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Technische Dokumentation
Technical Documentation

TUFLIN®
Jacketed Plug Valves

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CRANE
ChemPharma Flow Solutions

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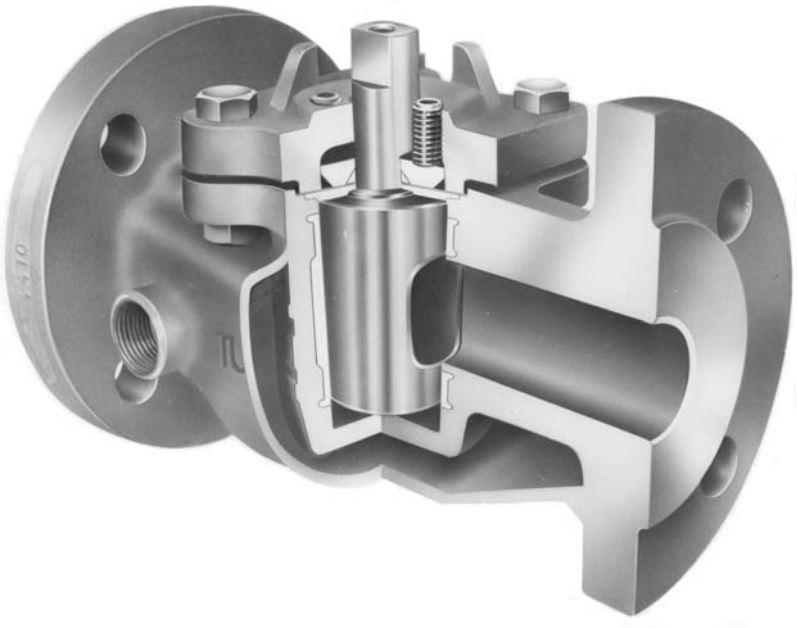
Design Features of TUFLIN® Jacketed Plug Valves



TUFLIN® Valves incorporate a plug rotating in a Teflon®-sleeve locked in the body. The Teflon®-sleeve serves as a self-lubricating seal against leakage through ports and to the atmosphere.
TUFLIN® Valves provide tight shut-off for liquids, gases or slurries, plus corrosion resistance with the absence of product contamination. The special TUFLIN® design accommodates specified changes in temperature, high vacuum as well as rated pressures, while still maintaining complete shut off.
The low friction Teflon® sleeve surrounding the plug permits quick and easy operation. Costly lubrication and maintenance are eliminated.
The seats are not exposed to the media in either the open or closed position.
The cold flow properties of Teflon® and the tendency to expand under heat are prevented by the special design of the body interior. The sleeve is locked into the body by means of metal lips surrounding the port areas and by the shoulders at the top and bottom in the body, thus restrained from rotation and movement. The ribs provided around the ports, at the top and bottom establish a very high compression of the Teflon®-sleeve against the plug.
TUFLIN® Jacketed Plug Valves provide excellent service where media need to be influenced through heating or cooling.
The welded jackets consist of two shells, sized from flange to flange to assure consistent heating or cooling of the valve and product. Crystallization or seizing of the product, as it is possible with bitumen; liquid sulphur, resins etc. will be prevented. The efficient flow or products is additionally secured through the elimination of pockets.
Heat carrier oil, steam, water, brine etc. can be used as heating or cooling medium.
The design of the split shells (jacket) permits a thorough hydrostatic and pneumatic examination of the valve body prior to the welding of the jacket.
Every valve will be tested again after the jackets are welded to the body.

Features
No lubrication, no seizing of plug
Teflon®-sleeve fully retained at top, bottom and around ports
Minimized body cavities for residuals or contamination
Heating/cooling from flange to flange
No maintenance cost
Complete shut off

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Components and Material Availability

Available Materials for Jacketed Valves
(Body and Plug)

Carbon Steel EN10213-4 (1.0619, GS-C25), A216-WCB, A352-LCB
Stainless Steel 1.4408, 1.4552, 1.4309 as per EN10213-4, CF8M, CF8C, CF8, CF3M, CF3
Argonit 1 (1.4361 casting), CN7M (A 20), A494-M-35-1 (Alloy 400, Monel), A494-CZ100 (Alloy 200, Nickel), A494-N7M (Alloy B2), A494-CW2M (Alloy C4), B367-C2 (Titanium), Zirconium R60702, A494-CY-40 (Alloy 600)
Argonit® is a registered trade mark of XOMOX.

Combinations of different materials for body and plug are available.

Body and plug are of the same material unless otherwise requested.

Available Materials for Jackets:
Steel ST 1403 or R ST 37-2
Stainless Steel 1.4301

Seals and sleeves are pure Teflon® (no regenerate).
Teflon®-fiberglass reinforced sleeves available on request.
Other sleeve materials depending on pressure and temperature. Other fluorocarbon seals for special applications on request.

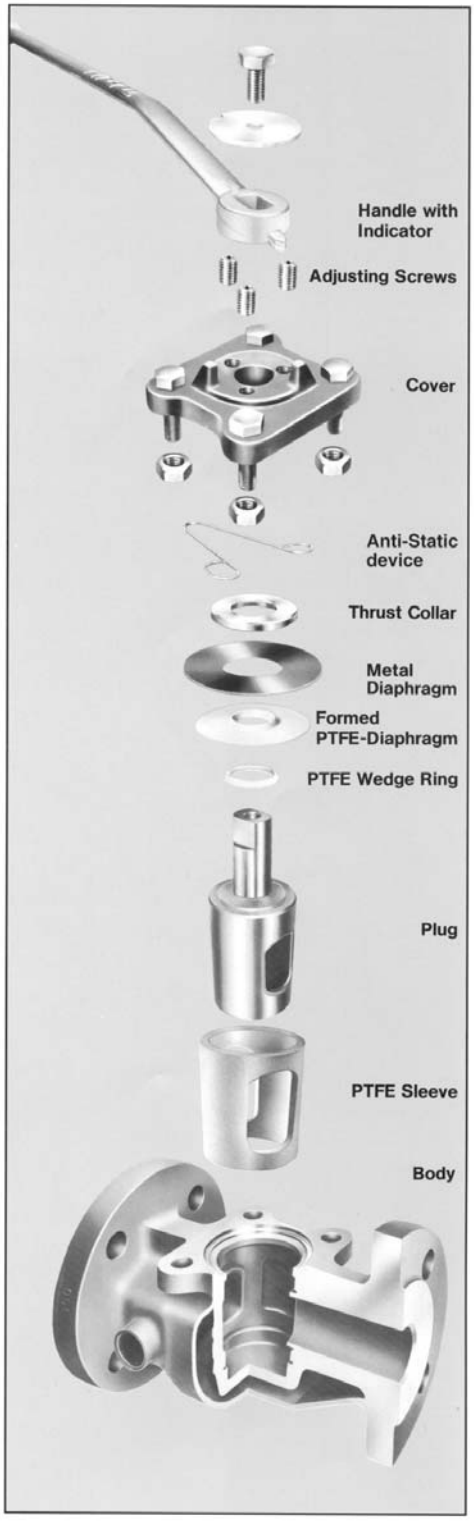
All Jacketed Valves are available in FIRESAFE – design acc. to API 607 4th edition, also with electrostatic eliminator, or free of oil and grease.
After final assembly, every valve is seat and shell tested acc. to the required standards.

Valves up to DN 100 / NPS 4 are equipped as a standard with wrenches, DN 125 / NPS 5 and above with manual gear operators.

Available Flange Standards:
PN 10-40 (EN 1092-1)
PN 63-100 (EN 1092-1) on request
CLASS 150 (ASME B16.5)
CLASS 300-600 (ASME B16.5) on request
JIS (JIS B2210)
British Standard (BS1560)
Weld ends or screwed ends on request.
Temperature range: 173 K to 553 K (-100°C to +280°C)
Suitable for vacuum services
(Vacuum range: 1.33 * 10^3 to 1.33 * 10^{-2} mbar)

Strength calculation method against internal pressure:
The calculation procedure for pressure retaining valve components has been performed acc. to DIN 3840 (EN12516).

Subject to technical modifications.



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Design and Dimensions of Wrenches

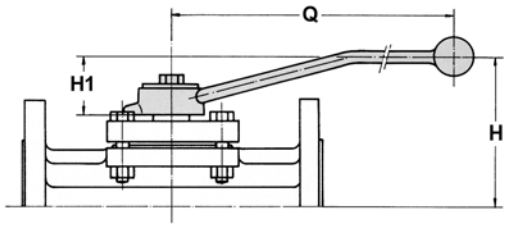
(with flow direction indicator)

Figure 1 **Standard Wrench, Material: Aluminium**
Figure 2 **Wrench with hub cap, Material: Steel**
(Special Design for DN 15 - 80 / NPS ½ - 3)
Figure 3 **T-Wrench, Material: Steel**

Dimensions in mm

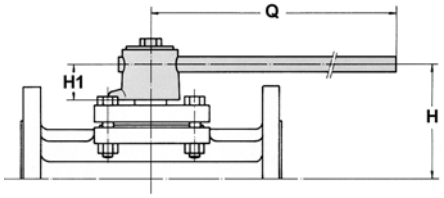
DN	NPS	H	H1	Q	Weight in kg
15	½	76	45	180	0.1
20	¾	76	45	180	0.1
25	1	96	46	260	0.2
32		96	46	260	0.2
40	1 ½	106	45	362	0.3
50	2	118	47	435	0.4
65		112	47	435	0.4
80	3	132	47	435	0.4

Standard wrench for DN 100 / NPS 4



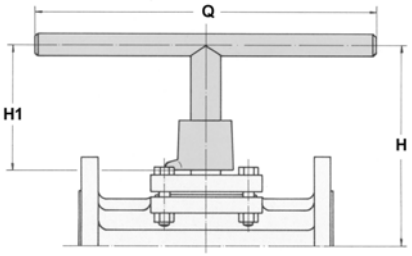
Dimensions in mm

DN	NPS	H	H1	Q	Weight in kg
15	½	68	36	190	0.32
20	¾	68	36	190	0.3
25	1	80	30	250	0.7
32		80	30	250	0.7
40	1 ½	91	30	300	1.1
50	2	108	37	450	1.6
65		102	37	450	1.6
80	3	122	37	450	1.6
100	4	151	45	600	3.2



Dimensions in mm

DN	NPS	H	H1	Q	Weight in kg
15	½	132	100	300	0.3
20	¾	132	100	300	0.3
25	1	195	145	300	0.6
32		195	145	300	0.6
40	1 ½	206	145	400	0.9
50	2	216	145	500	1.3
65		210	145	500	1.3
80	3	230	145	500	1.3
100	4	256	150	600	2.8



DN 125 – 400 / NPS 5 – 16 are standard equipped with worm gear (please see page 8 and 10).

Recommended wrench for isolated piping systems.
Standard wrench for valves with oversized flanges.

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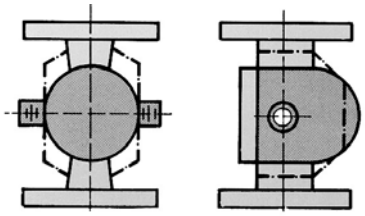
Selection of Preferential Jacket Connections

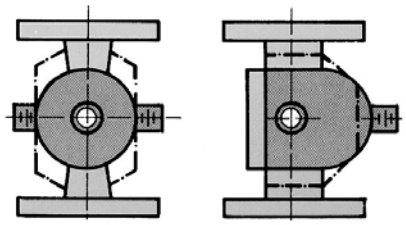
Jacket connection R with treaded socket
Jacket connection N with weld end socket



- - - Jacket ≥ DN 125 / NPS 5

Valid for Valves	Connection and Size*	Valve size
DIN DN 15 and 20 NPS ½ - 1 DIN DN 125 – 300 NPS 5 – 14	Thread R 3/8	Up to DIN DN 20, NPS 1
	Stutzen NPS ½	Up to DIN DN 20, NPS 1
	Thread R 1	Up to DIN DN 125-350, NPS 5 - 14
	Socket NPS 1	Up to DIN DN 125-350, NPS 5 - 14

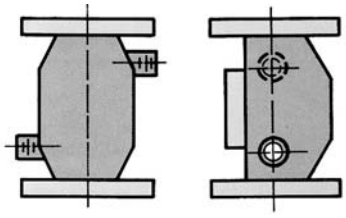
Jacket connection S with treaded socket
Jacket connection O with weld end socket



- - - Jacket ≥ DN 125 / NPS 5

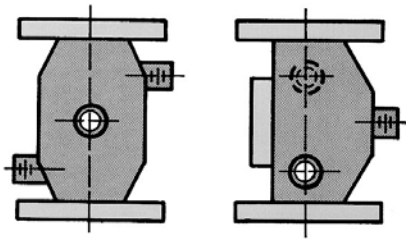
Valid for Valves	Connection and Size*	Valve size
DIN DN 15 and 20 NPS ½ - 1 DIN DN 125 – 300 NPS 5 – 14	Thread R 3/8	Up to DIN DN 20, NPS 1
	Socket NPS ½	Up to DIN DN 20, NPS 1
	Thread R 1	Up to DIN DN 125-350, NPS 5 - 14
	Socket NPS 1	Up to DIN DN 125-350, NPS 5 - 14

Jacket connection E with treaded socket
Jacket connection A with weld end socket



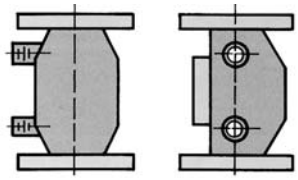
Valid for Valves	Connection and Size*	Valve size
DIN DN 25 - 100 NPS ½ - 4	Thread R 3/8	Up to DIN DN 32
	Thread R ½	DIN DN 40-100, NPS 1 ½ - 4
	Socket NPS ½	DIN DN 40-100, NPS 1 ½ - 4

Jacket connection F with treaded socket
Jacket connection B with weld end socket



Valid for Valves	Connection and Size*	Valve size
DIN DN 25 - 100 NPS 1 ½ - 4	Thread R 3/8	Up to DIN DN 32
	Thread R ½	DIN DN 40-100, NPS 1 ½ - 4
	Socket NPS ½	DIN DN 40-100, NPS 1 ½ - 4

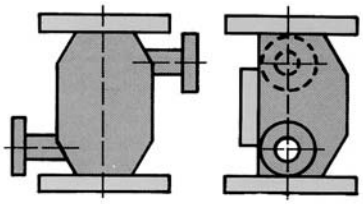
Jacket connection G with treaded socket
Jacket connection C with weld end socket



Valid for Valves	Connection and Size*	Valve size
DIN DN 25 - 100 NPS ½ - 4	Thread R 3/8	Up to DIN DN 32
	Thread R ½	DIN DN 40-100, NPS 1 ½ - 4
	Socket NPS ½	DIN DN 40-100, NPS 1 ½ - 4

* Not valid for valve type 9067H, 90367H, 9037H and 90337H.

Jacket connection J with flanges



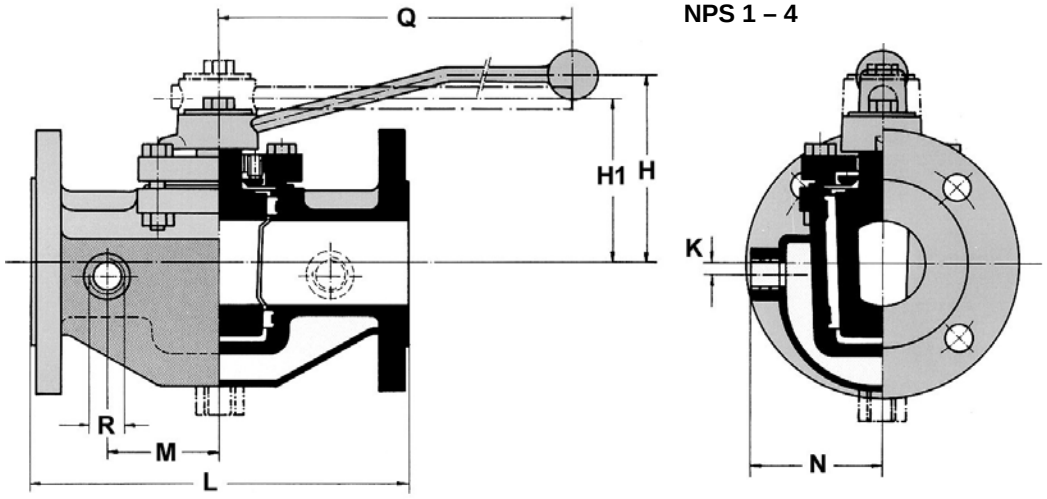
Valid for Valves	Connection and Size*	Valve size
DIN DN 25 - 100 NPS ½ - 4	Flange DIN DN 15	DIN DN 15 – 100
	Flange NPS ½	NPS ½ - 4

Other jacket connections on request.

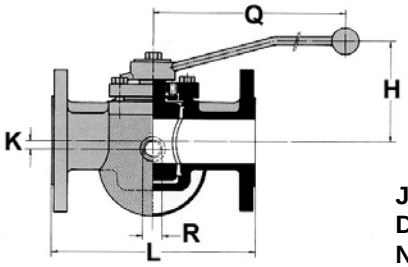
Type 127 H	**DIN PN 10 – 40**	**DN 15 – 100**
Type 067 H	**ASME Class 150**	**NPS ½ – 4**
Type 0367 H	**ASME Class 300**	**NPS ½ – 4**

Above DN 100 / NPS 4 please see page 8

Jacket connection E
DN 25 – 100 /
NPS 1 – 4



H1) Wrench for
DN 100 / NPS 4



Jacket connection R
DN 15 – 20 /
NPS ½ – ¾

Dimensions in mm

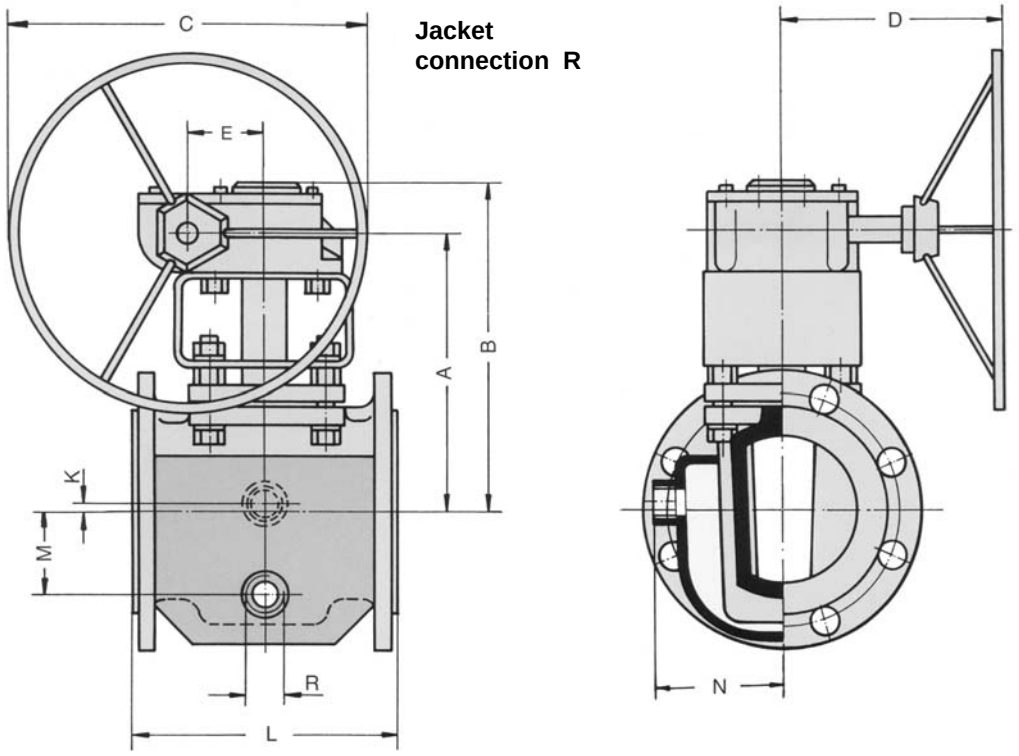
DN	NPS	L			H	Q	K			M			N			R	Approx. Weight in kg		
		127 H	067 H	0367 H			127 H	067 H	0367H	127 H	067 H	0367 H	127H	067H	0367H		127H	067H	0367H
15	½	130	108	150	76	180	6	6	6	0	0	0	56	56	56	R 3/8	3.0	2.2	3.5
20	¾	150	118	152	76	180	6	6	6	0	0	0	56	56	56	R 3/8	4.1	2.4	4.5
25	1	160	127	159	96	260	8	10	8	38	0	38	62	81	62	R 3/8	5.0	3,8	6.2
32		180			96	260	8			38			65			R 3/8	6.8		
40	1 ½	200	165	190	106	362	4	0	4	50	40	50	63	58	63	R 1/2	8.5	6.5	9.0
50	2	230	178	216	118	435	0	0	0	70	40	60	74	68	82	R 1/2	12.6	10.4	15.0
65		290			112	435	6			90			75			R 1/2	16.6		
80	3	310	203	283	132	435	*2	*10	0	100	45	80	77	78	91	R 1/2	20.8	15.6	24.0
100	4	350	229	305	151	600	*4	*15	*4	85	50	85	101	105	101	R 1/2	34.0	28.6	50.0

* Dimension referring to valve centerline.

Dimensions of flanges according to standards.

Type 127 H/G	**DIN PN 10 – 40**	**DN 125 – 300**
Type 067 H/G	**ASME Class 150**	**NPS 5 – 14**
Type 0367 H/G	**ASME Class 300**	**NPS 6 – 12**

Below DN 125 / NPS 5 please see page 7 „G“ indicates gear operated.



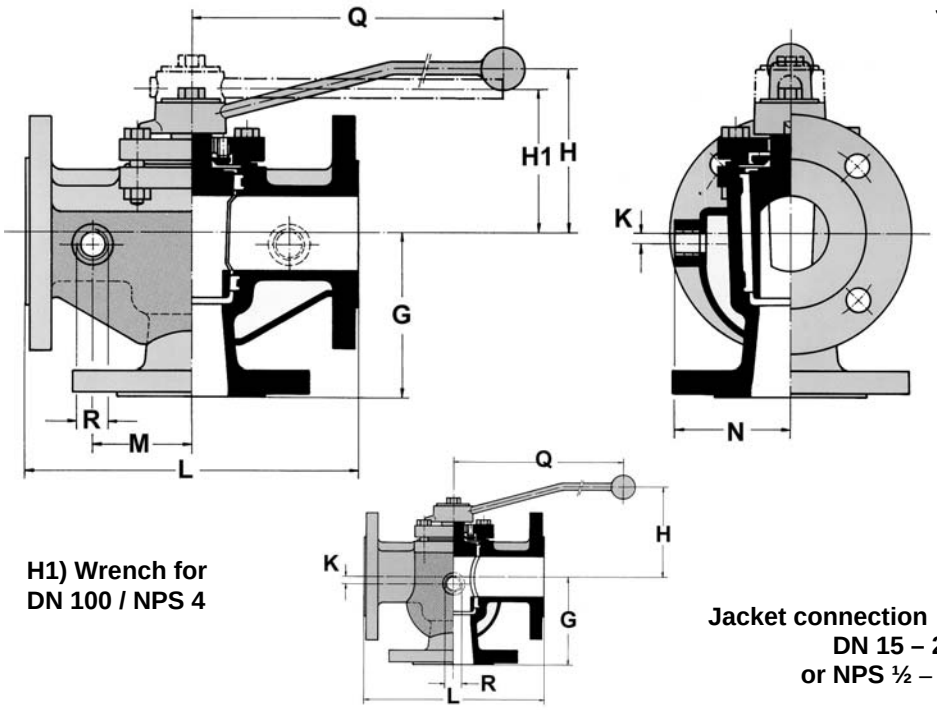
Dimensions in mm

DN	NPS	L			A	B	C	D	E	K			M			N			R	Approx. Weight kg		
		127 H	067 H	0367 H						127 H	067 H	0367 H	127 H	067 H	0367 H	127 H	067 H	0367 H		127 H	067 H	0367 H
125	5	267	267		308	347	300	223	67	20	20		65	65		115	115		R1	62.5	62.5	
150	6	267	267	403	308	347	300	223	67	20	20	0 [1)]	65	65	104 [1)]	115	115	116	R1	62	62	88
200	8	292	292	419	345	384	300	223	67	95	95		108	108		120	120		R1	93	93	
250	10	*330	330	457	450	494	457	279	90	15	15		108	108		180	180		R1	130	130	
300	12	*356	356	502	478	522	457	279	90	55	55		130	130		180	180		R1	195	195	
350	14	** 550	550	762	517	594	762	427	154	180	180		170	170		222	222		R1	221	221	

* Only PN 10 – 16
** Only PN 10 – 25
1) Jacket connection E please see page 7 Dimensions of flanges according to standards.

Type 137 H	**DIN PN 10 – 40**	**DN 15 – 100**
Type 037 H	**ASME Class 150**	**NPS ½ – 4**
Type 0337 H	**ASME Class 300**	**NPS ½ – 4**

Above DN 100 / NPS 4 please see page 10



Jacket connection E
DN 25 – 100 or
NPS 1 – 4

H1) Wrench for
DN 100 / NPS 4

Jacket connection R
DN 15 – 20
or NPS ½ – ¾

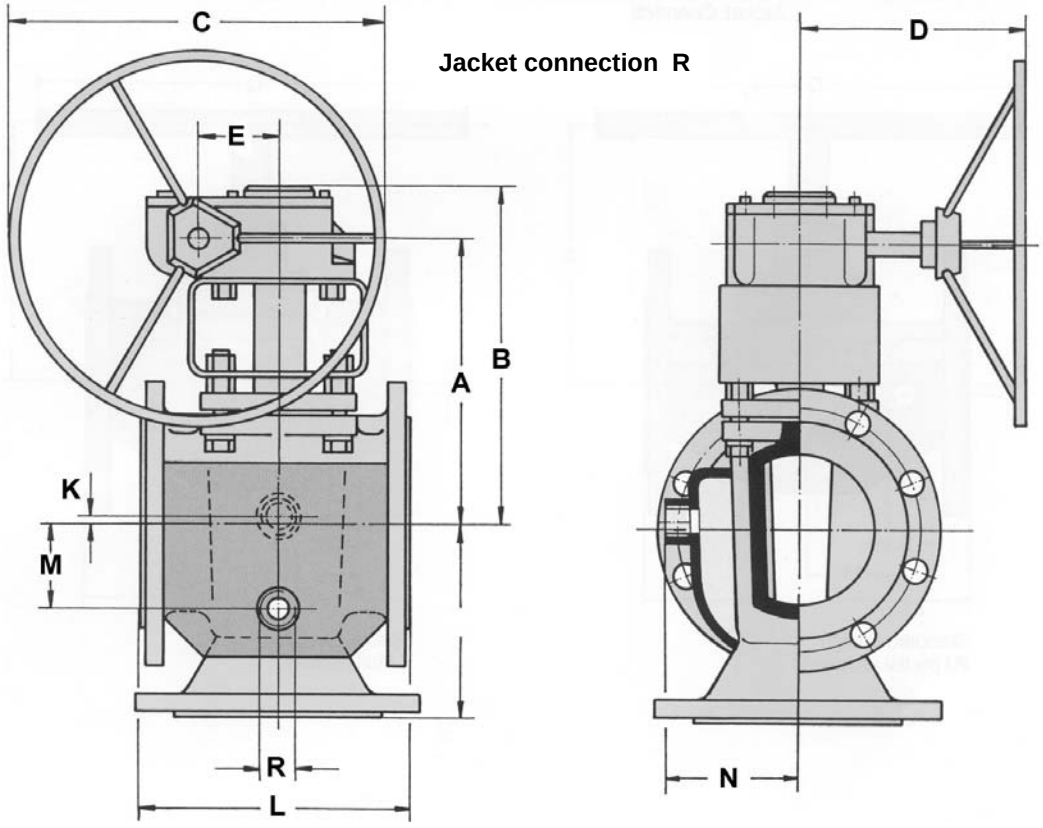
Dimensions in mm

DN	NPS	L			G			H	Q	K			M			N			R	Approx. Weight kg		
		137 H	037 H	033 7H	137 H	037 H	033 7H			137 H	037 H	0337 H	137 H	037 H	0337 H	137 H	037 H	0337 H		137 H	037 H	0337 H
15	½	130	130	108	85	85	85	76	180	6	6	6	0	0	0	56	56	56	R ⅜	4.2	3.2	5.5
20	¾	150	150	118	85	85	85	76	180	6	6	6	0	0	0	56	56	56	R ⅜	5.7	4.5	5.8
25	1	160	160	127	80	89	95	96	260	8	10	8	38	0	38	62	81	62	R ⅜	6.4	5.2	8.0
32		180	180		90			96	260	8			38			65			R ⅜	8.8		
40	1 ½	200	200	165	100	105	111	106	362	4	0	4	50	40	50	63	58	63	R ½	10.9	8.1	13.0
50	2	230	230	178	115	114	121	118	435	0	0	0	70	40	60	74	68	82	R ½	15.2	13.5	18.5
65		290	290		145			112	435	6			90			75			R ½	20.0		
80	3	310	310	203	155	130	141	132	435	*2	*10	0	100	45	80	77	78	91	R ½	25.5	20.9	31.5
100	4	350	350	229	175	152	171	151	600	*4	*15	*4	85	50	85	101	105	101	R ½	35.0	38.5	61.5

* Dimensions referring to valve centerline.
Please indicate type of plug when ordering (page 13)
Dimensions of flanges according to standards.

Type 137 H/G	**DIN PN 10 – 40**	**DN 125 – 300**
Type 067 H/G	**ASME Class 150**	**NPS 5 – 12**
Type 0367 H/G	**ASME Class 300**	**NPS 6 – 12**

Below DN 125 / NPS 5 please see page 9 „G“ indicates gear operated



Dimensions in mm

DN	NPS	L				G		A	B	C	D	E	K		M		N		R	Approx. Weight kg		
		137 H	037 H	0337 H	137 H	037 H	0337 H						137H 037H	0337 H	137H 037H	0337 H	137H 037H	0337 H		127 H	067 H	0367 H
125	5	267	267		190	190		308	347	300	223	67	20		65		115		R1	70	70	
150	6	267	267	403	190	190	216	308	347	300	223	67	20	0 [1)]	65	104 [1)]	115	116	R1	69	69	108
200	8	292	292	419	229	229	254	345	384	300	223	67	95		108		120		R1	121	120	
250	10	*330	330	457	*280	280		450	494	457	279	90	15		108		180		R1	158	157	
300	12	*356	356	502	*350	350		478	522	457	279		55		130		180		R1	243	241	

* PN 10 - 16 only
1) Jacket connection E see page 9
Please indicate type of plug when ordering (page 13).
Dimensions of flanges according to standards.

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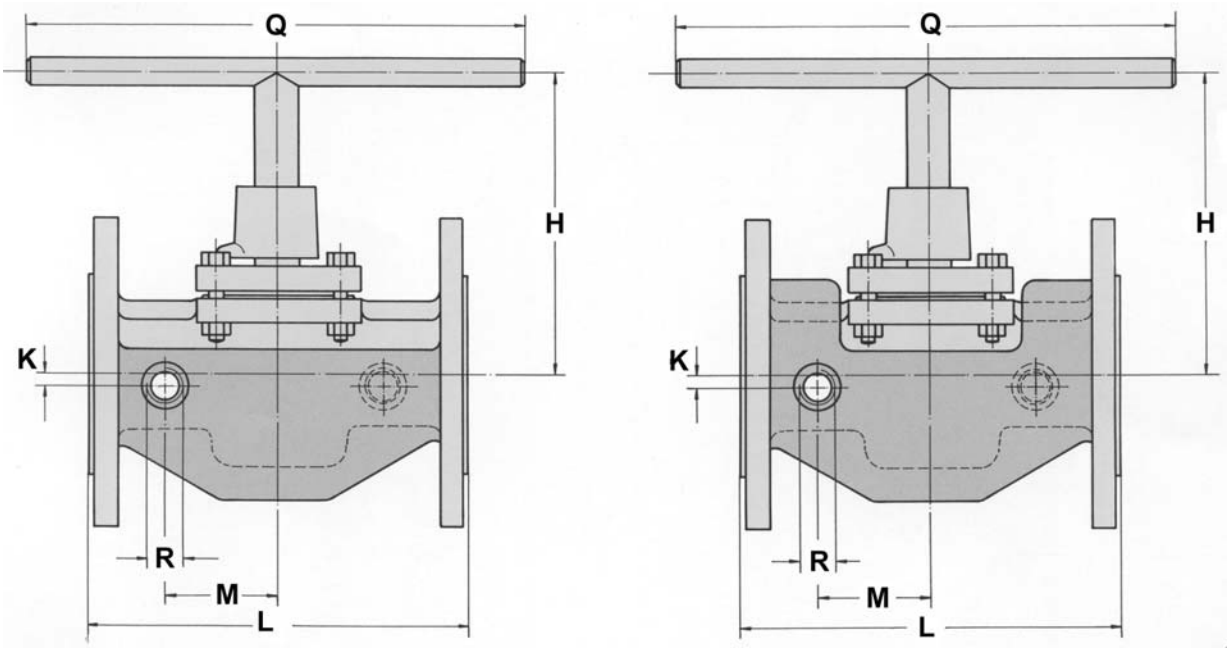
TUFLIN® Jacketed Two Way Valves with Oversized Flanges

Type 9067 H ASME Class 150
Type 90367 H ASME Class 300

Jacket Connection E



Standard design
PJ partial jacketed

Special design
FJ fully jacketed

Dimensions in mm

NPS		L		H	Q	K	M	R	Approx. Weight kg	
Valve	Flange	9067H	90367H						9067H	90367H
1	2	186	192	190	300	10	45	R 3/8	9.6	12.8
1½	2½	200	207	201	400	6	50	R ½	12.5	21.0
2	3	216	222	211	500	6	50	R ½	18.8	28.5
3	4	230	244	225	500	0	55	R ½	24.5	36.0
4	6	270	290	251	600	0	75	R ½	43.0	61.0

Dimensions of flanges according to standards.

DIN standard on request.

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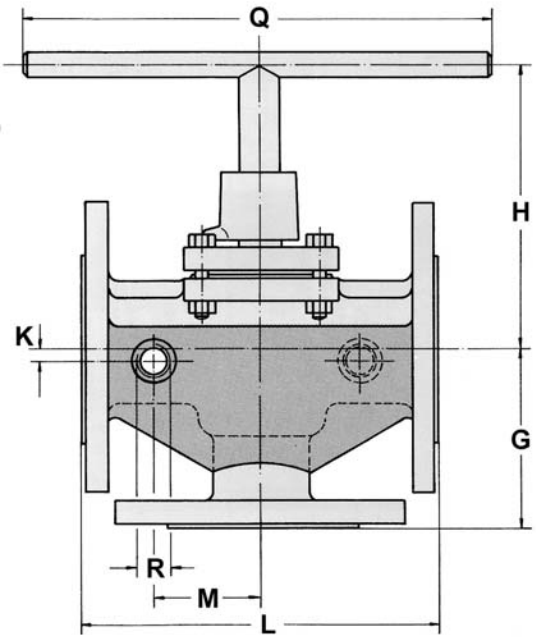
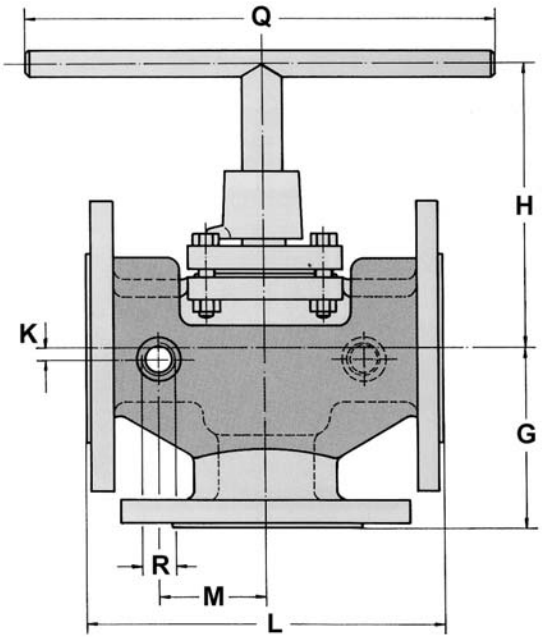
TUFLIN® Jacketed Three Way Valves with Oversized Flanges

Type 9037 H ASME Class 150
Type 90337 H ASME Class 300

Jacket Connection E



Standard design
PJ partial jacketed



Special design
FJ fully jacketed

Dimensions in mm

NPS		L		G		H	Q	K	M	R	Approx. Weight in kg	
Valve	Flange	9037H	90337H	9037H	90337H						9037H	90337H
1	2	186	192	120	123	190	300	10	45	R 3/8	11.6	13.5
1½	2½	200	207	142	143	201	400	6	50	R ½	17.0	21.0
2	3	216	222	150	153	211	500	6	50	R ½	24.5	36.5
3	4	230	244	178	184	225	500	0	55	R ½	32.5	48.5
4	6	270	290	208	218	251	600	0	75	R ½	55.5	70.0

Please indicate type of plug when ordering (page 13).
Dimensions of flanges according to standards.
DIN standard on request.

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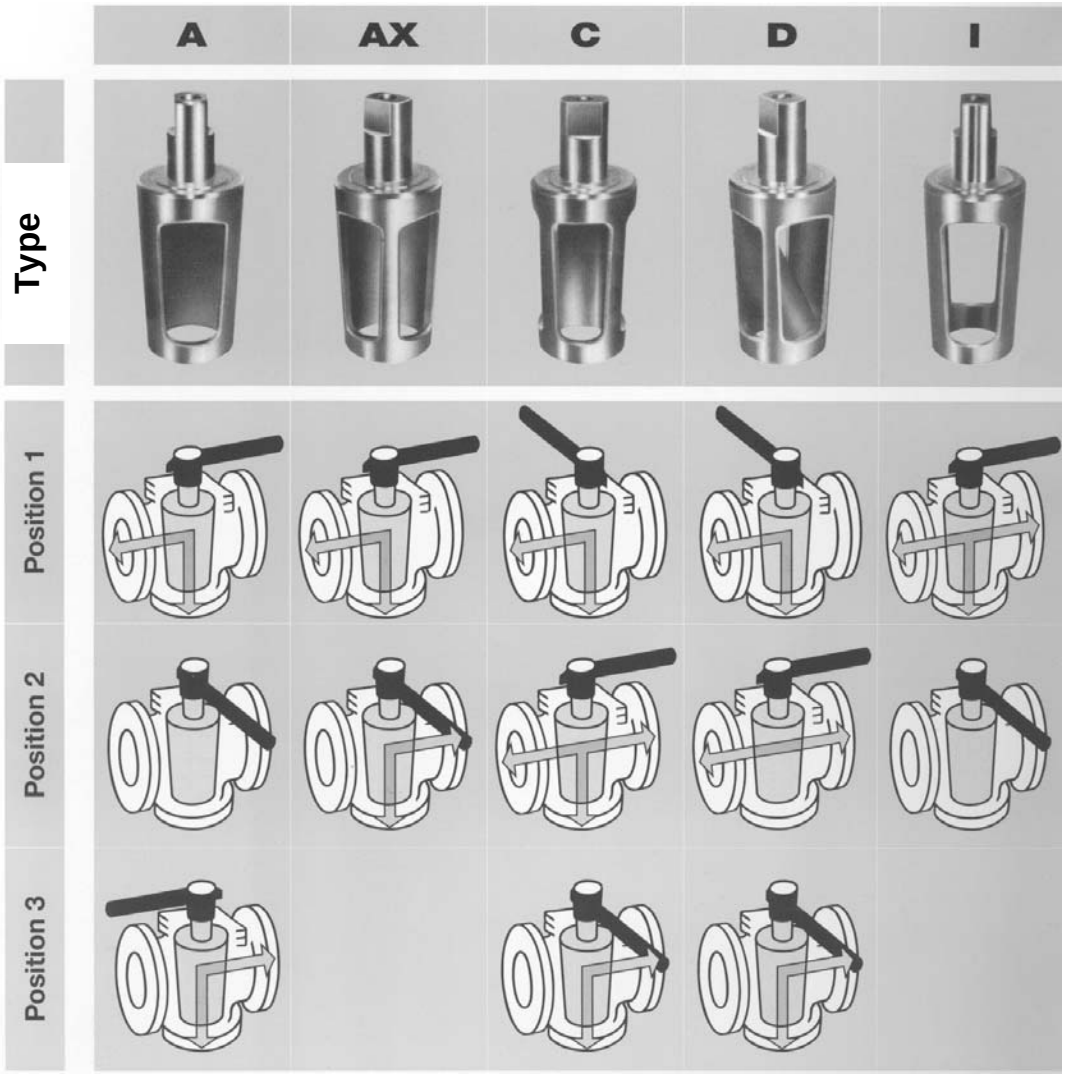
Plug Arrangements for TUFLIN® Three Way Valves



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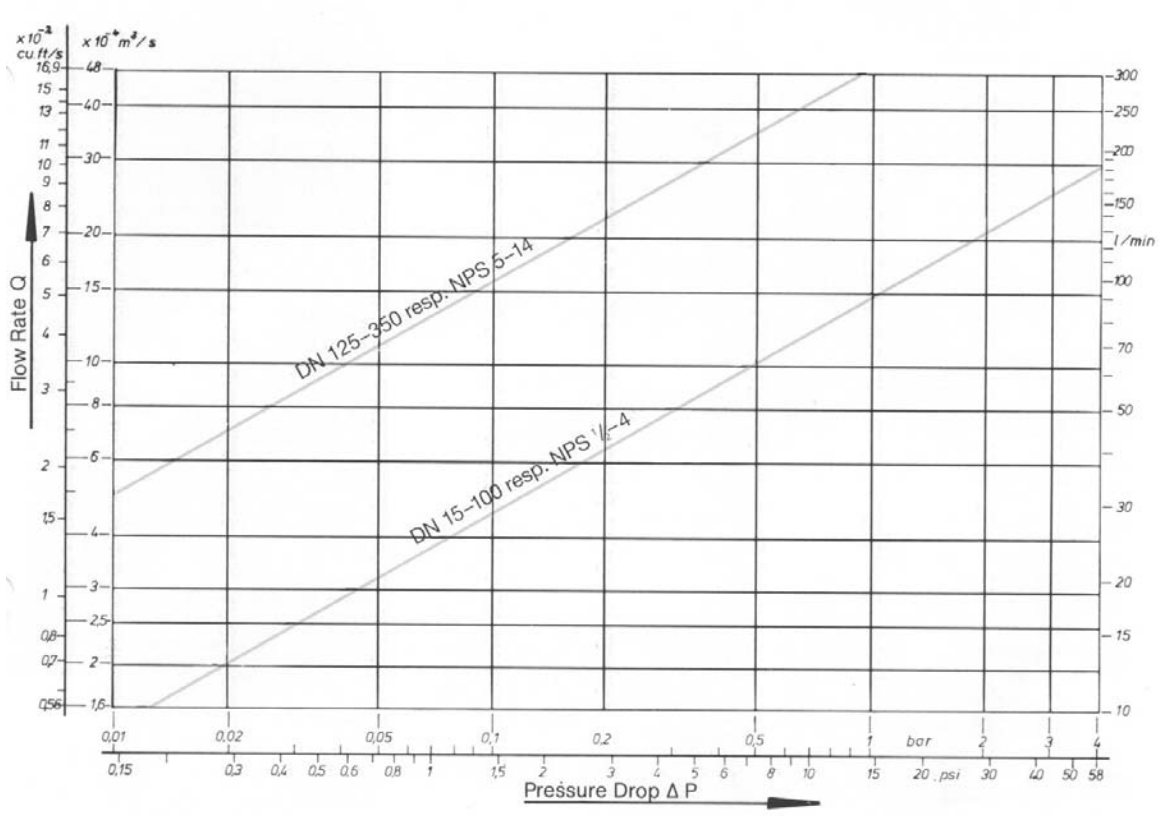
Pressure Drop Ratings in Jackets



Applicable for valves DN 15 – 350 / NPS 1/2 – 14, with jacket connection E or R.
Test medium: Water at ambient temperature.

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