact Keofitt.

Sterilisation takes place with valve closed.

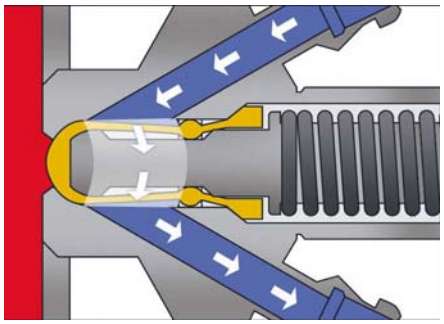
1. Remove the plugs.
2. Connect the steam hose to the valve's upper hose piece.
3. Open the steam supply and let it flow through the valve for sterilisation. 1 min. at 121°C (2 bar).
4. Close the steam supply.

Important! To reach 121ºC a pressure of 2 bar(g) is needed. This can only be reached by use of a pressure release valve, or other counter pressure
Important! Let steam hose be in place to prevent air contamination. If removal of steam hose is required, fit a sterile rubber or stainless steel plug onto the upper hose piece.

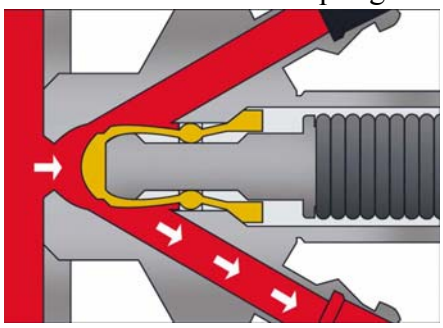
Sampling:

1. Open the valve and take the sample.
2. Shut the valve after the sample has been taken.
3. Clean the valve with steam and/or hot water, cf. 'sterilisation', points 1-4.

Sterilization



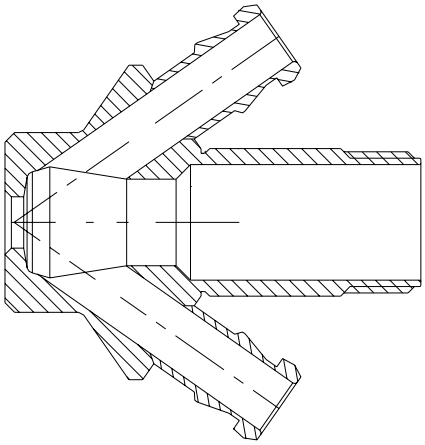
Sampling

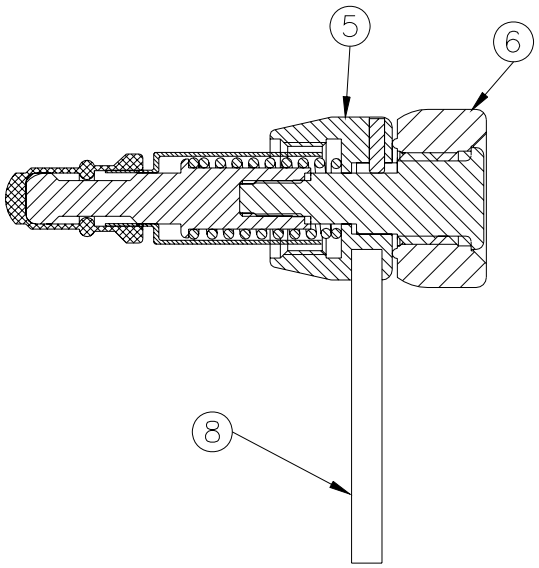


Maintenance:

The membrane must be replaced every second month.
In the event of intensive sterilisation and cleaning it may be necessary to replace it more frequently.
For valve heads with Micro Port, approx. 5-10 samples may be drawn off per membrane at 5-2 bar respectively.
The rubber plug must be replaced at least once every six months.
For disassembly of valve body and valve head, see instructions.

Disassembly and assembly of valve body and head:





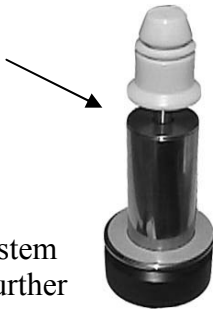
Order of operation:

Remember! - When replacing the membrane, set the valve head in the open position before it is screwed loose and pulled out of the valve body.

1. Set the valve head at the open position. For types h and k this is done by turning pos. 6 clockwise.
2. Remove the valve head pos. 5. A Tommy bar pos. 8 should be used for disassembly and assembly. Carried out by turning pos. 5 anti-clockwise.
3. Refit the valve head (in the open position) once the necessary parts have been replaced.

Instructions on replacing PTFE membrane

1. Open valve.
2. Release clamp ring.
3. Remove the valve head from the valve body.
4. Close valve head.
5. Push the membrane upwards until you can fit tool for membrane under it.
6. Insert tool for membrane, between the membrane and the valve.
7. Close valve head.
8. Now the membrane should loose from the valve head and can be replaced.



Important: Once the membrane has been removed from the valve head the click system in the membrane might be damaged. Therefore the membrane might be unsafe for further use and it is not recommended to use the membrane again.

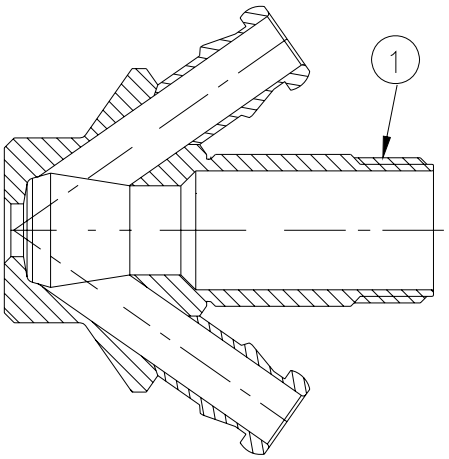
To attach new membrane to valve head.

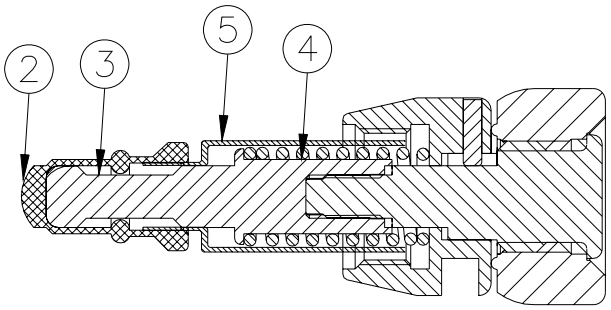
9. Set the valve head to closed position.
10. Place the new membrane on valve head.
11. Press down on membrane, until it clicks in place.
12. Set the valve head in open position.
13. Insert the valve head into the valve body.
14. Attach and close clamp ring.
15. Close valve head.

Important: Do not use hammer or other tool that might scratch the surface of the membrane.

Tool for membrane 400255

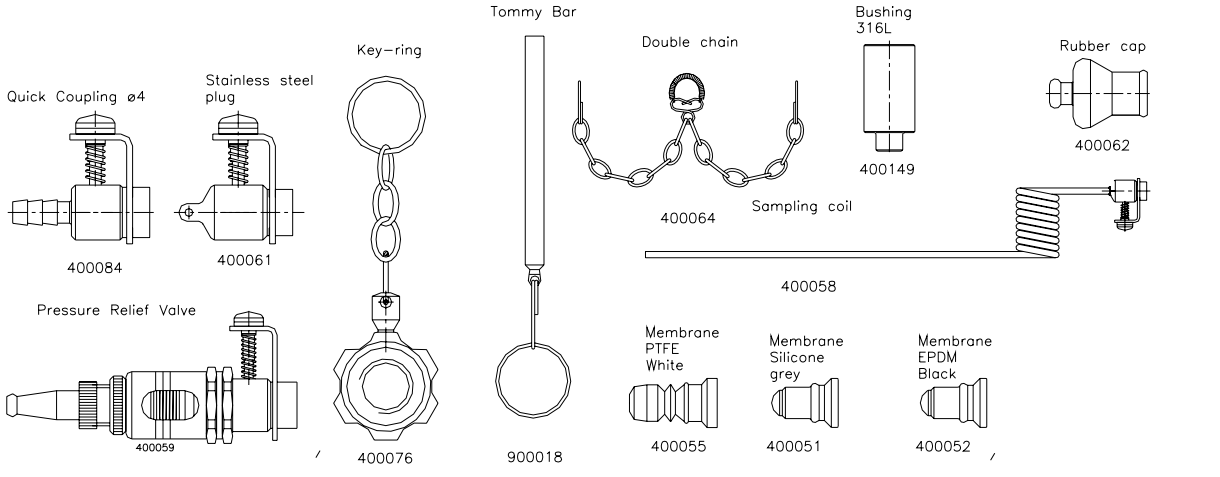
Spare parts list:

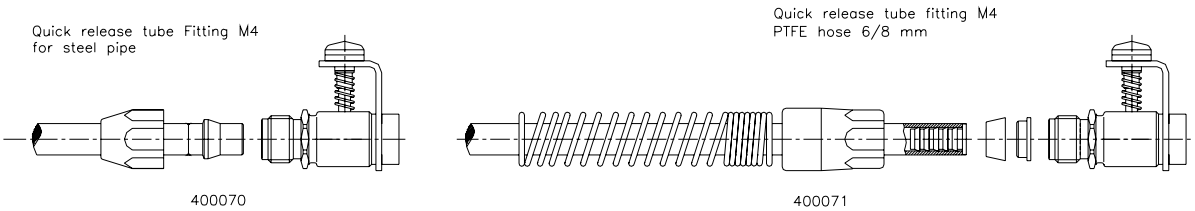




Pos.	Item	
1.	Valve body	
2.	Membrane Silicone	(grey)
	Membrane EPDM	(black)
	Membrane PTFE	(White)
3.	Lower stem	
4.	Spring	
5.	Steel bushing	

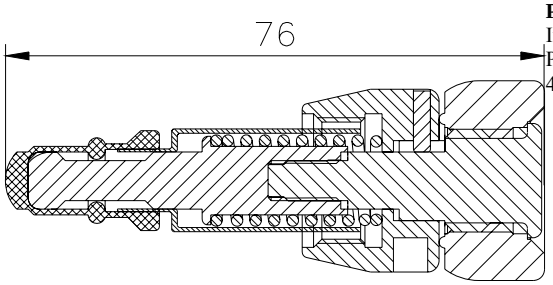
Parts and accessories for M4:





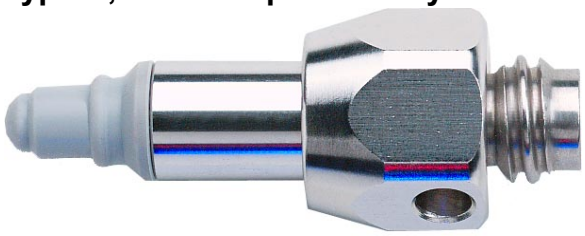
Valve Heads for M4:

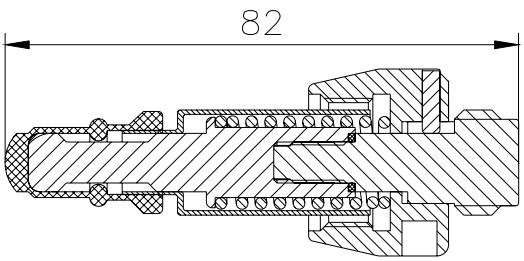
Type H, manual operated – item no. 400041.



Available with:
Silicone membrane
Item no.: 400051
EPDM membrane
Item no.: 400052
PTFE membrane
Item no.: 400055
PTFE Valve item no.: 405541

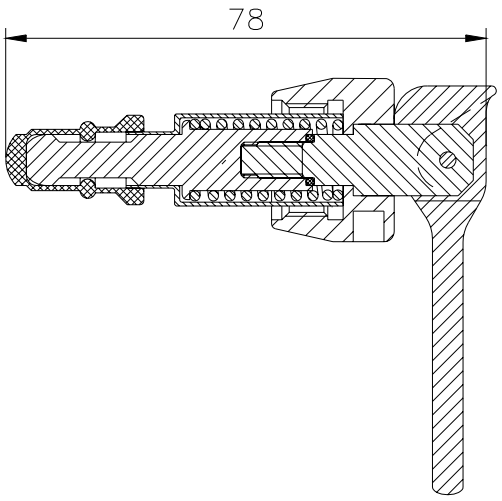
Type K, manual operated key version – item no. 400042.





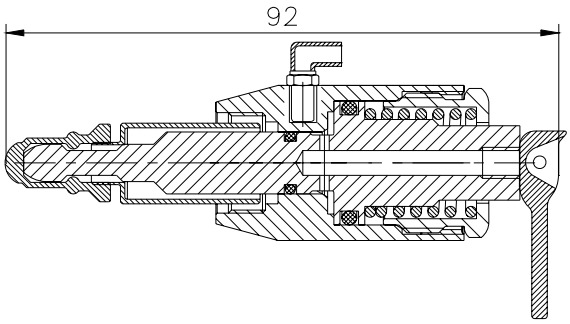
Available with:
Silicone membrane
Item no.: 400051
EPDM membrane
Item no.: 400052
PTFE membrane
Item no.: 400055
PTFE Valve item no.: 405542

Type Q, manual operated with lever – item no. 400043.



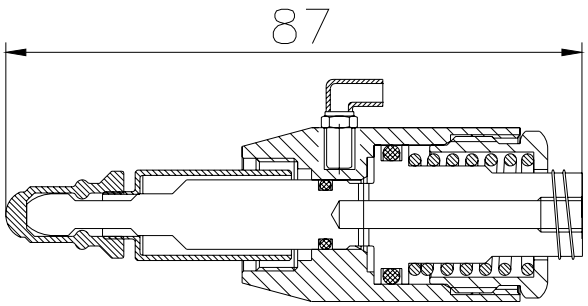
Available with:
Silicone membrane
Item no.: 400051
EPDM membrane
Item no.: 400052
PTFE membrane
Item no.: 400055
PTFE Valve item no.: 405543

Type N, Pneumatically activated – item no. 400044.



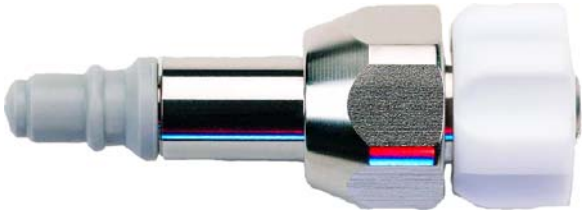
Available with:
Silicone membrane
Item no.: 400051
EPDM membrane
Item no.: 400052
PTFE membrane
Item no.: 400055
PTFE Valve item no.: 405544

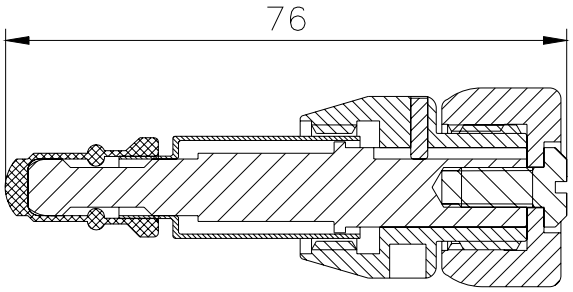
Type N, Pneumatically activated key version – item no. 400046.



Available with:
Silicone membrane
Item no.: 400051
EPDM membrane
Item no.: 400052
PTFE membrane
Item no.: 400055
PTFE Valve item no.: 405546

Type B, Pressure resistant up to 12 bar(g)– item no. 400047.





Available with:
Silicone membrane
Item no.: 400051
EPDM membrane
Item no.: 400052
PTFE membrane
Item no.: 400055
PTFE Valve item no.: 405546

Silicone Membranes for M4 – item no. 400051:

Length 16mm

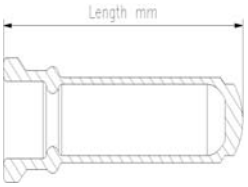
Technical Specification:

Membrane:	400051.
Type:	Silicone (Si, Q)
Colour	Light Grey
Hardness ◦Sha	60
Tensile strength MPa	10,5
Elongation at break %	530
Density g/cm^3	1.17
Range of temperature in dry atmospheric air °C	-80 - + 200°C
Compression set, DIN 53517, 24h/175°C %	30
Wear resistance	Less suitable (1)
Tear resistance	Very good (3)
Resistance to Weather and Ozone	Excellent (4)
Resistance to Hydrolysis (water and steam)	Good (2-3)
Resistance to Chemicals (acids/bases)	Suitable (2)
Resistance to mineral oil and gas	Less suitable (1)
Air and gas density	Not suitable (0)
Food safe	Yes (FDA*)

*FDA approved compound according to Code of Federal Regulations Title 21 - § 177.2600

Average live time of a silicone membrane is 2-3 months of lasting by normal use means:

Temp. max:……..121^0C
Steam pressure max:…2 bar(g)
Process pressure……..1-6 bar
Cip……Nho4 < 3% or similar
Samples…….....1-5 a day



EPDM Membranes for M4 – item no. 400051:

Length 16mm

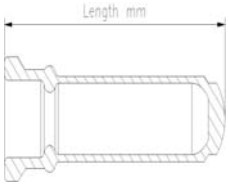
Technical Specification:

Membrane:	400052.
Type:	EPDM
Colour	Black
Hardness IRHD/ °Sha	61/59
Tensile strength MPa	16
Elongation at break %	400
Density g/cm^3	1.1
Range of temperature in dry atmospheric air °C	-50 - + 140°C
Compression set, DIN 53517, 24h/175°C %	18
Wear resistance	Very good (3)
Tear resistance	Very good (3)
Resistance to Weather and Ozone	Excellent (4)
Resistance to Hydrolysis (water and steam)	Excellent (4)
Resistance to Chemicals (acids/bases)	Very good (3)
Resistance to mineral oil and gas	Not suitable (0)
Air and gas density	Less suitable (1)
Food safe	Yes (FDA*)

*FDA approved compound according to Code of Federal Regulations Title 21 - § 177.2600

Average live time of an EPDM membrane is 2-3 months of lasting by normal use means:

Temp. max:……..121^{0}C
Steam pressure max:…2 bar(g)
Process pressure……..1-6 bar
Cip……Nho4 < 3% or similar
Samples…….....1-5 a day



PTFE membrane for M4 valves:

Length 20mm

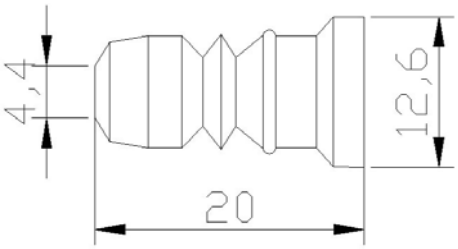
Technical Specification:

Type:			TFM 1600 PTFE
Colour			White
Temperature range			- 200 - +200ºC
Ball hardness		N/mm^2	29
Tensile strength	DIN53455	N/mm^2	35
Elongation at break	DIN53455	%	350
Density	DIN 53479	g/cm^3	2.17
Shore D	DIN 53505		57
Thermal conductivity	W/m.k DIN 57572		0.25-0.5
Expansion Coefficient	DIN 52612		$9\text{-}12x10^{-5}\ K^{-1}$
Friction coefficient			very low (<0.1)
Flammability			Inflammable UL 94VO
Chemical resistance			*
Food safe			Yes (FDA**)

* Is not attacked by common chemicals, with the exception of strongly oxidising acids.
**FDA approved compound according to Code of Federal Regulations Title 21 - § 177.1550

Keofitt guaranties 1 year of lasting by normal use means:

Temp……..115-130^{0}C
Steam pressure……1,5-2,5 bar
Process pressure….1-6 bar
Cip……..Nho4 < 3% or similar
Samples……...1-5 a day



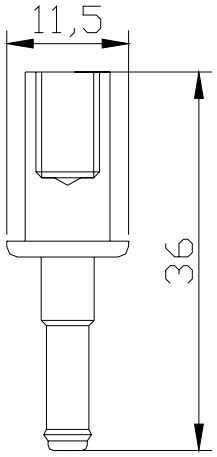
Parts Needed to change from Silicone to PTFE

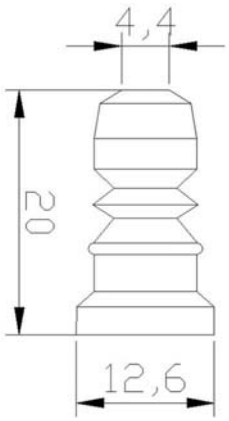
400340
400055

Upgrade from silicone to PTFE membrane:

For manually operated valve heads type H, K and Q:

To assemble see manual on WWW.Keofitt.dk under "MN-000000 replacing silicone for PTFE Membrane"

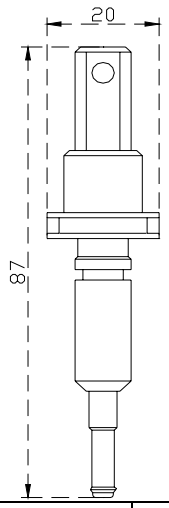


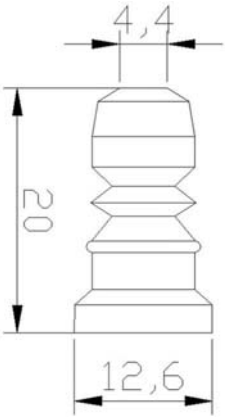


Nr.	Part Nr.	Part name	material	Nr.	Part Nr.	Part name	material
1	400340	Lower stem for PTFE	AISI 316L	2	400055	Membrane for M4	PTFE

For Pneumatically activated valve heads type N:

To assemble contact Keofitt at Keofitt@keofitt.dk or by phone.





Nr.	Part Nr.	Part name	material	Nr.	Part Nr.	Part name	material
1	400345	Spindle for M4	AISI 316L	3	600825	O-ring 7,1x1,6	EPDM
2	400055	Membrane for M4	PTFE	4	400820	O-ring 15,3 x 2,4	EPDM

Update:
For complete set of updated data sheets for all M4 valve bodies and heads please refer to our web page www.keofitt.dk

www.keofitt.dk