

## Diaphragm Valve, Plastic

### Construction

The GEMÜ 647 pneumatically operated plastic valve is a compact 2/2-way valve with good flow capability.

A diaphragm is the sealing element. The valve is mainly made of three components, a valve body, a shut off diaphragm and a cover with control medium connector. The control medium applies direct pressure to the shut off diaphragm pressing it against the shut off weir in the valve body.

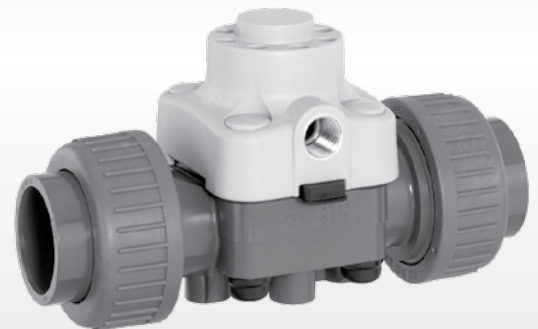
### Features

- Suitable for inert and corrosive\* liquid and gaseous media
- Valve body and diaphragm available in various materials and designs
- Insensitive to particulate media

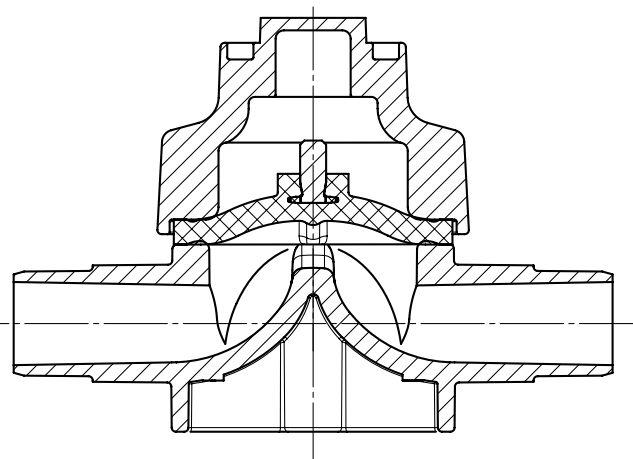
### Advantages

- Compact, lightweight construction and high performance
- Diaphragm easy to replace
- Suitable for dyeing plants, paper industry and automatic feeding installations
- The valve can be used in all applications where a closing spring is not required and where space is at a premium
- Good flow characteristics due to flow optimized valve body

\*see information on working medium on page 2



Sectional drawing



## Technical data

### Working medium

Corrosive, inert, gaseous and liquid media which have no negative impact on the physical and chemical properties of the body and diaphragm material.

### Ambient temperature

Valve body PVC-U	10 to 50 °C
Valve body ABS	-10 to 50 °C
Valve body PP-H	5 to 50 °C
Valve body PVDF	-10 to 50 °C

### Working medium temperature

Valve body PVC-U	10 to 60 °C
Valve body ABS	-10 to 60 °C
Valve body PP-H	5 to 80 °C
Valve body PVDF	-10 to 80 °C

The permissible operating pressure depends on the working medium temperature.

### Control medium

Inert gases

Max. perm. temperature of control medium 40°C

Filling volume:

Diaphragm size 20	0.27 dm <sup>3</sup>
Diaphragm size 25	0.69 dm <sup>3</sup>
Diaphragm size 40	1.42 dm <sup>3</sup>

MG	DN	NPS	Operating pressure	Control-pressure	Kv value
			[bar]		[m <sup>3</sup> /h]
20	15	1/2"	0 - 6	max. 10	6
	20	3/4"			10
	25	1"			12
25	32	1 1/4"			20
	40	1 1/2"			42
40	50	2"	46		

All pressures are gauge pressures. Operating pressure values were determined with static operating pressure applied on one side of a closed valve. Sealing at the valve seat and atmospheric sealing is ensured for the given values. Information on operating pressures applied on both sides and for high purity media on request.

MG = diaphragm size

Kv values determined acc. to DIN EN 60534, inlet pressure 5 bar, Δp 1 bar, PVC-U valve body and soft elastomer diaphragm.

The Kv values for other product configurations (e.g. other diaphragm or body materials) may differ. In general, all diaphragms are subject to the influences of pressure, temperature, the process and their tightening torques. Therefore the Kv values may exceed the tolerance limits of the standard.

The Kv value curve (Kv value dependent on valve stroke) can vary depending on the diaphragm material and duration of use.

### Pressure / temperature correlation for plastic

Temperature in °C (plastic body)		-10	±0	5	10	20	25	30	40	50	60	70	80
		Valve body material											
PVC-U Code 1		-	-	-	6.0	6.0	6.0	6.0	6.0	3.5	1.5	-	-
ABS Code 4		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0	2.0	-	-
PP-H Code 71		-	-	6.0	6.0	6.0	6.0	6.0	6.0	5.5	4.0	2.7	1.5
PVDF Code 75		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.4	4.7

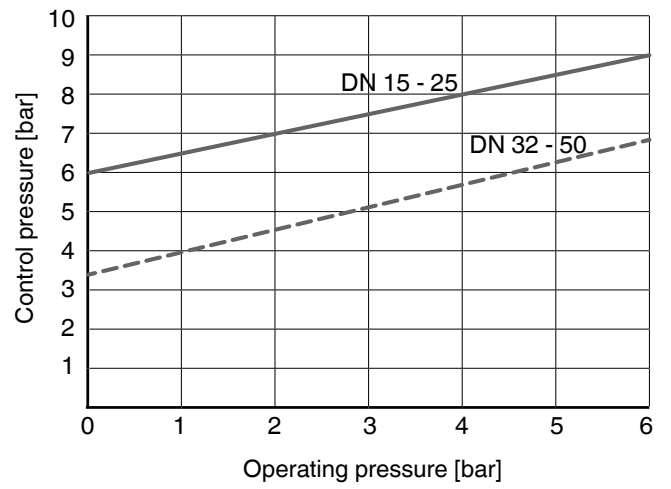
Data for extended temperature ranges on request. Please note that the ambient temperature and medium temperature generate a combined temperature at the valve body which must not exceed the above values.

## Technical data

### O-ring material for valve bodies with union ends

Diaphragm material	O-ring material
NBR	EPDM
EPDM	EPDM
FKM	FKM
Other combinations on request	

### Control pressure characteristic



## Order data

Body configuration	Code
2/2-way body	D

Diaphragm material	Code
NBR	2
FKM	4
EPDM	17
EPDM	29

Connection	Code
Spigots DIN for socket solvent cementing/welding	0
Flanges EN 1092 / PN10 / form B, length EN 558, series 1, ISO 5752, basic series 1	4
Union ends with DIN insert (socket)	7
Union ends with Rp threaded socket inserts	7R
Spigots for IR butt welding	20
Spigots - inch for socket solvent cementing/welding	30
Union ends with inch insert - BS (socket)	33
Flanges ANSI Class 125/150 RF, length EN 558, series 1, ISO 5752, basic series 1	39
Union ends with inch ASTM insert (socket)	3M
Union ends with JIS insert (socket)	3T
Union ends with DIN insert (for IR butt welding)	78

Control function	Code
Closed by control pressure, opened by operating pressure	5

Actuator size	Code
Diaphragm size 20 (DN 15, 20, 25)	ED
Diaphragm size 25 (DN 32)	FD
Diaphragm size 40 (DN 40, 50)	HD

Special version	Code
NSF 61 Drinking water certification	N

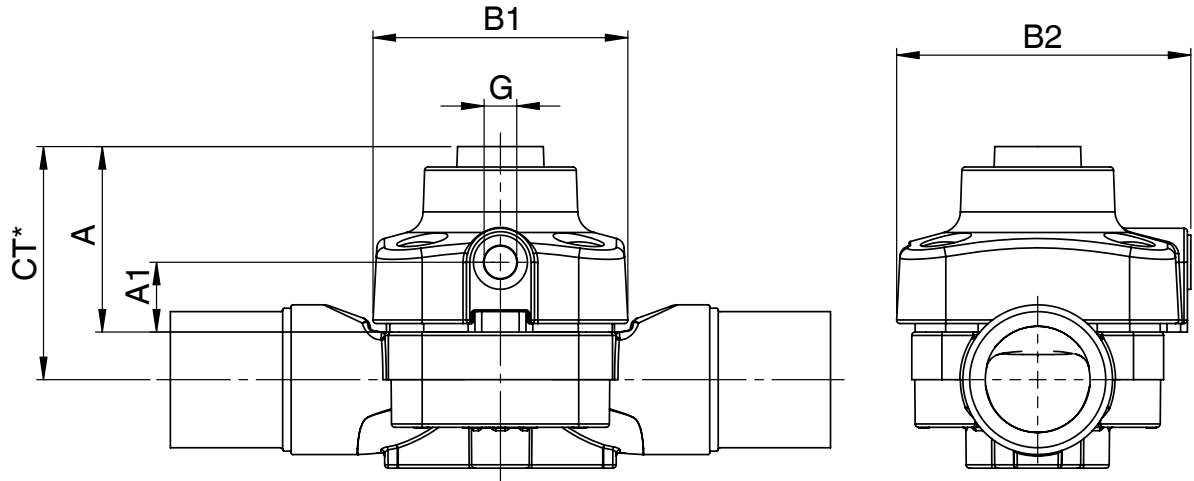
Valve body material	Code
PVC-U, grey	1
ABS	4
Inliner PP-H grey / outliner PP reinforced Union nut made from PP	71
Inliner PVDF / outliner PP reinforced Union nut made from PVDF	75

Order example	R647	25	D	7	1	17	5	ED	N
Type	R647								
Nominal size		25							
Body configuration (code)			D						
Connection (code)				7					
Valve body material (code)					1				
Diaphragm material (code)						17			
Control function (code)							5		
Actuator size (code)								ED	
Special version (code)									N

## Dimensions [mm]

### Actuator dimensions

Diaphragm size	DN	B1	B2	A	A1	G
20	15, 20, 25	64	69.5	50	19	G 1/4
25	32	75	85.0	54	20	G 1/4
40	40, 50	100	108.0	67	24	G 1/4

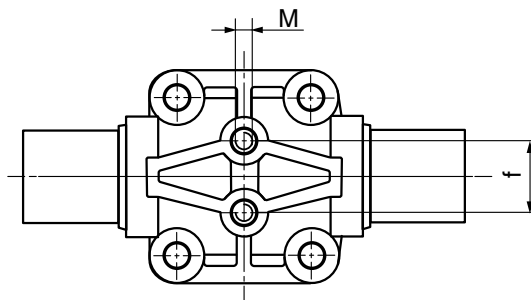


\* CT = A + H1 (see body dimensions)

### Valve body mounting dimensions

Diaphragm size	DN	M Connection code 0, 4, 7, 7R, 20, 33, 39, 3M, 3T, 78	M Connection code 30	f
20	15 - 25	M6	M6*	25,0
25	32	M6	M6*	25,0
40	40 - 50	M8	M8*	44,5

\* Inch thread on request.



## Body dimensions [mm]

### Spigots, connection code 0

Valve body material: PVC-U (code 1), Inliner PP-H (code 71), inliner PVDF (code 75)

MG	DN	NPS	H	H1	L	ød	c		Weight [kg]
							Material code 1	Material code 71, 75	
20	15	1/2"	36.0	10.0	124	20	16	18	0.12
	20	3/4"	38.0	12.0	144	25	19	19	0.13
	25	1"	39.0	13.0	154	32	22	22	0.16
25	32	1 1/4"	41.0	15.0	174	40	32	32	0.22
40	40	1 1/2"	63.2	23.2	194	50	35	26	0.50
	50	2"	63.2	23.2	224	63	38	33	0.57

MG = diaphragm size

For materials see overview on page 10

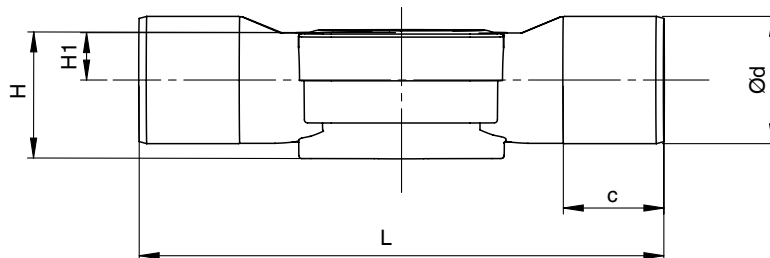
### Spigots, connection code 30

Valve body material: PVC-U (code 1), ABS (code 4)

MG	DN	NPS	H1	L	H	ød	c	Weight [kg]
20	15	1/2"	10.0	141	36.0	21.4	24	0.12
	20	3/4"	12.0	144	38.0	26.7	27	0.13
	25	1"	13.0	154	39.0	33.6	30	0.16
25	32	1 1/4"	15.0	174	41.0	42.2	33	0.22
40	40	1 1/2"	23.2	194	63.2	48.3	35	0.50
	50	2"	23.2	224	63.2	60.3	40	0.57

MG = diaphragm size

For materials see overview on page 10



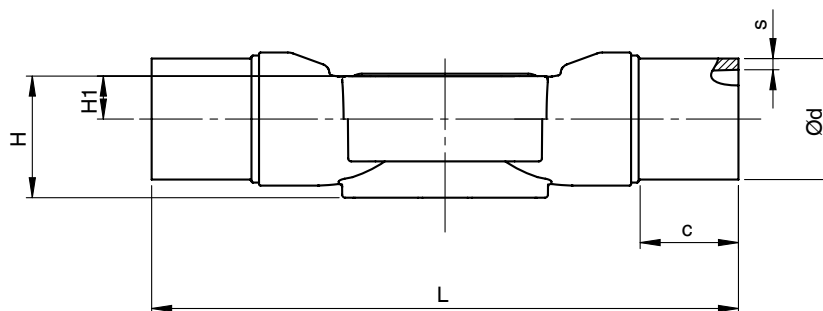
## Body dimensions [mm]

### Stutzen zum IR-Stumpfschweißen, Anschluss-Code 20 Ventilkörperwerkstoff Inliner PP-H (Code 71), Inliner PVDF (Code 75)

MG	DN	L	H	H1	ød	s		c	Weight [kg]
						Material code 71	Material code 75		
20	15	154	36.0	10.0	20	1.9	1.9	33	0.10
	20	154	38.0	12.0	25	2.3	1.9	33	0.12
	25	154	39.0	13.0	32	2.9	2.4	33	0.14
25	32	194	41.0	15.0	40	3.7	2.4	33	0.18
40	40	194	63.2	23.2	50	4.6	3.0	33	0.40
	50	224	63.2	23.2	63	5.8	3.0	33	0.47

MG = diaphragm size

For materials see overview on page 10

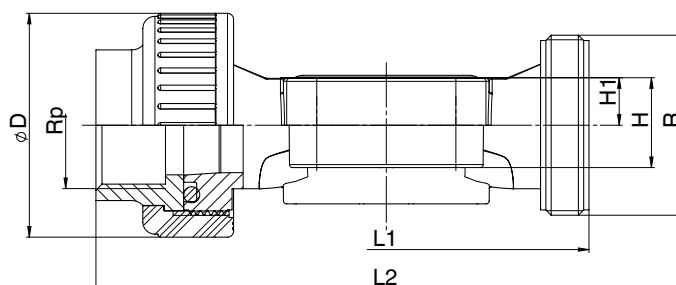


### Union ends with insert, connection code 7R Valve body material: PVC-U (code 1)

MG	DN	R	øD	L1	H	H1	L2	Rp	Weight [kg]
20	15	G 1	43	108	36.0	10.0	146	1/2	0.17
	20	G 1 1/4	53	108	38.0	12.0	152	3/4	0.21
	25	G 1 1/2	60	116	39.0	13.0	166	1	0.26
25	32	G 2	74	134	41.0	15.0	192	1 1/4	0.40
40	40	G 2 1/4	83	154	63.2	23.2	222	1 1/2	0.73
	50	G 2 3/4	103	184	63.2	23.2	266	2	1.00

MG = diaphragm size

For materials see overview on page 10



## Body dimensions [mm]

### Union ends with insert, connection code 7 Valve body material: PVC-U (code 1), ABS (code 4), inliner PP-H (code 71), inliner PVDF (code 75)

MG	DN	R	øD	L1	H	H1	L2				ød	Weight [kg]
							Material code 1	Material code 4	Material code 71	Material code 75		
20	15	G 1	43	108	36.0	10.0	146	150	143	146	20	0.17
	20	G 1 1/4	53	108	38.0	12.0	152	156	146	150	25	0.21
	25	G 1 1/2	60	116	39.0	13.0	166	170	158	162	32	0.26
25	32	G 2	74	134	41.0	15.0	192	196	181	184	40	0.40
40	40	G 2 1/4	83	154	63.2	23.2	222	222	207	210	50	0.73
	50	G 2 3/4	103	184	63.2	23.2	266	266	245	248	63	1.00

MG = diaphragm size

For materials see overview on page 10

### Union ends with insert, connection code 33, 3M Valve body material: PVC-U (code 1), ABS (code 4)

MG	DN	NPS	R	øD	L1	H	H1	Connection code 33				Connection code 3M		
								L2		ød	Weight [kg]	L2		Weight [kg]
								Material code 1	Material code 4			Material code 1	ød	
20	15	1/2"	G 1	43	108	36.0	10.0	146	150	21.4	0.24	158	21.4	0.26
	20	3/4"	G 1 1/4	53	108	38.0	12.0	152	156	26.8	0.28	164	26.7	0.30
	25	1"	G 1 1/2	60	116	39.0	13.0	166	170	33.6	0.33	180	33.5	0.38
25	32	1 1/4"	G 2	74	134	41.0	15.0	192	198	42.3	0.70	204	42.2	0.73
40	40	1 1/2"	G 2 1/4	83	154	63.2	23.2	222	220	48.3	0.83	230	48.3	0.93
	50	2"	G 2 3/4	103	184	63.2	23.2	264	264	60.4	1.40	266	60.4	1.50

MG = diaphragm size

For materials see overview on page 10

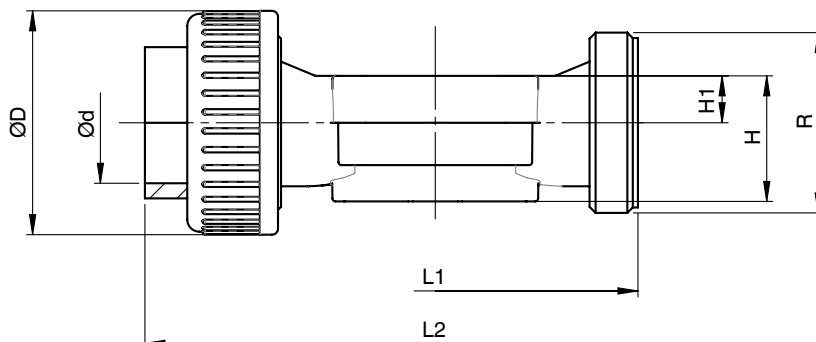
### Union ends with insert, connection code 3T Valve body material: PVC-U (code 1)

MG	DN	R	øD	L1	H	H1	L2	ød	Weight [kg]
20	15	G 1 1/4*	53*	108	36.0	10.0	152	22	0.26
	20	G 1 1/4	53	108	38.0	12.0	152	26	0.30
	25	G 1 1/2	60	116	39.0	13.0	166	32	0.38
25	32	G 2	74	134	41.0	15.0	192	38	0.73
40	40	G 2 1/4	83	154	63.2	23.2	222	48	0.93
	50	G 2 3/4	103	184	63.2	23.2	266	60	1.50

\* Insert requires valve body DN 20

MG = diaphragm size

For materials see overview on page 10





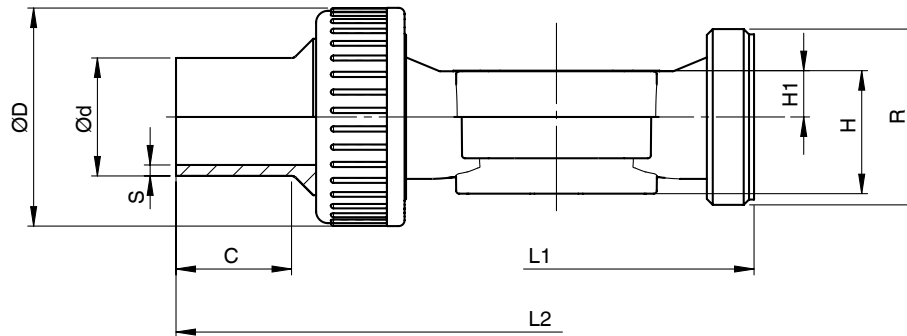
## Body dimensions [mm]

### Union ends with insert, connection code 78 Valve body material: inliner PP-H (code 71), inliner PVDF (code 75)

MG	DN	L1	L2	H	H1	øD	ød	R	s		c	Weight [kg]
									Material code 71	Material code 75		
20	15	108	214	36.0	10.0	43	20	G 1	1.9	1.9	36	0.27
	20	108	220	38.0	12.0	53	25	G 1 1/4	2.3	1.9	37	0.36
	25	116	234	39.0	13.0	60	32	G 1 1/2	2.9	2.4	39	0.37
25	32	134	258	41.0	15.0	74	40	G 2	3.7	2.4	39	0.63
40	40	154	284	63.2	23.2	83	50	G 2 1/4	4.6	3.0	43	1.13
	50	184	320	63.2	23.2	103	63	G 2 3/4	5.8	3.0	43	1.60

MG = diaphragm size

For materials see overview on page 10



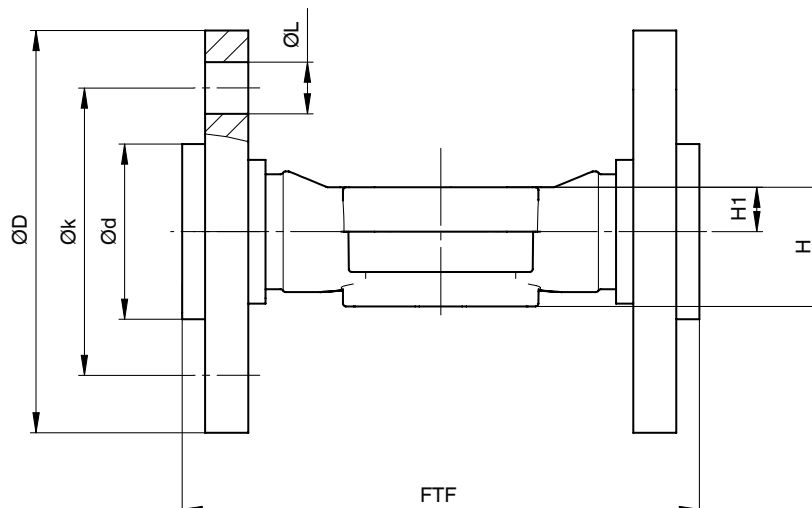
### Flanges, connection code 4, 39 Valve body material: PVC-U (Code 1), inliner PP-H (code 71), inliner PVDF (code 75)

MG	DN	FTF	H	H1	Connection code 4					Connection code 39					Weight [kg]
					øD	øL	ød	øk	Number of bolts	øD	øL	ød	øk	Number of bolts	
20	15	130	36.0	10.0	95	14	45*	65	4	95	16	45	60	4	0.67
	20	150	38.0	12.0	105	14	58	75	4	105	16	54	70	4	0.84
	25	160	39.0	13.0	115	14	68	85	4	115	16	63	79	4	1.28
25	32	180	41.0	15.0	140	18	78	100	4	140	16	73	89	4	1.89
40	40	200	63.2	23.2	150	18	88	110	4	150	16	82	98	4	2.36
	50	230	63.2	23.2	165	18	102	125	4	165	19	102	121	4	3.08

\* Material code 1 ød = 34

MG = diaphragm size

For materials see overview on page 10



## Overview of valve bodies for GEMÜ R647

Connection code		0			4			7			7R	20			30		33		39			3M	3T	78	
Material code		1	71	75	1	71	75	1	4	71	75	1	71	75	1	4	1	4	1	71	75	1	1	71	75
MG	DN																								
20	15	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	X	X
	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	25	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
25	32	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
40	40	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	50	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

MG = Diaphragm size

## Overview - Product conformity NSF (special function code N)

Diaphragm size	DN	Connection code									Material code	Diaphragm material (code)
		0	4	7	7R	30	33	39	3M	3T	1	17
20	15	X	X	X	X	X	X	X	X	-	X	X
	20	X	X	X	X	X	X	X	X	X	X	X
	25	X	X	X	X	X	X	X	X	X	X	X
25	32	X	X	X	X	X	X	X	X	X	X	X
40	40	X	X	X	X	X	X	X	X	X	X	X
	50	X	X	X	X	X	X	X	X	X	X	X

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