



BALL JOINTS

For

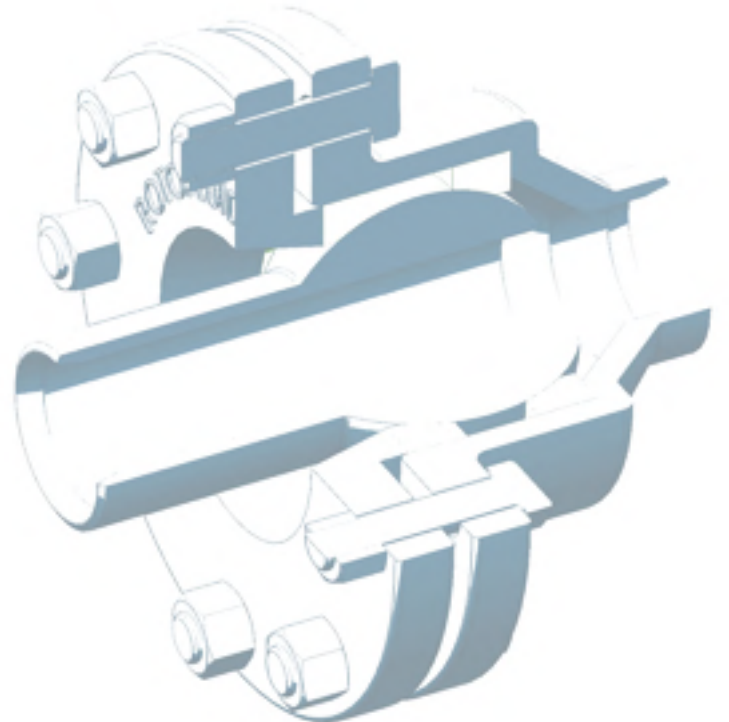
FLEXIBLE PIPING SYSTEMS

STATIONARY PIPING TO MOVING EQUIPMENT

MOVING PIPING TO STATIONARY EQUIPMENT

STORAGE TANK CONNECTIONS

.....more



ESZ Makine supplies ROTOFLUID ball joints when there is a need for a movable pipe-connection system between two equipment parts. Ball joints provide reliable and safe operation when transferring the product under extreme application parameters. In addition to loads caused by internal pressure; ROTOFLUID ball joints absorb external, radial, axial and bending forces. The maximum permissible load of a joint depends on many operational factors.

Temperature change, ground sinkage, earthquake and other factors cause pipelines to expand, contradict, shifting of axes, to bend, to twist. Ball joints can absorb these displacements.

ROTOFLUID ball joints are used in petroleum refineries, oil production, chemical process plants, industrial power plants, transportation terminals and in various sectors.

ROTOFLUID ball joints are used in

- Flexible piping systems
- Stationary piping to moving equipment
- Moving piping to stationary equipment
- Storage tank connections
- Long piping systems where temperature causes linear thermal expansion/contradiction

FEATURES

- Ball joints reduce the number and weight of anchors and guides in a piping system
- Ball joints can withstand heavy shock and vibration
- Ball joints are designed for low maintenance and do not need service continuously
- Ball joints both rotate and flex angularly
- Ball joints flex under very low forces causes lower end thrust

SEALS

- Sealing surfaces are plated special corrosion resistance material for longer service life
- Many different seal alternatives according to application parameters

SEAL MATERIALS

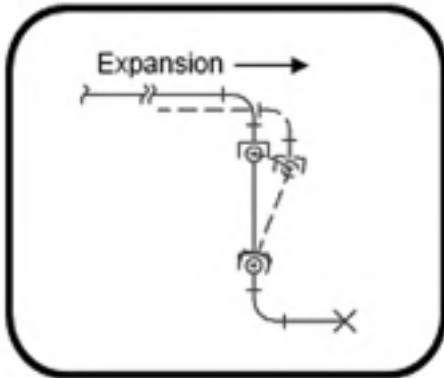
- Teflon
- Graphite Filled Teflon
- Bronze Filled Teflon
- Glass Filled Teflon
- Mineral Compound with Injectable Graphite Sealant
- Ductile iron with Injectable Graphite Sealant
- Aluminium Bronze with Injectable Graphite Sealant

MATERIALS

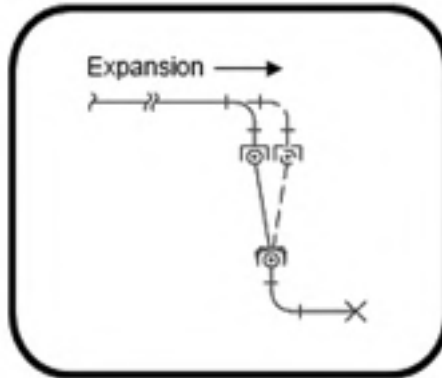
- ROTOFLUID swivel joints are made of 42CrMo4 (1.7225), St52-3 (1.0570), AISI304, AISI316, AISI316TI (1.4571).
- Special materials upon request.

ROTOFLUID BALL JOINT APPLICATIONS

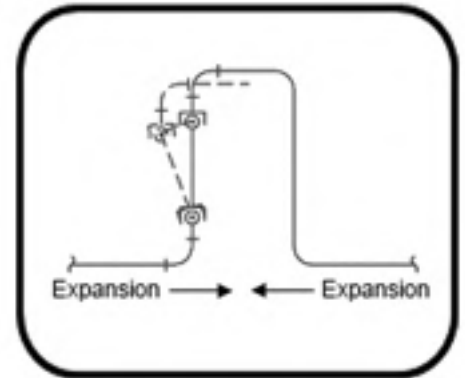
Typical installations of ball joints are shown below. Ball joints allow motion in all planes.



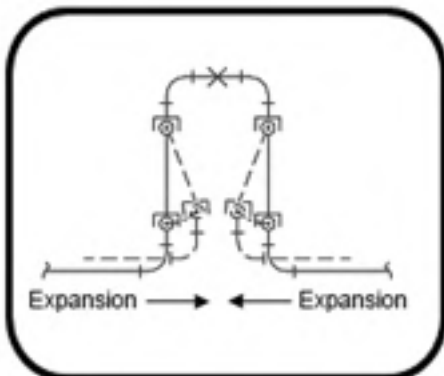
1. Two ball joints in an offset leg



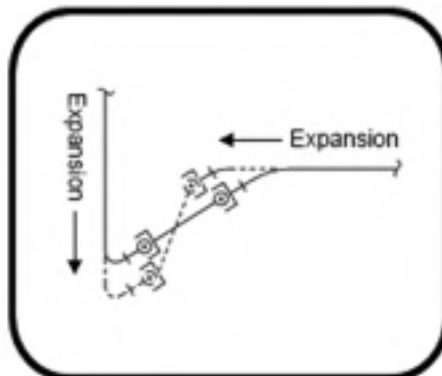
2. Two ball joints with preset spring



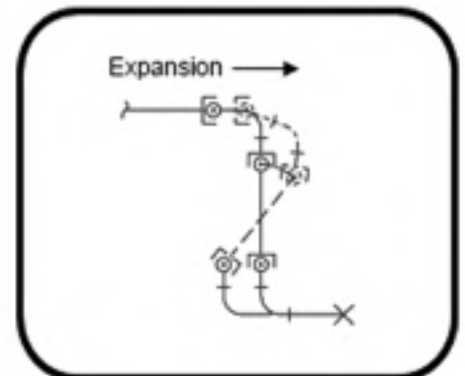
3. Two ball joints in a loop. Also available with preset spring.



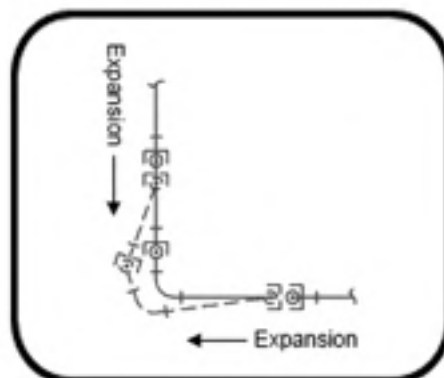
4. Four ball joints in a loop.



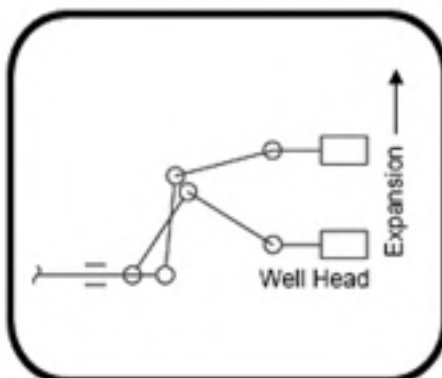
5. Two ball joints in an offset leg with motion along two axes.



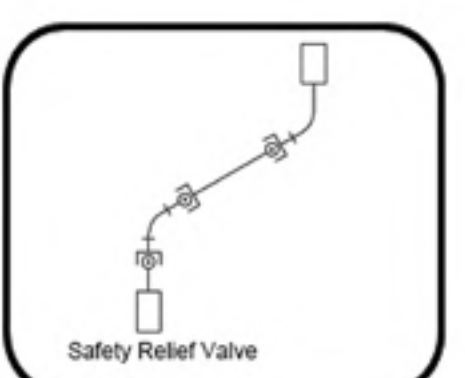
6. Three ball joints in an offset leg with motion along one axis.



7. Three ball joints with motion in two axes.



8. Wellhead installation



9. Three ball joint in a safety relief valve piping.

A SERIES BALL JOINTS

- Sizes 3/4" (DN20) - 5" (DN125)
- Higher sizes upon request
- Materials: 42CrMo4, AISI316TI
- Special materials upon request
- Manufactured in Style 20
- Other Styles upon request
- No lubrication required
- Faster and easier piping installation
- Articulated motion only
- Angular movement $\pm 7.5^\circ$

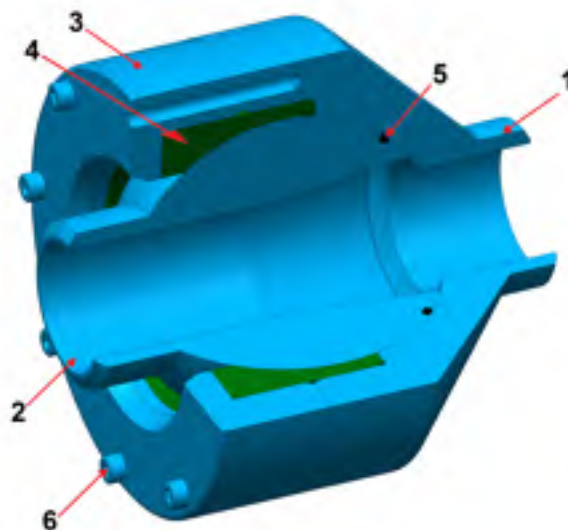
Max. Temperature: (-20°C) - (120°C)
(-4°F) - (+250°F)

Max. Pressure: 315 bar (4560 psi)

Seals: - Teflon Seal

- Nbr O-ring seal

- Special Seals upon request



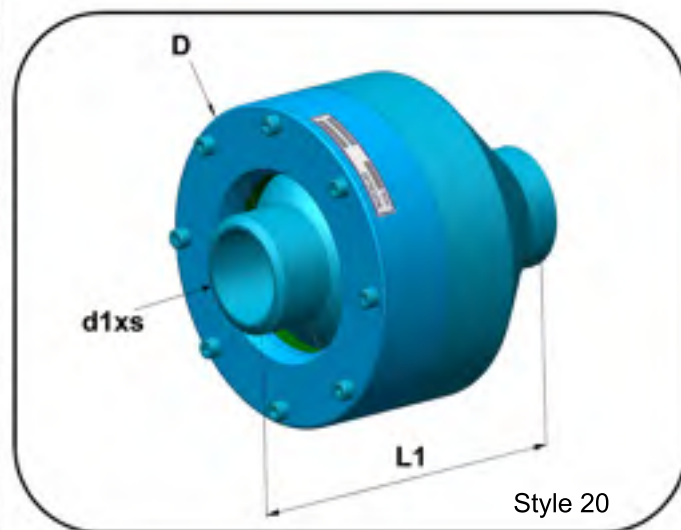
NO	DESCRIPTION
1	HOUSING
2	SHAFT
3	HOUSING FLANGE
4	BALL SEAL RING
5	SEAL O-RING
6	HOUSING BOLTS

A SERIES BALL JOINT WELD END CONNECTIONS

DIMENSIONS AND WEIGHTS

SIZE		PN160			WEIGHT (kg)
		D	d1xs	L1	
3/4"	DN20	88	25.0 x 3.0	96	2.5
1"	DN25	98	30.0 x 4.0	103	3.2
1 1/4"	DN32	108	38.0 x 5.0	112	5
1 1/2"	DN40	138	48.3 x 5.0	144	9
2"	DN50	162	60.3 x 6.3	176	15
2 1/2"	DN65	178	76.1 x 7.1	186	19
3"	DN80	230	101.6 x 8.8	213	33
4"	DN100	274	114.3 x 10.0	262	56
5"	DN125	336	139.7 x 8.0	337	96

SIZE		PN315			WEIGHT (kg)
		D	d1xs	L1	
3/4"	DN20	98	33.7 x 5.6	100	3,5
1"	DN25	108	42.4 x 7.1	116	5
1 1/4"	DN32	138	48.3 x 8.0	146	9,5
1 1/2"	DN40	162	60.3 x 10.0	176	16
2"	DN50	178	76.1 x 12.5	186	20
2 1/2"	DN65	230	88.5 x 14.2	223	38
3"	DN80	274	114.3 x 20.0	272	62
4"	DN100	336	139.0 x 22.2	342	109
5"	DN125	366	177.8 x 30.0	345	135



Please consult factory for sizes above 5" (DN125)

B SERIES SELF ALIGNING BALL JOINTS

- Sizes 3/8" (DN10) - 2" (DN50)
- Higher sizes upon request
- Materials: Forged Brass, 42CrMo4, AISI304, 316, 316TI
- Manufactured in 4 styles
- No lubrication required
- Faster and easier piping installation
- Special materials upon request
- Angular movement $\pm 15^\circ$

Max. Temperature: 260°C (500°F)

Max. Pressure: 24 bar (350 psi)

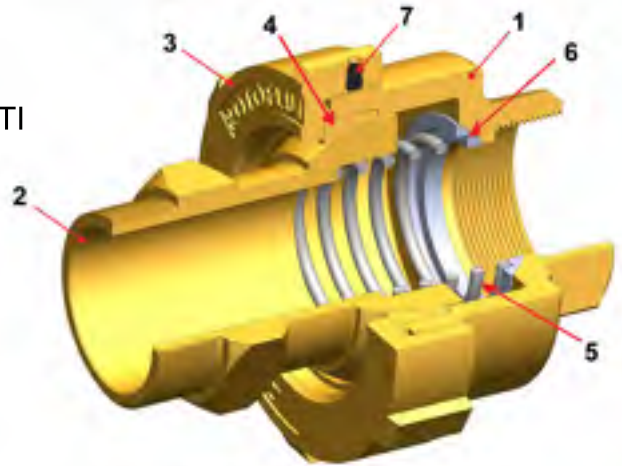
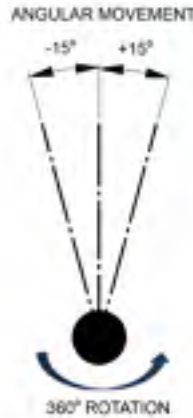
Seals: - Teflon Seal

- Bronz Imp. Teflon Seal

- Glass Imp. Teflon Seal

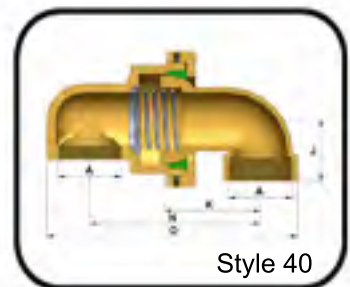
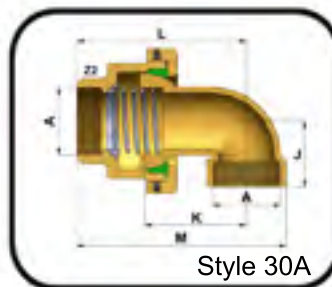
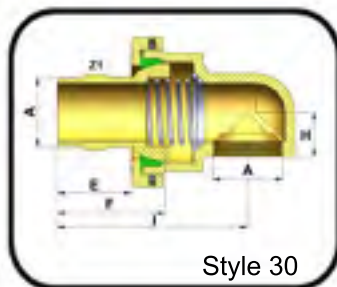
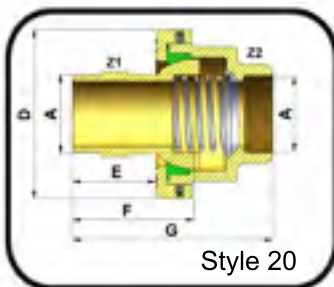
Special Option:

- Injectable Flaked Graphite Sealant



NO	DESCRIPTION
1	HOUSING
2	SHAFT
3	HOUSING NUT
4	BALL SEAL RING
5	SPRING
6	SPRING SEAT
7	CAP SCREW

B SERIES BALL JOINT THREADED CONNECTIONS



DIMENSIONS AND WEIGHTS

SIZE	D	E	F	G	H	I	J	K	L	M
3/8" DN10	52	27	42	70	15	69	22	36	64	75
1/2" DN15	66	34	53	88	20	87	30	45	80	94
3/4" DN20	84	35	59	99	25	99	34	55	95	113
1" DN25	91	44	68.5	113	27	115	39.5	63	107	128
1 1/4" DN32	100	48.5	75	125	30	129	45	69	119	144
1 1/2" DN40	112	56	81	135	33	138	51	76	130	158
2" DN50	128	63	92	152	38	163	58	90	150	185

SIZE	N	O	Z1	Z2	WEIGHT (kg)			
					STYLE 20	STYLE 30	STYLE 30A	STYLE 40
3/8" DN10	63	88	19	22	0,5	0,5	0,5	0,5
1/2" DN15	79	110	27	28	0,9	0,9	0,9	1
3/4" DN20	95	133	32	35	1,35	1,5	1,5	1,75
1" DN25	109	155	39	40	1,65	2	1,85	2,15
1 1/4" DN32	123	178	46	50	2,4	2,75	2,4	2,75
1 1/2" DN40	133	193	54	56	3	3,4	3,15	3,5
2" DN50	160	236	65	66	4	4,8	4,35	5,15

Please consult factory for sizes above 2" (DN50)

C SERIES BALL JOINTS

- Sizes 1" (DN25) - 4" (DN100)
- Higher sizes upon request
- Materials: ST52-3, 42CrMo4, AISI304/316/316Ti
- Special materials upon request
- Manufactured in 4 styles
- Articulated motion only
- Angular movement $\pm 15^\circ$
- Faster and easier piping installation
- No lubrication required

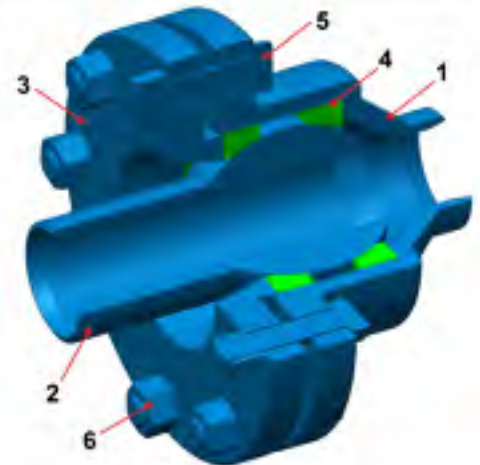
Seals: - Teflon Seal
 - Glass Filled Teflon Seal

Special Option:
 - Injectable Flaked Graphite Sealant

Max. Temperature: $(-20^\circ\text{C}) - (120^\circ\text{C}) / (-4^\circ\text{F}) - (+250^\circ\text{F})$

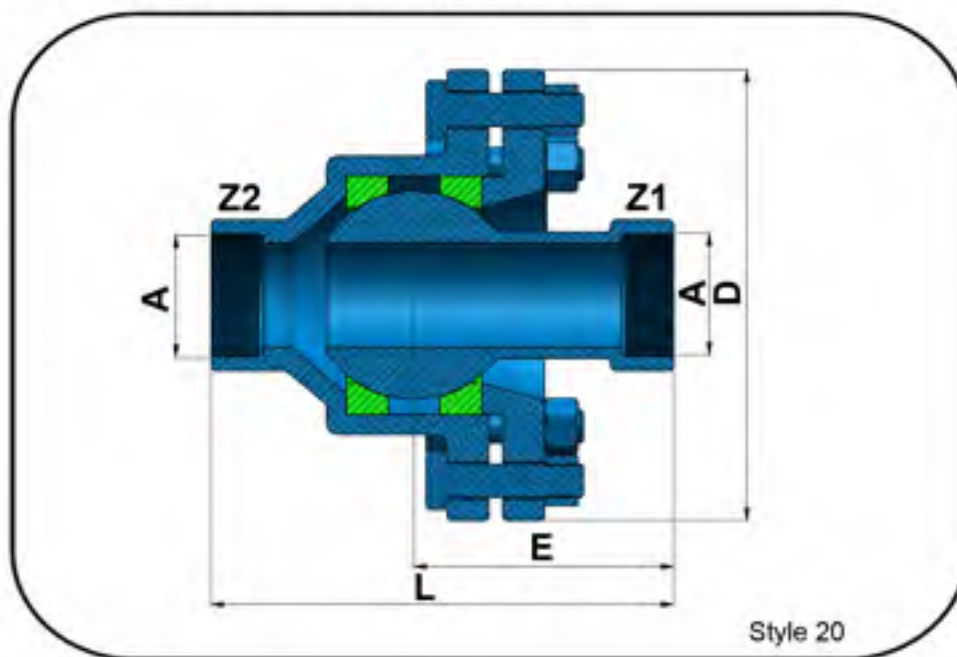
Max. Pressure: 20 bar (290 psi)

ANGULAR MOVEMENT



NO	DESCRIPTION
1	HOUSING
2	SHAFT
3	HOUSING FLANGE
4	BALL SEAL RING
5	BOLT
6	NUT

C SERIES BALL JOINT THREADED CONNECTIONS



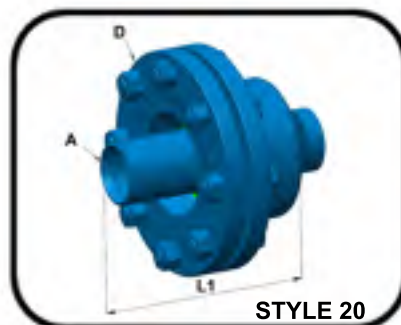
DIMENSIONS AND WEIGHTS

SIZE	D	E	L	Z1	Z2	WEIGHT (kg)
1" DN25	147	84	150	40	40	6,5
1 1/4" DN32	176	104	186	49	49	10
1 1/2" DN40	198	115	203	54	55	14
2" DN50	215	124	221	67	67	17
2 1/2" DN65	234	136	234	84	84	20
3" DN80	270	133	242	98	98	28
4" DN100	290	144	264	124	124	34

Please consult factory for sizes above 4" (DN100)

C SERIES BALL JOINTS

- Sizes 1" (DN25) - 8" (DN200)
- Higher sizes upon request
- Materials: ST52-3, 42CrMo4, AISI304/316/316TI
- Special materials upon request
- Manufactured in 4 styles
- Articulated motion only
- Angular movement $\pm 15^\circ$
- Faster and easier piping installation
- No lubrication required



Seals: - Teflon Seal
 - Glass Filled Teflon Seal

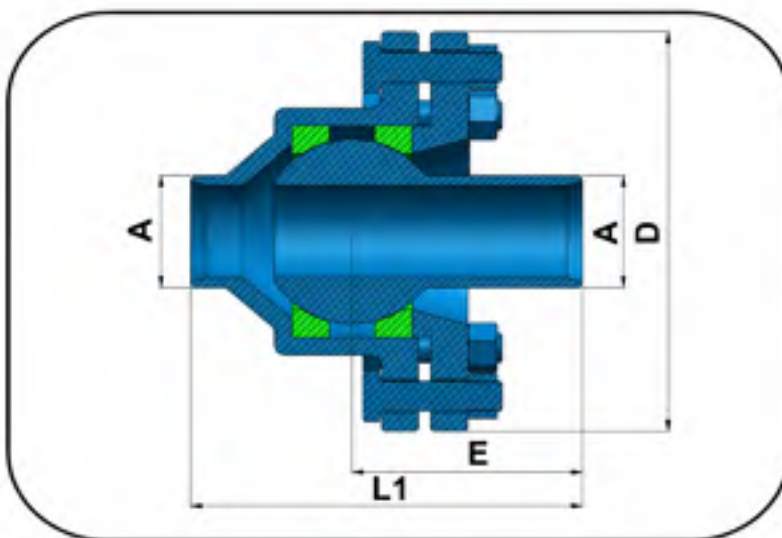
Special Option:
 - Injectable Flaked Graphite Sealant

Max. Temperature: $(-20^\circ\text{C}) - (120^\circ\text{C})$
 $(-4^\circ\text{F}) - (+250^\circ\text{F})$

Max. Pressure: 20 bar (290 psi)

C SERIES BALL JOINT WELD END CONNECTIONS

ANGULAR MOVEMENT



DIMENSIONS AND WEIGHTS

SIZE	D	E	L1	L2	L3	L4	WEIGHT (kg)			
							STYLE 20	STYLE 30/30A	STYLE 40	
1"	DN25	147	84	150	188	38	226	6,25	6,4	6,5
1 1/4"	DN32	176	104	186	234	48	282	10	10,2	10,5
1 1/2"	DN40	198	115	203	260	57	317	14	14,5	14,75
2"	DN50	215	124	221	297	76	373	17	17,5	18
2 1/2"	DN65	234	136	234	329	95	472	19	20	20,75
3"	DN80	270	133	242	356	114	470	28	29,5	30,5
4"	DN100	290	144	264	416	152	568	32	34,5	37
5"	DN125	326	155	279,5	469,5	190	659,5	43	47	51
6"	DN150	349	164	292	521	229	750	53	59,5	66
8"	DN200	399	173	307	612	305	917	68	83	98

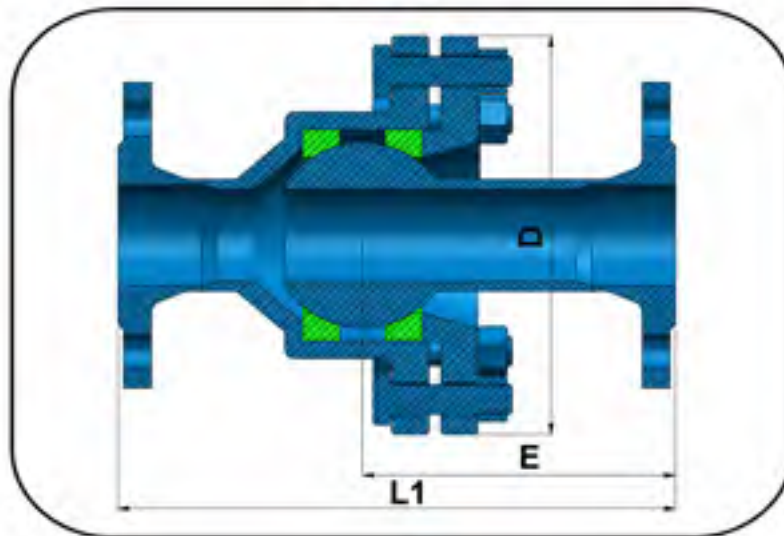
Please consult factory for sizes above 8" (DN200)

C SERIES BALL JOINTS

C SERIES BALL JOINT FLANGED CONNECTIONS

-PN16 & ANSI150 Flanges standard

-Special flanges upon request



DIMENSIONS AND WEIGHTS

PN16 FLANGE (DIN 2633)

SIZE	D	E	L1	L2	L3	L4	WEIGHT (kg)			
							STYLE 20	STYLE 30/30A	STYLE 40	
1"	DN25	147	124	230	228	78	226	8,75	9	9
1 1/4"	DN32	176	146	270	276	90	282	13,5	13,75	14
1 1/2"	DN40	198	160	293	305	102	317	18	18,5	18,75
2"	DN50	215	169	311	342	121	373	22	22,5	23
2 1/2"	DN65	234	181	324	374	140	472	25	26	27
3"	DN80	270	183	342	406	164	470	35,5	37	38
4"	DN100	290	196	368	468	204	568	41,5	44	46,25
5"	DN125	326	210	389,5	524,5	245	659,5	55,75	60	63,75
6"	DN150	349	219	402	576	284	750	68,5	75	81,5
8"	DN200	399	235	431	674	367	917	90	105	120

ANSI150 FLANGE (ASME 16.5)

SIZE	D	E	L1	L2	L3	L4	WEIGHT (kg)			
							STYLE 20	STYLE 30/30A	STYLE 40	
1"	DN25	147	84	258	242	92	226	8,25	8,5	8,5
1 1/4"	DN32	176	104	298	290	104	282	12,75	13	13,25
1 1/2"	DN40	198	115	323	320	117	317	17,5	18	18,15
2"	DN50	215	124	345	359	138	373	22,5	23	23,25
2 1/2"	DN65	234	136	370	397	163	472	27,5	28,5	29,25
3"	DN80	270	133	378	424	182	470	38	39,5	40,5
4"	DN100	290	144	414	491	227	568	45,75	48,25	50,75
5"	DN125	326	155	453,5	556,5	277	659,5	60	64	68
6"	DN150	349	164	466	608	316	750	74,5	81	87,5
8"	DN200	399	173	507	712	405	917	103,5	118	133,5

Please consult factory for sizes above 8" (DN200)



BALL JOINTS

ROTOFLUID BALL JOINTS APPLICATION ANALYSES FORM

COMPANY NAME: _____

ADDRESS: _____

TEL: _____ FAX: _____

CONTACT: _____ e-mail: _____

QUANTITY: _____ PCS MEDIUM: _____

SIZE: _____ or NOMINAL DIAMETER: _____ or FLOW RATE: _____

PRESSURE: _____ BAR or _____ PSI

TEMPERATURE: _____ °C or _____ °F

What is the preferred construction material: _____

Information about application, if possible please send us drawing

If you have any questions or need assistance, please contact our sales department. Please fill the form and send it by fax or email.





DISTRIBUTOR



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