9.01	ROTARY JOINTS

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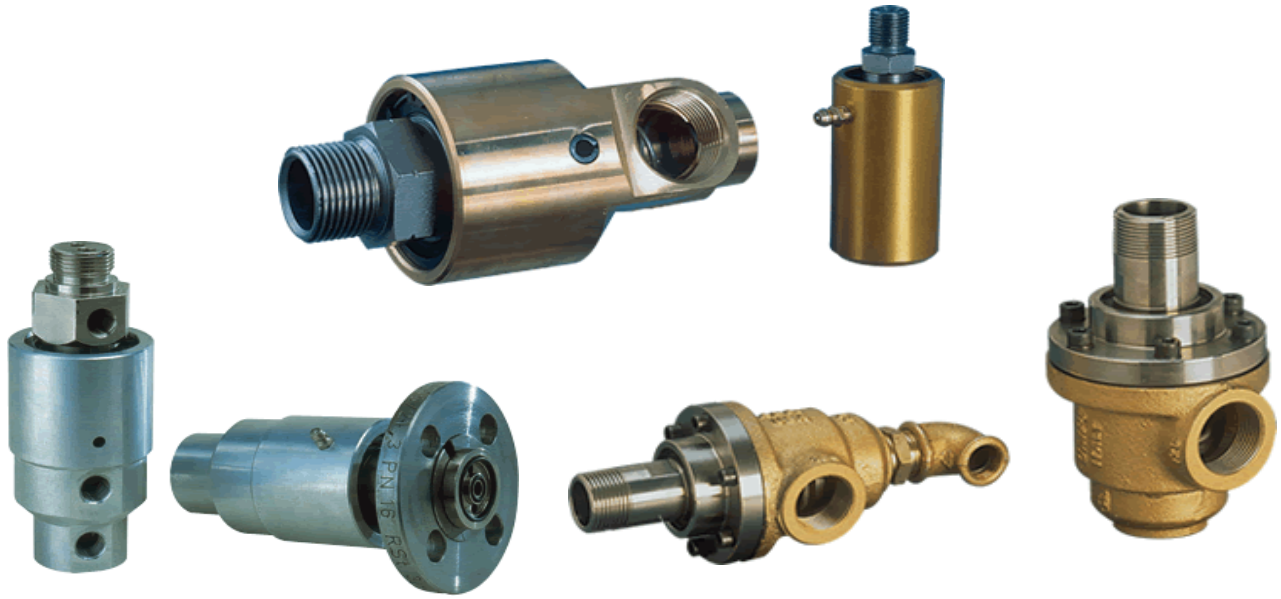
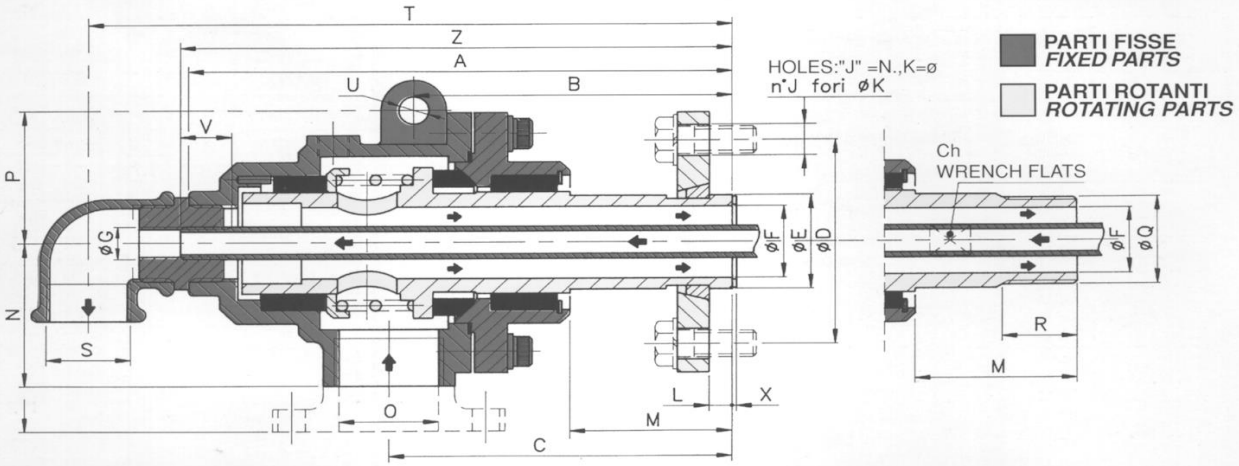


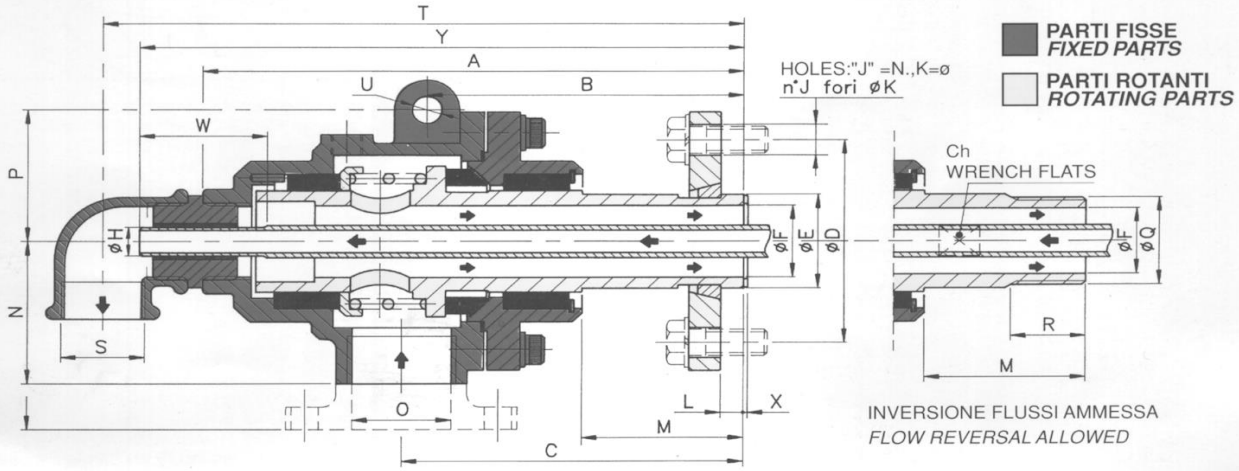
GIUNTI A DUE VIE (Tubo sifone fisso)
DUAL-FLOW JOINTS (Fixed syphon tube)

SERIE NF



GIUNTI A DUE VIE (Tubo sifone rotante libero)
DUAL-FLOW JOINTS (Freely rotating syphon tube)

SERIE NR



INVERSIONE FLUSSI AMMESSA
FLOW REVERSAL ALLOWED

9.02	ROTARY JOINTS SELF-SUPPORTED GRAPHITE

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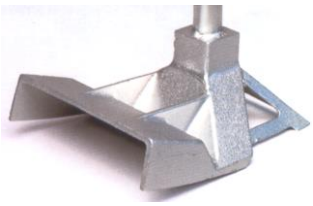
Self-supported rotary joints with 2 graphite bearings
Impregnated graphite ring operating in compression
Displayed indication of wear of the gasket
Max. Temperature working temperature: 315 ° C

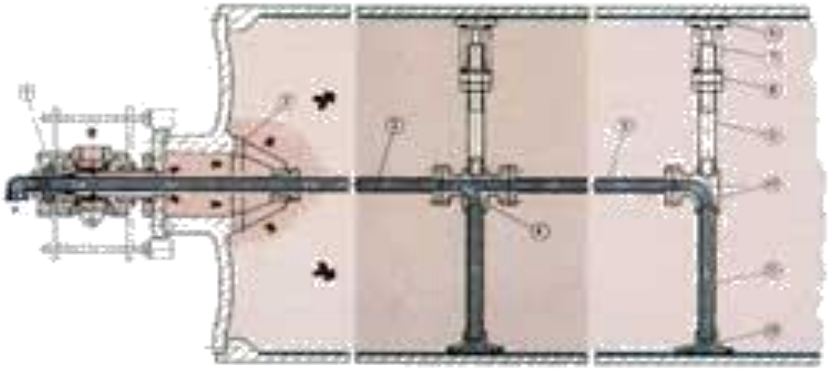
code	description
TK 41…	1 way
TK 42…	2 way with fixed drain pipe
TK 43…	2 way with rotary drain pipe
TK 4.1..	right threaded
TK 4.2..	left threaded
TK 4.3..	flanged

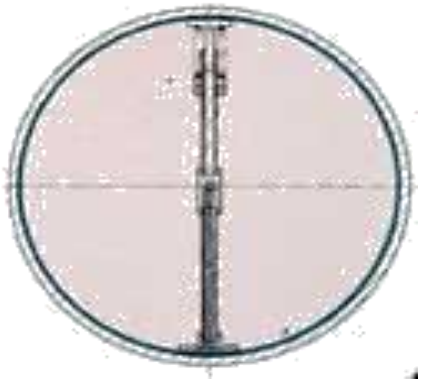
CODE	Ø DN	TYPE	max. working press. (bar)			wear mm	Lg min. flexible
			dhiaterm. oil	steam	water		
TK4 .. 05	**3/4"**	G 075	7	18	35	4	300
TK4 .. 06	**1"**	G 100	7	18	35	5	400
TK4 .. 07	**1¼"**	G 125	7	18	35	5	500
TK4 .. 08	**1½"**	G 150	7	18	35	5	500
TK4 .. 09	**2"**	G 200	5	16	28	7	600
TK4 .. 10	**2½"**	G 250	5	16	28	7	600
TK4 .. 11	**3"**	G 300	5	16	28	8	700
TK4 . 312	**100**	G 400	4	14	20	8	
TK4 . 313	**125**	G 500	4	14	20	10	
TK4 . 314	**150**	G 600	3	12	18	13	
TK4 . 315	**200**	G 800	3	12	18	16	



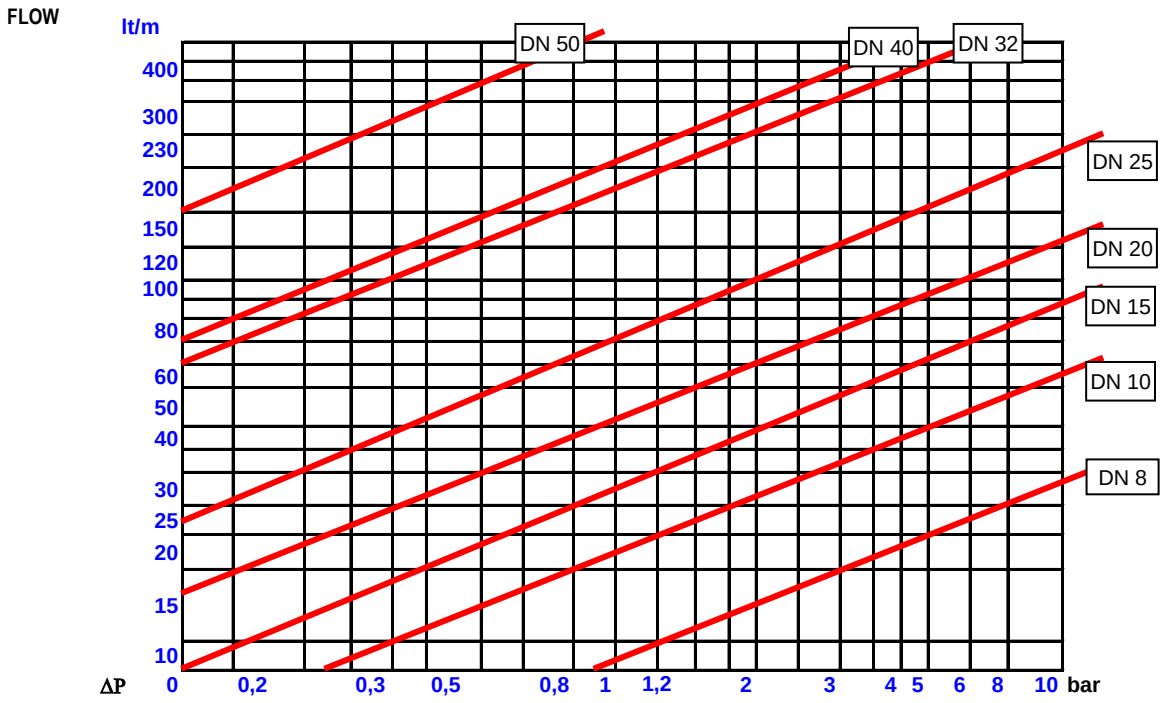
rotary drain pipe for medium and low speed

simple junction





rotary joints load losses



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TH 100 — EXPANSION JOINT - THREADED FF - PN 10

TH101..	BODY	: neoprene
TH102..	BODY	: EPDM

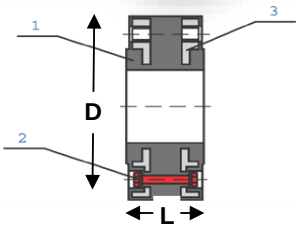
Use: water
Bocchettoni: galvanized cast iron
Depression: max. 650 mmHg
Operating temperature: -10 + 105 ° C
Working pressure: 10 bar
Bursting pressure: 50 bar
Axial compression: 25 mm
Axial extension: 6 mm
Side travel: 23 mm

CODE	Ø	FREE LENGHT	Corsa laterale
TH...05	3/4"	200	32°
TH...06	1"	200	25°
TH...07	1¼"	200	25°
TH...08	1½"	200	20°
TH...09	2"	200	15°
TH...10	2½"	200	12°
TH...11	3"	200	10°

TH 200 — WAFER RUBBER FLEXIBLE EXPANSION JOINT - PN 6 - PN 10

DESCRIPTION	MATERIAL
BODY	EPDM
BOLTS	STEEL
CORE	STEELù

These joints should not be used for absorb large vibrations, twisting or angular movements. They must be installed between 2 fixed points.



	DN	L	PN 10			PN 6		
			code	ØD	screw	code	ØD	screw
	20	70	TH 20105	108	4xM12x30	TH 21105	90	4xM10x25
	25	70	TH 20106	118	4xM12x30	TH 21106	100	4xM10x25
	32	70	TH 20107	143	4xM16x30	TH 21107	120	4xM12x30
	40	70	TH 20108	153	4xM16x30	TH 21108	130	4xM12x30
	50	70	TH 20109	168	4xM16x30	TH 21109	140	4xM12x30
	65	70	TH 20110	189	4xM16x30	TH 21110	160	4xM12x30
	80	70	TH 20111	204	8xM16x35	TH 21111	190	4xM16x35
	100	70	TH 20112	224	8xM16x35	TH 21112	210	4xM16x35
	125	70	TH 20113	254	8xM16x40	TH 21113	240	8xM16x35
	150	70	TH 20114	289	8xM20x40	TH 21114	265	8xM16x35
PN 10	200	90	TH 20115	344	8xM20x50	TH 21115	320	8xM16x40

TH 300 — EXPANSION JOINT - FLANGED - PN 10 / 16

Use : water - oils - weak acids
Attacks : flanged UNI PN 10/16 - ANSI
Resistance to acids> see table C07
Temperature: -10 + 90 ° C

Negative pressure max. admissible: 660 mmHg
Permissible movement of lateral travel: ± 13 mm
Allowable movement of angular travel: 15 °

PN 10		
FLANGE		sleeve
steel	inox	
TH301..	TH321..	EPDM
TH305..	TH325..	NBR
TH311..	TH331..	Hypalon

PN 16		
FLANGE		sleeve
steel	inox	
TH302..	TH322..	EPDM
TH306..	TH326..	NBR
TH312..	TH332..	Viton

ANSI 150		
FLANGE		sleeve
steel	inox	
TH351..	TH371..	EPDM
TH355..	TH375..	NBR
TH361..	TH381..	Hypalon

code	DN	free lenght mm		COMPR.		EXTENS.		bar
		EPDM	NBR	EPDM	NBR	EPDM	NBR	Press.
TH...06	25	93	-	8	-	4	-	16
TH...07	32	93	95	8	9	4	6	16
TH...08	40	93	95	8	10	4	6	16
TH...09	50	99	105	8	10	5	7	16
TH...10	65	108	115	12	13	6	7	16
TH...11	80	116	130	12	15	6	8	16
TH...12	100	129	135	18	19	10	10	16
TH...13	125	142	170	18	19	10	12	16
TH...14	150	156	180	18	20	10	12	16
TH...15	200	177	205	25	25	14	16	16
TH...16	250	206	240	25	25	14	16	16
TH...17	300	217	260	25	25	14	16	16
TH...18	350	266	265	25	25	16	16	10
TH...19	400	266	265	25	25	16	16	10
TH...20	450	200	265	19	25	13	16	10
TH...21	500	200	265	19	25	13	16	10
TH...22	600	250	265	19	25	13	16	10

TH 390..	Extension and compression limiting kit

9.20	EXPANSION JOINTS

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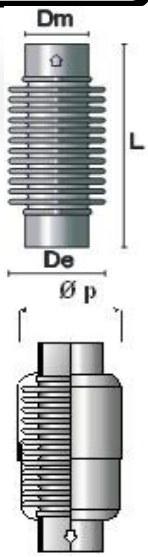
TK 310

BELLOW AXIAL EXPANSION JOINT PN 16 IN AISI 321 - INNER GUIDE

MODEL	EXTERNAL PROTECTION	STEEL SLEEVE	AISI SLEEVE
M	WITHOUT	TK310..	TK315..
ML		TK311..	TK316..
MP	WITH	TK312..	TK317..
MPL		TK313..	TK318..

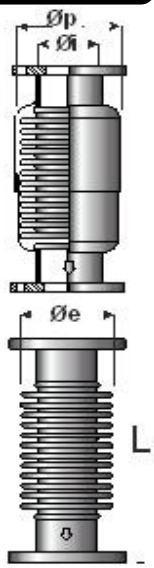


CODE	DN	Dm	De	Ø p	mod. M - MP STROKE in mm Total	+	-	L	mod. ML - MPL STROKE in mm Total	+	-	L
TK...05	20	26,9	39	50	40	13	27	242	60	20	40	323
TK...06	25	33,7	45,8	55	40	13	27	241	60	20	40	318
TK...07	32	42,4	54,2	65	40	13	27	266	66	22	44	363
TK...08	40	48,3	65	77	40	13	27	265	66	22	44	341
TK...09	50	60,3	79	91	45	15	30	290	70	23	47	373
TK...10	65	76,1	95,6	107	45	15	30	292	75	25	50	400
TK...11	80	88,9	108,4	119	45	15	30	296	75	25	50	397
TK...12	100	114,3	136,8	149	47	17	30	299	80	26	54	411
TK...13	125	141,3	171,4	187	50	17	33	309	80	26	54	435
TK...14	150	168,3	200,4	215	50	17	33	340	80	26	54	428
TK...15	200	219,1	252,4	267	50	17	33	348	80	26	54	460

TK 330

FLANGED BELLOW AXIAL EXPANSION JOINT PN 16 IN AISI 321 - INNER GUIDE

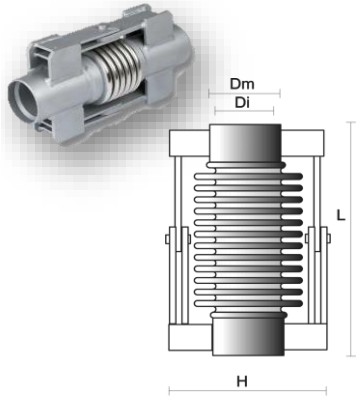
MODEL	EXTERNAL PROTECTION	STEEL SLEEVE	AISI SLEEVE
M	WITHOUT	TK330..	TK335..
ML		TK331..	TK336..
MP	WITH	TK332..	TK337..
MPL		TK333..	TK338..



CODE	DN	Ø i	Ø e	Ø p	mod. F - FP STROKE in mm Total	+	-	L	mod. FL - FPL STROKE in mm Total	+	-	L
TK...05	20	22,3	39,0	50	40	13	27	252	60	20	40	333
TK...06	25	27,2	45,8	55	40	13	27	251	60	20	40	328
TK...07	32	35,0	54,2	65	40	13	27	276	66	22	44	373
TK...08	40	41,5	65,0	77	40	13	27	275	66	22	44	351
TK...09	50	53,8	79,0	91	45	15	30	300	70	23	47	383
TK...10	65	69,6	95,6	107	45	15	30	302	75	25	50	410
TK...11	80	81,6	108,4	119	45	15	30	306	75	25	50	407
TK...12	100	106,2	136,8	149	47	17	30	309	80	26	54	421
TK...13	125	132,3	171,4	187	50	17	33	319	80	26	54	445
TK...14	150	159,3	200,4	215	50	17	33	350	80	26	54	438
TK...15	200	207,3	252,4	267	50	17	33	358	80	26	54	470

TK 320

Hinged expansion joint - BW - PN 16/25/40



Use: water - steam - diaterm oil.
Bellows: AISI 321
Sleeves: carbon steel
Structure: carbon steel

Conveyor: AISI 304
Pressure: 25 bar at 120 ° C
Max temperature: 450 ° C
Connections: to weld

code	angular stroke	DN	Dm mm	Di mm	H mm	Me Nm/deg	Ma Nm/bar	L mm
TK32008	17,5	40	48,3	38	125	2	0,36	300
TK32009	15	50	60,3	49	145	3	0,66	290
TK32010	11,8	65	76,1	66	165	5	1,06	292
TK32011	11,5	80	88,9	74	205	7	1,47	371
TK32012	10,8	100	114,3	97	240	15	2,33	430
TK32013	13,5	125	141,3	122	270	23	4,53	524
TK32014	11,5	150	168,3	146	320	33	7,42	553
TK32015	10	200	219,1	194	400	71	16,00	625
TK32016	8,2	250	273	243	480	139	28,62	755
TK32017	7,8	300	323,8	292	560	134	45,32	767

Me = Momento di reazione elastica Ma = Momento di attrito dei perni

9.21	EXPANSION JOINTS FOR GAS IN TEFLON - TEXTILE

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TK 301 — EXPANSION JOINTS FOR GAS - MALE THREADED

Joint suitable for gas with
multi-part bellows in AISI
Male threaded connections
in steel at 105
Operating temperature: -55 ° C + 250 ° C

CODE	DN	LENGHT mm	MAX. PRESS bar	MIN RADIUS mm
TK30104	1/2"	145	7	30
TK30105	3/4"	150	6	40
TK30106	1"	165	5	45
TK30107	1¼"	180	0,5	57
TK30108	1½"	210	0,5	69
TK30109	2"	230	0,5	90

TK 305 — EXPANSION JOINTS FOR GAS - Flanged PN 10

Joint suitable for gas with
multi-part bellows in AISI
thermal capacity <35 Kw

Flanges with drilling PN 10
in galvanized 105 steel
operating temperature: -55 ° C + 250 ° C

CODE	DN	LENGHT mm	MAX. PRESS bar	FLANGE UNI
TK30509	DN 50	175	0,5	PN 10
TK30510	DN 65	175	0,5	PN 10
TK30511	DN 80	175	0,5	PN 10
TK30512	DN 100	195	0,5	PN 10
TK30513	DN 125	195	0,5	PN 10
TK30514	DN 150	200	0,5	PN 10
TK30515	DN 200	200	0,5	PN 10

TK 308 — EXPANSION JOINTS FOR PUMPS - FLUID 350°C

n ° 1 fixed flange in steel PN 16 / PN 40
n ° 1 rotating flange in steel PN 16 / PN 40
inner tube in AISI 321
external braid in AISI 304
Max. working temperature: 350 ° C

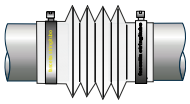
CODE	DN	H mm	W. press. 20 °C (bar)
TK30805	DN 20	200	50
TK30806	DN 25	200	40
TK30807	DN 32	200	35
TK30808	DN 40	200	30
TK30809	DN 50	200	20
TK30810	DN 65	300	20
TK30811	DN 80	300	18
TK30812	DN 100	300	14
TK30813	DN 125	400	12
TK30814	DN 150	400	10
TK30815	DN 200	400	6
TK30816	DN 250	400	3

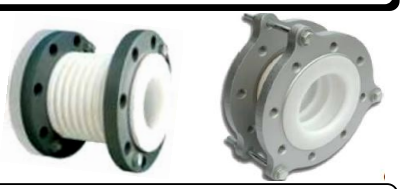
To get the real pressure of exercise multiply the Kp factor for the pressure at 20 ° C in the table

correction factor Pressure/temperature		
Temp.°C	*Kp*	*Kcr*
100	0,84	1,18
150	0,75	1,3
200	0,69	1,4
250	0,65	1,46
275	0,63	1,5
300	0,61	1,53
325	0,6	1,54
350	0,59	1,55

TK 350 — TEFLON EXPANSION JOINTS

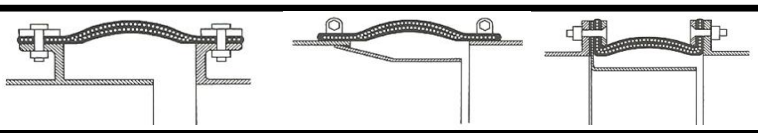
Teflon compensators have a high resistance to corrosion.
They are used in chemical, pharmaceutical, food,
with PH from 1 to 15 - Swivel flanges in materials on request
max temperature = 180 ° C
diameters = DN 15 - 600 mm





TK 360 — TEXTILE EXPANSON JOINTS - PROTECTION CUSHION

Design temperatures: 540 ° C
Fiberglass:: 950 ° C -
Silica fiber:: 1200 ° C
Ecological ceramic fiber: 1350 ° C



The thermal protection cushion is installed to allow the joint to perform the dilator in the manner better and for as long as possible. This must be placed before the joint, in a special space obtained with the realization of flanges welded on the structural work by the system. The protection cushion consists of a fiberglass or silicon felt, contained within a thick mesh of AISI 304 to avoid it dispersion of fibers and to make it adaptable in its own location (dimensions are dictated by the type of crying and temperatures). In any case it is advisable to use a metal deflector welded inside the duct for convey the flow in the direction, preventing direct involvement in the applied textile product.

9.22	CALCULATION OF THERMAL EXPANSION OF JOINTS

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To find the thermal expansion of any straight pipe it is necessary to know:
occorre conoscere:
the length in mm
the minimum operating temperature in ° C (T min)
the maximum operating temperature in ° C (T max)
the piping material
Delta P = L x e
Delta P = expansion in mm between T min and T max
e = coefficient of dilatation. temperature mm / mm between T min and T max

Example
Pipe length L = 65,000 mm
Tubing material: carbon steel
T min = -20 ° C
T max = +240 ° C
e) at a temperature of 240 ° C = 2.75 x 10^{-3}
e) at the temperature of -20 ° C = 0.43 x 10^{-3}
Delta P = 65000 x 3.18 x 10^{-3} = 206.7 mm.

THERMAL EXPANSION COEFFICIENT								
Temperature	e = thermal expansion coefficient, mm/mm (multiply the chart value for 10^{-3})							
	MATERIAL							
°C	Carbon steel low alloy	medium alloy steel (Cr-Mo 5 ÷ 9%)	St.Steel austenitic	Alloy steels (25 Cr-20 Ni)	cast iron	copper	aluminium	Monel 400 (67 Ni-30 Cu)
-200	1,97	1,85	3,21	2,5				2,17
-180	1,83	1,72	2,96	2,31				2,04
-160	1,67	1,58	2,68	2,11				1,90
-140	1,52	1,43	2,40	1,90				1,76
-120	1,19	1,28	2,13	1,70				1,62
-100	1,0	1,13	1,87	1,49				1,47
-80	0,82	0,95	1,39	1,24				1,10
-60	0,64	0,78	0,92	0,99				0,72
-40	0,43	0,6	0,54	0,75				0,42
-20	0,20	0,4	0,36	0,50	-0,38	-0,33	-0,44	0,28
-10					-0,19	-0,16	-0,22	
0	0,20	0,19	0,17	0,24	0	0	0	0,13
20	0,01	0,01	0,01	0,01	0,21	0,33	0,46	0,01
40	0,22	0,21	0,32	0,27	0,42	0,68	0,91	0,27
60	0,44	0,42	0,66	0,55	0,63	1	1,37	0,55
80	0,67	0,64	1,0	0,83	0,83	1,3	1,84	0,83
100	0,9	0,86	1,33	1,11	1	1,7	2,31	1,12
120	1,15	1,08	1,67	1,40	1,26	2	2,8	1,41
140	1,40	1,31	2,01	1,68	1,50	2,4	3,3	1,70
160	1,66	1,55	2,36	1,99	1,73	2,7	3,8	2,01
180	1,93	1,79	2,72	2,30	1,96	3,1	4,3	2,33
200	2,19	2,03	3,08	2,61	2,20	3,5	4,8	2,65
220	2,47	2,20	3,45	2,92	2,45	3,8	5,4	2,97
240	2,75	2,58	3,81	3,22	2,69	4,2	5,9	3,29
260	3,02	2,79	4,17	3,53	2,93			3,61
280	3,31	3,05	4,53	3,86	3,12			3,95
300	3,60	3,32	4,91	4,18	3,46			4,28
320	3,89	3,58	5,28	4,51	3,73			4,62
340	4,21	3,86	5,66	4,84	4			4,98
360	4,52	4,13	6,04	5,18				5,33
380	4,83	4,41	6,42	5,52				5,69
400	5,15	4,69	6,81	5,86				6,05
420	5,47	4,98	7,20	6,21				6,41
440	5,80	5,27	7,59	6,57				6,79
460	6,14	5,57	7,99	6,93				7,18
480	6,48	5,86	8,39	7,29				7,56
500	6,80	6,15	8,79	7,64				7,95
520	7,12	6,45	9,20	7,98				8,33
540	7,44	6,74	9,60	8,33				8,72
560	7,79	7,03	10,0	8,68				9,13
580	8,14	7,32	10,4	9,03				9,54
600	8,48	7,61	10,84	9,38				9,94
620	8,79	7,91	11,24	9,74				10,35
640	9,11	8,20	11,65	10,09				10,77
660	9,44	8,50	12,05	10,44				11,22
680	9,77	8,82	12,46	10,79				11,63
700	10,11	9,14	12,87	11,14				12,03
720	10,44	9,44	13,28	11,49				12,46
740	10,77	9,74	13,68	11,84				12,90
760	11,11	10,04	14,02	12,20				13,11

9.23	DISMANTLING JOINT

VALVOIND Srl Via Pascoli, 5 - 24060 Bagnatica (Bergamo) Tel. 035.681919-Fax. 035.684461

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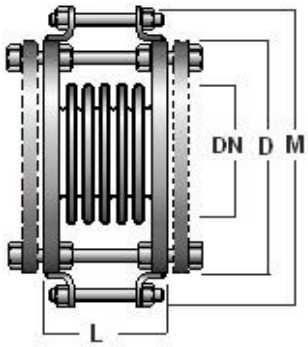
valvole industriali

TD 250

DISMANTLING JOINT PN 10 / 16



COD	PN 10					PN 16				
	TD250..					TD251..				
	DN	L	M	D	Kg	DN	L	M	D	Kg
..12	100	123	354	220	11	100	123	354	220	11
..13	125	117	384	250	15	125	117	384	250	15
..14	150	155	435	285	18	150	155	435	285	18
..15	200	168	490	340	25	200	168	490	340	25
..16	250	172	545	395	32	250	172	545	395	32
..17	300	164	595	445	37	300	164	595	445	37
..18	350	192	655	505	55	350	192	655	505	55
..19	400	196	723	565	70	400	196	723	565	70
..20	450	196	773	615	83	450	196	773	615	83
..21	500	212	828	670	101	500	212	828	670	101
..22	600	216	958	780	132	600	216	958	780	132
..23	700	220	1073	895	162	700	220	1073	895	162
..24	800	228	1205	1015	220	800	228	1205	1015	220
..25	900	232	1305	1115	250	900	232	1305	1115	250
..26	1000	232	1432	1230	320	1000	232	1432	1230	320
..27	1200	256	1669	1455	350	1200	256	1669	1455	350
..28	1400	264	1901	1675	425	1400	264	1901	1675	425

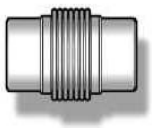
The following dimensions are indicative

EXPANSION JOINTS TYPE

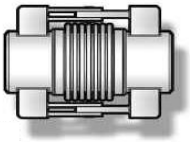
Maximum allowable pressure in bar at max. operating temperature ° C for bellows PN 16 in AISI 321												
Temp. °C	20	80	100	120	150	200	250	280	300	320	340	350
Press. Bar	16	14,1	13,4	12,8	12,1	11,1	10,4	10	9,8	9,7	9,6	9,5

Data required for joint design

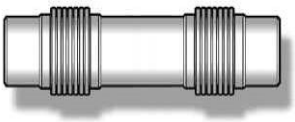
- U Temperature
- U Pressure or depression
- U Flow elements (powders, acids, etc.)
- U Dimensions
- U Indoor or outdoor installation
- U Axial movements
- U Presence of a deflector in the conduit
- U Type of flanges



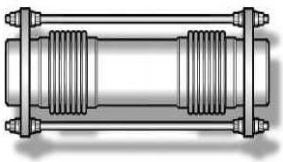
AXIAL
TK300



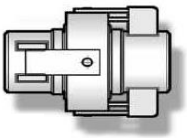
ANGULAR
TK320



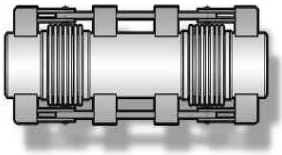
UNIVERSAL
TK420



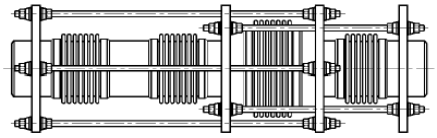
SPHERICAL SIDE
TK430



SPHERICAL ANGULAR
(CARDAN)
TK410



LATERAL
TK450



UNIVERSAL PUSHED ELIMINATED
TK470

9.24	MONOLITHIC INSULATING JOINTS THREADED ISO / BSP / NPT

VALVOIND Srl Via Pascoli, 5 - 24060 Bagnatica (Bergamo) Tel. 035.681919-Fax. 035.684461

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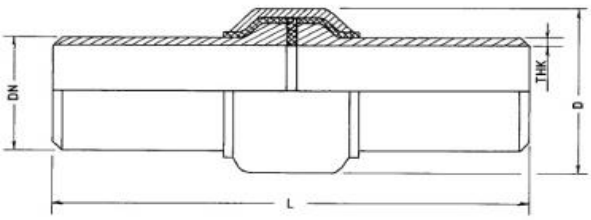
TECHNICAL FEATURES
TEMPERATURE INTERVAL -10 ° C / 70 ° C
CALCULATION PRESSURE 10 bar
HYDROSTATIC PRESSURE 15 bar
AIR LOSS 5 bar / 10s
DIELECTRIC POWER> 3kV / 1min. -50Hz AC
ELECTRIC RESISTANCE IN DRY CONDITIONS> 5 Mhom - 1000 V DC
EXTERNAL / INTERNAL COVERING EPOXY PRIMER / EPOXY RESIN
(INTERNAL COVERING FOR SPECIAL WATER ON REQUEST)

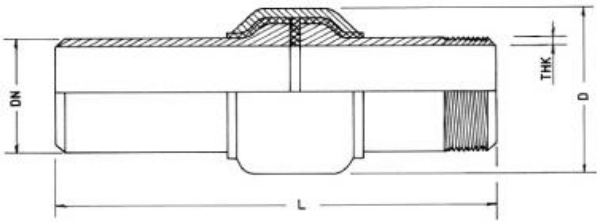
W - W



TO WELD / TO WELD

CODE	Ø	sp	D	L	Kg
TD20104	1/2"	2,77	48	210	0,55
TD20105	3/4"	2,87	49	220	0,55
TD20106	1"	3,38	54	230	0,60
TD20107	1¼"	3,56	64	250	1,20
TD20108	1½"	3,68	71	260	1,40
TD20109	2"	3,91	83	290	1,90
TD20110	2½"	4,00	101	330	2,90
TD20111	3"	4,78	115	350	3,38

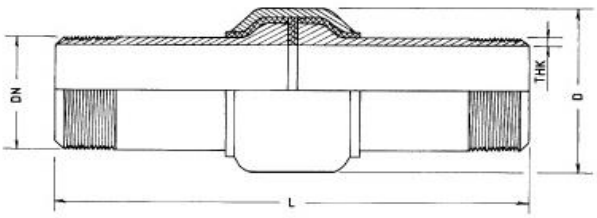
W - M



MALE / TO WELD

CODE	Ø	THK	D	L	Kg
TD20204	1/2"	2,77	48	150	0,50
TD20205	3/4"	2,87	49	165	0,50
TD20206	1"	3,38	54	180	0,65
TD20207	1¼"	3,56	64	195	1,00
TD20208	1½"	3,68	71	210	1,20
TD20209	2"	3,91	83	220	1,70
TD20210	2½"	4,00	101	240	2,30
TD20211	3"	4,78	115	260	3,50

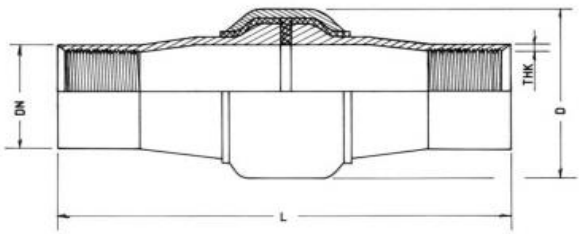
M - M



MALE / MALE

CODE	Ø	THK	D	L	Kg
TD20304	1/2"	2,77	48	100	0,40
TD20305	3/4"	2,87	49	110	0,40
TD20306	1"	3,38	54	120	0,50
TD20307	1¼"	3,56	64	135	0,70
TD20308	1½"	3,68	71	145	0,90
TD20309	2"	3,91	83	150	1,25
TD20310	2½"	4,00	101	176	1,55
TD20311	3"	4,78	115	200	2,30

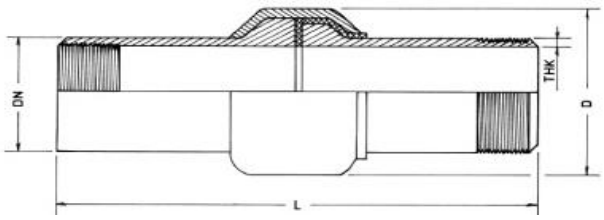
F - F



FEMALE / FEMALE

CODE	Ø	THK	D	L	Kg
TD20404	1/2"	2,77	48	100	0,44
TD20405	3/4"	2,87	49	110	0,44
TD20406	1"	5,00	54	120	0,80
TD20407	1¼"	5,00	64	135	1,00
TD20408	1½"	7,00	71	145	1,54
TD20409	2"	7,00	83	150	1,80

M - F



FEMALE / MALE

CODE	Ø	M-THK	F-THK	D	L	Kg
TD20504	1/2"	2,77	3,00	48	100	0,30
TD20505	3/4"	2,87	3,00	49	110	0,40
TD20506	1"	3,38	4,00	54	120	0,50
TD20507	1¼"	3,56	4,00	64	135	0,65
TD20508	1½"	3,68	4,00	71	145	0,90
TD20509	2"	3,91	4,00	83	150	1,20
TD20510	2½"	4,00	5,00	101	176	1,60
TD20511	3"	4,78	5,00	115	200	2,20

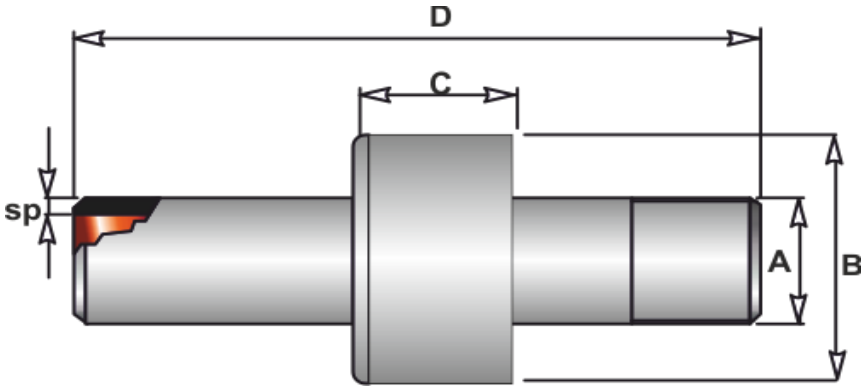
9.25	MONOLITHIC INSULATING JOINTS TO WELD

VALVOIND Srl Via Pascoli, 5 - 24060 Bagnatica (Bergamo) Tel. 035.681919-Fax. 035.684461

Valvoind
valvole industriali

TECHNICAL FEATURES

FACTOR CALCULATION 0.6
TEMPERATURE INTERVAL -10 ° C / 70 ° C
HYDROSTATIC PRESSURE 1.5 TIMES CALCULATION PRESSURE bar
DIELECTRIC POWER> 3kV / 1min. -50Hz AC
ELECTRIC RESISTANCE IN DRY CONDITIONS> 25 MOhm - 1000 V DC
EXTERNAL / INTERNAL COATING EPOXY RESIN
N.D.E MPI, UT, X-RAYS, PENETRATING DYEING ON WELDING (ACCORDING TO CASES



		PN 16 - PN 25						PN 40						PN 100					
		ANSI 150						ANSI 300						ANSI 600					
CODE		TD210..						TD211..						TD212..					
	DN	A	sp	B	C	D	Kg	A	sp	B	C	D	Kg	A	sp	B	C	D	Kg
..04	1/2"	21,3	2,77	60	44	250	0,8	21,3	2,77	60	60	250	0,9	21,3	2,77	60	60	250	1
..05	3/4"	26,7	2,87	60	44	250	0,9	26,7	2,87	66	60	250	1,2	26,7	2,87	66	60	250	1,3
..06	1"	33,4	3,38	64	47	250	1,1	33,4	3,38	76	60	250	1,9	33,4	3,38	76	60	250	2
..07	1¼"	42,4	3,56	77	50	250	1,6	42,4	3,56	82	70	300	2,5	42,4	3,56	82	70	300	2,5
..08	1½"	48,3	3,68	90	54	300	2,4	48,3	3,68	95	80	300	3,5	48,3	3,68	95	80	300	3,5
..09	2"	60,3	3,91	102	60	300	3,6	60,3	3,91	108	92	300	5,5	60,3	3,91	108	92	300	6
..10	2½"	76,1	4,00	114	62	400	4,5	76,1	4,0	128	96	400	8,5	76,1	4,0	127	96	400	8,5
..11	3"	88,9	4,78	127	65	400	6,3	88,9	5,49	140	105	400	11	88,9	5,49	146	121	400	15
..12	4"	114,3	4,78	154	70	400	9,1	114,3	6,02	159	110	400	12,5	114,3	6,02	177	132	400	22
..13	5"	141,3	4,78	194	80	500	15	141,3	6,55	195	130	500	26	141,3	6,55	203	141	500	31
..14	6"	168,3	4,78	230	95	500	21	168,3	7,11	229	136	600	37	168,3	7,11	240	147	600	43
..15	8"	219,1	6,35	273	100	500	31	219,1	8,18	298	18	600	57	219,1	8,18	298	158	600	66
..16	10"	273	6,35	324	120	700	55	273	9,27	343	142	700	72	273	9,27	352	173	700	95
..17	12"	323,8	7,14	381	130	700	75	323,8	9,52	394	142	700	114	323,8	9,52	415	186	700	145
..18	14"	355,6	7,92	419	138	900	105	355,6	9,52	430	155	900	140	355,6	9,52	442	192	900	165
..19	16"	406,4	7,92	469	150	900	150	406,4	9,52	469	155	900	153	406,4	9,52	505	219	900	231
..20	18"	457,2	7,92	530	158	1000	163	457,2	9,52	530	177	1000	184	457,2	9,52	568	244	1000	295
..21	20"	508	9,52	582	158	1000	199	508	9,52	582	180	1000	210	508	9,52	630	255	1000	370
..22	22"	558,8	9,52	635	160	1000	226	558,8	9,52	650	198	1000	270	558,8	9,52	688	278	1000	460
..23	24"	609,6	9,52	696	163	1000	256	609,6	9,52	705	204	1000	340	609,6	9,52	740	290	1000	560
..24	26"	660,4	9,52	750	163	1000	262	660,4	12,7	776	214	1000	480	660,4	12,7	787	308	1000	720
..25	28"	711,2	9,52	800	168	1000	310	711,2	12,7	818	222	1200	550	711,2	12,7	868	331	1200	850
..26	30"	762	9,52	850	172	1200	341	762	12,7	875	225	1200	640	762	12,7	915	350	1200	990
..27	32"	812,8	9,52	905	180	1200	465	812,8	12,7	930	274	1200	710	812,8	12,7	970	355	1200	1150
..28	36"	914,4	12,7	1015	182	1200	520	914,4	12,7	1030	280	1200	665	914,4	12,7	1095	380	1300	1400
..29	40"	1016	12,7	1110	190	1200	620	1016	12,7	1145	318	1200	920	1016	12,7	1190	420	1400	1630
..30	42"	1066,7	12,7	1160	195	1200	710	1066,7	12,7	1200	326	1200	1100	1066,7	12,7	1270	440	1400	1740
..31	48"	1219,2	14,3	1330	210	1200	860	1219,2	14,3	1380	330	1200	1450	1219,2	14,3	1420	500	1500	2300

PATENTED according to the double seal system independent of 16 "# 600 and above
The dimensions are indicative only and may undergo alterations without notice
Insulating joints: API 5L / ISO 3183 / EN 10208-2 / ASTM A333 **SMUSSED ENDS**
Thickness and different materials available on request
together with the offer, the technical data sheet of the upper measurement joints of the 48 "ANSI 600 class will be provided