

MSABEK



DUCTILE IRON PIPES, FITTINGS & VALVES

— PRODUCT CATALOGUE —



STRENGTH
THAT ENDURES



RELIABILITY
YOU CAN TRUST



ENGINEERED
TO PERFORM



WATER PIPING



PRODUCT CATALOGUE

Straight Connections

This technical book cover MSABEK products under the following standards mentioned in Table No.(1) , Also MSABEK produce other standards and products other than mentioned in this technical book ,please contact sales team for other technical books for other products and standards ,below table show covered standards by MSABEK :

1- ISO STANDARDS:

STANDARD NO.	DESCRIPTION
ISO 2531	Ductile iron pipes, fittings, accessories and their joints for water applications
ISO 7186	Ductile iron products for sewerage applications
ISO 10803	Design method for ductile iron pipes
ISO 13470	Trenchless applications of ductile iron pipes systems -- Product design and installation
ISO 10804	Restrained joint systems for ductile iron pipe
ISO 7005-2	Metallic flanges - Part 2: Cast iron flanges
ISO 16134	Earthquake- and subsidence-resistant design of ductile iron pipelines
ISO 10802	Ductile iron pipelines -- Hydrostatic testing after installation
ISO 27306	Metallic materials -- Method of constraint loss correction of CTOD fracture toughness for fracture assessment of steel components
ISO 9349	Pre insulated ductile iron pipeline systems
ISO 8179-1	Ductile iron pipes - External zinc-based coating -- Part 1: Metallic zinc with finishing layer
ISO 8179-2	Ductile iron pipes -- External zinc coating -- Part 2: Zinc rich paint with finishing layer
ISO 4179	Ductile iron pipes and fittings for pressure and non-pressure pipelines -- Cement mortar lining
ISO 16132	Ductile iron pipes and fittings -- Seal coats for cement mortar linings
ISO 8180	Ductile iron pipelines - Polyethylene sleeving for site application
ISO 4633	Rubber seals -- Joint rings for water supply, drainage and sewerage pipelines -- Specification for materials
ISO/NP 16631	Ductile iron pipes, fittings, accessories and their joints for water distribution
ISO 9001	Quality management systems -- Requirements
ISO 14001	Environmental management systems -- Requirements with guidance for use
ISO/TS 14048	Environmental management - Life cycle assessment -- Data documentation format
ISO/TR 14062	Environmental management - Integrating environmental aspects into product design and development

Note (1) : above table show Standard Number only , MSABEK cover all versions for standards mentioned in Table No. (1).

Note (2): ISO -International Organization for Standardization standards

2- EN STANDARDS:

STANDARD NO.	DESCRIPTION
EN 545	Ductile iron pipes, fittings accessories and their joints for water pipelines
EN 598	Ductile iron pipes, fittings accessories and their joints for sewerage applications
EN 969	Ductile iron pipes, fittings, accessories and their joints for gas pipelines. Requirements and test methods
EN 14525	Ductile iron wide tolerance couplings and flange adaptors for use with pipes of different materials: ductile iron, grey iron, steel, PVC-U, PE, fiber-cement
EN 15655	Ductile iron pipes, fittings and accessories. Internal polyurethane lining for pipes and fittings. -Requirements and test methods
EN 12842	Ductile iron fittings for PVC-U or PE piping systems. Requirements and test methods
EN 14628	Ductile iron pipes, fittings and accessories - External polyethylene coating for pipes - Requirements and test methods
EN 14628	Ductile iron pipes, fittings and accessories. Epoxy coating (heavy duty) of ductile iron fittings and accessories. Requirements and test methods
EN 15189	Ductile iron pipes, fittings and accessories - External polyurethane coating for pipes - Requirements and test methods
EN 15542	Ductile iron pipes, fittings and accessories - External cement mortar coating for pipes - Requirements and test methods
EN 681-1	Elastomeric seals - Material requirements for pipe joint seals used in water and drainage applications - Part 1: Vulcanized rubber
EN 197-1	Cement – Part 1 : Composition, specifications and conformity criteria for common cements
EN 197-2	Cement – Part 2 : Conformity evaluation
EN 206-1	Concrete – Part 1: Specification, performance, production and conformity
BS EN 1092-1	Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated
EN 10255	Non-alloy steel tubes suitable for welding and threading. Technical delivery conditions
EN 10216- 1:2002 A1:2004	“Seamless steel tubes for pressure purposes” - Technical delivery conditions - Part 1: Non-alloy steel tubes with specified room temperature properties
EN 20224:2002	“Non-alloy steel tubes and fittings for the conveyance of water and other aqueous liquids”
EN 10297-1:2003	Seamless steel tubes for mechanical and general engineering purposes
EN 10208- 1,2:1997, 1996	Steel pipes for pipelines for combustible fluids
EN 10210- 1,2:1994, 1997	Hot finished structural hollow sections of no-alloy and fine grain steels

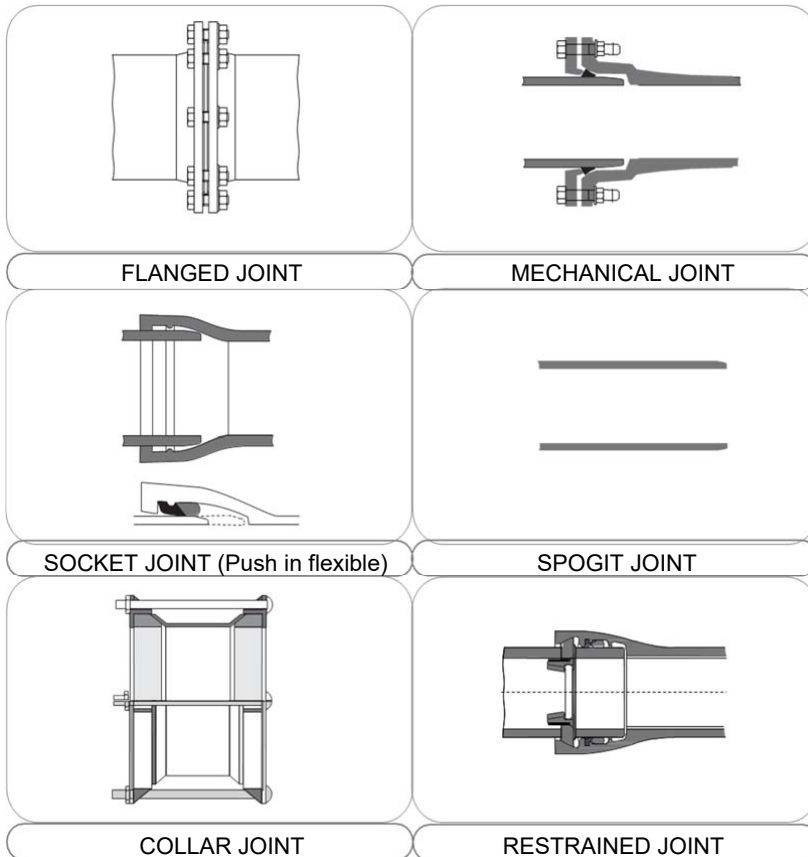
OTHER STANDARDS:

STANDARD NO.	DESCRIPTION
ANSI/AWWA C115/A21.15	American National Standard for Flanged Ductile-Iron Pipe with Ductile-Iron or Gray - Iron Threaded Flanges
AWWA C105/A21.5-10	Polyethylene Encasement for Ductile-Iron Pipe Systems
AWWA C104/A21.4-08	Cement Mortar Lining for Ductile Iron Pipe and Fittings for Water, Includes Erratum (2010)
DIN 28600 – DIN 28646	Ductile Iron Pressure Pipes And Fittings For Gas And Water Pipelines
ANSI/AWWA C104/A21	Cement-Mortar Lining for Ductile- Iron Pipe and Fittings for Water
ANSI/AWWA C105/A21.5	Polyethylene Encasement for Ductile-Iron Pipe Systems
ANSI/AWWA C110/A21.10	Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in., for Water
ANSI/AWWA C111/A21.11	Rubber-Gasket Joints for Ductile- Iron Pressure Pipe and Fittings
ANSI/AWWA C115/A21.15	Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges
ANSI/AWWA C150/A21.50	Thickness Design of Ductile-Iron Pipe
ANSI/AWWA C151/A21.51	Ductile-Iron Pipe, Centrifugally Cast for Water
ANSI/AWWA C153/A21.53	Ductile-Iron Compact Fittings, for Water Service
ANSI/AWWA C600	Installation of Ductile-Iron Water Mains and Their Appurtenances
ANSI/AWWA C606	Grooved and Shouldered Joints
ASTM A674	Polyethylene Encasement for Ductile Iron Pipe for Water or Other Liquids
ASTM A716	Ductile Iron Culvert Pipe
ASTM A746	Ductile Iron Gravity Sewer Pipe
ANSI/NSF 61	Drinking Water System Components— Health Effects
ASTM G62	Standard Test Methods for Holiday Detection in Pipeline Coatings
ASTM A53	Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A106	Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service

JOINTS & CONNECTIONS FOR DUCTILE PIPES SYSTEMS:

The main advantage for ductile iron pipes & fittings is very easy to be connected without any welding like other types of pipes, Listed below are the standard joint systems manufactured by MSABEK.

1. Socket - the socket is the female end of a pipe or fitting.
2. Spigot - male end of the pipe and or fitting.
3. Flange (Flanged Joint) - flat circular end of pipe or fitting. A flange can be fixed (integrally cast or welded) or adjustable; an adjustable flange comprises a ring, in one or several parts assembled together, which bears on an end joint hub and freely rotates 45° on the pipe or fitting axis before jointing.
4. Push-in flexible joint - this is the standard underground joint. The joint is assembled by inserting the spigot through a gasket into the socket.
5. Mechanical flexible joint - flexible joint where the sealing of the joint is obtained by applying pressure to the gasket by mechanical means, e.g. a gland
6. Restrained Flexible Joint - flexible joint where a means is provided to prevent separation of an assembled joint
7. Collar - a connecting piece which is used to join two spigots together



MSABEK preforms several types of pressure test for pipes, gaskets, and fittings.

Tables below are for pressure test on K classes & C Classes :

Note: MSABEK do 100% maximum hydrostatic pressure test on factory.

PFA (allowable operating pressure): Internal pressure, exclusive of surge, that a component can safely withstand.

PMA (allowable maximum operating pressure): Maximum internal pressure, including surge that a component can safely withstand in service.

PEA (allowable test pressure): Maximum hydrostatic pressure test that a newly installed component can withstand for a short duration.

Please note that component

Important Note: test pressure is different from a system test pressure, which is related to the design pressure of the pipeline.

Minimum Works test pressure (PEA) K9 System

Product	Nominal diameter DN (mm)	Test pressure (Bar)	Time (sec)
Ductile Iron Pipe	40-300	50	> 10
	350-600	40	
	700-1000	32	
	1100-2000	25	
	2200-2600	18	
Ductile Iron Fittings	40-300	25	> 10
	350-600	16	
	700-2600	10	

C-K CLASSES

DN (mm)	ALLAWABLE PRESSURE(BAR)											
	K5			K7			K8			K9		
	PFA	PMA	PEA	PFA	PMA	PEA	PFA	PMA	PEA	PFA	PMA	PEA
40	180	197	202	180	197	202	180	197	202	180	197	202
50	172	192	197	172	192	197	172	192	197	172	192	197
60	164	186	191	164	186	191	164	186	191	164	186	191
65	153	178	183	153	178	183	153	178	183	153	178	183
80	142	170	175	142	170	175	142	170	175	142	170	175
100	117	140	145	117	140	145	117	140	145	117	140	145
125	95	114	119	95	114	119	95	114	119	95	114	119
150	80	96	101	80	96	101	80	96	101	80	96	101
200	61	73	78	61	73	78	61	73	78	65	78	83
250	49	59	64	49	59	64	49	59	64	57	68	73
300	41	49	54	41	49	54	45	54	59	52	62	67
350	36	43	48	36	43	48	42	50	55	48	58	63
400	32	38	43	36	43	48	40	48	53	46	55	60
450	28	34	39	35	42	47	38	46	51	43	52	57
500	25	30	35	34	41	46	36	43	48	42	50	55
600	21	25	30	32	38	43	34	41	46	39	47	52
700	21	25	30	31	37	42	32	38	43	37	44	49
800	21	25	30	30	36	41	31	37	42	36	43	48
900	20	24	29	29	35	40	30	36	41	34	41	46
1000	20	24	29	28	34	39	29	35	40	33	40	45
1100	20	24	29	28	34	39	29	35	40	33	40	45
1200	19	23	28	27	32	37	28	34	39	32	38	43
1400	19	23	28	27	32	37	27	32	37	31	37	42
1500	19	23	28	26	31	36	27	32	37	31	37	42
1600	19	23	28	26	31	36	27	32	37	30	36	41
1800	19	23	28	26	31	36	26	31	36	30	36	41
2000	18	22	27	25	30	35	26	31	36	29	35	40
2200	18	22	27	25	30	35	26	31	36	29	35	40
2400	18	22	27	25	30	35	25	30	35	29	35	40
2600	18	22	27	25	30	35	25	30	35	28	34	39

FITTING PRESSURE PERFORMANCE (C CLASS SYSTEM)

Allowable pressure for C-class fittings

Diameter DN	Pressure class C	PFA bar	PMA bar	PEA bar
40 to 100	100	100	120	125
125 to 200	64	64	77	82
250 to 350	50	50	60	65
400 to 600	40	40	48	53
700 to 1400	30	30	36	41
1500 to 2000	25	25	30	35

Allowable pressure for components with flanged joints

Flange Rating	Allowable operating pressure PFA (bar)	Max. allowable operating pressure PMA (bar)	Allowable site test pressure PEA (bar)
10	10	12	17
16	16	20	25
25	25	30	35
40	40	48	53

Allowable pressure for restrained joints (push on Type)-Class 50

DN (mm)	ALLOWABLE PRESSURE		
	C50		
	PFA	PMA	PEA
40-80	32	38	43
100	32	38	43
125	25	30	35
150	25	30	35
200	25	30	35
250	25	30	35
300	25	30	35
350	16	20	25
400	16	20	25
450	16	20	25
500	16	20	25
600	10	12	17
700	10	12	17
800	10	12	17
900	10	12	17
1000	10	12	17
1100	10	12	17
1200	10	12	17

Socket spigot joints are designed to be fully flexible and allow angular deflection, which permits the installed pipeline to accommodate ground movement. The following table shows the maximum allowable deflection of the socket:

DN (mm)	Angular Deflection	
	T-Type	K-Type
40mm-200mm	5°	5°
250mm-300mm	4°	5°
350mm	4°	4°
400mm	3°	4°
450-500mm	3°	3°
600mm	2°	3°
700mm-900mm	2°	2°
1000mm-2600mm	2°	1°

Stiffness is an important factor to determine pipes depth design of underground pipes also it is important where pipes crossing roads or exposed under any load below table show the allow- able stiffness:

1- C CLASS STIFFNESS & OVALITY

DN (mm)	STIFFNESS KN/m2						Allowable pipe ovality(%)					
	C25	C30	C40	C50	C64	C100	C25	C30	C40	C50	C64	C100
40	-	-	1472	1472	1472	935	-	-	1.19	1.19	1.19	19
50	-	-	1472	1472	1472	935	-	-	1.19	1.19	1.19	19
60	-	-	1472	1472	1472	935	-	-	1.19	1.19	1.19	19
65	-	-	1472	1472	1472	935	-	-	1.19	1.19	1.19	19
80	-	-	1472	1472	1472	935	-	-	1.19	1.19	1.19	19
100	-	-	481	823	823	1655	-	-	1.45	1.45	1.45	1.15
125	-	-	476	476	581	1497	-	-	1.74	1.74	1.62	1.19
150	-	-	285	285	472	1335	-	-	26	26	1.74	1.23
200	-	-	143	220	389	1145	-	-	2.59	2.25	1.86	1.30
250	-	-	122	194	356	1066	-	-	2.73	2.34	1.91	1.33
300	-	57	103	178	313	991	-	3.53	2.89	2.41	2	1.36
350	36	69	99	192	302	959	4.10	3.31	2.93	2.35	22	1.37
400	31	52	90	154	280	907	4.31	3.64	33	2.53	27	1.40
450	30	44	86	149	278	897	4.35	3.84	37	2.55	28	1.41
500	27	41	80	141	262	871	4.53	3.92	3.15	2.61	2.12	1.42
600	25	38	75	132	249	836	4.62	43	3.21	2.66	2.15	1.44
700	25	36	71	127	241	821	4.64	4.12	3.28	2.70	2.18	1.45
800	22	34	68	122	237	-	4.86	4.19	3.31	2.74	2.19	-
900	21	32	66	118	232	-	4.94	4.25	3.36	2.76	2.21	-
1000	20	31	65	116	-	-	51	4.33	3.38	2.95	-	-
1100	19	31	64	115	-	-	57	4.33	3.40	2.95	-	-
1200	19	29	62	-	-	-	5.11	4.39	3.42	6.34	-	-
1400	12	19	-	-	-	-	5.87	56	-	-	-	-
1500	18	28	-	-	-	-	5.19	4.46	-	-	-	-
1600	17	28	-	-	-	-	5.22	4.48	-	-	-	-
1800	17	27	-	-	-	-	5.73	4.51	-	-	-	-
2000	17	27	-	-	-	-	5.75	4.54	-	-	-	-
2200	16		-	-	-	-	10.72	-	-	-	-	-
2400	16		-	-	-	-	10.78	-	-	-	-	-
2600	16		-	-	-	-	10.80	-	-	-	-	-

2- K CLASS STIFFNESS & OVALITY

DN	STIFFNESS KN/m2						Allowable pipe ovalization(%)					
	K5	K7	K8	K9	K10	K12	K5	K7	K8	K9	K10	K12
80	27282	728	2728	2728	27284	617	0.86	0.86	0.86	0.86	0.86	0.73
100	15181	518	1518	1518	15182	876	15	15	15	15	15	0.86
125	814	814	814	814	940	1765	1.29	1.29	1.29	1.29	1.23	12
150	486	486	486	486	642	1199	1.53	1.53	1.53	1.53	1.41	1.16
200	213	213	213	253	362	671	22	22	22	1.92	1.72	1.42
250	112	112	112	167	239	440	2.50	2.50	2.50	2.22	1.99	1.65
300	66	66	82	122	174	319	2.99	2.99	2.80	2.48	2.23	1.85
350	42	42	64	95	135	247	3.47	3.47	36	2.71	2.44	22
400	29	38	53	78	111	202	3.95	3.76	3.28	2.91	2.61	2.17
450	20	32	45	66	94	170	4.43	3.99	3.48	39	2.77	2.30
500	15	28	39	58	81	147	4.91	4.20	3.67	3.26	2.92	2.43
600	9	23	31	46	65	116	5.87	4.56	3.99	3.54	3.18	2.64
700	7	19	26	38	54	97	6.83	4.87	4.25	3.77	3.39	2.82
800	6	17	23	33	47	84	7.20	5.13	4.48	3.98	3.57	2.97
900	5	15	20	30	42	74	7.51	5.35	4.67	4.15	3.73	3.10
1000	5	14	19	27	38	68	7.77	5.54	4.84	4.29	3.86	3.21
1100	5	13	17	25	35	62	81	5.71	4.99	4.43	3.98	3.31
1200	4	12	16	23	33	58	8.22	5.85	5.11	4.54	48	3.39
1400	4	11	14	21	29	52	8.57	6.10	5.33	4.73	4.25	3.54
1500	4	11	14	20	28	49	8.71	6.21	5.42	4.81	4.33	3.60
1600	4	10	13	19	27	47	8.84	6.30	5.51	4.89	4.39	3.65
1800	4	10	12	18	25	44	98	6.47	5.65	52	4.51	3.75
2000	3	9	12	17	24	41	9.28	6.61	5.78	5.13	4.61	3.83
2200	3	9	11	16	22	39	9.44	6.73	5.88	5.22	4.69	3.90
2400	3	9	11	16	22	38	9.58	6.83	5.97	5.30	4.76	3.96
2600	3	8	10	15	21	37	9.71	6.92	65	5.37	4.83	41

NOTE: please refer to design manual for underground depth calculations.



Ring Test

All MSABEK pipes and fittings are coated and Lined as specified in the following standards:

STANDARD	DESCRIPTION
ISO 4179	Ductile iron pipes and fittings for pressure and non-pressure pipelines. Cement mortar lining
ISO 8179-1	Ductile iron pipes - External zinc-based coating --Part 1: Metallic zinc with finishing layer
ISO 8179-2	Ductile iron pipes - External zinc coating - art 2: Zinc rich paint with finishing layer
ISO 16132	Ductile iron pipes and fittings - Seal coats for cement mortar linings
ISO 8180	Ductile iron pipelines -- Polyethylene sleeving for site application
EN 545, 598	Ductile Iron pipe coating and lining
DIN 2614 C	Cement mortar linings for ductile iron and steel pipes and fittings; application, requirements and testing
DIN EN 14901	Ductile iron pipes, fittings and accessories - Epoxy coating (heavy duty) Of ductile iron fittings and accessories
DIN EN 14628	Ductile iron pipes, fittings and accessories External polyethylene coating for pipes
DIN EN 15189	Ductile iron pipes, fittings and accessories External polyurethane coating for pipes Requirements and test methods
ANSI/AWWA C104/A21.4	American National Standard for Cement- Mortar Lining for Ductile-Iron Pipe and Fittings for Water
ANSI/AWWA C116/A21.16	American National Standard for Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile- Iron and Gray-Iron Fittings For Water Supply Service

NOTE: MSABEK can cover many other standards mentioned in the tables earlier, please refer to other data sheets published by MSABEK.

APPLICATIONS

MSABEK products cover many applications, the coating and lining system produced is very huge and we considered one of unique companies can cover big range of applications, below are the main applications:

- 1-Potable water Systems
- 2-Sewage Water Systems
- 3-Irrigation Systems
- 4-Industrial fluids Systems
- 5-Fire Fighting Systems



To meet the requirements for potable water in all applications MSABEK manufacture the following systems:



INTERNAL LINING:

Pipes & Fittings are lined with the following options:

a. Cement Lining:

- a.1. Sulphate resistant cement
- a.2. Portland cement
- a.3. Blast Furnace cement

b. Epoxy Lining:

- b.1 Solvent free epoxy b.2 Fusion bonded epoxy b.3 Ceramic epoxy
- b.4 Resin epoxy
- b.5 Polyurethane epoxy

c. Epoxy Over Cement:

- c1. Resin Epoxy over the cement
- c2. Solvent Epoxy over the cement

e. Fusion bonded Polyethylene

SEAL COAT ON CEMENT LINING :

When specified or prescribed by the customer the cement mortar lining is given a seal coat of asphaltic material.

On specific requirement of customer we provide Epoxy Seal Coat over Cement Lining. The purpose of the seal coat is to control leaching of cement into Water.

CEMENT MORTAR LININGS

The cement mortar lining (CML) of ductile iron pipes is manufactured to ISO 4179, BS EN 545 Section 4.4.3. The lining shall constitute a dense, homogeneous layer which covers the internal surface of the pipe. The compressive strength of the CML after curing shall be not less than 50MPa. The surface of the CML shall comply fully with ISO 4179, BS EN 545. The lining shall be smooth and uniform. Trowel marks, protrusion of sand grains and surface texture are acceptable. Fine crazing and hairline cracks may appear in dry linings.

The following table details the minimum thickness in millimeters of the lining of ductile iron pipes and fittings.

DEIONIZED FRESH WATER:

We recommend to protect the cement lining with deionized water, Polyurethane or equivalent lining.

CEMENT LINING

Nominal Size	Thickness		Maximum crack width and radial displacement
	Nominal Value	Tolerance	
40 to 300	4	-1.5	0.8
350 to 600	5	-2	0.8
700 to 1200	6	-2.5	1
1400 to 2000	9	-3	1.2
2200 to 2600	12	-5	1.5

NOTE (1): Cement Mortar and tolerance for potable water.

NOTE (2): Storage of pipes in a hot, dry environment can cause the pipe to expand and the mortar to shrink. This may result in the dry lining developing area's of disbandment and shrinkage cracks which could exceed the widths given in the table above. Upon the lining being exposed to water again, the lining will absorb the moisture and the crack will close. This is known as an autogenous healing process.

NOTE (3): A negative tolerance only is given.

EXTERNAL COATINGS:

Pipes & Fittings are lined with the following options:

The pipes are supplied with a layer of metallic zinc or Zinc Aluminum to ISO 8179, BS EN 545 Section 4.4.2.1. and finished with a layer of Black Bitumen, epoxy, FBE, FBP, Polyurethane or Cement Resin to ISO 8179, BS EN 545 Section 4.5.2. and polyethylene encasement to ANSI/ AWWA C10/A21.5, ISO 8180.

Zinc coating or Zinc Aluminum is applied in varying levels depending on soil aggressivity.

The options are:

- Standard 130 gm/ m2 and finishing layer of 70 microns or more
- 150 gm/m2 and finishing layer of 70 microns or more
- 200 gm/m2 and finishing layer of 70 microns or more
- 400 gm/m2 and finishing layer of 70 microns or more:

MSABEK fittings are supplied coated with many coating systems like rich paint zinc with Bitumen, FBE, or blue PPA 571 Plascoat 250 microns (mean.) as standard, complying to BS EN 545 Section 4.1.4. and Section 4.5. Plascoat has full BS 6920 approval. Alternatively, the fittings can be coated with Blue Resicoat 250 microns (mean).

Fittings coated with either Plascoat or Resicoat having a coating thickness of 250 microns may be buried in soils of all levels of corrosivity (non to highly aggressive).

POTABLE WATER CERTIFIED

All Types of lining used to line our ductile iron pipes and fittings are approved for potable water and certified for human consumption having a nontoxic certificate at normal and high temperatures comply to BS 6920 standard.

Ductile iron pipes and fittings finished with the coatings detailed may be used to convey all types of water for human consumption.

2. SEWAGE& INDUSTRIAL COATING& LINING SYSTEMS

All MSABEK ductile iron pipes and fittings for sewage applications are supplied as detailed below:

INTERNAL LINING:

MSABEK pipes will be lined with High Alumina cement in accordance with ISO 4179, BS EN 598 Section 4.4.3.

Ceramic Epoxy for Sewerage: Ceramic epoxy lining is a specialized lining with high abrasion resistance which is suitable for raw sewer conveyance.

This is done against customers requirement.

CEMENT MORTAR LININGS

The surface of the lining will be substantially smooth; trowel marks and protrusions of sand grains are acceptable, but may occasionally contain longitudinal and circumferential shrinkage cracks but these will not affect the stability of the lining and the widths of the cracks and any radial displacement at the cracks will not exceed the values given in the table below. (Dimensions in millimeters)

Nominal Size	Thickness		Maximum crack width
DN	Nominal Value	Tolerance	and radial displacement
80 to 300	4	-1.5	0.6
350 to 600	5	-2	0.7
700 to 1200	6	-2.5	0.8
1400 to 2000	9	-3	0.8
2200 to 2600	12	-5	0.8

Note(1): Pipe ends may have a chamfer of maximum length 20mm.

Note(2): Storage of pipes and fittings in a hot, dry environment can cause metal expansion and mortar shrinkage which may result in dry lining developing areas of disbandment and shrinkage cracks. When the lining is re-exposed to water, it will swell by absorption of moisture and the cracks will eventually heal by an autogenous process.

Note(3): A negative tolerance only is given.

HIGH ALUMINA CEMENT RESISTANCE

Abrasion Resistance:

Abrasion in fluid transmission can result when the conveyed liquid contains a high concentration of solids. High velocities will also increase the abrasion of the pipe wall. This abrasive effect can erode the pipe wall over a period of time. It is likely to be a problem in the following situations:

- Combined sewers
 - Industrial effluent
 - Steep slopes

The high alumina lining used by MSABEK Flow Pipelines offers excellent resistance to abrasion. This lining allows regular maximum flows up to 7m/sec with minimal attack in each of the above situations.



Resistance to septic attack:

Bacterial corrosion is one of the main causes of deterioration of sewage networks regardless of climatic conditions. Normally associated with hot climates such as the Middle East and Australia, bacterial corrosion can occur in temperate climates under the right conditions – periods of low flow, turbulence at a pumping main discharge point.

Hydrogen sulfide (H₂S) released by the effluents is transformed into sulphury acid by the bacterial microflora on the damp walls of the pipes. Tests have demonstrated that high alumina cement is a material which offers high durability in the presence of bacterial corrosion.

Resistance to chemical attack:

Sewage networks can be at risk from attack by chemicals found in industrial effluents. The following table taken from BS EN 545 Annexe E shows the resistance of high alumina cement compared with Portland cement.

Water Characteristics	Portland Cement	High Alumina Cement
Minimum value of pH	6	4
aggressive CO ₂	7	no limit
sulfates (SO ₄ -)	400	no limit
magnesium (Mg++)	100	no limit
ammonium (NH ₄ +))	30	no limit

EXTERNAL COATINGS:

The pipes are supplied with a layer of metallic zinc or ZnAl to ISO 8179, EN 598 Section 4.4.2. and have a finish layer of Red Epoxy as per ISO 8179, EN 598 Section 4.1.4. and 4.4.2.4.

Zinc coating is applied in varying thickness depending on soil aggressivity Epoxy Coating Compared to normal bitumen coated pipes it offers:

- More resistance to external galvanic/ soil corrosion in aggressive soil
- More resistance to external chemical (acid, alkali, organic) attack
- Better adherence to metal surface, hence more durable coating
- Higher scratch resistance
- Good resistance to coating damage during transportation/ handling/laying
- Comes in attractive blue/green (for water) or red (for sewerage) color

FITTINGS

Internal and External Coating:

Fittings will be supplied with a red Plascoat finish as standard in accordance with ISO8179, ISO 4179, BS EN 598 Section

4.5.2.

Fusion Bonded Epoxy Coating

A state-of-the-art automated facility has been created to coat DI Fittings with powdered epoxy by fusion bonding process.

This inert coating in attractive color is suited for aggressive soil condition. Advantages of Fusion Bonded Epoxy (F.B.E)

- Gives high gloss and smooth coatings with excellent adhesion.
- Difficult shapes can be coated evenly.
- Provides enhanced corrosion resistant properties.
- A choice of Blue, green or Red colors for water or sewage applications is available.
- Film thickness between 100 – 250 micron, can be specified as per the requirement. Higher film thickness (>250 micron) can also be applied as per customer requirement.

PH LEVELS

Our standard coating systems are suitable for pH levels between and 12. For pipelines which have a process medium with pH levels less than 4 or greater than 12, please consult our Technical Sales Department. For the chemical resistance of our pipes and fittings contact our Technical Sales Department.

CO2 LEVELS

CO2 level is very important for lining selection in case of high CO2 level then the lining must be high cement class or polyurethane.

HYDRAULIC FLOW CHARACTERISTICS

The advance in corrosion protective systems, such as the use of epoxy coatings, adds greatly to both its service life and its already impressive flow characteristics.

LINING REPAIR

In the event that an area of cement mortar lining is damaged, repairs can be made quickly and simply by using either cement mortar or a compatible synthetic material which is approved for use with the potable water. Where a repair is carried out using cement mortar, follow the procedure outlined below.

- The cement mortar must be of the same type as that used in the original lining.
- If possible position the pipe or fitting with the damaged area at invert level.
- Carefully chip out the damaged lining. Undercut the edges of the adjacent sound lining to help form a 'key' for the repair.
- Clean away all loose debris.
- Thoroughly wet the exposed metal surface and the edges of the lining around the exposed area.

3. FIRE FIGHTING COATING& LINING SYSTEMS

MSABEK produce special Coating & lining to meet international standards for fire fighting like NFPA, FM, UL and others for under ground firefighting networks it is similar to potable water systems ,but for above ground systems the coating and lining systems as a follow:

Coating:

1-ZN spray of 200g/m²

2-Aniti fire epoxy coating and approved by FM. the thickness as per customer requirement.

Lining:

Epoxy coating of 150 Micron layer.



MARKING OF PIPES & FITTINGS:

NO	ITEM	Example
Pipes		
1	Nominal Bore	DN300
2	Class of other than K9	K7
3	Denotes the pipe is ductile iron	three dots, DI,
4	Appropriate standard	ISO 2531
5	Year of manufacture	2003
6	Manufacturer's identification	Manufacturer's mark
7	PN rating of flanges when applicable	PN16
Fittings		
1	Nominal Bore	DN300
2	Angle of bend	90° etc.
3	Denotes the fitting is ductile iron	DI
4	Appropriate standard	ENE 545
5	Year of manufacture	2024
6	Manufacturer's identification	MASBEK
7	PN rating of flanges when applicable	10,16,25,etc.

PROJECT IDENTIFICATION

MSABEK Flow Pipelines can mark all pipes and fittings to your specific requirements. This can be done either by the use of metal tags or white water resistant markers.



FLANGES

Flanged pipe work is supplied drilled to BS EN 1092-2 : 1997 or ISO 7005-2 as standard. If other flanged drillings should be required, please state the preferred drilling upon your enquiry.

This diagram illustrates the arrangement but not necessarily the correct number of bolt holes; refer to tables for the actual number. Flanged pressure pipelines are suitable for a wide range of industries and applications, primarily, pumping stations, treatment works, process plant and rising mains. Rigid and self anchoring, flanged joints give no provision for deflection, and therefore no external anchorage is required when changes in direction occur, or at blank ends. To give the flexibility when installing a flanged pipeline system, the use of flange adaptors is common practice.

The flanged joint offers a high strength and high pressure capability, making a ductile iron pressure pipeline an ideal cost effective material when used in the movement of sewage and water in above ground applications.

It is recommended that flanged pipe work is not used in buried situations due to the risk of excessive bending moments. However, where flanges are buried directly in the ground, (i.e. flange adaptors), the bolts must be protected from corrosion by wrapping with a protective tape or coating to WIS 4-52-03.

FIXED FLANGED JOINTS



ROTATING FLANGED JOINTS

In addition to our range of fixed flanged fittings, we can offer a range of fittings with an adjustable rotating flange as per BS EN 545 (Section 3.5) and BS EN 1092-2 (Section 3.1). The working pressures and corrosion protection options for the adjustable fitting are the same as the fixed flanged fitting range.

The adjustable flange offers all the advantages of a fixed flange but with added advantages:

1. Ease of assembly.
2. Flexibility to orientate the pipeline on site.
3. Interchangeable flange drillings.



PRODUCT DETAILS

Applicable Standards

ISO 2531 , EN545, EN598 , EN681 & ISO898-1 .

Test Pressure

1.5 times working pressure for short duration .

Vacuum Pressure

Capable of accommodating a vacuum pressure of -0.7 bar.

Coating & Lining

Potable Water Fusion Bonded Epoxy powder according to DIN 30677-T2

Colors

-The product's coating standard colors as a follow:

- Blue –Potable water applications
- Black-Potable water or sewage
- Red :Firefighting applications
- Vinous: Sewage applications

Applications

- Industrial Water Applications
- Water Distribution Networks
- Water Transmission
- Irrigation Applications
- Fire Fighting System

Ambient Temperature Rating :

Dismantling Joint with EPDM: -20°C to +90°C

Dismantling Joint with NBR: -20°C to +90°C

Media Temperature Rating :

Dismantling Joint with EPDM: 1°C to +60°C

Dismantling Joint with NBR: 1°C to +90°C

Marking:

Diameter , Material Identification , Pressure Rating
And any custom marking.

longitudinal forces Due to Internal Pressure:

The maximum resist end load due to the internal pressure adequate external must not exceed rubber gasket friction force.
Note: restraint Type Dismantling type must be used to prevent pipe pull out incase of no thrust.

Max. Bolt Torque:

On every Bolt

Size	N.m	Size	N.m	Size	N.m	Size	N.m
M12	65	M20	340	M27	940	M36	2100
M16	190	M24	600	M30	1240	M45	3240

Angularity:

4°~6° depend on tolerance of pipe OD and installation skills.

End Ring and Dismantling Body:

Ductile Iron DIN 1693 (GGG-400) /BS EN 1563 (EN GJS-400-15)

Centre Sleeve:

Ductile Iron DIN 1693 (GGG-400) /BS EN 1563 (EN GJS-400-15)

Gasket:

EPDM : to BS EN 681-1, Type WA, WC

NBR : to BS EN 682, Type G

Bolts

Standard - Galvanized Steel as per ISO 4016

Optional - Stainless Steel

Nuts

Standard - Galvanized Steel as per EN 24034

Optional - Stainless Steel

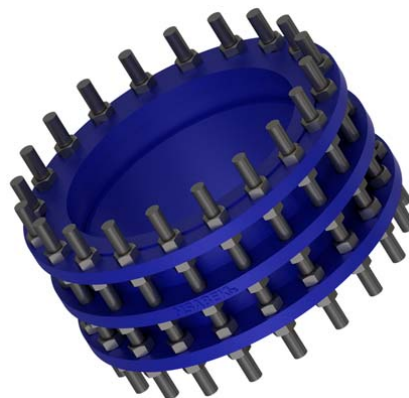
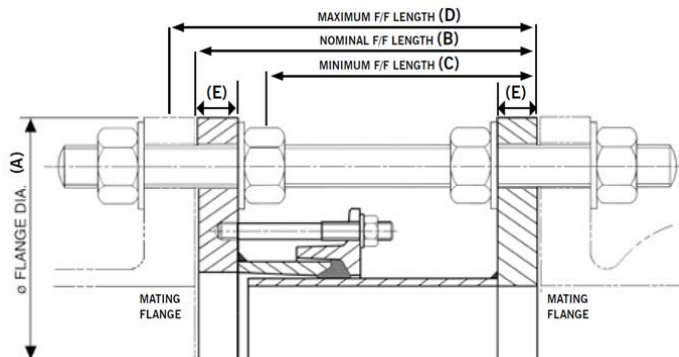
Washers

Standard - Galvanized Steel as per ISO 7089

Optional - Stainless Steel

Flange

Dimensions and drilling according to EN 1092-2



DUCTILE IRON

DISMANTLING JOINT

Flange details				Flange to				Tie Rod Details				
Dia.	Rating	Spigot E (mm)	A (mm)	B (mm)	C (mm)	D (mm)	Dia. Length (mm)	No.	Total Weight (KG)	Dia. Length (mm)	No.	Total Weight (KG)
40	PN10,16,25,40	17	165	194	174	214	M16 x 300	4	6.2	M16 x 300	4	6.2
50	PN10,16,25,40	17	165	194	174	214	M16 x 300	4	6.9	M16 x 300	4	6.9
65	PN10,16,25,40	17	185	194	174	214	M16 x 300	4	7.7	M16 x 300	4	7.7
80	PN10,16,25,40	17	200	194	174	214	M16 x 300	4	9.4	M16 x 300	4	9.4
100	PN10,16	17	220	194	174	214	M16 x 300	4	10.4	M16 x 300	4	10.4
125	PN10,16	17	250	194	174	214	M16 x 300	4	11.9	M16 x 300	4	11.9
150	PN10,16	17	285	194	174	214	M20 x 310	4	15.8	M20 x 310	4	15.8
200	PN10	20	340	194	174	214	M20 x 310	4	21.6	M20 x 310	4	21.6
200	PN16	20	340	194	174	214	M20 x 310	4	21.6	M20 x 310	4	21.6
250	PN10	20	395	194	174	214	M20 x 310	4	28.9	M20 x 310	4	28.9
250	PN16	20	405	194	174	214	M24 x 330	4	31.6	M24 x 330	4	31.6
300	PN10	19	445	194	174	214	M20 x 310	4	32.8	M20 x 310	4	32.8
300	PN16	20	460	194	174	214	M24 x 330	4	35.4	M24 x 330	4	35.4

RODUCT DETAILS

Flange details				Flange to				Tie Rod Details				
Dia.	Rating	Spigot E (mm)	A (mm)	B (mm)	C (mm)	D (mm)	Dia. Length (mm)	No.	Total Weight (KG)	Dia. Length (mm)	No.	Total Weight (KG)
100	PN25,40	25	235	194	174	214	M20 x 320	4	19.2	M20 x 320	4	19.2
125	PN25,40	25	270	194	174	214	M24 x 330	4	26.2	M24 x 330	4	26.2
150	PN25	25	300	194	174	214	M24 x 330	4	28.9	M24 x 330	4	28.9
150	PN40	25	300	194	174	214	M24 x 330	4	28.8	M24 x 330	4	28.8
200	PN25	25	360	194	174	214	M24 x 340	4	37.5	M24 x 340	4	37.5
200	PN40	25	375	194	174	214	M27 x 350	4	42.6	M27 x 350	4	42.6
250	PN25	25	425	194	174	214	M27 x 350	4	49.1	M27 x 350	4	49.1
250	PN40	25	450	194	174	214	M30 x 370	4	57.9	M30 x 370	4	57.9
300	PN25	25	485	194	174	214	M27 x 350	4	57.1	M27 x 350	4	57.1
300	PN40	25	515	194	174	214	M30 x 380	4	69.8	M30 x 380	4	69.8
350	PN10	18	505	295	270	320	M20 x 430	4	57.7	M20 x 430	4	57.7
400	PN10	18	565	295	270	320	M24 x 440	4	68.9	M24 x 440	4	68.9
450	PN10	23	615	300	275	325	M24 x 450	5	87.2	M24 x 450	5	87.2
500	PN10	23	670	300	275	325	M24 x 460	5	97.1	M24 x 460	5	97.1
550	PN10	23	730	300	275	325	M27 x 470	5	112	M27 x 470	5	112
600	PN10	23	780	300	275	325	M27 x 470	5	120	M27 x 470	5	120
650	PN10	23	835	300	275	325	M27 x 480	6	132	M27 x 480	6	132
700	PN10	23	895	300	275	325	M27 x 480	6	146	M27 x 480	6	146
800	PN10	23	1015	300	275	325	M30 x 500	6	167	M30 x 500	8	169
900	PN10	25	1115	307	277	337	M30 x 520	7	211	M30 x 520	8	215.6
1000	PN10	25	1230	307	277	337	M33 x 530	7	246	M33 x 530	8	251
1100	PN10	25	1340	307	277	337	M33 x 540	8	276	M33 x 540	10	286
1400	PN10	38	1675	320	290	350	M39 x 600	9	509	M39 x 600	12	533
1500	PN10	38	1785	320	290	350	M39 x 610	9	606	M39 x 610	12	631
1600	PN10	38	1915	320	290	350	M45 x 630	10	731	M45 x 630	10	731
1800	PN10	38	2115	320	290	350	M45 x 650	11	829	M45 x 650	14	866
2000	PN10	60	2325	462	412	512	M45 x 830	12	1412	M45 x 830	16	470
2200	PN10	60	2550	462	412	512	M52 x 860	13	1699	M52 x 950	14	1775
2400	PN10	60	2760	462	412	512	M52 x 880	14	1878	M52 x 970	18	2032

DUCTILE IRON

DISMANTLING JOINT

RODUCT DETAILS

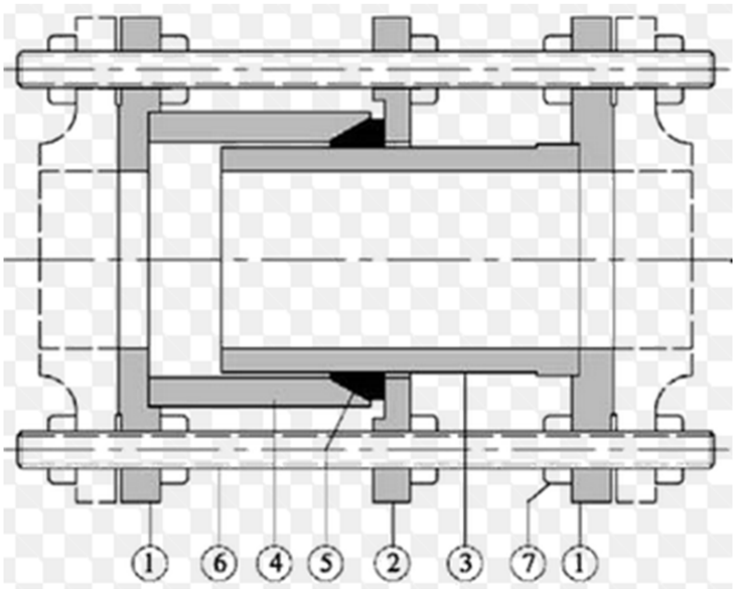
Dismantling joint dimensions at PN25

Flange details				Flange to			Tie Rod Details					
Dia.	Rating	Spigot E (mm)	A (mm)	B (mm)	C (mm)	D (mm)	Dia. Length (mm)	No.	Total Weight (KG)	Dia. Length (mm)	No.	Total Weight (KG)
350	PN25	25	555	302	277	327	M30 x 480	4	91.1	M30 x 480	4	91.1
400	PN25	25	620	302	277	327	M33 x 490	4	109	M33 x 490	4	109
450	PN25	25	670	302	277	327	M33 x 500	5	122	M33 x 500	5	122
500	PN25	25	730	302	277	327	M33 x 510	5	137	M33 x 510	5	137
550	PN25	25	785	302	277	327	M36 x 530	5	155	M36 x 530	5	155
600	PN25	25	845	302	277	327	M36 x 540	5	170	M36 x 540	6	177
650	PN25	25	895	307	277	337	M36 x 550	6	199	M36 x 550	8	211
700	PN25	25	960	302	277	327	M39 x 570	6	212	M39 x 570	8	227
800	PN25	25	1085	307	277	337	M45 x 630	6	279	M45 x 630	8	302
900	PN25	25	1185	307	277	337	M45 x 630	7	317	M45 x 630	10	350
1000	PN25	38	1320	320	290	350	M52 x 660	7	520	M52 x 740	8	567
1200	PN25	38	1530	320	290	350	M52 x 690	8	637	M52 x 770	12	724
1800	PN25	60	2185	462	412	512	M64 x 970	11	1855	M64 x 1075	16	1970

Dismantling joint dimensions at PN40

Flange details				Flange to			Tie Rod Details					
Dia.	Rating	Spigot E (mm)	A (mm)	B (mm)	C (mm)	D (mm)	Dia. Length (mm)	No.	Total Weight (KG)	Dia. Length (mm)	No.	Total Weight (KG)
350	PN40	25	580	307	277	337	M33 x 520	4	111	M33 x 520	4	111
400	PN40	25	660	307	277	337	M36 x 540	4	138	M36 x 540	4	138
450	PN40	25	685	307	277	337	M36 x 550	5	148	M36 x 550	5	148
500	PN40	25	755	307	277	337	M39 x 570	5	178	M39 x 570	6	186
550	PN40	38	835	320	290	350	M45 x 600	5	289	M45 x 600	5	289
600	PN40	38	890	320	290	350	M45 x 620	5	313	M45 x 620	6	325
650	PN40	38	945	320	290	350	M45 x 630	6	350	M45 x 630	8	374
700	PN40	38	995	320	290	350	M45 x 640	6	375	M45 x 640	8	399
800	PN40	38	1140	320	290	350	M52 x 680	6	479	M52 x 760	8	544
900	PN40	38	1250	320	290	350	M52 x 700	7	570	M52 x 780	10	661
1000	PN40	38	1360	320	290	350	M52 x 720	8	661	M52 x 810	14	826
1200	PN40	38	1575	320	290	350	M56 x 780	10	863	M56 x 870	16	1073

PARTS & ACCESSORIES:



ITEM	PART	description
1	End Flanges	Ductile Iron (Flange drilling according to 1092-2)
2	Middle Flange	Ductile Iron (Flange drilling according to 1092-2)
3	Internal Pipe	Ductile Iron
4	Outside Pipe	Ductile Iron
5	Sealing	NBR, EPDM
6	Bolt	Standard: Galvanized Steel as per ISO 4017 Optional: Stainless Steel
7	Nut	Standard: Galvanized Steel as per EN 24034 Optional: Stainless Steel

DUCTILE IRON

DISMANTLING JOINT

PRODUCT DETAILS

Applicable Standards

ISO 2531 ,EN545, EN598 , EN681 & ISO898-1 .

Test Pressure

1.5 times working pressure for short duration .

Vacuum Pressure

Capable of accommodating a vacuum pressure of -0.7 bar.

Coating & Lining

Potable Water Fusion Bonded Epoxy powder according to DIN 30677-T2

Colors

-The product's coating standard colors as a follow:

- Blue –Potable water applications
- Black-Potable water or sewage
- Red :Firefighting applications
- Vinous: Sewage applications

Applications

- Industrial Water Applications
- Water Distribution Networks
- Water Transmission
- Irrigation Applications
- Fire Fighting System

Ambient Temperature Rating :

Flange Adaptor with EPDM: -20°C to +90°C

Flange Adaptor with NBR: -20°C to +90°C

Media Temperature Rating :

Flange Adaptor with EPDM: 1°C to +60°C

Flange Adaptor with NBR: 1°C to +90°C

Marking:

Diameter , Material Identification , Pressure Rating
And any custom marking.

longitudinal forces Due to Internal Pressure:

The maximum resist end load due to the internal pressure adequate external must not exceed rubber gasket friction force.

Max. Bolt Torque:

On every Bolt

Size	N.m	Size	N.m	Size	N.m	Size	N.m
M12	65	M20	340	M27	940	M36	2100
M16	190	M24	600	M30	1240	M45	3240

Angularity:

4°~6° depend on tolerance of pipe OD and installation skills.

End Ring and Body:

Ductile Iron DIN 1693 (GGG-400) /BS EN 1563 (EN GJS-400-15)

Centre Sleeve:

Ductile Iron DIN 1693 (GGG-400) /BS EN 1563 (EN GJS-400-15)

Gasket:

EPDM : to BS EN 681-1, Type WA, WC

NBR : to BS EN 682, Type G

Bolts

Standard - Galvanized Steel as per ISO 4016

Optional - Stainless Steel

Nuts

Standard - Galvanized Steel as per EN 24034

Optional - Stainless Steel

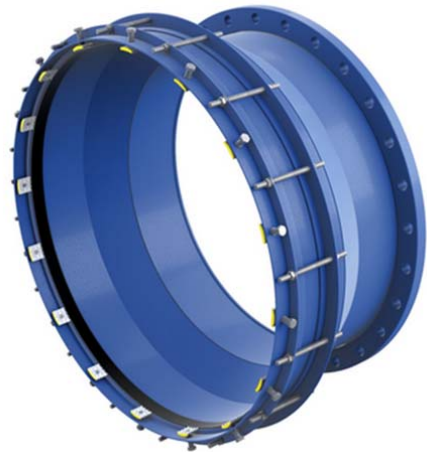
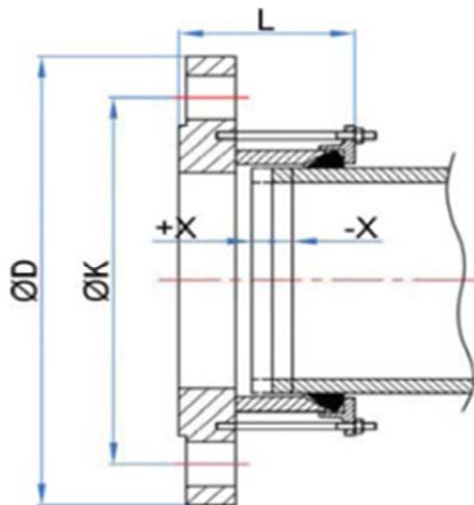
Washers

Standard - Galvanized Steel as per ISO 7089

Optional - Stainless Steel

Flange

Dimensions and drilling according to EN 1092-2



DUCTILE IRON

FLANGE ADAPTOR

Flange Adaptor dimensions at PN10

Nominal Diameter DN	ØD	ØK	L	±X	PN10		
					Stud Bolt		Weight (kg)
					Size d	No.	
80	200	160	180	40	M12x102	8	11
100	220	180	180	40	M12x110	8	14
125	250	210	180	40	M12x110	8	16
150	285	240	185	40	M12x110	8	23
200	340	295	185	40	M12x120	12	32
250	395	350	185	40	M12x120	12	40
300	445	400	185	50	M12x120	12	47
350	505	460	185	50	M16x146	16	62
400	565	515	200	50	M16x146	16	78
450	615	565	200	50	M16x146	20	90
500	670	620	200	50	M16x152	20	102
600	780	725	200	50	M16x152	20	134
700	895	840	200	50	M16x152	24	165
800	1015	950	200	50	M16x152	24	225
900	1115	1050	205	50	M16x152	28	250
1000	1230	1160	205	50	M16x152	28	300
1200	1455	1380	220	50	M16x165	32	470
1400	1675	1590	225	50	M16x165	36	650
1600	1915	1820	225	50	M16x235	40	950
1800	2115	2020	230	50	M16x235	44	1180
2000	2325	2230	235	50	M16x235	48	1450

Flange Adaptor dimensions at PN16

Nominal Diameter DN	ØD	ØK	L	±X	PN16		
					Stud Bolt		Weight
					Size d	No.	(kg)
80	200	160	180	40	M12x102	8	11
100	220	180	180	40	M12x110	8	14
125	250	210	180	40	M12x110	8	16
150	285	240	185	40	M12x110	8	23
200	340	295	185	40	M12x120	12	33
250	405	355	185	40	M12x120	12	48
300	460	410	190	50	M12x120	12	60
350	520	470	190	50	M16x146	16	80
400	580	525	200	50	M16x146	16	102
450	640	585	205	50	M16x146	20	120
500	715	650	205	50	M16x152	20	150
600	840	770	205	50	M16x152	20	200
700	910	840	205	50	M16x152	24	225
800	1025	950	210	50	M16x152	24	295
900	1125	1050	210	50	M16x152	28	340
1000	1255	1170	210	50	M16x152	28	460
1200	1485	1390	215	50	M16x165	32	680
1400	1685	1590	230	50	M16x165	36	840
1600	1930	1820	230	50	M16x235	40	1160
1800	2130	2020	240	50	M16x235	44	1400
2000	2345	2230	240	50	M16x235	48	1630

DUCTILE IRON

FLANGE ADAPTOR

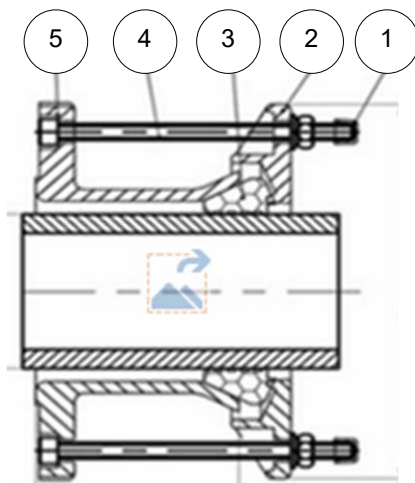
Flange Adaptor dimensions at PN25

Nominal Diameter DN	ØD	ØK	L	±X	PN25		
					Stud Bolt		Weight
					Size d	No.	(kg)
80	200	160	165	40	M16x102	8	14
100	235	190	165	40	M16x110	8	20
125	270	220	165	40	M16x110	8	27
150	300	250	190	40	M16x110	8	32
200	360	310	190	40	M16x120	12	47
250	425	370	190	40	M16x120	12	65
300	485	430	195	50	M16x120	16	85
350	555	490	200	50	M20x146	16	125
400	620	550	210	50	M20x146	16	160
450	670	600	210	50	M20x146	20	175
500	730	660	215	50	M20x152	20	202
600	845	770	215	50	M20x152	20	270
700	960	875	215	50	M20x152	24	340
800	1085	990	220	50	M20x152	24	500
900	1185	1090	230	50	M20x152	28	550
1000	1320	1210	230	50	M20x152	28	785
1200	1530	1420	250	50	M20x165	32	1160
1400	1755	1640	255	50	M20x165	36	1300
1600	1975	1860	265	50	M20x235	40	1560
1800	2195	2070	270	50	M20x235	44	1850
2000	2425	2300	275	50	M20x235	48	2020

DUCTILE IRON

FLANGE ADAPTOR

PARTS & ACCESSORIES:



ITEM	PART	description
1	Bolt s Cap	Standard: Galvanized Steel as per ISO 4017 Optional: Stainless Steel
2	Gland	Ductile Iron
3	Gasket	NBR, EPDM
4	Bolts & Nuts	Standard: Galvanized Steel Optional: Stainless Steel
5	Body	Ductile Iron

DUCTILE IRON

FLANGE ADAPTOR

PRODUCT DETAILS

Applicable Standards

ISO 2531 ,EN545, EN598 , EN681 & ISO898-1 .

Test Pressure

1.5 times working pressure for short duration .

Vacuum Pressure

Capable of accommodating a vacuum pressure of -0.7 bar.

Coating & Lining

Potable Water Fusion Bonded Epoxy powder according to DIN 30677-T2

Colors

-The product's coating standard colors as a follow:

- Blue –Potable water applications
- Black-Potable water or sewage
- Red :Firefighting applications
- Vinous: Sewage applications

Applications

- Industrial Water Applications
- Water Distribution Networks
- Water Transmission
- Irrigation Applications
- Fire Fighting System

Ambient Temperature Rating :

Reducer with EPDM: -20°C to +90°C

Reducer with NBR: -20°C to +90°C

Media Temperature Rating :

Reducer with EPDM: 1°C to +60°C

Reducer with NBR: 1°C to +90°C

Marking:

Diameter , Material Identification , Pressure Rating
And any custom marking.

longitudinal forces Due to Internal Pressure:

The maximum resist end load due to the internal pressure adequate external must not exceed rubber gasket friction force.

Max. Bolt Torque:

On every Bolt

Size	N.m	Size	N.m	Size	N.m	Size	N.m
M12	65	M20	340	M27	940	M36	2100
M16	190	M24	600	M30	1240	M45	3240

Angularity:

4°~6° depend on tolerance of pipe OD and installation skills.

Gasket:

EPDM : to BS EN 681-1, Type WA, WC

NBR : to BS EN 682, Type G

Flange

Dimensions and drilling according to EN 1092-2

Bolts

Standard - Galvanized Steel as per ISO 4016

Optional - Stainless Steel

Nuts

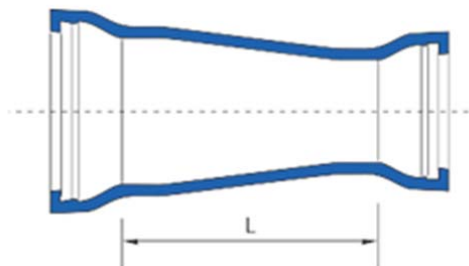
Standard - Galvanized Steel as per EN 24034

Optional - Stainless Steel

Washers

Standard - Galvanized Steel as per ISO 7089

Optional - Stainless Steel

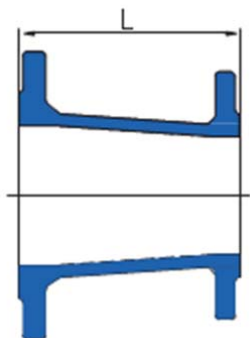


DOUBLE SOCKET REDUCER

Nominal Diameter		L (mm)	Weight (kg)	
DN	dn		T Type	MJ Type
100	80	90	9.2	11.9
150	80	190	14.9	18.6
150	100	150	15.3	19.1
200	100	250	23.5	26
200	150	150	24	27
250	150	250	32.5	36
250	200	150	33	35
300	150	350	43	50
300	200	250	43.5	49
300	250	150	41.5	47.5
350	200	360	59	62.5
350	250	260	57	61
350	300	160	52.5	61.5
400	200	460	73.5	78
400	250	360	72	76.5
400	300	260	67.5	77
400	350	160	66	73
450	250	460	89	94
450	300	360	84	94.5
450	350	260	83	91
450	400	160	77.5	86.5

Nominal Diameter		L (mm)	Weight (kg)	
DN	dn		T Type	MJ Type
500	300	460	104	114
500	350	360	103	110
500	400	260	97	106
500	450	160	90.5	99
600	350	560	149	157
600	450	360	137	146
600	500	260	129	137
700	400	680	210	215
700	450	580	205	210
700	500	480	198	203
700	600	280	179	184
800	450	780	278	278
800	500	680	271	271
800	600	480	252	252
900	500	880	360	358
900	600	680	341	339
900	700	480	323	316
900	800	280	292	281
1000	600	880	446	445
1000	700	680	427	422
1000	800	480	397	386
1000	900	280	359	346
1200	700	1080	699	667
1200	800	880	668	631
1200	900	680	630	591
1400	1000	480	582	544
1400	800	760	-	716
1400	900	660	-	170
1400	1000	560	1015	704

Nominal Diameter		L (mm)	Weight (kg)	
DN	dn		T Type	MJ Type
1600	1200	360	973	663
1600	1000	760	1427	960
1600	1200	560	1355	919
1800	1400	360	1316	879
1800	1200	760	-	1238
1800	1400	560	-	1198
2000	1600	360	-	1123
2000	1200	960	-	1620
2000	1400	160	-	1579
2000	1600	560	-	1503
2000	1800	360	-	1411



DOUBLE FLANGED REDUCER

Nominal Diameter		L (mm)	Weight (kg)		
DN	dn		PN10	PN16	PN25
100	80	200	9.4	9.4	9.9
150	80	300	14.8	14.8	15.8
150	80	400	15.2	15.2	16.2
150	100	300	15.5	15.5	17
200	80	300	21.8	21.6	23.6
200	80	650	35.1	34.9	36.9
200	100	300	22.3	22.1	24.1
200	100	600	27.5	28	30.8
200	150	300	22	21.5	25
250	80	300	24	23.8	27.4
250	80	650	36.5	36.3	39.9
250	100	300	29.3	29.1	33.2
250	100	650	42.6	42.4	46.5
250	150	300	33.2	33	37
250	150	600	39	39	43.5
250	200	300	31	30.5	36
300	80	300	25.4	25	30.6
300	100	300	30.6	30.3	35.7
300	150	650	56	55	62
300	150	300	38.6	38.3	44.7
300	200	600	58.5	57	65
300	200	300	43	42.5	49.9
300	250	300	41	40	49
350	200	650	61.5	64	74
350	250	600	65.5	67.5	79
350	300	300	50	52.5	66
400	100	300	43.3	51.6	59.8
400	150	300	46.2	58.6	63.2
400	200	300	49.5	54	67.3

Nominal Diameter		L (mm)	Weight (kg)		
DN	dn		PN10	PN16	PN25
400	200	700	74.5	73	86.5
400	250	650	77	81.5	96
400	300	300	58.3	62.6	79.5
400	300	600	82	90	107
400	350	300	58	67	86
450	250	700	82	87	103
450	300	650	87	92	110
450	350	600	96	106	125
450	400	300	81	85	101
500	200	600	88.2	101.5	115.2
500	200	600	96	109.3	132.3
500	300	700	126	134	152
500	350	650	111	127	145
500	400	600	113	131	153
500	450	300	83	104	126
600	300	600	126	150	170
600	350	750	147	174	193
600	400	600	140.8	169.8	195.7
600	400	700	150	178	201
600	450	650	151	183	206
600	500	600	154	191	214
700	400	800	196	212	255
700	450	750	197	217	259
700	500	700	200	256	268
700	600	600	195	236	282
800	450	900	263	286	347
800	500	800	256	284	346
800	600	700	260	298	363
800	700	600	263	290	371
900	500	1000	338	370	443
900	600	800	318	360	436
900	700	700	321	352	444
900	800	600	308	352	462
1000	600	1000	422	490	583
1000	700	800	396	442	551
1000	800	700	399	448	575
1000	900	600	376	438	577
1200	700	1345	711	777	908
1200	800	1160	638	758	908

Nominal Diameter		L (mm)	Weight (kg)		
DN	dn		PN10	PN16	PN25
1200	900	975	652	726	887
1200	1000	790	614	703	879
1200	1100	605	566	655	850
1400	800	1590	1034	1105	-
1400	900	1405	998	1074	-
1400	1000	1220	961	1052	-
1400	1100	1035	914	1005	-
1400	1200	850	859	971	-
1600	1000	1650	1424	1547	-
1600	1100	1465	1377	1502	-
1600	1200	1280	1324	1468	-
1600	1400	910	1165	1311	-
1800	1500	1155	1610	1810	-
1800	1600	970	1517	1718	-
2000	1200	2140	2512	2705	-
2000	1400	1770	2358	2553	-
2000	1500	1585	2268	2492	-
2000	1600	1400	2176	2404	-
2000	1800	1030	1903	2153	-

PRODUCT DETAILS

Applicable Standards

ISO 2531 ,EN545, EN598 , EN681 & ISO898-1 .

Test Pressure

1.5 times working pressure for short duration .

Vacuum Pressure

Capable of accommodating a vacuum pressure of -0.7 bar.

Coating & Lining

Potable Water Fusion Bonded Epoxy powder according to DIN 30677-T2

Colors

-The product's coating standard colors as a follow:

- Blue –Potable water applications
- Black-Potable water or sewage
- Red :Firefighting applications
- Vinous: Sewage applications

Applications

- Industrial Water Applications
- Water Distribution Networks
- Water Transmission
- Irrigation Applications
- Fire Fighting System

Ambient Temperature Rating :

Short Pipe with EPDM: -20°C to +90°C

Short Pipe with NBR: -20°C to +90°C

Media Temperature Rating :

Short Pipe with EPDM: 1°C to +60°C

Short Pipe with NBR: 1°C to +90°C

Marking:

Diameter , Material Identification , Pressure Rating And any custom marking.

longitudinal forces Due to Internal Pressure:

The maximum resist end load due to the internal pressure adequate external must not exceed rubber gasket friction force.

Max. Bolt Torque:

On every Bolt

Size	N.m	Size	N.m	Size	N.m	Size	N.m
M12	65	M20	340	M27	940	M36	2100
M16	190	M24	600	M30	1240	M45	3240

Angularity:

4°~6° depend on tolerance of pipe OD and installation skills.

Gasket:

EPDM : to BS EN 681-1, Type WA, WC

NBR : to BS EN 682, Type G

Flange

Dimensions and drilling according to EN 1092-2

Bolts

Standard - Galvanized Steel as per ISO 4016

Optional - Stainless Steel

Nuts

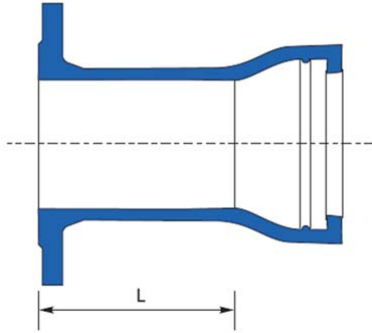
Standard - Galvanized Steel as per EN 24034

Optional - Stainless Steel

Washers

Standard - Galvanized Steel as per ISO 7089

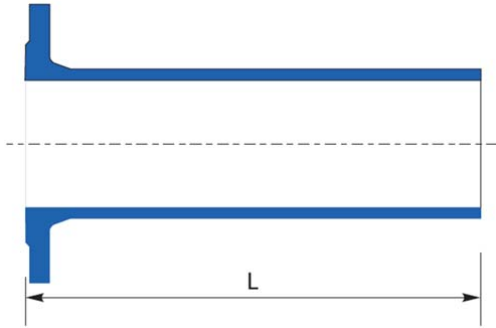
Optional - Stainless Steel



FLANGED SOCKET

Nominal Diameter DN	L (mm)	Weight (kg)					
		T Type			K Type		
		PN10	PN16	PN25	PN10	PN16	PN25
80	130	8.3	8.3	8.3	9.3	9.3	9.30
100	130	10.2	10.2	10.7	11.3	11.3	12.5
150	135	16.4	16.4	17.3	18	18	19
200	140	24.5	24.5	26	24	24	26
250	145	32	32	35.5	32	32	35.5
300	150	39	39	44	44.5	44	49.5
350	155	47	47	60	53	55.5	63
400	160	60	60	75	64	68	78.5
450	165	70.5	70.5	88.5	74.5	82	92.5
500	170	84	84	107	87	100	110
600	180	112	112	146	115	138	149
700	190	161	161	-	162	174	-
800	200	209	209	-	205	220	-
900	210	259	259	-	252	271	-
1000	220	323	323	-	317	351	-
1200	240	482	482	-	450	505	-
1400	310	654	654	-	654	711	-
1600	330	887	887	-	873	963	-
1800	350	1125	1125	-	1103	1214	-
2000	370	1414	1414	-	1378	1516	-

NOTE: PN40 flange type is available on request



FLANGED SPIGOT

Nominal Diameter DN	L (mm)	Weight (kg)		
		PN10	PN16	PN25
80	350	7.8	7.8	7.8
100	360	9.7	9.7	10.2
150	380	15.8	15.8	16.7
200	400	23	23	25
250	420	32	32	35.5
300	440	42.5	42.5	47.5
350	460	53	53	63.5
400	480	65.5	65.5	81
450	500	78.5	78.5	98
500	520	96	96	120
600	560	136	136	171
700	600	185	185	-
800	600	233	233	-
900	600	280	280	-
1000	600	339	339	-
1200	600	473	473	-
1400	710	691	691	-
1600	180	957	957	-
1800	850	1242	1242	-
2000	920	1591	1591	-

NOTE: PN40 flange type is available on request

PRODUCT DETAILS

Applicable Standards

ISO 2531 ,EN545, EN598 , EN681 & ISO898-1 .

Test Pressure

1.5 times working pressure for short duration .

Vacuum Pressure

Capable of accommodating a vacuum pressure of -0.7 bar.

Coating & Lining

Potable Water Fusion Bonded Epoxy powder according to DIN 30677-T2

Colors

-The product's coating standard colors as a follow:

- Blue –Potable water applications
- Black-Potable water or sewage
- Red :Firefighting applications
- Vinous: Sewage applications

Applications

- Industrial Water Applications
- Water Distribution Networks
- Water Transmission
- Irrigation Applications
- Fire Fighting System

Ambient Temperature Rating :

Flexible Joint with EPDM: -20°C to +90°C

Flexible Joint with NBR: -20°C to +90°C

Media Temperature Rating :

Flexible Joint with EPDM: 1°C to +60°C

Flexible Joint with NBR: 1°C to +90°C

Marking:

Diameter , Material Identification , Pressure Rating And any custom marking.

longitudinal forces Due to Internal Pressure:

The maximum resist end load due to the internal pressure adequate external must not exceed rubber gasket friction force.

Max. Bolt Torque:

On every Bolt

Size	N.m	Size	N.m	Size	N.m	Size	N.m
M12	65	M20	340	M27	940	M36	2100
M16	190	M24	600	M30	1240	M45	3240

Angularity:

4°~6° depend on tolerance of pipe OD and installation skills.

End Ring and Body:

Ductile Iron DIN 1693 (GGG-400) /BS EN 1563 (EN GJS-400-15)

Centre Sleeve:

Ductile Iron DIN 1693 (GGG-400) /BS EN 1563 (EN GJS-400-15)

Gasket:

EPDM : to BS EN 681-1, Type WA, WC

NBR : to BS EN 682, Type G

Bolts

Standard - Galvanized Steel as per ISO 4016

Optional - Stainless Steel

Nuts

Standard - Galvanized Steel as per EN 24034

Optional - Stainless Steel

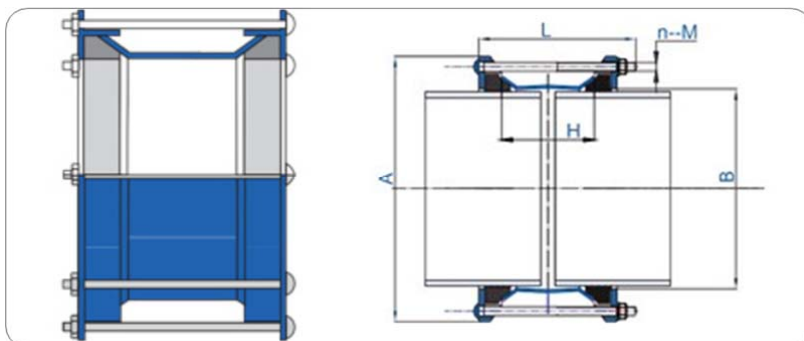
Washers

Standard - Galvanized Steel as per ISO 7089

Optional - Stainless Steel

Flange

Dimensions and drilling according to EN 1092-2



Nominal Diameter DN	ØD	ØK	L	±X	PN10		
					Stud Bolt		Weight
					Size d	No.	(kg)
80	200	160	180	40	M12x102	8	11
100	220	180	180	40	M12x110	8	14
125	250	210	180	40	M12x110	8	16
150	285	240	185	40	M12x110	8	23
200	340	295	185	40	M12x120	12	32
250	395	350	185	40	M12x120	12	40
300	445	400	185	50	M12x120	12	47
350	505	460	185	50	M16x146	16	62
400	565	515	200	50	M16x146	16	78
450	615	565	200	50	M16x146	20	90
500	670	620	200	50	M16x152	20	102
600	780	725	200	50	M16x152	20	134
700	895	840	200	50	M16x152	24	165
800	1015	950	200	50	M16x152	24	225
900	1115	1050	205	50	M16x152	28	250
1000	1230	1160	205	50	M16x152	28	300
1200	1455	1380	220	50	M16x165	32	470
1400	1675	1590	225	50	M16x165	36	650
1600	1915	1820	225	50	M16x235	40	950
1800	2115	2020	230	50	M16x235	44	1180
2000	2325	2230	235	50	M16x235	48	1450

PRODUCT DETAILS

Applicable Standards

ISO 2531 ,EN545, EN598 , EN681 & ISO898-1 .

Test Pressure

1.5 times working pressure for short duration .

Vacuum Pressure

Capable of accommodating a vacuum pressure of -0.7 bar.

Coating & Lining

Potable Water Fusion Bonded Epoxy powder according to DIN 30677-T2

Colors

-The product's coating standard colors as a follow:

- Blue –Potable water applications
- Black-Potable water or sewage
- Red :Firefighting applications
- Vinous: Sewage applications

Applications

- Industrial Water Applications
- Water Distribution Networks
- Water Transmission
- Irrigation Applications
- Fire Fighting System

Ambient Temperature Rating :

Collar with EPDM: -20°C to +90°C

Collar with NBR: -20°C to +90°C

Media Temperature Rating :

Collar with EPDM: 1°C to +60°C

Collar with NBR: 1°C to +90°C

Marking:

Diameter , Material Identification , Pressure Rating And any custom marking.

longitudinal forces Due to Internal Pressure:

The maximum resist end load due to the internal pressure adequate external must not exceed rubber gasket friction force.

Max. Bolt Torque:

On every Bolt

Size	N.m	Size	N.m	Size	N.m	Size	N.m
M12	65	M20	340	M27	940	M36	2100
M16	190	M24	600	M30	1240	M45	3240

Angularity:

4°~6° depend on tolerance of pipe OD and installation skills.

Gasket:

EPDM : to BS EN 681-1, Type WA, WC

NBR : to BS EN 682, Type G

Bolts

Standard - Galvanized Steel as per ISO 4016

Optional - Stainless Steel

Nuts

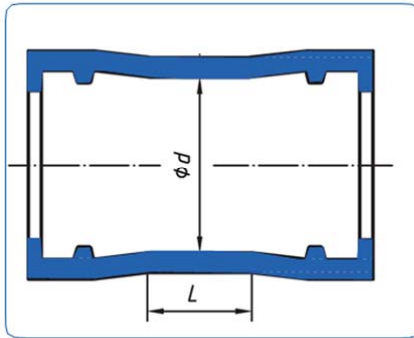
Standard - Galvanized Steel as per EN 24034

Optional - Stainless Steel

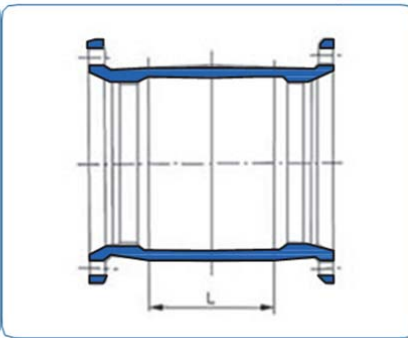
Washers

Standard - Galvanized Steel as per ISO 7089

Optional - Stainless Steel



Push Fit



MJ

Nominal Diameter DN	L (mm)	Weight (kg)	
		T Type	M.J Type
80	160	7.9	12.9
100	160	9.9	15.8
150	165	15.9	23.5
200	170	23	30
250	175	31.5	38.5
300	180	41	54
350	185	52	67.5
400	190	64	81
450	195	91	96
500	200	93	109
600	210	129	140
700	220	172	185
800	230	223	225
900	240	282	278
1000	250	349	348
1200	270	560	500
1400	340	816	816
1600	360	1094	1094
1800	380	1427	1426
2000	400	1818	1818

PRODUCT DETAILS

Applicable Standards

ISO 2531 ,EN545, EN598 , EN681 & ISO898-1 .

Test Pressure

1.5 times working pressure for short duration .

Vacuum Pressure

Capable of accommodating a vacuum pressure of -0.7 bar.

Coating & Lining

Potable Water Fusion Bonded Epoxy powder according to DIN 30677-T2

Colors

-The product's coating standard colors as a follow:

- Blue –Potable water applications
- Black-Potable water or sewage
- Red :Firefighting applications
- Vinous: Sewage applications

Applications

- Industrial Water Applications
- Water Distribution Networks
- Water Transmission
- Irrigation Applications
- Fire Fighting System

Ambient Temperature Rating :

Plug with EPDM: -20°C to +90°C

Plug with NBR: -20°C to +90°C

Media Temperature Rating :

Plug with EPDM: 1°C to +60°C

Plug with NBR: 1°C to +90°C

Marking:

Diameter , Material Identification , Pressure Rating And any custom marking.

longitudinal forces Due to Internal Pressure:

The maximum resist end load due to the internal pressure adequate external must not exceed rubber gasket friction force.

Max. Bolt Torque:

On every Bolt

Size	N.m	Size	N.m	Size	N.m	Size	N.m
M12	65	M20	340	M27	940	M36	2100
M16	190	M24	600	M30	1240	M45	3240

Angularity:

4°~6° depend on tolerance of pipe OD and installation skills.

Gasket:

EPDM : to BS EN 681-1, Type WA, WC

NBR : to BS EN 682, Type G

Bolts

Standard - Galvanized Steel as per ISO 4016

Optional - Stainless Steel

Nuts

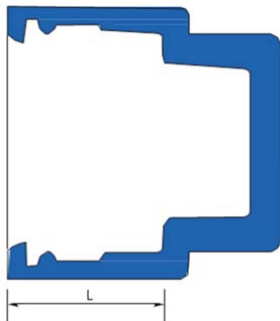
Standard - Galvanized Steel as per EN 24034

Optional - Stainless Steel

Washers

Standard - Galvanized Steel as per ISO 7089

Optional - Stainless Steel



Nominal Diameter DN	T Type		K Type	
	L (mm)	Weight (kg)	L (mm)	Weight (kg)
80	113	3.6	92	5.1
100	120	5.1	93	6.7
150	130	8.9	104	10.9
200	146	14.1	105	15.5
250	152	20.5	106	21.5
300	159	29	127	31
350	176	42.5	128	40.5
400	178	53.5	129	53
450	180	67	130	63
500	187	82.5	131	75.5
600	194	119	132	116
700	-	-	143	166
800	-	-	144	250
900	-	-	145	333
1000	-	-	156	434
1200	-	-	160	671

NOTE: Other designs of pug are available on request

WATER PIPING



PRODUCT CATALOGUE

Divert & Branches Connections

This technical book cover MSABEK products under the following standards mentioned in Table No.(1) , Also MSABEK produce other standards and products other than mentioned in this technical book ,please contact sales team for other technical books for other products and standards ,below table show covered standards by MSABEK :

1- ISO STANDARDS:

STANDARD NO.	DESCRIPTION
ISO 2531	Ductile iron pipes, fittings, accessories and their joints for water applications
ISO 7186	Ductile iron products for sewerage applications
ISO 10803	Design method for ductile iron pipes
ISO 13470	Trenchless applications of ductile iron pipes systems -- Product design and installation
ISO 10804	Restrained joint systems for ductile iron pipe
ISO 7005-2	Metallic flanges - Part 2: Cast iron flanges
ISO 16134	Earthquake- and subsidence-resistant design of ductile iron pipelines
ISO 10802	Ductile iron pipelines -- Hydrostatic testing after installation
ISO 27306	Metallic materials -- Method of constraint loss correction of CTOD fracture toughness for fracture assessment of steel components
ISO 9349	Pre insulated ductile iron pipeline systems
ISO 8179-1	Ductile iron pipes - External zinc-based coating -- Part 1: Metallic zinc with finishing layer
ISO 8179-2	Ductile iron pipes -- External zinc coating -- Part 2: Zinc rich paint with finishing layer
ISO 4179	Ductile iron pipes and fittings for pressure and non-pressure pipelines -- Cement mortar lining
ISO 16132	Ductile iron pipes and fittings -- Seal coats for cement mortar linings
ISO 8180	Ductile iron pipelines - Polyethylene sleeving for site application
ISO 4633	Rubber seals -- Joint rings for water supply, drainage and sewerage pipelines -- Specification for materials
ISO/NP 16631	Ductile iron pipes, fittings, accessories and their joints for water distribution
ISO 9001	Quality management systems -- Requirements
ISO 14001	Environmental management systems -- Requirements with guidance for use
ISO/TS 14048	Environmental management - Life cycle assessment -- Data documentation format
ISO/TR 14062	Environmental management - Integrating environmental aspects into product design and development

Note (1) : above table show Standard Number only , MSABEK cover all versions for standards mentioned in Table No. (1).

Note (2): ISO -International Organization for Standardization standards

2- EN STANDARDS:

STANDARD NO.	DESCRIPTION
EN 545	Ductile iron pipes, fittings accessories and their joints for water pipelines
EN 598	Ductile iron pipes, fittings accessories and their joints for sewerage applications
EN 969	Ductile iron pipes, fittings, accessories and their joints for gas pipelines. Requirements and test methods
EN 14525	Ductile iron wide tolerance couplings and flange adaptors for use with pipes of different materials: ductile iron, grey iron, steel, PVC-U, PE, fiber-cement
EN 15655	Ductile iron pipes, fittings and accessories. Internal polyurethane lining for pipes and fittings. -Requirements and test methods
EN 12842	Ductile iron fittings for PVC-U or PE piping systems. Requirements and test methods
EN 14628	Ductile iron pipes, fittings and accessories - External polyethylene coating for pipes - Requirements and test methods
EN 14628	Ductile iron pipes, fittings and accessories. Epoxy coating (heavy duty) of ductile iron fittings and accessories. Requirements and test methods
EN 15189	Ductile iron pipes, fittings and accessories - External polyurethane coating for pipes - Requirements and test methods
EN 15542	Ductile iron pipes, fittings and accessories - External cement mortar coating for pipes - Requirements and test methods
EN 681-1	Elastomeric seals - Material requirements for pipe joint seals used in water and drainage applications - Part 1: Vulcanized rubber
EN 197-1	Cement – Part 1 : Composition, specifications and conformity criteria for common cements
EN 197-2	Cement – Part 2 : Conformity evaluation
EN 206-1	Concrete – Part 1: Specification, performance, production and conformity
BS EN 1092-1	Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated
EN 10255	Non-alloy steel tubes suitable for welding and threading. Technical delivery conditions
EN 10216- 1:2002 A1:2004	“Seamless steel tubes for pressure purposes” - Technical delivery conditions - Part 1: Non-alloy steel tubes with specified room temperature properties
EN 20224:2002	“Non-alloy steel tubes and fittings for the conveyance of water and other aqueous liquids”
EN 10297-1:2003	Seamless steel tubes for mechanical and general engineering purposes
EN 10208-1,2:1997, 1996	Steel pipes for pipelines for combustible fluids
EN 10210-1,2:1994, 1997	Hot finished structural hollow sections of no-alloy and fine grain steels

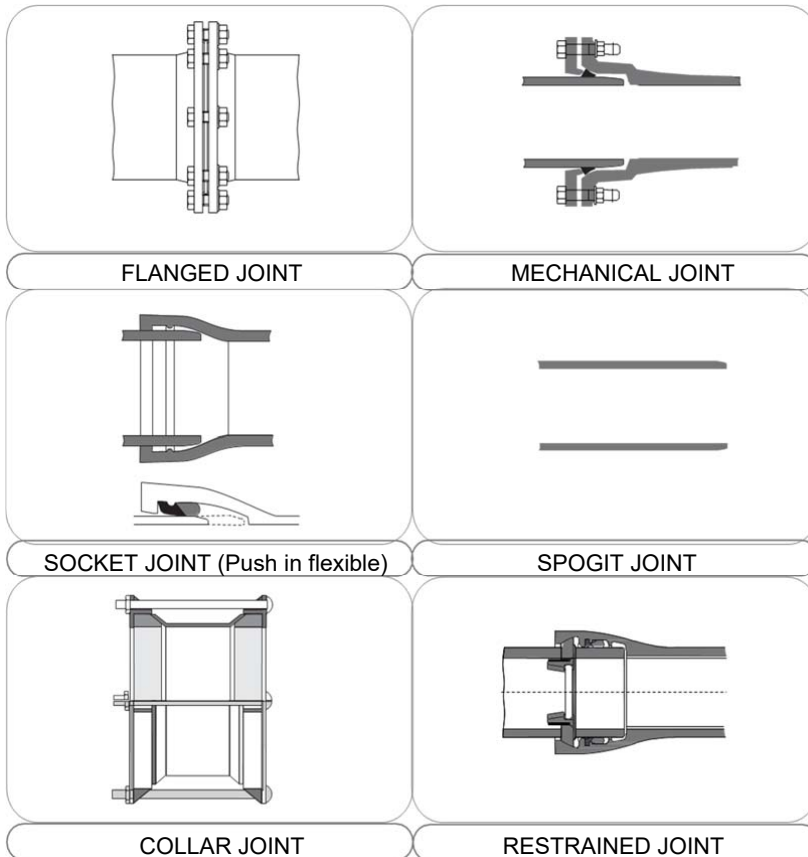
OTHER STANDARDS:

STANDARD NO.	DESCRIPTION
ANSI/AWWA C115/A21.15	American National Standard for Flanged Ductile-Iron Pipe with Ductile-Iron or Gray - Iron Threaded Flanges
AWWA C105/A21.5-10	Polyethylene Encasement for Ductile-Iron Pipe Systems
AWWA C104/A21.4-08	Cement Mortar Lining for Ductile Iron Pipe and Fittings for Water, Includes Erratum (2010)
DIN 28600 – DIN 28646	Ductile Iron Pressure Pipes And Fittings For Gas And Water Pipelines
ANSI/AWWA C104/A21	Cement-Mortar Lining for Ductile- Iron Pipe and Fittings for Water
ANSI/AWWA C105/A21.5	Polyethylene Encasement for Ductile-Iron Pipe Systems
ANSI/AWWA C110/A21.10	Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in., for Water
ANSI/AWWA C111/A21.11	Rubber-Gasket Joints for Ductile- Iron Pressure Pipe and Fittings
ANSI/AWWA C115/A21.15	Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges
ANSI/AWWA C150/A21.50	Thickness Design of Ductile-Iron Pipe
ANSI/AWWA C151/A21.51	Ductile-Iron Pipe, Centrifugally Cast for Water
ANSI/AWWA C153/A21.53	Ductile-Iron Compact Fittings, for Water Service
ANSI/AWWA C600	Installation of Ductile-Iron Water Mains and Their Appurtenances
ANSI/AWWA C606	Grooved and Shouldered Joints
ASTM A674	Polyethylene Encasement for Ductile Iron Pipe for Water or Other Liquids
ASTM A716	Ductile Iron Culvert Pipe
ASTM A746	Ductile Iron Gravity Sewer Pipe
ANSI/NSF 61	Drinking Water System Components— Health Effects
ASTM G62	Standard Test Methods for Holiday Detection in Pipeline Coatings
ASTM A53	Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A106	Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service

JOINTS & CONNECTIONS FOR DUCTILE PIPES SYSTEMS:

The main advantage for ductile iron pipes & fittings is very easy to be connected without any welding like other types of pipes, Listed below are the standard joint systems manufactured by MSABEK.

1. Socket - the socket is the female end of a pipe or fitting.
2. Spigot - male end of the pipe and or fitting.
3. Flange (Flanged Joint) - flat circular end of pipe or fitting. A flange can be fixed (integrally cast or welded) or adjustable; an adjustable flange comprises a ring, in one or several parts assembled together, which bears on an end joint hub and freely rotates 45° on the pipe or fitting axis before jointing.
4. Push-in flexible joint - this is the standard underground joint. The joint is assembled by inserting the spigot through a gasket into the socket.
5. Mechanical flexible joint - flexible joint where the sealing of the joint is obtained by applying pressure to the gasket by mechanical means, e.g. a gland
6. Restrained Flexible Joint - flexible joint where a means is provided to prevent separation of an assembled joint
7. Collar - a connecting piece which is used to join two spigots together



MSABEK preforms several types of pressure test for pipes, gaskets, and fittings.

Tables below are for pressure test on K classes & C Classes :

Note: MSABEK do 100% maximum hydrostatic pressure test on factory.

PFA (allowable operating pressure): Internal pressure, exclusive of surge, that a component can safely withstand.

PMA (allowable maximum operating pressure): Maximum internal pressure, including surge that a component can safely withstand in service.

PEA (allowable test pressure): Maximum hydrostatic pressure test that a newly installed component can withstand for a short duration.

Please note that component

Important Note: test pressure is different from a system test pressure, which is related to the design pressure of the pipeline.

Minimum Works test pressure (PEA) K9 System

Product	Nominal diameter DN (mm)	Test pressure (Bar)	Time (sec)
Ductile Iron Pipe	40-300	50	> 10
	350-600	40	
	700-1000	32	
	1100-2000	25	
	2200-2600	18	
Ductile Iron Fittings	40-300	25	> 10
	350-600	16	
	700-2600	10	

C-K CLASSES

DN (mm)	ALLAWABLE PRESSURE(BAR)											
	K5			K7			K8			K9		
	PFA	PMA	PEA	PFA	PMA	PEA	PFA	PMA	PEA	PFA	PMA	PEA
40	180	197	202	180	197	202	180	197	202	180	197	202
50	172	192	197	172	192	197	172	192	197	172	192	197
60	164	186	191	164	186	191	164	186	191	164	186	191
65	153	178	183	153	178	183	153	178	183	153	178	183
80	142	170	175	142	170	175	142	170	175	142	170	175
100	117	140	145	117	140	145	117	140	145	117	140	145
125	95	114	119	95	114	119	95	114	119	95	114	119
150	80	96	101	80	96	101	80	96	101	80	96	101
200	61	73	78	61	73	78	61	73	78	65	78	83
250	49	59	64	49	59	64	49	59	64	57	68	73
300	41	49	54	41	49	54	45	54	59	52	62	67
350	36	43	48	36	43	48	42	50	55	48	58	63
400	32	38	43	36	43	48	40	48	53	46	55	60
450	28	34	39	35	42	47	38	46	51	43	52	57
500	25	30	35	34	41	46	36	43	48	42	50	55
600	21	25	30	32	38	43	34	41	46	39	47	52
700	21	25	30	31	37	42	32	38	43	37	44	49
800	21	25	30	30	36	41	31	37	42	36	43	48
900	20	24	29	29	35	40	30	36	41	34	41	46
1000	20	24	29	28	34	39	29	35	40	33	40	45
1100	20	24	29	28	34	39	29	35	40	33	40	45
1200	19	23	28	27	32	37	28	34	39	32	38	43
1400	19	23	28	27	32	37	27	32	37	31	37	42
1500	19	23	28	26	31	36	27	32	37	31	37	42
1600	19	23	28	26	31	36	27	32	37	30	36	41
1800	19	23	28	26	31	36	26	31	36	30	36	41
2000	18	22	27	25	30	35	26	31	36	29	35	40
2200	18	22	27	25	30	35	26	31	36	29	35	40
2400	18	22	27	25	30	35	25	30	35	29	35	40
2600	18	22	27	25	30	35	25	30	35	28	34	39

FITTING PRESSURE PERFORMANCE (C CLASS SYSTEM)

Allowable pressure for C-class fittings

Diameter DN	Pressure class C	PFA bar	PMA bar	PEA bar
40 to 100	100	100	120	125
125 to 200	64	64	77	82
250 to 350	50	50	60	65
400 to 600	40	40	48	53
700 to 1400	30	30	36	41
1500 to 2000	25	25	30	35

Allowable pressure for components with flanged joints

Flange Rating	Allowable operating pressure PFA (bar)	Max. allowable operating pressure PMA (bar)	Allowable site test pressure PEA (bar)
10	10	12	17
16	16	20	25
25	25	30	35
40	40	48	53

Allowable pressure for restrained joints (push on Type)-Class 50

DN (mm)	ALLOWABLE PRESSURE		
	C50		
	PFA	PMA	PEA
40-80	32	38	43
100	32	38	43
125	25	30	35
150	25	30	35
200	25	30	35
250	25	30	35
300	25	30	35
350	16	20	25
400	16	20	25
450	16	20	25
500	16	20	25
600	10	12	17
700	10	12	17
800	10	12	17
900	10	12	17
1000	10	12	17
1100	10	12	17
1200	10	12	17

Socket spigot joints are designed to be fully flexible and allow angular deflection, which permits the installed pipeline to accommodate ground movement. The following table shows the maximum allowable deflection of the socket:

DN (mm)	Angular Deflection	
	T-Type	K-Type
40mm-200mm	5°	5°
250mm-300mm	4°	5°
350mm	4°	4°
400mm	3°	4°
450-500mm	3°	3°
600mm	2°	3°
700mm-900mm	2°	2°
1000mm-2600mm	2°	1°

Stiffness is an important factor to determine pipes depth design of underground pipes also it is important where pipes crossing roads or exposed under any load below table show the allow- able stiffness:

1- C CLASS STIFFNESS & OVALITY

DN (mm)	STIFFNESS KN/m2						Allowable pipe ovality(%)					
	C25	C30	C40	C50	C64	C100	C25	C30	C40	C50	C64	C100
40	-	-	1472	1472	1472	935	-	-	1.19	1.19	1.19	19
50	-	-	1472	1472	1472	935	-	-	1.19	1.19	1.19	19
60	-	-	1472	1472	1472	935	-	-	1.19	1.19	1.19	19
65	-	-	1472	1472	1472	935	-	-	1.19	1.19	1.19	19
80	-	-	1472	1472	1472	935	-	-	1.19	1.19	1.19	19
100	-	-	481	823	823	1655	-	-	1.45	1.45	1.45	1.15
125	-	-	476	476	581	1497	-	-	1.74	1.74	1.62	1.19
150	-	-	285	285	472	1335	-	-	26	26	1.74	1.23
200	-	-	143	220	389	1145	-	-	2.59	2.25	1.86	1.30
250	-	-	122	194	356	1066	-	-	2.73	2.34	1.91	1.33
300	-	57	103	178	313	991	-	3.53	2.89	2.41	2	1.36
350	36	69	99	192	302	959	4.10	3.31	2.93	2.35	22	1.37
400	31	52	90	154	280	907	4.31	3.64	33	2.53	27	1.40
450	30	44	86	149	278	897	4.35	3.84	37	2.55	28	1.41
500	27	41	80	141	262	871	4.53	3.92	3.15	2.61	2.12	1.42
600	25	38	75	132	249	836	4.62	43	3.21	2.66	2.15	1.44
700	25	36	71	127	241	821	4.64	4.12	3.28	2.70	2.18	1.45
800	22	34	68	122	237	-	4.86	4.19	3.31	2.74	2.19	-
900	21	32	66	118	232	-	4.94	4.25	3.36	2.76	2.21	-
1000	20	31	65	116	-	-	51	4.33	3.38	2.95	-	-
1100	19	31	64	115	-	-	57	4.33	3.40	2.95	-	-
1200	19	29	62	-	-	-	5.11	4.39	3.42	6.34	-	-
1400	12	19	-	-	-	-	5.87	56	-	-	-	-
1500	18	28	-	-	-	-	5.19	4.46	-	-	-	-
1600	17	28	-	-	-	-	5.22	4.48	-	-	-	-
1800	17	27	-	-	-	-	5.73	4.51	-	-	-	-
2000	17	27	-	-	-	-	5.75	4.54	-	-	-	-
2200	16		-	-	-	-	10.72	-	-	-	-	-
2400	16		-	-	-	-	10.78	-	-	-	-	-
2600	16		-	-	-	-	10.80	-	-	-	-	-

2- K CLASS STIFFNESS & OVALITY

DN (mm)	STIFFNESS KN/m ²						Allowable pipe ovalization(%)					
	K5	K7	K8	K9	K10	K12	K5	K7	K8	K9	K10	K12
80	27282	728	2728	2728	27284	617	0.86	0.86	0.86	0.86	0.86	0.73
100	15181	518	1518	1518	15182	876	15	15	15	15	15	0.86
125	814	814	814	814	940	1765	1.29	1.29	1.29	1.29	1.23	12
150	486	486	486	486	642	1199	1.53	1.53	1.53	1.53	1.41	1.16
200	213	213	213	253	362	671	22	22	22	1.92	1.72	1.42
250	112	112	112	167	239	440	2.50	2.50	2.50	2.22	1.99	1.65
300	66	66	82	122	174	319	2.99	2.99	2.80	2.48	2.23	1.85
350	42	42	64	95	135	247	3.47	3.47	36	2.71	2.44	22
400	29	38	53	78	111	202	3.95	3.76	3.28	2.91	2.61	2.17
450	20	32	45	66	94	170	4.43	3.99	3.48	39	2.77	2.30
500	15	28	39	58	81	147	4.91	4.20	3.67	3.26	2.92	2.43
600	9	23	31	46	65	116	5.87	4.56	3.99	3.54	3.18	2.64
700	7	19	26	38	54	97	6.83	4.87	4.25	3.77	3.39	2.82
800	6	17	23	33	47	84	7.20	5.13	4.48	3.98	3.57	2.97
900	5	15	20	30	42	74	7.51	5.35	4.67	4.15	3.73	3.10
1000	5	14	19	27	38	68	7.77	5.54	4.84	4.29	3.86	3.21
1100	5	13	17	25	35	62	81	5.71	4.99	4.43	3.98	3.31
1200	4	12	16	23	33	58	8.22	5.85	5.11	4.54	48	3.39
1400	4	11	14	21	29	52	8.57	6.10	5.33	4.73	4.25	3.54
1500	4	11	14	20	28	49	8.71	6.21	5.42	4.81	4.33	3.60
1600	4	10	13	19	27	47	8.84	6.30	5.51	4.89	4.39	3.65
1800	4	10	12	18	25	44	98	6.47	5.65	52	4.51	3.75
2000	3	9	12	17	24	41	9.28	6.61	5.78	5.13	4.61	3.83
2200	3	9	11	16	22	39	9.44	6.73	5.88	5.22	4.69	3.90
2400	3	9	11	16	22	38	9.58	6.83	5.97	5.30	4.76	3.96
2600	3	8	10	15	21	37	9.71	6.92	65	5.37	4.83	41

NOTE: please refer to design manual for underground depth calculations.



Ring Test

All MSABEK pipes and fittings are coated and Lined as specified in the following standards:

STANDARD	DESCRIPTION
ISO 4179	Ductile iron pipes and fittings for pressure and non-pressure pipelines. Cement mortar lining
ISO 8179-1	Ductile iron pipes - External zinc-based coating --Part 1: Metallic zinc with finishing layer
ISO 8179-2	Ductile iron pipes - External zinc coating - art 2: Zinc rich paint with finishing layer
ISO 16132	Ductile iron pipes and fittings - Seal coats for cement mortar linings
ISO 8180	Ductile iron pipelines -- Polyethylene sleeving for site application
EN 545, 598	Ductile Iron pipe coating and lining
DIN 2614 C	Cement mortar linings for ductile iron and steel pipes and fittings; application, requirements and testing
DIN EN 14901	Ductile iron pipes, fittings and accessories - Epoxy coating (heavy duty) Of ductile iron fittings and accessories
DIN EN 14628	Ductile iron pipes, fittings and accessories External polyethylene coating for pipes
DIN EN 15189	Ductile iron pipes, fittings and accessories External polyurethane coating for pipes Requirements and test methods
ANSI/AWWA C104/A21.4	American National Standard for Cement- Mortar Lining for Ductile-Iron Pipe and Fittings for Water
ANSI/AWWA C116/A21.16	American National Standard for Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile- Iron and Gray-Iron Fittings For Water Supply Service

NOTE: MSABEK can cover many other standards mentioned in the tables earlier, please refer to other data sheets published by MSABEK.

APPLICATIONS

MSABEK products cover many applications, the coating and lining system produced is very huge and we considered one of unique companies can cover big range of applications, below are the main applications:

1-Potable water Systems

2-Sewage Water Systems

3-Irrigation Systems

4-Industrial fluids Systems

5-Fire Fighting Systems



To meet the requirements for potable water in all applications MSABEK manufacture the following systems:



INTERNAL LINING:

Pipes & Fittings are lined with the following options:

a. Cement Lining:

- a.1. Sulphate resistant cement
- a.2. Portland cement
- a.3. Blast Furnace cement

b. Epoxy Lining:

- b.1 Solvent free epoxy b.2 Fusion bonded epoxy b.3 Ceramic epoxy
- b.4 Resin epoxy
- b.5 Polyurethane epoxy

c. Epoxy Over Cement:

- c1. Resin Epoxy over the cement
- c2. Solvent Epoxy over the cement

e. Fusion bonded Polyethylene

SEAL COAT ON CEMENT LINING :

When specified or prescribed by the customer the cement mortar lining is given a seal coat of asphaltic material.

On specific requirement of customer we provide Epoxy Seal Coat over Cement Lining. The purpose of the seal coat is to control leaching of cement into Water.

CEMENT MORTAR LININGS

The cement mortar lining (CML) of ductile iron pipes is manufactured to ISO 4179, BS EN 545 Section 4.4.3. The lining shall constitute a dense, homogeneous layer which covers the internal surface of the pipe. The compressive strength of the CML after curing shall be not less than 50MPa. The surface of the CML shall comply fully with ISO 4179, BS EN 545. The lining shall be smooth and uniform. Trowel marks, protrusion of sand grains and surface texture are acceptable. Fine crazing and hairline cracks may appear in dry linings.

The following table details the minimum thickness in millimeters of the lining of ductile iron pipes and fittings.

DEIONIZED FRESH WATER:

We recommend to protect the cement lining with deionized water, Polyurethane or equivalent lining.

CEMENT LINING

Nominal Size	Thickness		Maximum crack width and radial displacement
	Nominal Value	Tolerance	
40 to 300	4	-1.5	0.8
350 to 600	5	-2	0.8
700 to 1200	6	-2.5	1
1400 to 2000	9	-3	1.2
2200 to 2600	12	-5	1.5

NOTE (1): Cement Mortar and tolerance for potable water.

NOTE (2): Storage of pipes in a hot, dry environment can cause the pipe to expand and the mortar to shrink. This may result in the dry lining developing area's of disbandment and shrinkage cracks which could exceed the widths given in the table above. Upon the lining being exposed to water again, the lining will absorb the moisture and the crack will close. This is known as an autogenous healing process.

NOTE (3): A negative tolerance only is given.

EXTERNAL COATINGS:

Pipes & Fittings are lined with the following options:

The pipes are supplied with a layer of metallic zinc or Zinc Aluminum to ISO 8179, BS EN 545 Section 4.4.2.1. and finished with a layer of Black Bitumen, epoxy, FBE, FBP, Polyurethane or Cement Resin to ISO 8179, BS EN 545 Section 4.5.2. and polyethylene encasement to ANSI/ AWWA C10/A21.5, ISO 8180.

Zinc coating or Zinc Aluminum is applied in varying levels depending on soil aggressivity.

The options are:

- Standard 130 gm/ m2 and finishing layer of 70 microns or more
- 150 gm/m2 and finishing layer of 70 microns or more
- 200 gm/m2 and finishing layer of 70 microns or more
- 400 gm/m2 and finishing layer of 70 microns or more:

MSABEK fittings are supplied coated with many coating systems like rich paint zinc with Bitumen, FBE, or blue PPA 571 Plascoat 250 microns (mean.) as standard, complying to BS EN 545 Section 4.1.4. and Section 4.5. Plascoat has full BS 6920 approval. Alternatively, the fittings can be coated with Blue Resicoat 250 microns (mean).

Fittings coated with either Plascoat or Resicoat having a coating thickness of 250 microns may be buried in soils of all levels of corrosivity (non to highly aggressive).

POTABLE WATER CERTIFIED

All Types of lining used to line our ductile iron pipes and fittings are approved for potable water and certified for human consumption having a nontoxic certificate at normal and high temperatures comply to BS 6920 standard.

Ductile iron pipes and fittings finished with the coatings detailed may be used to convey all types of water for human consumption.

2. SEWAGE& INDUSTRIAL COATING& LINING SYSTEMS

All MSABEK ductile iron pipes and fittings for sewage applications are supplied as detailed below:

INTERNAL LINING:

MSABEK pipes will be lined with High Alumina cement in accordance with ISO 4179, BS EN 598 Section 4.4.3.

Ceramic Epoxy for Sewerage: Ceramic epoxy lining is a specialized lining with high abrasion resistance which is suitable for raw sewer conveyance.

This is done against customers requirement.

CEMENT MORTAR LININGS

The surface of the lining will be substantially smooth; trowel marks and protrusions of sand grains are acceptable, but may occasionally contain longitudinal and circumferential shrinkage cracks but these will not affect the stability of the lining and the widths of the cracks and any radial displacement at the cracks will not exceed the values given in the table below. (Dimensions in millimeters)

Nominal Size	Thickness		Maximum crack width
DN	Nominal Value	Tolerance	and radial displacement
80 to 300	4	-1.5	0.6
350 to 600	5	-2	0.7
700 to 1200	6	-2.5	0.8
1400 to 2000	9	-3	0.8
2200 to 2600	12	-5	0.8

Note(1): Pipe ends may have a chamfer of maximum length 20mm.

Note(2): Storage of pipes and fittings in a hot, dry environment can cause metal expansion and mortar shrinkage which may result in dry lining developing areas of disbandment and shrinkage cracks. When the lining is re-exposed to water, it will swell by absorption of moisture and the cracks will eventually heal by an autogenous process.

Note(3): A negative tolerance only is given.

HIGH ALUMINA CEMENT RESISTANCE

Abrasion Resistance:

Abrasion in fluid transmission can result when the conveyed liquid contains a high concentration of solids. High velocities will also increase the abrasion of the pipe wall. This abrasive effect can erode the pipe wall over a period of time. It is likely to be a problem in the following situations:

- Combined sewers
 - Industrial effluent
 - Steep slopes

The high alumina lining used by MSABEK Flow Pipelines offers excellent resistance to abrasion. This lining allows regular maximum flows up to 7m/sec with minimal attack in each of the above situations.



Resistance to septic attack:

Bacterial corrosion is one of the main causes of deterioration of sewage networks regardless of climatic conditions. Normally associated with hot climates such as the Middle East and Australia, bacterial corrosion can occur in temperate climates under the right conditions – periods of low flow, turbulence at a pumping main discharge point.

Hydrogen sulfide (H₂S) released by the effluents is transformed into sulphury acid by the bacterial microflora on the damp walls of the pipes. Tests have demonstrated that high alumina cement is a material which offers high durability in the presence of bacterial corrosion.

Resistance to chemical attack:

Sewage networks can be at risk from attack by chemicals found in industrial effluents. The following table taken from BS EN 545 Annexe E shows the resistance of high alumina cement compared with Portland cement.

Water Characteristics	Portland Cement	High Alumina Cement
Minimum value of pH	6	4
aggressive CO ₂	7	no limit
sulfates (SO ₄ -)	400	no limit
magnesium (Mg++)	100	no limit
ammonium (NH ₄ +))	30	no limit

EXTERNAL COATINGS:

The pipes are supplied with a layer of metallic zinc or ZnAl to ISO 8179, EN 598 Section 4.4.2. and have a finish layer of Red Epoxy as per ISO 8179, EN 598 Section 4.1.4. and 4.4.2.4.

Zinc coating is applied in varying thickness depending on soil aggressivity Epoxy Coating Compared to normal bitumen coated pipes it offers:

- More resistance to external galvanic/ soil corrosion in aggressive soil
- More resistance to external chemical (acid, alkali, organic) attack
- Better adherence to metal surface, hence more durable coating
- Higher scratch resistance
- Good resistance to coating damage during transportation/ handling/laying
- Comes in attractive blue/green (for water) or red (for sewerage) color

FITTINGS

Internal and External Coating:

Fittings will be supplied with a red Plascoat finish as standard in accordance with ISO8179, ISO 4179, BS EN 598 Section

4.5.2.

Fusion Bonded Epoxy Coating

A state-of-the-art automated facility has been created to coat DI Fittings with powdered epoxy by fusion bonding process.

This inert coating in attractive color is suited for aggressive soil condition. Advantages of Fusion Bonded Epoxy (F.B.E)

- Gives high gloss and smooth coatings with excellent adhesion.
- Difficult shapes can be coated evenly.
- Provides enhanced corrosion resistant properties.
- A choice of Blue, green or Red colors for water or sewage applications is available.
- Film thickness between 100 – 250 micron, can be specified as per the requirement. Higher film thickness (>250 micron) can also be applied as per customer requirement.

PH LEVELS

Our standard coating systems are suitable for pH levels between and 12. For pipelines which have a process medium with pH levels less than 4 or greater than 12, please consult our Technical Sales Department. For the chemical resistance of our pipes and fittings contact our Technical Sales Department.

CO2 LEVELS

CO2 level is very important for lining selection in case of high CO2 level then the lining must be high cement class or polyurethane.

HYDRAULIC FLOW CHARACTERISTICS

The advance in corrosion protective systems, such as the use of epoxy coatings, adds greatly to both its service life and its already impressive flow characteristics.

LINING REPAIR

In the event that an area of cement mortar lining is damaged, repairs can be made quickly and simply by using either cement mortar or a compatible synthetic material which is approved for use with the potable water. Where a repair is carried out using cement mortar, follow the procedure outlined below.

- The cement mortar must be of the same type as that used in the original lining.
- If possible position the pipe or fitting with the damaged area at invert level.
- Carefully chip out the damaged lining. Undercut the edges of the adjacent sound lining to help form a 'key' for the repair.
- Clean away all loose debris.
- Thoroughly wet the exposed metal surface and the edges of the lining around the exposed area.

3. FIRE FIGHTING COATING& LINING SYSTEMS

MSABEK produce special Coating & lining to meet international standards for fire fighting like NFPA, FM, UL and others for under ground firefighting networks it is similar to potable water systems ,but for above ground systems the coating and lining systems as a follow:

Coating:

1-ZN spray of 200g/m²

2-Aniti fire epoxy coating and approved by FM. the thickness as per customer requirement.

Lining:

Epoxy coating of 150 Micron layer.



MARKING OF PIPES & FITTINGS:

NO	ITEM	Example
Pipes		
1	Nominal Bore	DN300
2	Class of other than K9	K7
3	Denotes the pipe is ductile iron	three dots, DI,
4	Appropriate standard	ISO 2531
5	Year of manufacture	2003
6	Manufacturer's identification	Manufacturer's mark
7	PN rating of flanges when applicable	PN16
Fittings		
1	Nominal Bore	DN300
2	Angle of bend	90° etc.
3	Denotes the fitting is ductile iron	DI
4	Appropriate standard	ENE 545
5	Year of manufacture	2024
6	Manufacturer's identification	MASBEK
7	PN rating of flanges when applicable	10,16,25,etc.

PROJECT IDENTIFICATION

MSABEK Flow Pipelines can mark all pipes and fittings to your specific requirements. This can be done either by the use of metal tags or white water resistant markers.



RODUCT DETAILS

Applicable Standards

ISO 2531 ,EN545, EN598 , EN681 & ISO898-1 .

Test Pressure

1.5 times working pressure for short duration .

Vacuum Pressure

Capable of accommodating a vacuum pressure of -0.7 bar.

Coating & Lining

Potable Water Fusion Bonded Epoxy powder according to DIN 30677-T2

Colors

-The product's coating standard colors as a follow:

- Blue –Potable water applications
- Black-Potable water or sewage
- Red :Firefighting applications
- Vinous: Sewage applications

Applications

- Industrial Water Applications
- Water Distribution Networks
- Water Transmission
- Irrigation Applications
- Fire Fighting System

Ambient Temperature Rating :

Elbow with EPDM: -20°C to +90°C

Elbow with NBR: -20°C to +90°C

Media Temperature Rating :

Elbow with EPDM: 1°C to +60°C

Elbow with NBR: 1°C to +90°C

Marking:

Diameter , Material Identification , Pressure Rating
And any custom marking.

longitudinal forces Due to Internal Pressure:

The maximum resist end load due to the internal pressure adequate external must not exceed rubber gasket friction force.

Max. Bolt Torque:

On every Bolt

Size	N.m	Size	N.m	Size	N.m	Size	N.m
M12	65	M20	340	M27	940	M36	2100
M16	190	M24	600	M30	1240	M45	3240

Angularity:

4°~6° depend on tolerance of pipe OD and installation skills.

Gasket:

EPDM : to BS EN 681-1, Type WA, WC

NBR : to BS EN 682, Type G

Flange

Dimensions and drilling according to EN 1092-2

Bolts

Standard - Galvanized Steel as per ISO 4016

Optional - Stainless Steel

Nuts

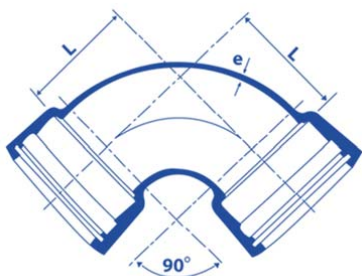
Standard - Galvanized Steel as per EN 24034

Optional - Stainless Steel

Washers

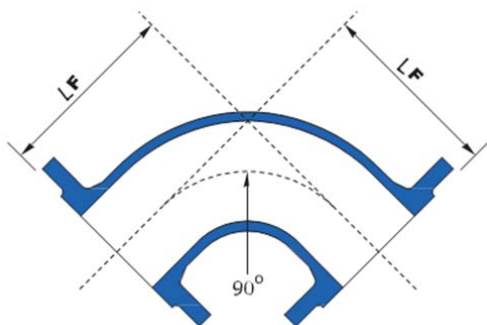
Standard - Galvanized Steel as per ISO 7089

Optional - Stainless Steel



Type A: Double Socket, Type B: Socket Spigot, Type C: Mechanical Joint (K Type)

DN	L (mm)	Weight (kg)		
		Type A	Type B	Type C
80	100	9	10.1	12
100	120	12.1	13.3	15.6
150	170	22	24	27.5
200	220	36.5	38.3	40
250	270	51.5	60.6	55.5
300	320	70.5	70.8	81.5
350	370	97.5	111.7	105
400	420	124	145.6	134
450	470	156	184.8	166
500	520	193	229.6	202
600	620	280	337.1	290
700	720	455	490	443
800	820	605	665	581
900	920	813	880	785
1000	1020	1045	1137	935
1200	1220	1663	1798	1660
1400	1220	2419	2170	1918
1600	1290	3382	2904	2543
1800	1320	-	-	3833
2000	1360	-	-	4783

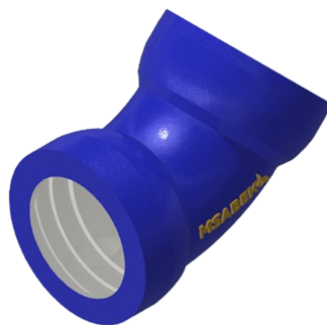
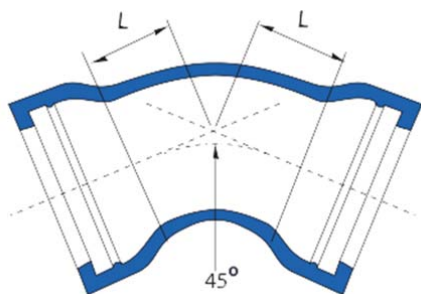


DOUBLE FLANGED ELBOW

DN	LF (mm)	Approximate weight, Type F (kg)			
		PN10	PN16	PN25	PN40
80	165	9.6	9.6	9.6	10
100	180	12	12	13	14
150	220	20.5	20.5	22.5	24.4
200	260	31.5	31.0	35	39
250	350	50.5	49.5	57	64
300	400	70	69.5	80	92
350	450	90.5	96	112	129
400	500	117	126	148	169
450	550	147	163	184	201
500	600	184	211	232	257
600	700	277	324	348	290
700	800	394	418	497	-
800	900	543	573	671	-
900	1000	708	746	866	-
1000	1100	919	988	1146	-
1200	1300	1452	1562	1767	-
1400	1350	1948	2062	-	-
1600	1450	2663	2841	-	-
1800	1500	3348	3572	-	-
2000	-	-	-	-	-

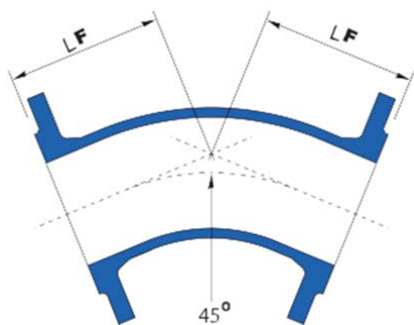
DUCTILE IRON

ELBOW



Type A: Double Socket, Type B: Socket Spigot, Type C: Mechanical Joint (K Type)

DN	L (mm)	Weight (kg)		
		Type A	Type B	Type C
80	55	8.1	8.1	11.1
100	65	10.8	10.6	14.3
150	85	18.8	18.2	24
200	110	31	28.2	34
250	130	41.5	40.2	45.5
300	150	55	54.6	66
350	175	76	71.3	83.5
400	195	94	89.9	104
450	220	117	125	127
500	240	141	139	150
600	285	199	200	209
700	330	288	275	289
800	370	382	365	373
900	415	501	485	488
1000	460	640	608	628
1200	550	1007	930	943
1400	515	1273	1231	1223
1600	565	1740	1695	1647
1800	610	2296	-	2166
2000	660	2970	-	2791

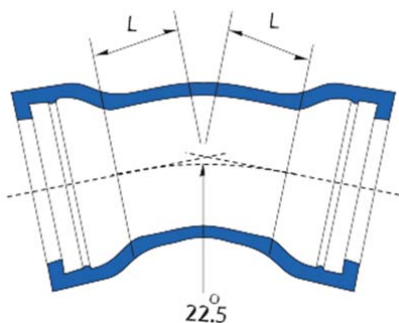


DOUBLE FLANGED ELBOW

DN	LF (mm)	Approximate weight, Type F (kg)			
		PN10	PN16	PN25	PN40
80	130	9.4	9.4	9.4	9.8
100	140	11.5	11.5	12.5	13.7
150	160	19.1	19.1	21	23
200	180	28.5	28	32	35
250	350	56.5	56	63	69
300	400	79	78.5	89	98
350	298	78.5	84	99.5	110
400	324	99.5	109	131	146
450	349	122	138	160	198
500	375	151	178	199	219
600	426	221	268	292	318
700	478	311	334	398	-
800	529	423	453	541	-
900	581	543	581	699	-
1000	632	700	769	907	-
1200	735	1088	1198	1377	-
1400	775	1551	1664	-	-
1600	845	2190	2369	-	-
1800	910	1640	1864	-	-
2000	980	2081	2357	-	-

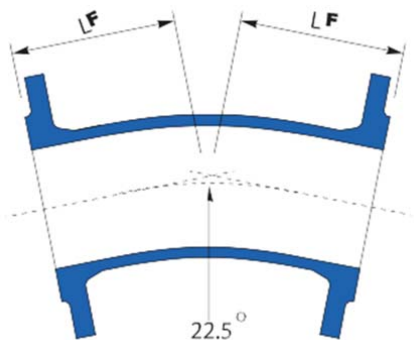
DUCTILE IRON

ELBOW



Type A: Double Socket, Type B: Socket Spigot, Type C: Mechanical Joint (K Type)

DN	L (mm)	Weight (kg)		
		Type A	Type B	Type C
80	40	7.7	7.7	10.7
100	40	10	9.8	13.5
150	55	17.3	16.8	22.5
200	65	27.5	25.2	30.5
250	75	36	35.2	40.5
300	85	47	46.2	58
350	95	64	59	71
400	110	78.5	79.5	88
450	120	95	107	105
500	130	113	117	123
600	150	154	161	164
700	175	223	210	223
800	195	291	274	281
900	220	377	375	364
1000	240	474	443	463
1200	285	736	660	671
1400	260	933	891	882
1600	280	1259	1214	1167
1800	305	1663	-	1533
2000	330	2144	-	1965

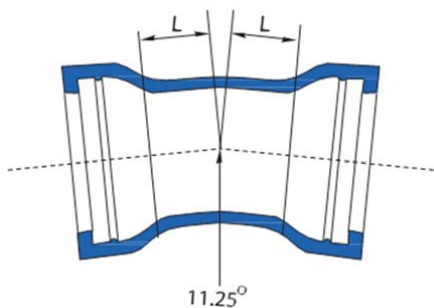


DOUBLE FLANGED ELBOW

DN	LF (mm)	Approximate weight, Type F (kg)			
		PN10	PN16	PN25	PN40
80	130	9.3	9.3	9.3	9.5
100	140	11.4	11.4	12.5	13.1
150	160	18.9	18.9	21	23
200	180	28	27.5	31.5	33.4
250	350	55.5	54.5	62	68
300	400	77.5	76.5	87.5	94
350	298	77	82.5	98	107.5
400	324	97.5	107	129	137.8
450	349	120	135	157	169.1
500	375	148	175	196	213.4
600	426	216	263	287	304.7
700	478	304	328	-	-
800	529	414	444	-	-
900	581	531	569	-	-
1000	632	684	753	-	-
1200	735	1062	1172	-	-
1400	835	1431	1544	-	-
1600	940	1972	2151	-	-
1800	480	2539	2763	-	-
2000	520	3243	3519	-	-

DUCTILE IRON

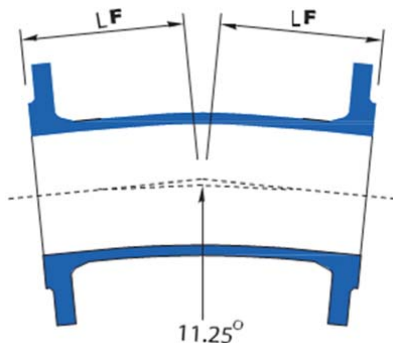
ELBOW



Type A: Double Socket, Type B: Socket Spigot, Type C: Mechanical Joint (K Type)

DN	L (mm)	Weight (kg)		
		Type A	Type B	Type C
80	30	7.4	7.4	10.5
100	30	9.7	9.4	13.1
150	35	16.2	16	21.5
200	40	25.5	23.2	29
250	50	33.5	32.2	37.5
300	55	43	42.2	54
350	60	58	53.3	65.5
400	65	70	70.5	79
450	70	83.5	97	94
500	75	98.5	102	108
600	85	131	138	141
700	95	186	174	187
800	110	243	226	234
900	120	309	284	297
1000	130	386	354	375
1200	150	588	512	524
1400	130	747	705	697
1600	140	1007	962	914
1800	155	1331	1390	1200
2000	165	1702	1800	1522

Table (22): Double Socket 11.25deg Elbow dimensions



DOUBLE FLANGED ELBOW

DN	LF (mm)	Approximate weight, Type F (kg)			
		PN10	PN16	PN25	PN40
80	130	9.5	9.5	9.5	9.7
100	140	11.5	11.5	12.5	12.9
150	160	19.1	19.1	21	22.3
200	180	28.5	28	32	33.8
250	350	56.5	56	63.5	66.3
300	400	79.5	79	89.5	95.2
350	298	79	84	100	108.3
400	324	100	109	131	145.2
450	349	123	139	160	175.8
500	375	152	179	200	218.4
600	426	222	269	294	311.7
700	478	313	336	-	-
800	529	426	455	-	-
900	581	546	584	-	-
1000	632	704	773	-	-
1200	735	1094	1204	-	-
1400	835	1560	1674	-	-
1600	940	2203	2382	-	-
1800	345	1342	1566	-	-
2000	375	1694	1970	-	-

Table (23): Double Flanged 11.25deg Elbow dimensions

PRODUCT DETAILS

Applicable Standards

ISO 2531 ,EN545, EN598 , EN681 & ISO898-1 .

Test Pressure

1.5 times working pressure for short duration .

Vacuum Pressure

Capable of accommodating a vacuum pressure of -0.7 bar.

Coating & Lining

Potable Water Fusion Bonded Epoxy powder according to DIN 30677-T2

Colors

-The product's coating standard colors as a follow:

- Blue –Potable water applications
- Black-Potable water or sewage
- Red :Firefighting applications
- Vinous: Sewage applications

Applications

- Industrial Water Applications
- Water Distribution Networks
- Water Transmission
- Irrigation Applications
- Fire Fighting System

Ambient Temperature Rating :

Tee with EPDM: -20°C to +90°C

Tee with NBR: -20°C to +90°C

Media Temperature Rating :

Tee with EPDM: 1°C to +60°C

Tee with NBR: 1°C to +90°C

Marking:

Diameter , Material Identification , Pressure Rating
And any custom marking.

longitudinal forces Due to Internal Pressure:

The maximum resist end load due to the internal pressure adequate external must not exceed rubber gasket friction force.

Max. Bolt Torque:

On every Bolt

Size	N.m	Size	N.m	Size	N.m	Size	N.m
M12	65	M20	340	M27	940	M36	2100
M16	190	M24	600	M30	1240	M45	3240

Angularity:

4°~6° depend on tolerance of pipe OD and installation skills.

Gasket:

EPDM : to BS EN 681-1, Type WA, WC

NBR : to BS EN 682, Type G

Flange

Dimensions and drilling according to EN 1092-2

Bolts

Standard - Galvanized Steel as per ISO 4016

Optional - Stainless Steel

Nuts

Standard - Galvanized Steel as per EN 24034

Optional - Stainless Steel

Washers

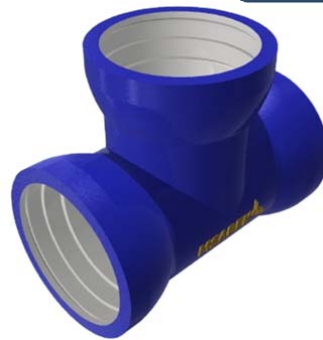
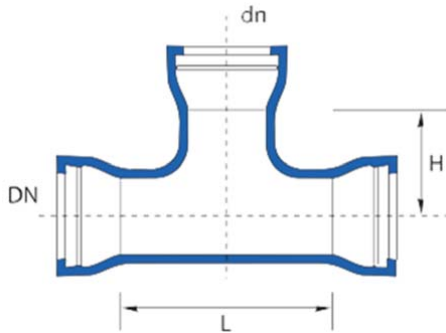
Standard - Galvanized Steel as per ISO 7089

Optional - Stainless Steel

TEE

MSABEK

DATA SHEET



ALL SOCKET

Nominal Diameter		L (mm)	H (mm)	Weight (kg)	
DN	dn			T Type	MJ Type
80	80	170	85	13.8	16.8
100	80	170	95	16.7	19.9
100	100	190	95	18.2	21.5
150	80	170	120	24.5	28.5
150	100	195	120	26.5	30.5
150	150	255	125	31.5	36.5
200	80	175	145	35	36
200	100	200	450	37.5	38.5
200	150	255	150	43	45
200	200	315	155	50.5	50.5
250	80	200	210	47	48.3
250	100	200	210	48	49
250	150	315	220	59	61
250	200	315	220	63.5	63.5
250	250	375	230	71.5	71.5
300	100	205	235	54.5	66.5
300	150	320	245	68	80.5
300	200	320	245	72	48
300	250	375	250	85.5	92.1
300	300	435	260	90.5	106
350	100	205	260	70.5	78

DUCTILE IRON

TEE

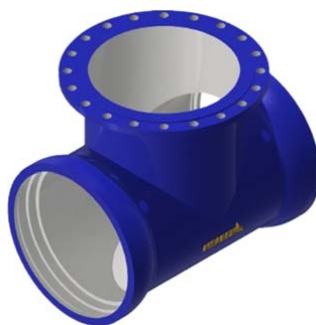
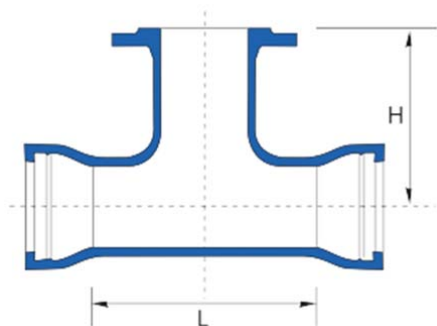
Nominal Diameter		L (mm)	H (mm)	Weight (kg)	
DN	dn			T Type	MJ Type
350	150	325	270	86.5	95
350	200	325	270	90.5	98
350	250	375	375	105	109
350	300	440	285	111	122
350	350	495	290	124	133
400	100	210	285	83	92
400	150	325	295	101	111
400	200	325	295	105	114
400	250	375	300	116	128
400	300	440	310	127	140
400	350	495	315	137	152
400	400	560	320	155	167
450	100	215	320	106	116
450	150	330	320	117	128
450	200	330	320	121	131
450	250	375	325	138	147
450	300	445	335	146	160
450	350	495	340	161	175
450	400	560	345	175	188
450	450	620	350	190	203
500	100	315	345	115	123
500	150	330	345	135	145
500	200	330	345	139	148
500	250	380	350	161	168
500	300	450	360	167	179
500	350	500	365	187	198
500	400	565	370	198	210
500	450	620	375	214	224
500	500	680	380	231	242
600	100	220	395	168	169
600	150	340	395	175	184
600	200	340	395	178	187
600	250	380	400	205	213
600	300	455	410	211	223
600	350	500	415	246	248
600	400	570	420	248	259
600	450	620	425	280	281

Nominal Diameter		L (mm)	H (mm)	Weight (kg)	
DN	dn			T Type	MJ Type
600	500	685	430	296	296
600	600	800	440	325	337
700	100	345	445	279	269
700	150	345	445	283	273
700	200	345	445	289	279
700	300	460	460	326	316
700	400	575	470	361	350
700	500	650	480	411	399
700	600	810	490	461	450
700	700	925	500	536	519
800	100	350	495	341	317
800	150	350	495	347	324
800	200	350	495	353	329
800	300	465	510	399	376
800	400	580	520	439	416
800	500	815	530	472	449
800	600	1045	540	629	606
800	700	1045	550	665	637
800	800	1045	565	701	666
900	100	355	545	446	416
900	150	355	545	450	420
900	200	355	545	458	427
900	300	590	570	535	505
900	400	590	570	556	526
900	500	820	590	803	770
900	600	1170	590	747	739
900	700	1050	615	878	843
900	800	1170	615	903	868
900	900	1170	625	944	899
1000	100	360	595	626	596
1000	150	360	595	632	602
1000	200	360	595	640	607
1000	300	595	620	761	729
1000	400	595	620	786	751
1000	500	830	620	900	941
1000	600	1290	640	1008	970
1000	700	1055	665	1081	1041

Nominal Diameter		L (mm)	H (mm)	Weight (kg)	
DN	dn			T Type	MJ Type
1000	800	1290	665	1129	1087
1000	900	1290	685	1150	1106
1000	1000	1290	685	1209	1164
1100	200	370	650	710	680
1100	400	600	670	909	675
1100	600	830	690	1052	822
1100	800	1065	715	1313	986
1100	1000	1295	735	1504	1172
1100	1100	1410	745	1626	1267
1200	100	375	700	713	669
1200	150	375	700	719	675
1200	200	375	700	725	681
1200	300	605	720	963	887
1200	400	605	720	978	900
1200	500	715	740	1095	1011
1200	600	840	740	1139	1055
1200	700	955	765	1390	1306
1200	800	1070	765	1449	1365
1200	900	1185	785	1596	1512
1200	1000	1300	785	1657	1564
1200	1200	1535	805	1900	1792
1400	100	385	820	916	884
1400	200	385	820	923	891
1400	400	800	820	1133	1098
1400	600	1030	840	1679	1422
1400	800	1260	865	1910	1641
1400	1000	1495	885	2441	1886
1400	1200	1725	905	2795	2133
1400	1400	1960	930	3124	2436
1600	100	400	920	2323	1173
1600	200	400	920	-	1183
1600	400	810	920	-	1435
1600	600	1040	940	-	1806
1600	800	1275	965	-	2073
1600	1000	1505	985	-	2363
1600	1200	1740	1010	-	2660
1600	1400	1970	1030	-	2992

Nominal Diameter		L (mm)	H (mm)	Weight (kg)	
DN	dn			T Type	MJ Type
1600	1600	2200	1050	-	3346
1800	100	410	1020	-	1518
1800	200	410	1020	-	1525
1800	400	820	1020	-	1931
1800	600	1055	1040	-	2272
1800	800	1285	1065	-	2591
1800	1000	1520	1085	-	2933
1800	1200	1750	1110	-	3274
1800	1400	1980	1130	-	3652
1800	1600	2215	1150	-	4052
1800	1800	2445	1175	-	4498
2000	200	420	1120	-	1924
2000	400	830	1120	-	2299
2000	600	1065	1140	-	2793
2000	800	1300	1165	-	3179
2000	1000	1530	1185	-	3572
2000	1200	1760	1210	-	3968
2000	1400	1995	1230	-	4407
2000	1600	2225	1250	-	7850
2000	1800	2460	1275	-	5346
2000	2000	2690	1295	-	5873
2200	600	1080	1240	-	3500
2200	800	1310	1265	-	3803
2200	1000	1540	1285	-	4258
2200	1200	1775	1310	-	4725
2200	1400	2005	1330	-	5214
2200	1600	2240	1350	-	5722
2200	1800	2470	1375	-	6264
2200	2000	2700	1395	-	6835
2200	2200	2935	1415	-	7457
2400	600	1090	1340	-	4100
2400	800	1320	1365	-	4486
2400	1000	1555	1385	-	5018
2400	1200	1785	1410	-	5539
2400	1400	2020	1430	-	6102
2400	1400	2020	1430	-	6102
2400	1600	2250	1450	-	6662

Nominal Diameter		L (mm)	H (mm)	Weight (kg)	
DN	dn			T Type	MJ Type
2400	1800	2489	1475	-	7263
2400	2000	2715	1495	-	7900
2400	2200	2945	1515	-	8558
2400	2400	3180	1540	-	9267
2600	600	1100	1440	-	5100
2600	800	1335	1465	-	5463
2600	1000	1565	1485	-	6060
2600	1200	1800	1510	-	6670
2600	1400	2030	1530	-	7296
2600	1600	2260	1550	-	7927
2600	1800	2495	1575	-	8609
2600	2000	2725	1595	-	9301
2600	2200	2960	1615	-	10034
2600	2400	3190	1640	-	10814
2600	2600	3420	1660	-	11718



DOUBLE SOCKET WITH FLANGED BRANCH

Nominal Diameter		L (mm)	H (mm)	Weight (kg)					
				T Type			MJ Type		
DN	dn			PN10	PN16	PN25	PN10	PN16	PN25
80	80	170	165	14.7	14.7	14.7	16.7	16.7	16.7
100	80	170	175	17.5	17.5	17.5	19.7	19.7	19.7
100	100	190	180	18.9	18.9	19.4	21	21	21.5
150	80	170	205	25.5	25.5	25.5	28.5	28.5	28.5
150	100	195	210	27	27	27.5	30.5	30.5	31
150	150	255	220	32.5	32.5	33.5	35.5	35.5	36.5
200	80	175	235	36.5	36.5	36.5	36.5	36.5	36.5
200	100	200	240	38.5	38.5	39	38.5	38.5	39
200	150	255	250	44.5	44.5	45.5	44.5	44.5	45.5
200	200	315	260	51.5	51	53	51.5	51	53
250	80	200	270	47	47	47	47	47	47
250	100	200	270	47.5	47.5	48	48	48	48.5
250	150	315	290	59	59	60	59	59	60
250	200	315	290	62.5	62	64	62.5	62	64
250	250	375	300	71	71	74.5	71.5	71	74.5
300	80	205	300	54.5	54.5	54.5	64	64	64
300	100	205	300	55	55	55.5	65	65	65.5
300	150	320	320	68.5	68.5	69.5	78.5	78.5	79.5
300	200	320	320	72	71.5	73.5	81.5	81.5	83.5
300	250	375	330	83	83	81	85	91	96
300	300	435	340	92	91.5	97	102	102	107
350	80	205	330	70.5	70.5	70.5	76.50	76.5	76
350	100	205	330	71	71	71.5	76.50	76.5	77
350	150	325	350	87.5	87.5	88.5	93	93	94
350	200	325	350	90.5	90.5	92.5	96	96	98

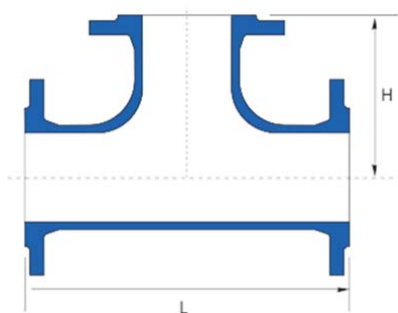
Nominal Diameter		L (mm)	H (mm)	Weight (kg)					
				T Type			MJ Type		
DN	dn			PN10	PN16	PN25	PN10	PN16	PN25
350	250	375	360	103	103	114	125	125	135
350	300	440	370	113	113	118	118	118	123
350	350	495	380	123	126	134	129	132	139
400	80	210	360	83	83	83	90	90	90
400	100	210	360	84	84	84.5	91	91	91.5
400	150	325	380	102	102	103	109	109	110
400	200	325	380	105	105	107	1130	112	114
400	250	375	390	119	119	118	122	128	132
400	300	440	400	129	129	134	1370	136	142
400	350	495	410	143	143	146	153	156	163
400	400	560	420	155	160	171	1630	167	178
450	80	215	395	97.5	97.5	97.5	1050	105	105
450	100	215	395	98.5	98.5	99	1060	106	107
450	150	330	410	119	119	120	1270	127	128
450	200	330	410	122	122	124	1300	130	132
450	250	375	420	141	140	140	149	149	153
450	300	445	430	149	14	154	1570	157	162
450	350	495	440	166	169	169	174	177	186
450	400	560	450	177	181	192	1850	189	200
450	450	620	460	192	200	211	2000	208	219
500	80	215	420	113	113	113	1190	119	119
500	100	215	420	114	114	114	1200	120	120
500	150	330	440	137	137	138	1430	143	144
500	200	330	440	140	140	142	1470	146	148
500	250	380	450	165	165	169	172	171	177
500	300	450	460	171	171	176	1770	177	182
500	350	500	470	192	195	203	198	201	210
500	400	565	480	201	206	217	2070	212	223
500	450	620	490	220	228	244	226	235	250
500	500	680	500	236	249	260	2420	256	266
600	80	220	480	145	145	145	1510	151	151
600	100	220	480	146	146	147	1520	152	153
600	150	340	500	177	177	178	1830	183	184
600	200	340	500	180	180	182	1870	187	188
600	250	380	510	219	218	222	215	215	218
600	300	455	520	216	216	221	2220	222	227
600	350	500	530	252	255	263	247	251	260

Nominal Diameter		L (mm)	H (mm)	Weight (kg)					
				T Type			MJ Type		
DN	dn			PN10	PN16	PN25	PN10	PN16	PN25
600	400	570	540	252	257	268	2580	263	274
600	450	620	550	285	293	309	281	289	305
600	500	685	560	304	309	331	301	305	327
600	600	800	580	338	362	374	3450	368	360
700	100	345	525	242	242	243	2430	243	244
700	150	345	525	246	246	247	2460	246	247
700	200	345	525	249	249	251	2500	249	251
700	300	460	540	300	300	306	301	301	307
700	400	575	555	329	333	344	3290	334	345
700	500	690	570	412	412	418	392	407	409
700	600	810	585	421	445	456	4220	445	457
700	700	925	600	476	487	498	4760	488	512
800	100	350	585	304	304	305	2950	295	295
800	150	350	585	308	308	309	2980	298	299
800	200	350	585	311	311	313	3020	301	303
800	300	580	600	371	371	377	362	362	368
800	400	580	615	405	410	421	3960	401	412
800	500	815	630	522	537	549	513	528	540
800	600	1045	645	588	612	624	5790	603	614
800	700	1045	660	620	635	669	611	626	660
800	800	1045	675	640	655	708	6310	646	699
900	100	355	630	378	378	378	365	365	366
900	150	355	645	381	381	382	3680	368	369
900	200	355	645	385	384	386	3710	371	373
900	300	590	660	455	455	461	442	442	448
900	400	590	675	497	502	513	4840	488	499
900	500	820	690	666	681	693	653	668	690
900	600	1170	705	758	782	794	7450	769	760
900	700	1050	720	788	803	837	775	790	824
900	800	1170	735	808	823	876	7950	810	863
900	900	1170	750	835	854	920	8220	841	907
1000	100	360	690	461	461	462	461	461	462
1000	150	360	705	464	464	465	4510	451	452
1000	200	360	705	467	467	469	4550	455	457
1000	300	595	720	552	552	558	552	552	558
1000	400	595	735	598	603	416	5860	591	602
1000	500	830	750	852	867	879	852	867	879

Nominal Diameter		L (mm)	H (mm)	Weight (kg)					
				T Type			MJ Type		
DN	dn			PN10	PN16	PN25	PN10	PN16	PN25
1000	600	1290	765	958	982	994	9460	970	981
1000	700	1055	780	985	1000	1032	985	1000	1032
1000	800	1290	795	1006	1021	1074	9940	1009	1074
1000	900	1290	810	1052	1076	1137	1052	1076	1137
1000	1000	1290	825	1072	1086	1192	1059	1094	1092
1100	200	370	765	782	782	784	531	531	533
1100	400	600	795	930	934	845	680	684	695
1100	600	830	825	1079	1103	1114	836	860	871
1100	800	1065	855	1321	1335	1388	1015	1029	1082
1100	1000	1295	885	1560	1595	1681	1205	1240	1326
1100	1100	1410	900	1679	1714	1814	1313	1348	1448
1200	100	375	810	763	763	763	676	676	676
1200	150	375	820	806	806	806	678	678	678
1200	200	375	825	682	682	684	6180	618	620
1200	300	605	840	917	917	923	769	769	775
1200	400	605	855	852	856	867	7870	792	803
1200	500	840	870	980	1018	1044	968	973	995
1200	600	840	885	1031	1055	1067	9670	991	1003
1200	700	1070	900	1169	1184	1218	1169	1184	1218
1200	800	1070	915	1227	1242	1295	1162	1177	1295
1200	900	1300	930	1367	1427	1452	1367	1427	1452
1200	1000	1300	945	1436	1470	1556	1372	1406	1556
1200	1200	1535	975	1682	1736	1846	1617	1672	1846
1400	100	385	910	1120	1120	1120	1120	1120	1120
1400	200	385	920	1189	1189	1189	1189	1189	1189
1400	400	800	950	1357	1368	1374	1221	1226	1237
1400	600	1030	980	1478	1505	1519	1441	1464	1476
1400	800	1260	1010	1709	1728	1777	1677	1692	1777
1400	1000	1495	1040	1955	1996	2075	1929	1964	2075
1400	1200	1725	1070	2375	2439	2539	2205	2260	2539
1400	1400	1960	1100	2697	2765	2917	2501	2557	2917
1600	100	400	1020	1261	1261	1261	1261	1261	1261
1600	200	400	1030	1361	1361	1361	1361	1361	1361
1600	400	810	1060	1561	1565	1576	1561	1565	1576
1600	600	1040	1090	1908	1934	1942	1831	1854	1866
1600	800	1275	1120	2192	2211	2264	2121	2136	2189
1600	1000	1505	1150	2480	2523	2607	2416	2451	2536

Nominal Diameter		L (mm)	H (mm)	Weight (kg)					
				T Type			MJ Type		
DN	dn			PN10	PN16	PN25	PN10	PN16	PN25
1600	1200	1740	1180	2799	2863	3349	2743	2798	2907
1600	1400	1970	1210	3129	3186	3349	3073	3130	3293
1600	1600	2200	1240	3517	4607	4792	3461	3551	3741
1800	100	410	1130	-	-	-	1742	1742	1742
1800	200	410	1140	-	-	-	1842	1842	1842
1800	400	820	1170	-	-	-	2042	2046	2059
1800	600	1055	1200	2414	2440	-	2302	2326	2337
1800	800	1285	1230	2748	2767	-	2642	2657	2710
1800	1000	1520	1260	3095	3137	-	2998	3032	3118
1800	1200	1750	1290	3460	3524	-	3371	3426	3510
1800	1400	1980	1320	-	-	-	3750	3807	3970
1800	1600	2215	1350	-	-	-	4188	4277	4498
1800	1800	2445	1380	-	-	-	4624	4735	4990
2000	200	420	1250	-	-	-	2230	2230	2232
2000	400	830	1280	-	-	-	2530	2534	2547
2000	600	1065	1310	2988	3015	-	2830	2853	2865
2000	800	1300	1340	-	-	-	3239	3254	3307
2000	1000	1530	1370	3790	3832	-	3648	3682	3768
2000	1200	1760	1400	-	-	-	4079	4134	4243
2000	1400	1995	1430	4645	4713	-	4523	4580	4743
2000	1600	2225	1460	-	-	-	5007	5097	5287
2000	1800	2460	1490	-	-	-	5497	5609	5863
2000	2000	2690	1520	-	-	-	6030	6168	6506
2200	600	1080	1420	3647	3674	-	3510	3507	-
2200	800	1310	1450	-	-	-	3873	3888	-
2200	1000	1540	1480	-	-	-	4347	4381	-
2200	1200	1775	1510	5055	5119	-	4851	4906	-
2200	1400	2005	1540	-	-	-	5349	5406	-
2200	1600	2240	1570	-	-	-	5903	5992	-
2200	1800	2470	1600	6579	6705	-	6442	6553	-
2200	2000	2700	1630	-	-	-	7022	7160	-
2200	2200	2935	1660	-	-	-	7688	7858	-
2400	600	1090	1530	-	-	-	4085	4111	-
2400	800	1320	1560	4383	4409	-	4566	4581	-
2400	1000	1555	1590	-	-	-	5119	5151	-
2400	1200	1785	1620	6005	6069	-	5682	5737	-
2400	1400	2020	1650	-	-	-	6257	6134	-

Nominal Diameter		L (mm)	H (mm)	Weight (kg)					
				T Type			MJ Type		
DN	dn			PN10	PN16	PN25	PN10	PN16	PN25
2400	1600	2250	1680	-	-	-	6866	6955	-
2400	1800	2480	1710	7734	7860	-	7168	7579	-
2400	2000	2715	1740	-	-	-	8120	8258	-
2400	2200	2945	1770	-	-	-	8826	8996	-
2400	2400	3180	1800	-	-	-	9614	9842	-
2600	600	1100	1640	5205	-	-	4955	4971	-
2600	800	1335	1670	-	-	-	5553	5568	-
2600	1000	1565	1700	-	-	-	6175	6210	-
2600	1200	1800	1730	-	-	-	6829	6884	-
2600	1400	2030	1750	7704	-	-	7471	7528	-
2600	1600	2260	1790	-	-	-	8155	8244	-
2600	1800	2495	1820	-	-	-	8842	8954	-
2600	2000	2725	1850	9713	-	-	9553	9691	-
2600	2200	2960	1880	-	-	-	10339	10510	-
2600	2400	3190	1910	-	-	-	11173	11401	-
2600	2600	3420	1940	-	-	-	11973	12226	-



DUCTILE IRON

TEE

ALL FLANGED

Nominal Diameter		L (mm)	H (mm)	Weight (kg)		
DN	dn			PN10	PN16	PN25
80	80	330	165	15.8	15.5	15.8
100	80	360	175	18.6	18.6	19.6
100	100	360	180	19.5	19.5	21
150	80	440	205	29	29	31
150	100	440	210	30	30	32.5
150	150	440	220	33.5	33.5	36.5
200	80	520	235	43	42.5	46.5
200	100	520	240	44	43.5	48
200	150	520	250	47	47	52
200	200	520	260	51	50.5	56.5
250	80	700	270	49.3	49.7	56.7
250	100	700	275	68.5	68	76
250	150	700	325	73.5	73	81
250	200	700	325	77.5	76.5	86
250	250	700	350	84	83	93.5
300	80	800	295	93	93.5	103.5
300	100	800	300	94.5	93.5	105
300	150	800	350	99	98.5	110
300	200	800	350	103	102	115
300	250	800	375	111	110	123
300	300	800	400	117	116	132
350	80	850	325	104	104	120
350	100	850	325	117	123	139
350	150	850	325	120	126	143
350	200	850	325	124	129	147
350	250	850	325	128	134	154
350	300	850	425	140	145	166
350	350	850	425	145	153	177

Nominal Diameter		L (mm)	H (mm)	Weight (kg)		
DN	dn			PN10	PN16	PN25
400	80	900	350	145	154	176
400	100	900	350	146	155	178
400	150	900	350	149	158	181
400	200	900	350	152	161	185
400	250	900	350	152	175	198
400	300	900	450	168	177	204
400	350	900	450	174	186	217
400	400	900	450	179	193	226
450	100	950	375	177	193	215
450	150	950	375	180	196	219
450	200	950	375	183	199	222
450	250	950	375	194	210	234
450	300	950	475	199	215	242
450	350	950	475	207	227	260
450	400	950	475	210	230	263
450	450	950	475	216	240	272
500	100	1000	400	215	241	265
500	150	1000	400	218	245	267
500	200	1000	400	221	248	271
500	250	1000	400	228	258	289
500	300	1000	500	237	264	291
500	350	1000	500	239	268	303
500	400	1000	500	248	279	311
500	450	1000	500	249	284	322
500	500	1000	500	261	301	333
600	100	1100	450	301	340	352
600	150	1100	450	309	356	381
600	200	1000	450	312	359	385
600	250	1100	450	307	360	392
600	300	1100	550	328	375	404
600	350	1100	550	329	380	413
600	400	1100	550	338	390	424
600	450	1100	550	338	417	448
600	500	1100	550	340	420	464
600	600	1100	550	355	434	477
700	100	600	390	240	263	328
700	150	600	395	242	265	331
700	200	650	525	281	304	363
700	250	720	525	300	322	391
700	300	760	530	319	342	412
700	350	830	530	337	363	436

Nominal Diameter		L (mm)	H (mm)	Weight (kg)		
DN	dn			PN10	PN16	PN25
700	400	870	555	358	386	455
700	450	920	560	370	401	477
700	500	990	560	412	448	524
700	600	1200	585	476	523	615
700	700	1200	600	499	534	645
800	100	670	454	316	345	438
800	150	670	454	320	349	443
800	200	690	585	368	397	479
800	250	770	585	389	414	510
800	300	800	585	413	443	533
800	350	880	600	429	461	562
800	400	910	615	459	493	582
800	450	980	615	471	508	612
800	500	1030	620	495	538	642
800	600	1350	645	633	687	806
800	700	1350	645	665	706	831
800	800	1350	675	685	730	880
900	100	720	495	396	434	548
900	150	720	495	398	436	551
900	200	730	645	454	492	551
900	250	820	645	485	484	607
900	300	880	650	513	522	639
900	350	930	655	536	550	669
900	400	950	675	561	604	716
900	450	1030	680	585	630	755
900	500	1030	690	611	662	787
900	600	1500	705	810	872	1026
900	700	1500	710	855	904	1050
900	800	1500	735	880	932	1092
900	900	1500	750	917	974	1144
1000	100	770	550	494	563	711
1000	150	770	705	496	565	713
1000	200	770	705	499	567	716
1000	250	880	710	609	677	828
1000	300	930	710	635	703	855
1000	350	980	725	673	733	888
1000	400	990	735	694	767	904
1000	450	1080	745	722	798	956
1000	500	1130	755	751	833	991
1000	600	1650	765	1015	1107	1268
1000	700	1650	765	1087	1167	1346

Nominal Diameter		L (mm)	H (mm)	Weight (kg)		
DN	dn			PN10	PN16	PN25
1000	800	1650	770	1106	1189	1382
1000	900	1650	800	1143	1231	1435
1000	1000	1650	825	1186	1289	1509
1200	400	1070	855	1008	1131	1302
1200	600	1290	885	1101	1312	1470
1200	800	1510	915	1291	1492	1687
1200	1000	1730	945	1494	1714	1941
1200	1200	1950	975	1806	1970	2269
1400	600	1320	980	1527	1665	-
1400	800	1540	1010	1755	1884	-
1400	1000	1760	1040	1995	2143	-
1400	1200	1980	1070	2262	2431	-
1400	1400	2200	1100	2545	2715	-
1600	600	1380	1090	2019	2221	-
1600	800	1600	1120	2294	2487	-
1600	1000	1820	1150	2578	2791	-
1600	1200	2040	1180	2888	3122	-
1600	1400	2260	1210	3208	3444	-
1600	1600	2480	1240	3586	3854	-
1800	600	1440	1200	2521	2768	-
1800	800	1660	1230	2848	3087	-
1800	1000	1880	1260	3184	3442	-
1800	1200	2100	1290	3543	3822	-
1800	1400	2320	1320	3910	4190	-
1800	1600	2540	1350	4328	4641	-
1800	1800	2760	1380	4750	2086	-
2000	600	1500	1310	3119	3419	-
2000	800	1720	1340	3505	3796	-
2000	1000	1940	1370	3898	4209	-
2000	1200	2160	1400	4314	4644	-
2000	1400	2380	1430	4733	5066	-
2000	1600	2600	1460	5202	5567	-
2000	1800	2820	1490	5668	6055	-
2000	2000	3040	1520	6185	6599	-
2200	600	1560	1420	3975	4334	-
2200	800	1780	1450	4298	4654	-
2200	1000	2000	1480	4753	5128	-
2200	1200	2220	1510	5026	5413	-
2200	1400	2440	1540	5709	6160	-
2200	1600	2660	1570	6234	6664	-
2200	1800	2880	1600	6474	6934	-

Nominal Diameter		L (mm)	H (mm)	Weight (kg)		
DN	dn			PN10	PN16	PN25
2200	2000	3100	1630	7136	7795	-
2200	2200	3320	1660	7954	8464	-
2400	600	1620	1530	4418	4849	-
2400	800	1740	1560	5200	5671	-
2400	1000	2060	1590	5721	6211	-
2400	1200	2280	1620	5963	6432	-
2400	1400	2500	1650	6804	7317	-
2400	1600	2720	1680	7392	7937	-
2400	1800	2940	1710	7614	8145	-
2400	2000	3160	1740	8591	9185	-
2400	2200	3380	1770	9275	9901	-
2400	2400	3600	1800	10031	10715	-

WATER PIPING



PRODUCT CATALOGUE

Gate Valve

This technical book cover MSABEK products under the following standards mentioned in Table No.(1) , Also MSABEK produce other standards and products other than mentioned in this technical book ,please contact sales team for other technical books for other products and standards ,below table show covered standards by MSABEK :

1- ISO STANDARDS:

STANDARD NO.	DESCRIPTION
ISO 2531	Ductile iron pipes, fittings, accessories and their joints for water applications
ISO 7186	Ductile iron products for sewerage applications
ISO 10803	Design method for ductile iron pipes
ISO 13470	Trenchless applications of ductile iron pipes systems -- Product design and installation
ISO 10804	Restrained joint systems for ductile iron pipe
ISO 7005-2	Metallic flanges - Part 2: Cast iron flanges
ISO 16134	Earthquake- and subsidence-resistant design of ductile iron pipelines
ISO 10802	Ductile iron pipelines -- Hydrostatic testing after installation
ISO 27306	Metallic materials -- Method of constraint loss correction of CTOD fracture toughness for fracture assessment of steel components
ISO 9349	Pre insulated ductile iron pipeline systems
ISO 8179-1	Ductile iron pipes - External zinc-based coating -- Part 1: Metallic zinc with finishing layer
ISO 8179-2	Ductile iron pipes -- External zinc coating -- Part 2: Zinc rich paint with finishing layer
ISO 4179	Ductile iron pipes and fittings for pressure and non-pressure pipelines -- Cement mortar lining
ISO 16132	Ductile iron pipes and fittings -- Seal coats for cement mortar linings
ISO 8180	Ductile iron pipelines - Polyethylene sleeving for site application
ISO 4633	Rubber seals -- Joint rings for water supply, drainage and sewerage pipelines -- Specification for materials
ISO/NP 16631	Ductile iron pipes, fittings, accessories and their joints for water distribution
ISO 9001	Quality management systems -- Requirements
ISO 14001	Environmental management systems -- Requirements with guidance for use
ISO/TS 14048	Environmental management - Life cycle assessment -- Data documentation format
ISO/TR 14062	Environmental management - Integrating environmental aspects into product design and development

Note (1) : above table show Standard Number only , MSABEK cover all versions for standards mentioned in Table No. (1).

Note (2): ISO -International Organization for Standardization standards

2- EN STANDARDS:

STANDARD NO.	DESCRIPTION
EN 545	Ductile iron pipes, fittings accessories and their joints for water pipelines
EN 598	Ductile iron pipes, fittings accessories and their joints for sewerage applications
EN 969	Ductile iron pipes, fittings, accessories and their joints for gas pipelines. Requirements and test methods
EN 14525	Ductile iron wide tolerance couplings and flange adaptors for use with pipes of different materials: ductile iron, grey iron, steel, PVC-U, PE, fiber-cement
EN 15655	Ductile iron pipes, fittings and accessories. Internal polyurethane lining for pipes and fittings. -Requirements and test methods
EN 12842	Ductile iron fittings for PVC-U or PE piping systems. Requirements and test methods
EN 14628	Ductile iron pipes, fittings and accessories - External polyethylene coating for pipes - Requirements and test methods
EN 14628	Ductile iron pipes, fittings and accessories. Epoxy coating (heavy duty) of ductile iron fittings and accessories. Requirements and test methods
EN 15189	Ductile iron pipes, fittings and accessories - External polyurethane coating for pipes - Requirements and test methods
EN 15542	Ductile iron pipes, fittings and accessories - External cement mortar coating for pipes - Requirements and test methods
EN 681-1	Elastomeric seals - Material requirements for pipe joint seals used in water and drainage applications - Part 1: Vulcanized rubber
EN 197-1	Cement – Part 1 : Composition, specifications and conformity criteria for common cements
EN 197-2	Cement – Part 2 : Conformity evaluation
EN 206-1	Concrete – Part 1: Specification, performance, production and conformity
BS EN 1092-1	Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated
EN 10255	Non-alloy steel tubes suitable for welding and threading. Technical delivery conditions
EN 10216- 1:2002 A1:2004	“Seamless steel tubes for pressure purposes” - Technical delivery conditions - Part 1: Non-alloy steel tubes with specified room temperature properties
EN 20224:2002	“Non-alloy steel tubes and fittings for the conveyance of water and other aqueous liquids”
EN 10297-1:2003	Seamless steel tubes for mechanical and general engineering purposes
EN 10208- 1,2:1997, 1996	Steel pipes for pipelines for combustible fluids
EN 10210- 1,2:1994, 1997	Hot finished structural hollow sections of no-alloy and fine grain steels

OTHER STANDARDS:

STANDARD NO.	DESCRIPTION
ANSI/AWWA C115/A21.15	American National Standard for Flanged Ductile-Iron Pipe with Ductile -Iron or Gray - Iron Threaded Flanges
AWWA C105/A21.5-10	Polyethylene Encasement for Ductile-Iron Pipe Systems
AWWA C104/A21.4-08	Cement Mortar Lining for Ductile Iron Pipe and Fittings for Water, Includes Erratum (2010)
DIN 28600 – DIN 28646	Ductile Iron Pressure Pipes And Fittings For Gas And Water Pipelines
ANSI/AWWA C104/A21	Cement-Mortar Lining for Ductile- Iron Pipe and Fittings for Water
ANSI/AWWA C105/A21.5	Polyethylene Encasement for Ductile-Iron Pipe Systems
ANSI/AWWA C110/A21.10	Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in., for Water
ANSI/AWWA C111/A21.11	Rubber-Gasket Joints for Ductile- Iron Pressure Pipe and Fittings
ANSI/AWWA C115/A21.15	Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges
ANSI/AWWA C150/A21.50	Thickness Design of Ductile-Iron Pipe
ANSI/AWWA C151/A21.51	Ductile-Iron Pipe, Centrifugally Cast for Water
ANSI/AWWA C153/A21.53	Ductile-Iron Compact Fittings, for Water Service
ANSI/AWWA C600	Installation of Ductile-Iron Water Mains and Their Appurtenances
ANSI/AWWA C606	Grooved and Shouldered Joints
ASTM A674	Polyethylene Encasement for Ductile Iron Pipe for Water or Other Liquids
ASTM A716	Ductile Iron Culvert Pipe
ASTM A746	Ductile Iron Gravity Sewer Pipe
ANSI/NSF 61	Drinking Water System Components— Health Effects
ASTM G62	Standard Test Methods for Holiday Detection in Pipeline Coatings
ASTM A53	Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A106	Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service



PRODUCT RANGE

Resilient Seated Gate Valves with Socket Ends for PVC, HDPE and ductile iron pipes

Standards: EN 1074-2, BS 5163 DN80-200mm
PN16



Resilient Seated Flanged Gate Valves

Standards: EN 1074-2, BS 5163, DIN 3202, AWWA
C509 DN50-600mm
PN10, PN16, PN25



Metal Seated Gate Valve

Standards: EN 1074-2, BS 5163, DIN 3202,
DN40-1600mm
PN10, PN16, PN25, PN40



DUCTILE IRON

GATE VALVE



PRODUCT RANGE

Resilient Seated Gate Valves with Socket Ends for PVC, HDPE and ductile iron pipes

Standards: EN 1074-2, BS 5163 DN80-200mm
PN16



Resilient Seated Flanged Gate Valves

Standards: EN 1074-2, BS 5163, DIN 3202, AWWA C509 DN50-600mm
PN10, PN16, PN25



Metal Seated Gate Valve

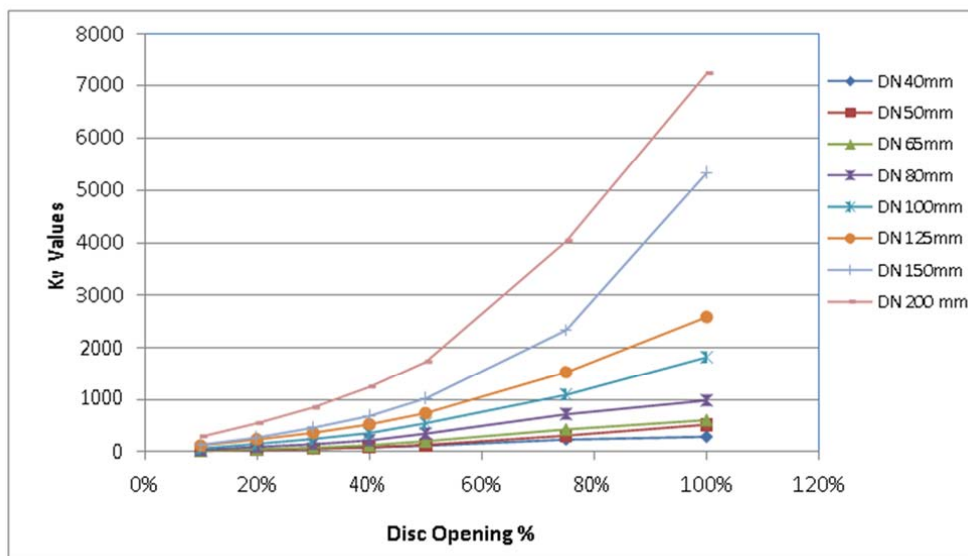
Standards: EN 1074-2, BS 5163, DIN 3202,
DN40-1600mm
PN10, PN16, PN25, PN40



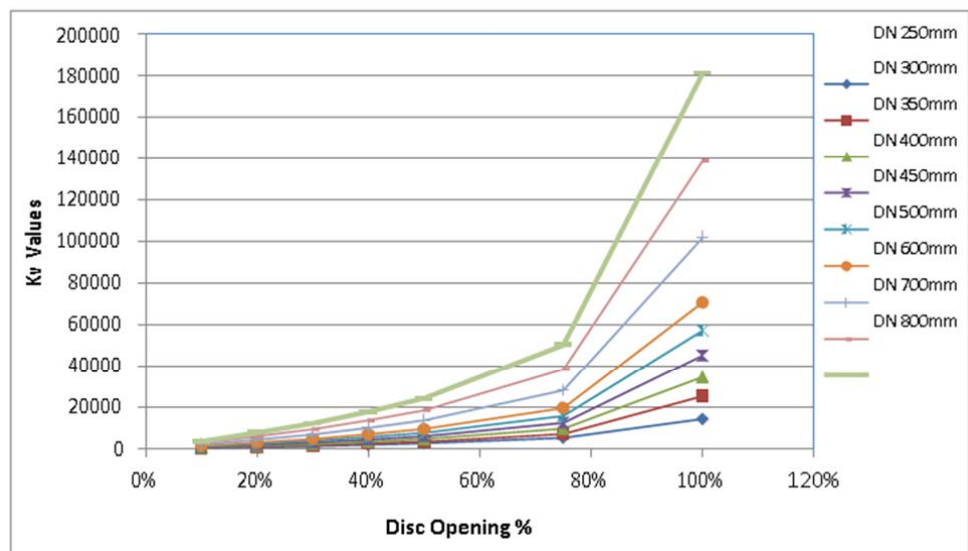
DUCTILE IRON

GATE VALVE

DN 50mm - DN 200mm



DN 250mm - DN 800mm





FEATURES

- Resilient Seated Gate Valve is operating by the EPDM covered iron wedge moving perpendicular to the flow axis through a worm machined stem multi turned.
- 100% tight sealing is achieved through EPDM covered wedge fully contacting the fusion bonded epoxy coated flow surface
- In each time the valve is opened, the flow on the line cleans the sealing surface, prevents from dirt and deposits
- With its short installation length (DIN 3202 F4), does not occupy a big place.
- Suitable to install actuator and gearbox
- Suitable to use with ground and underground applications.
- Can be operated with extension spindle
- Very low head loss rating.
- Can be operated with lower torque ratings, no maintenance needed.
- Blue fusion bonded epoxy coating in accordance with BS EN 14901.

APPLICATIONS

Resilient seated gate valve for use in potable water systems, heating and chilled water, neutral liquids, fire system either above ground or buried service applications.

STANDARDS

Design: DIN 3352, BS 5163, BS EN 1074-2, AWWA C509

End Connection: Flanged EN 1092-2 / ISO 7005-2.

Face to Face: EN 558-1 Series 14 / DIN 3202 F4, EN 558-1 Series 15 / DIN 3202 F5, EN 558-1 Series 3

Test: DIN EN 12266-1

STANDARDS

-15° to +70° C

RESILIENT SEATED WITH SOCKET FOR

Standard: BS 5163, DIN 3352

Pressure Rating: PN16

Size: DN40 - DN400

MATERIALS

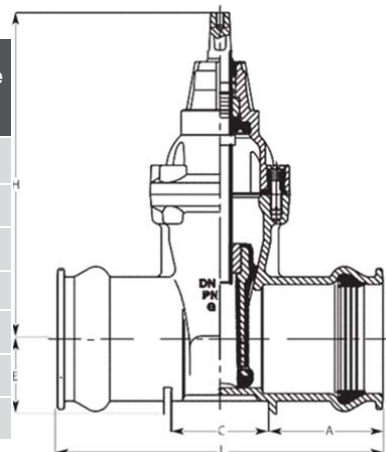
Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Wedge rubber sealing	EPDM or NBR
Bonnet	GGG 40 / 50
Stem	Stainless steel 1.4021
Stem nut	Bronze
Stem guide bush	Bronze
O-rings	EPDM or NBR
Sliding disc	POM
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE

Size DN	Pipe De	A (mm)	L (mm)	H (mm)	C (mm)	E (mm)	Weight (kg)	Volume (m³)
40	50	103	270	236	64	44	7	0.01
65	75	108	298	271	82	85	9	0.01
100	110	118	336	334	100	79	18	0.01
150	160	130	400	448	140	107	40	0.04
200	225	151	452	562	150	142	58	0.06
250	280	166	504	664	172	174	95	1.01
400	400	185	596	950	226	240	246	2.05



RESILIENT SEATED WITH SOCKET FOR DUCTILE

Standard: BS 5163, EN 1074

Pressure Rating: PN16

Size: DN80 - DN300

MATERIALS

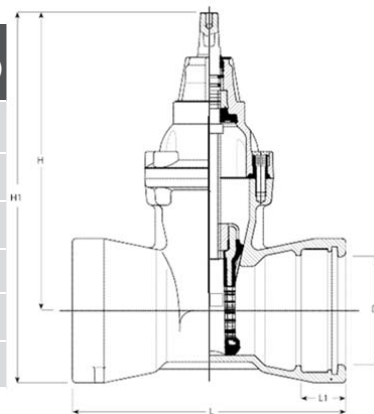
Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Wedge rubber sealing	EPDM or NBR
Bonnet	GGG 40 / 50
Stem	Stainless steel 1.4021
Stem nut	Bronze
Stem guide bush	Bronze
O-rings	EPDM or NBR
Sliding disc	POM
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE

Size DN (mm)	Pipe De (mm)	A (mm)	L (mm)	H (mm)	C (mm)	E (mm)
80	98	284	297	368	16	0.01
100	118	306	334	415	21	0.02
150	170	337	448	558	40	0.04
200	222	355	562	701	75	0.08
250	274	390	664	826	110	1.02
300	326	440	740	931	175	2.00



RESILIENT SEATED WITH LOCKABLE SOCKET FOR

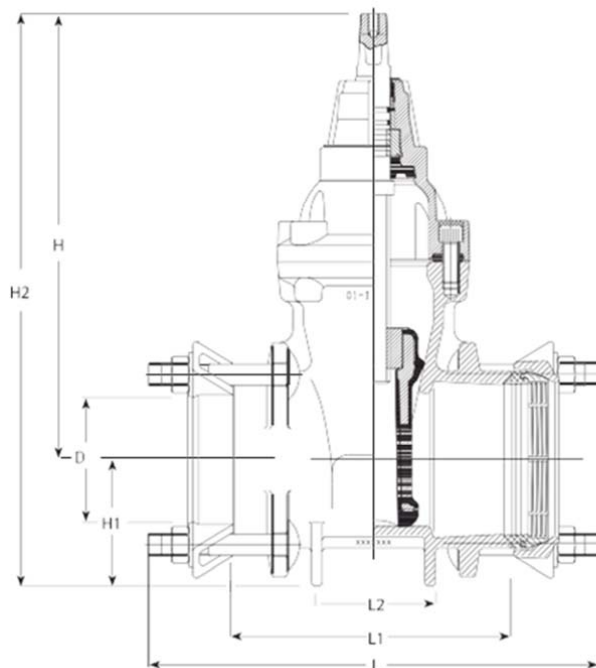
Standard: BS 5163, EN 1074

Pressure Rating: PN16

Size: DN40 - DN300

MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Wedge rubber sealing	EPDM or NBR
Bonnet	GGG 40 / 50
Stem	Stainless steel 1.4021
Stem nut	Bronze
Stem guide bush	Bronze
O-rings	EPDM or NBR
Sliding disc	POM
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE

Size DN (mm)	D (mm)	H (mm)	H1 (mm)	H2 (mm)	L (mm)	L1 (mm)	L2 (mm)	Weight (kg)	Volume (m3)
40	50	236	44	280	312	182	64	11	0.01
50	63	241	52	293	312	182	68	12	0.01
65	75	271	85	329	312	182	70	13	0.01
80	90	297	68	365	330	200	78	17	0.01
100	110	334	94	428	338	208	90	24	0.01
125	125	375	102	477	338	208	91	30	0.02
125	140	375	107	482	350	220	95	40	0.03
150	160	448	118	566	390	260	124	42	0.04
150	180	448	128	566	390	260	124	45	0.05
200	200	562	158	720	439	309	124	65	0.05
200	225	562	172	734	499	309	133	75	0.06
250	250	664	174	838	529	339	143	103	0.09
250	280	664	184	848	529	339	155	106	1.01
300	315	740	208	948	570	380	184	143	1.03

DUCTILE IRON

GATE VALVE

FACE TO FACE: DIN EN 558-1 SERIES 14, DIN 3202, F4

Pressure Rating: PN 10

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN50 - DN600

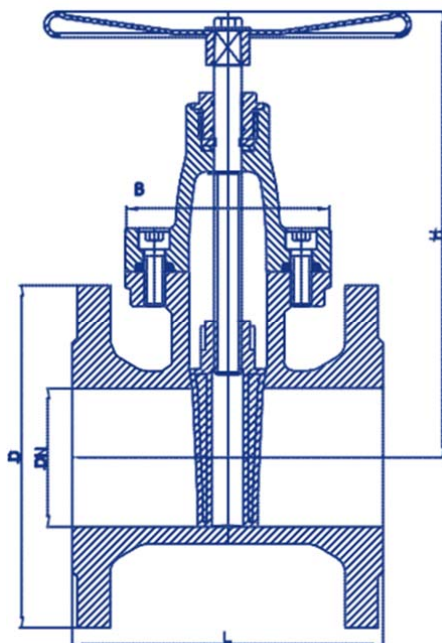
MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Wedge rubber sealing	EPDM or NBR
Bonnet	GGG 40 / 50
Stem	Stainless steel 1.4021
Stem nut	Bronze
Stem guide bush	Bronze
O-rings	EPDM or NBR
Sliding disc	POM
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE



Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
50	150	165	230	123	13	0.02
65	170	185	240	134	18	0.2
80	180	200	280	152	21	0.03
100	190	220	330	176	28	0.04
125	200	250	390	202	39	0.05
150	210	285	460	235	45	0.07
200	230	340	550	305	127	0.12
250	250	395	660	340	156	0.19
300	270	445	760	500	191	0.26
350	290	505	822	565	240	0.42
400	310	565	910	615	380	0.68
450	330	615	1080	680	410	0.8
500	350	670	1180	730	530	1.07
600	390	780	1345	785	680	1.6

Cast Iron GG 25 Body is available on request

FACE TO FACE: DIN EN 558-1 SERIES 14, DIN 3202, F4

Pressure Rating: PN 16

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN50 - DN600

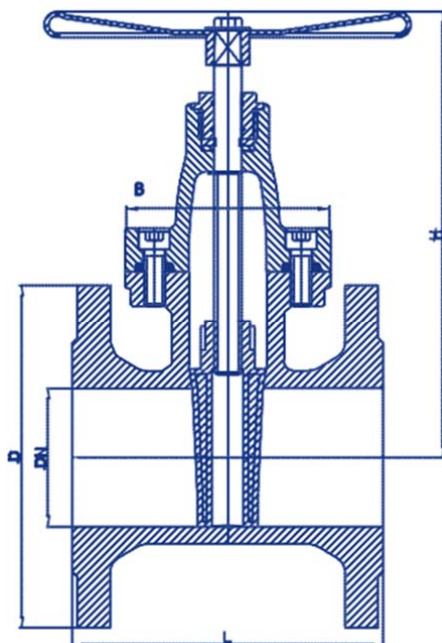
MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Wedge rubber sealing	EPDM or NBR
Bonnet	GGG 40 / 50
Stem	Stainless steel 1.4021
Stem nut	Bronze
Stem guide bush	Bronze
O-rings	EPDM or NBR
Sliding disc	POM
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE



Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
50	150	165	230	123	13	0.02
65	170	185	240	134	18	0.02
80	180	200	280	152	21	0.03
100	190	220	330	176	28	0.04
125	200	250	390	202	39	0.05
150	210	285	460	235	45	0.07
200	230	340	550	305	127	0.12
250	250	405	660	340	156	0.19
300	270	460	760	500	191	0.26
350	290	520	822	565	240	0.42
400	310	580	910	615	380	0.68
450	330	640	1080	680	410	0.80
500	350	715	1180	730	530	1.07
600	390	840	1345	785	680	1.60

Cast Iron GG 25 Body is available on request



FACE TO FACE: DIN EN 558-1 SERIES 14, DIN 3202, F4

Pressure Rating: Class 150

Flange Drilling: ANSI Class 150

Size: DN50 - DN600

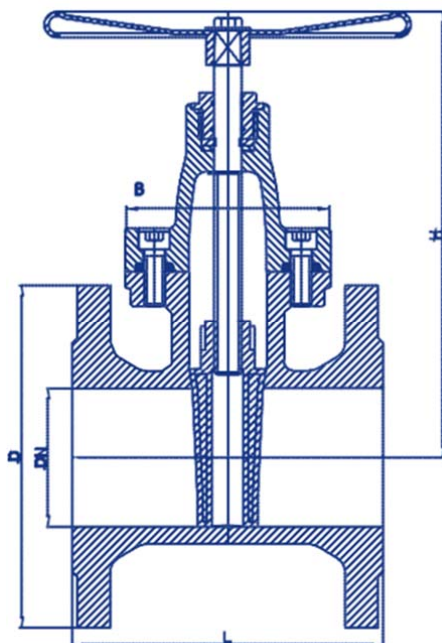
MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Wedge rubber sealing	EPDM or NBR
Bonnet	GGG 40 / 50
Stem	Stainless steel 1.4021
Stem nut	Bronze
Stem guide bush	Bronze
O-rings	EPDM or NBR
Sliding disc	POM
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE



Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
50	150	152	230	123	13	.02
65	170	178	240	134	18	.02
80	180	191	280	152	21	.03
100	190	229	330	176	28	.04
125	200	254	390	202	39	.05
150	210	279	460	235	45	.07
200	230	343	550	305	127	.12
250	250	406	660	340	156	.19
300	270	483	760	500	191	.26
350	290	533	822	565	240	.42
400	310	597	910	615	380	.68
450	330	635	1080	680	410	.8
500	350	699	1180	730	580	1.07
600	390	813	1345	785	680	1.6

Cast Iron GG 25 Body is available on request

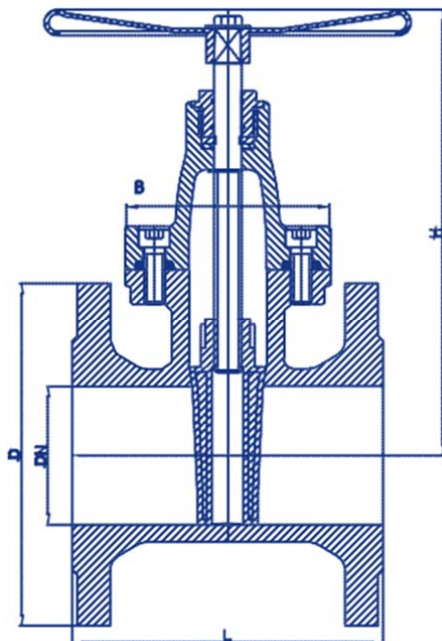
FACE TO FACE: DIN EN 558-1 SERIES 14, DIN 3202, F4**Pressure Rating: PN 25****Flange Drilling: EN 1092-2 / ISO 7005-2.****Size: DN50 - DN300****MATERIALS**

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Wedge rubber sealing	EPDM or NBR
Bonnet	GGG 40 / 50
Stem	Stainless steel 1.4021
Stem nut	Bronze
Stem guide bush	Bronze
O-rings	EPDM or NBR
Sliding disc	POM
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE



Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
50	178	165	245	123	11	.02
65	190	185	275	134	15	.02
80	203	200	305	152	18	.03
100	229	235	330	176	24	.04
125	254	270	375	202	35	.05
150	267	300	415	235	50	.07
200	292	360	570	305	92	.12
250	330	425	660	340	143	.19
300	356	485	770	500	194	.26

Cast Iron GG 25 Body is available on request

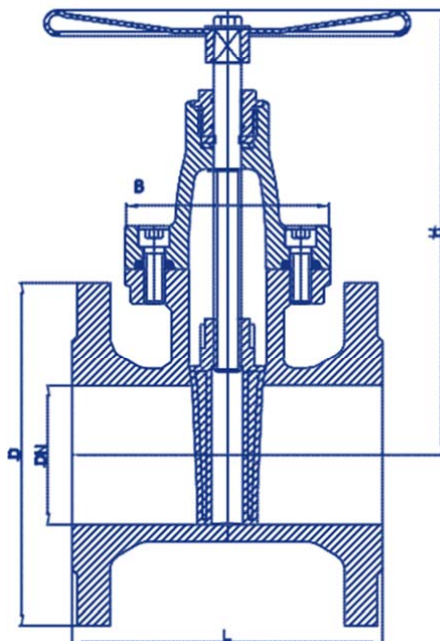
FACE TO FACE: DIN EN 558-1 SERIES 15, DIN 3202, F5**Pressure Rating: PN 10****Flange Drilling: EN 1092-2 / ISO 7005-2.****Size: DN50 - DN600****MATERIALS**

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Wedge rubber sealing	EPDM or NBR
Bonnet	GGG 40 / 50
Stem	Stainless steel 1.4021
Stem nut	Bronze
Stem guide bush	Bronze
O-rings	EPDM or NBR
Sliding disc	POM
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE



Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
50	250	165	230	123	14	0.02
65	270	185	240	134	20	0.03
80	280	200	280	152	21	0.04
100	300	220	330	176	30	0.05
125	325	250	390	202	42	0.06
150	350	285	460	235	48	0.09
200	400	340	550	305	131	0.18
250	450	395	660	340	159	0.22
300	500	445	760	500	210	0.30
350	550	505	822	565	249	0.47
400	600	565	910	615	393	0.73
450	650	615	1080	680	526	0.88
500	700	670	1180	730	543	1.15
600	800	780	1345	785	695	1.80

Cast Iron GG 25 Body is available on request



FACE TO FACE: DIN EN 558-1 SERIES 15, DIN 3202, F5

Pressure Rating: PN 16

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN50 - DN600

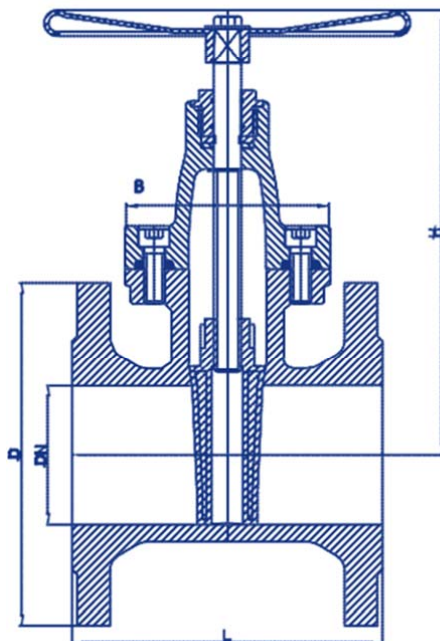
MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Wedge rubber sealing	EPDM or NBR
Bonnet	GGG 40 / 50
Stem	Stainless steel 1.4021
Stem nut	Bronze
Stem guide bush	Bronze
O-rings	EPDM or NBR
Sliding disc	POM
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE



Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
50	250	165	230	123	14	0.02
65	270	185	240	134	20	0.03
80	280	200	280	152	21	0.04
100	300	220	330	176	30	0.05
125	325	250	390	202	42	0.06
150	350	285	460	235	48	0.09
200	400	340	550	305	131	0.18
250	450	405	660	340	159	0.22
300	500	460	760	500	210	0.30
350	550	520	822	565	249	0.47
400	600	580	910	615	393	0.73
450	640	680	526	0.88	526	0.88
500	700	715	1180	730	543	1.15
600	800	840	1345	785	695	1.80

Cast Iron GG 25 Body is available on request

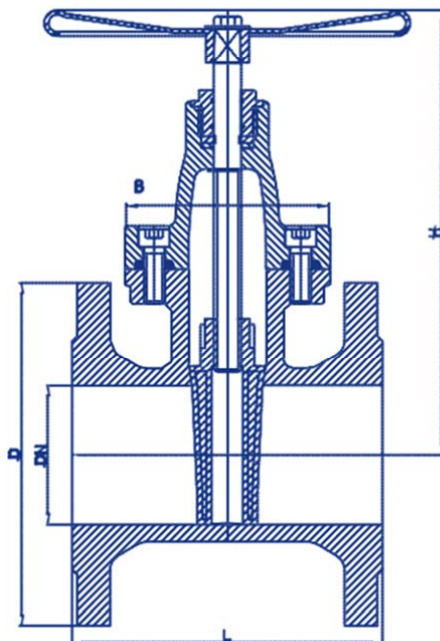
FACE TO FACE: DIN EN 558-1 SERIES 15, DIN 3202, F5**Pressure Rating: PN 25****Flange Drilling: EN 1092-2 / ISO 7005-2.****Size: DN50 - DN600****MATERIALS**

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Wedge rubber sealing	EPDM or NBR
Bonnet	GGG 40 / 50
Stem	Stainless steel 1.4021
Stem nut	Bronze
Stem guide bush	Bronze
O-rings	EPDM or NBR
Sliding disc	POM
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE



Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
50	250	165	230	123	14	.02
65	270	185	240	134	20	.03
80	280	200	280	152	21	.04
100	300	235	330	176	30	.05
125	325	270	390	202	42	.06
150	350	300	460	235	48	.09
200	400	360	550	305	131	.18
250	450	425	660	340	159	.22
300	500	485	760	500	210	.30

Cast Iron GG 25 Body is available on request



FACE TO FACE: DIN EN 558-1 SERIES 3, DIN 3202, F3

Pressure Rating: PN 10

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN50 - DN600

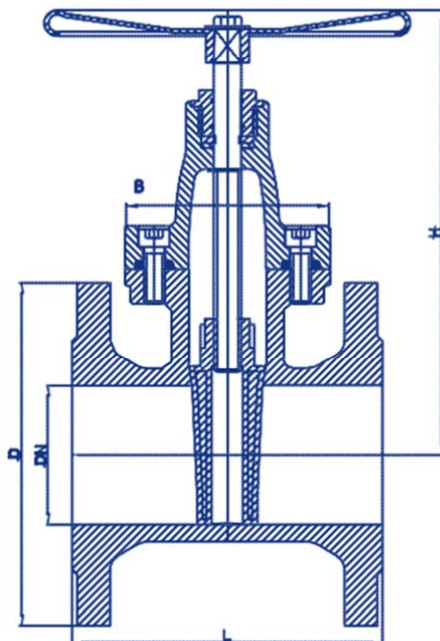
MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Wedge rubber sealing	EPDM or NBR
Bonnet	GGG 40 / 50
Stem	Stainless steel 1.4021
Stem nut	Bronze
Stem guide bush	Bronze
O-rings	EPDM or NBR
Sliding disc	POM
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE



Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
50	178	165	245	123	11	0.02
65	190	185	275	134	15	0.02
80	203	200	305	152	18	0.03
100	229	220	330	176	24	0.04
125	254	250	375	202	32	0.05
150	267	285	415	235	48	0.07
200	292	340	570	305	90	0.12
250	330	395	660	340	140	0.19
300	356	445	770	500	191	0.26
350	381	505	870	565	250	0.42
400	406	565	1010	615	320	0.68
450	432	615	1080	680	410	0.80
500	457	670	1180	730	530	1.07
600	508	780	1345	785	680	1.60

Cast Iron GG 25 Body is available on request

FACE TO FACE: DIN EN 558-1 SERIES 3, DIN 3202, F3

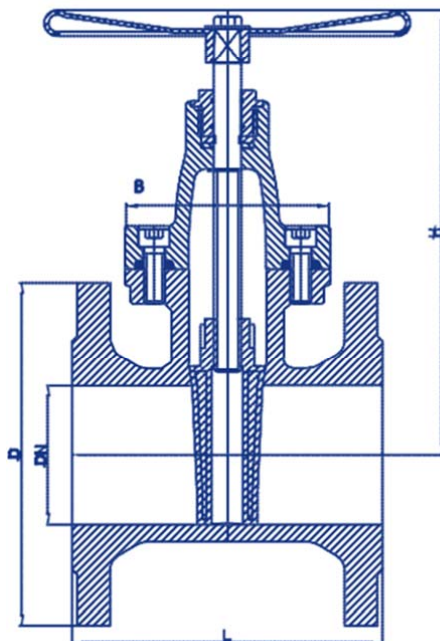
Pressure Rating: PN 16

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN50 - DN600

MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Wedge rubber sealing	EPDM or NBR
Bonnet	GGG 40 / 50
Stem	Stainless steel 1.4021
Stem nut	Bronze
Stem guide bush	Bronze
O-rings	EPDM or NBR
Sliding disc	POM
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE

Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
50	178	165	245	123	11	0.02
65	190	185	275	134	15	0.02
80	203	200	305	152	18	0.03
100	229	220	330	176	24	0.04
125	254	250	375	202	32	0.05
150	267	285	415	235	50	0.07
200	292	340	570	305	92	0.12
250	330	405	660	340	143	0.19
300	356	460	770	500	194	0.26
350	381	520	870	565	253	0.42
400	406	580	1010	615	323	0.68
450	432	640	1080	680	413	0.80
500	457	715	1180	730	536	1.07
600	508	840	1345	785	684	1.60

Cast Iron GG 25 Body is available on request

FACE TO FACE: DIN EN 558-1 SERIES 3, DIN 3202, F3

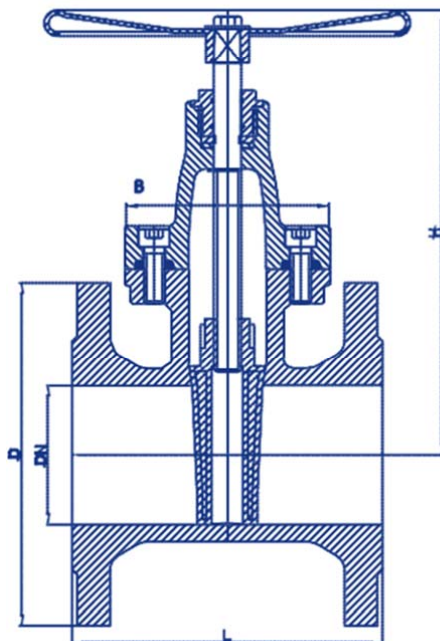
Pressure Rating: PN 25

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN50 - DN300

MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Wedge rubber sealing	EPDM or NBR
Bonnet	GGG 40 / 50
Stem	Stainless steel 1.4021
Stem nut	Bronze
Stem guide bush	Bronze
O-rings	EPDM or NBR
Sliding disc	POM
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE

Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
50	178	165	245	123	11	.02
65	190	185	275	134	15	.02
80	203	200	305	152	18	.03
100	229	235	330	176	24	.04
125	254	270	375	202	32	.05
150	267	300	415	235	50	.07
200	292	360	570	305	92	.12
250	330	425	660	340	143	.19
300	356	485	770	500	194	.26

Cast Iron GG 25 Body is available on request

FACE TO FACE: ANSI/ASME B16.10

Design Standard: AWWA C509

Pressure Rating: Class 125

Rising Stem (OS&Y)

Flange Drilling: ANSI/ASME B16.1 Class 125, ANSI/AWWA

C110/21.10

Size: DN50 - DN300

MATERIALS

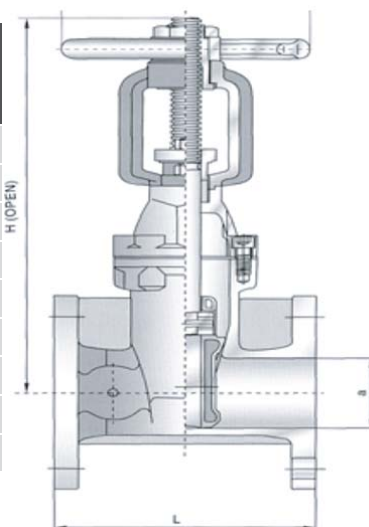
Body	Ductile Iron ASTM 536 65-45-12
Wedge	Ductile Iron ASTM 536
Wedge rubber sealing	EPDM or NBR
Bonnet	Ductile Iron ASTM 536 65-45-12
Stem	Stainless steel 1.4021
Stem nut	Bronze, Copper Alloy
Stem guide bush	Bronze
Yoke	Ductile Iron ASTM 536 65-45-12
O-rings	EPDM or NBR
Sliding disc	POM
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE

Size DN (mm)	L (mm)	Dimensions		Weight (kg)	Volume (m3)
		Flange D	H Open		
50	178	152	255	17	0.04
65	190	178	280	20	0.05
80	203	191	300	29	0.06
100	229	229	344	34	0.10
125	254	254	410	42	0.13
150	267	279	441	58	0.18
200	292	343	529	83	0.28
250	330	406	614	138	0.32
300	356	482	700	192	0.39





FEATURES

- Metal faced gate valve, consisting of four faces, non-ferrous metal rings (normally Al Bronze) within valve; two fitted to valve body and two fitted to valve wedge.
- A metal-faced valve is recommended when used for scour duties (The recommended average flow velocity for scour duty is 10m/sec).
- Standard orientation for metal seated gate valves is for vertical valve stem in horizontal pipeline.
- The seats can be machined and disks, gears, threads and linkage replaced.
- The stem seal is typically packing which needs to be kept wet to maintain the seal.
- There are tools that can replace the packing though the valve box without having to dig up the valve.
- With its short installation length (DIN 3202 F4), does not occupy a big place.
- Suitable to install actuator and gearbox
- Suitable to use with ground and underground applications.
- Can be operated with extension spindle
- Very low head loss rating.
- Blue fusion bonded epoxy coating in accordance with BS EN 14901.

APPLICATIONS

Metal seated gate valve for use in potable water systems, heating and chilled water, neutral liquids, fire system either above ground or buried service applications.

STANDARDS

Design: DIN 3352, BS 5163, BS EN 1074-2, AWWA C509

End Connection: Flanged EN 1092-2 / ISO 7005-2.

Face to Face: EN 558-1 Series 14 / DIN 3202 F4, EN 558-1 Series 15 / DIN 3202 F5, EN 558-1 Series 3

Test: DIN EN 12266-1

STANDARDS

-15° to +70° C

FACE TO FACE: DIN EN 558-1 SERIES 3

Pressure Rating: PN 10

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN40 - DN1600

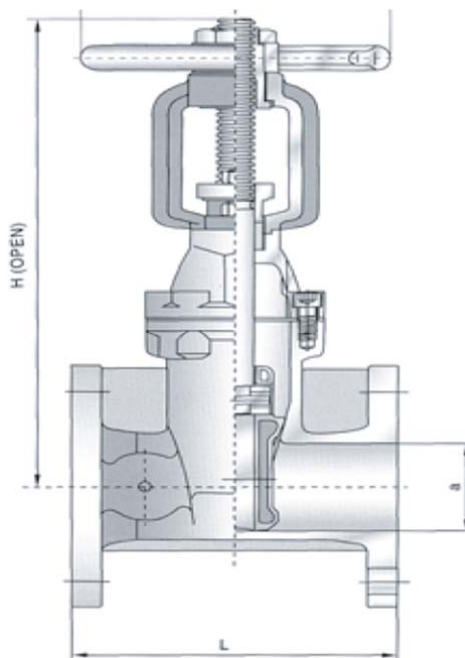
MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Bonnet	GGG 40 / 50
Seat ring on the body	Gunmetal
Seat ring on the wedge	Gunmetal
Stem	Stainless steel 1.4021
Stem nut	Gunmetal
Stem guide bush	Gunmetal
O-rings	EPDM or NBR
Bolts/Nuts	Stainless Steel A2
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE



Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
40	165	150	240	140	8	0.01
50	178	165	255	140	10	0.01
65	190	185	295	160	14	0.02
80	203	200	315	160	18	0.02
100	229	220	345	180	22	0.03
125	254	250	400	200	29	0.04
150	267	285	430	200	35	0.06
200	292	340	525	225	62	0.06
250	330	395	625	280	90	0.10
300	356	445	720	320	200	0.18
350	381	505	820	360	240	0.30
400	406	565	900	360	340	0.40
450	432	615	970	400	420	0.48
500	457	670	1055	500	530	0.72
600	508	780	1240	500	880	1.16
700	610	895	1420	360	1290	1.52
800	660	1015	1640	400	1800	2.25
900	711	1115	1770	500	2340	3.07
1000	811	1230	1890	500	3040	4.00
1200	1120	1455	2230	400	3950	6.60
1400	1120	1675	2950	500	5040	10.8
1600	1200	1915	3290	500	9750	16.0

FACE TO FACE: DIN EN 558-1 SERIES 3

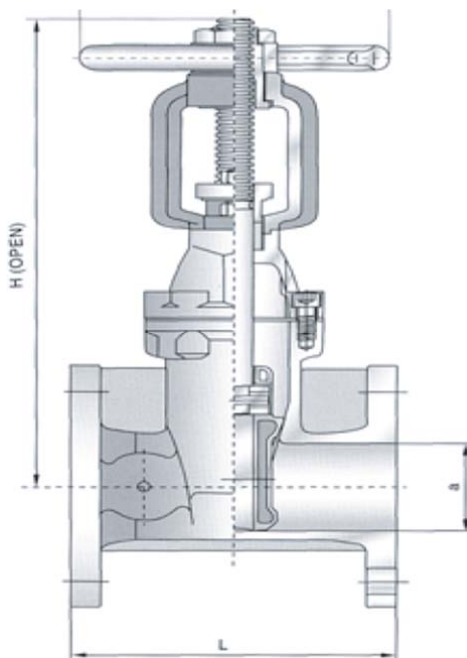
Pressure Rating: PN 16

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN40 - DN1600

MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Bonnet	GGG 40 / 50
Seat ring on the body	Gunmetal
Seat ring on the wedge	Gunmetal
Stem	Stainless steel 1.4021
Stem nut	Gunmetal
Stem guide bush	Gunmetal
O-rings	EPDM or NBR
Bolts/Nuts	Stainless Steel A2
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE

Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
40	165	150	240	140	8	0.01
50	178	165	255	140	10	0.01
65	190	185	295	160	14	0.02
80	203	200	315	160	18	0.02
100	229	220	345	180	22	0.03
125	254	250	400	200	29	0.04
150	267	285	430	200	35	0.06
200	292	340	525	225	62	0.06
250	330	395	625	280	90	0.10
300	356	445	720	320	200	0.18
350	381	505	820	360	240	0.30
400	406	565	900	360	340	0.40
450	432	615	970	400	420	0.48
500	457	670	1055	500	530	0.72
600	508	780	1240	500	880	1.16
700	610	895	1420	360	1290	1.52
800	660	1015	1640	400	1800	2.25
900	711	1115	1770	500	2340	3.07
1000	811	1230	1890	500	3040	4.00
1200	1120	1455	2230	400	3950	6.60
1400	1120	1675	2950	500	5040	10.8
1600	1200	1915	3290	500	9750	16.0

FACE TO FACE: DIN EN 558-1 SERIES 3

Pressure Rating: PN 25

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN40 - DN1000

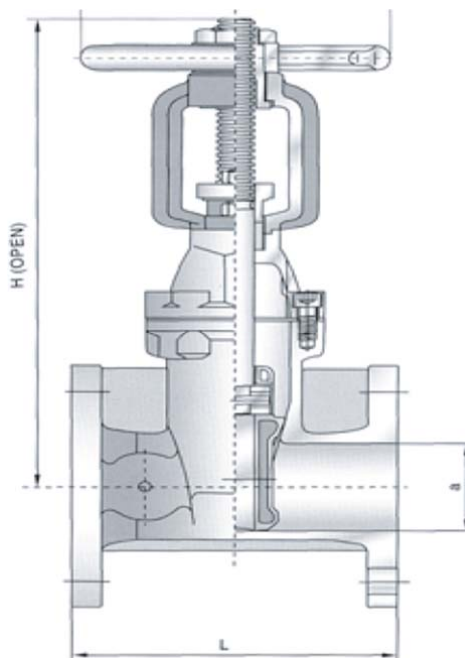
MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Bonnet	GGG 40 / 50
Seat ring on the body	Gunmetal
Seat ring on the wedge	Gunmetal
Stem	Stainless steel 1.4021
Stem nut	Gunmetal
Stem guide bush	Gunmetal
O-rings	EPDM or NBR
Bolts/Nuts	Stainless Steel A2
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE



Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
40	240	150	280	200	21	0.01
50	250	165	290	225	27	0.02
65	270	185	330	280	40	0.03
80	280	200	350	280	45	0.04
100	330	235	400	320	68	0.05
125	360	270	460	360	90	0.06
150	390	300	520	360	120	0.09
200	460	360	630	400	190	0.16
250	530	425	730	500	222	0.22
300	630	485	840	640	370	0.30
350	690	555	940	640	467	0.33
400	750	620	1070	720	650	0.55
500	880	730	1260	800	1,123	0.80
600	1000	845	1480	800	1,685	1.20
700	1130	960	1620	800	2,250	1.70
800	1250	1085	1820	900	3,195	2.40
900	1380	1185	2040	900	4,200	3.20
1000	1500	1320	2200	900	5,000	4.20

DUCTILE IRON

GATE VALVE



FACE TO FACE: DIN EN 558-1 SERIES 14, DIN 3202 F4

Pressure Rating: PN 10

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN40 - DN300

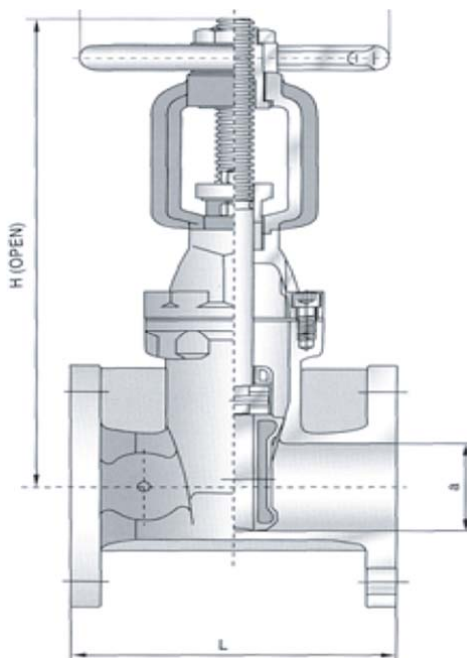
MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Bonnet	GGG 40 / 50
Seat ring on the body	Gunmetal
Seat ring on the wedge	Gunmetal
Stem	Stainless steel 1.4021
Stem nut	Gunmetal
Stem guide bush	Gunmetal
O-rings	EPDM or NBR
Bolts/Nuts	Stainless Steel A2
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE



Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
40	140	150	240	8	0.01	0.01
50	150	165	255	10	0.01	0.01
65	170	185	295	14	0.02	0.02
80	180	200	315	18	0.02	0.02
100	190	220	345	22	0.03	0.03
125	200	250	400	29	0.04	0.04
150	210	285	430	35	0.06	0.06
200	230	340	525	62	0.06	0.06
250	250	395	625	90	0.08	0.10
300	270	445	725	117	0.12	0.18

FACE TO FACE: DIN EN 558-1 SERIES 15, DIN 3201-1

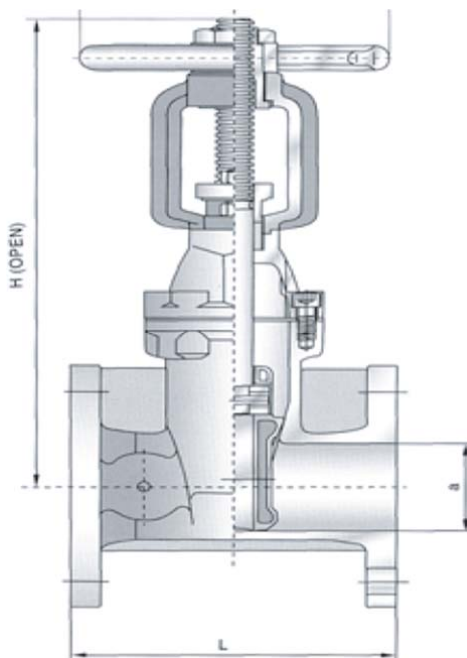
Pressure Rating: PN 10

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN40 - DN1200

MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Bonnet	GGG 40 / 50
Seat ring on the body	Gunmetal
Seat ring on the wedge	Gunmetal
Stem	Stainless steel 1.4021
Stem nut	Gunmetal
Stem guide bush	Gunmetal
O-rings	EPDM or NBR
Bolts/Nuts	Stainless Steel A2
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE

Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
40	240	150	250	180	16	.01
50	250	165	265	180	18	.02
65	270	185	320	225	25	.03
80	280	200	335	225	33	.03
100	300	220	380	280	42	.04
125	325	250	448	320	61	.05
150	350	285	480	320	81	.07
200	400	340	600	360	124	.12
250	450	395	710	400	182	.19
300	500	445	800	500	240	.26
350	550	505	890	500	332	.42
400	600	565	1000	640	465	.56
450	650	615	1100	640	615	.70
500	700	670	1200	720	725	.80
600	800	780	1360	720	1010	1.19
700	900	895	1550	800	1346	1.6
800	1000	1015	1780	800	1836	2.1
900	1100	1115	1960	800	2436	3.0
1000	1200	1230	2150	900	3590	3.8
1200	1400	1455	2520	1000	5260	4.6

DUCTILE IRON

GATE VALVE



FACE TO FACE: DIN EN 558-1 SERIES 15, DIN 3202-1

Pressure Rating: PN 16

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN40 - DN1200

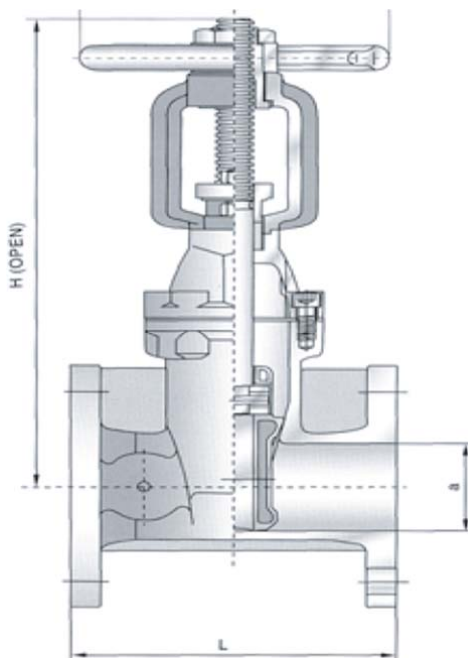
MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Bonnet	GGG 40 / 50
Seat ring on the body	Gunmetal
Seat ring on the wedge	Gunmetal
Stem	Stainless steel 1.4021
Stem nut	Gunmetal
Stem guide bush	Gunmetal
O-rings	EPDM or NBR
Bolts/Nuts	Stainless Steel A2
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE



Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
40	240	150	250	180	16	.01
50	250	165	265	180	18	.02
65	270	185	320	225	25	.03
80	280	200	335	225	33	.03
100	300	220	380	280	42	.04
125	325	250	448	320	61	.05
150	350	285	480	320	81	.07
200	400	340	600	360	124	.12
250	450	405	710	400	182	.19
300	500	460	800	500	240	.26
350	550	520	890	500	332	.42
400	600	580	1000	640	465	.56
450	650	640	1100	640	615	.70
500	700	715	1200	720	725	.80
600	800	840	1360	720	1010	1.19
700	900	910	1550	800	1346	1.6
800	1000	1025	1780	800	1836	2.1
900	1100	1125	1960	800	2436	3.0
1000	1200	1255	2150	900	3590	3.8
1200	1400	1485	2520	1000	5260	4.6

DUCTILE IRON

GATE VALVE

FACE TO FACE: DIN EN 558-1 SERIES 15, DIN 3202-1

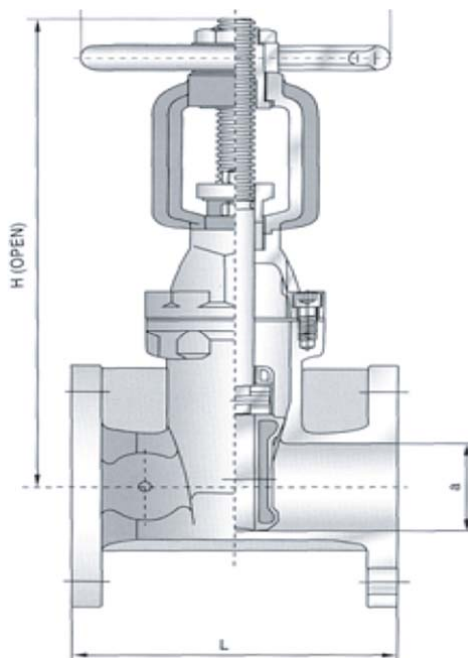
Pressure Rating: PN 25

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN40 - DN500

MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Bonnet	GGG 40 / 50
Seat ring on the body	Gunmetal
Seat ring on the wedge	Gunmetal
Stem	Stainless steel 1.4021
Stem nut	Gunmetal
Stem guide bush	Gunmetal
O-rings	EPDM or NBR
Bolts/Nuts	Stainless Steel A2
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE

Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
40	240	150	250	180	16	.01
50	250	165	265	180	18	.02
65	270	185	320	225	25	.03
80	280	200	335	225	33	.03
100	300	235	380	280	42	.04
125	325	270	448	320	61	.05
150	350	300	480	320	81	.07
200	400	360	600	360	124	.12
250	450	425	710	400	182	.19
300	500	485	800	500	240	.26
350	550	555	890	500	332	.42
400	600	620	1000	640	465	.56
450	650	670	1100	640	615	.70
500	700	730	1200	720	725	.80

FACE TO FACE: DIN 3202-1 F15

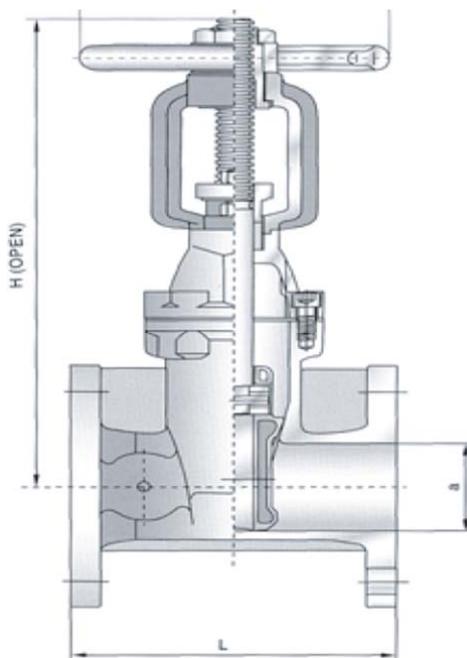
Pressure Rating: PN 10

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN40 - DN1000

MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Bonnet	GGG 40 / 50
Seat ring on the body	Gunmetal
Seat ring on the wedge	Gunmetal
Stem	Stainless steel 1.4021
Stem nut	Gunmetal
Stem guide bush	Gunmetal
O-rings	EPDM or NBR
Bolts/Nuts	Stainless Steel A2
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE

Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
40	240	150	280	200	21	0.01
50	250	165	290	225	27	0.02
65	270	185	330	280	40	0.03
80	280	200	350	280	45	0.04
100	330	220	400	320	68	0.05
125	360	250	460	360	90	0.06
150	390	285	520	360	120	0.09
200	460	340	630	400	190	0.16
250	530	395	730	500	222	0.22
300	630	445	840	640	370	0.03
350	690	505	940	640	467	0.33
400	750	565	1070	720	650	0.55
500	880	670	1260	800	1,123	0.80
600	1000	780	1480	800	1,685	1.20
700	1130	895	1620	800	2,250	1.70
800	1250	1015	1820	900	3,195	2.40
900	1380	1115	2040	900	4,200	3.20
1000	1500	1230	2200	900	5,000	4.20

FACE TO FACE: DIN 3202-1 F15

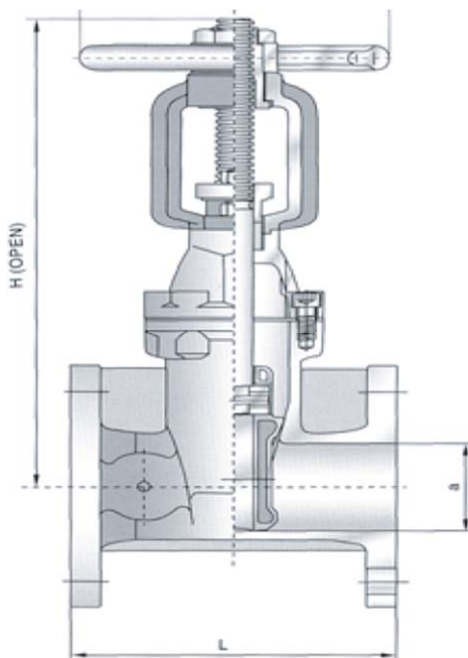
Pressure Rating: PN 16

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN40 - DN1000

MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Bonnet	GGG 40 / 50
Seat ring on the body	Gunmetal
Seat ring on the wedge	Gunmetal
Stem	Stainless steel 1.4021
Stem nut	Gunmetal
Stem guide bush	Gunmetal
O-rings	EPDM or NBR
Bolts/Nuts	Stainless Steel A2
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE

Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
40	240	150	280	200	21	0.01
50	250	165	290	225	27	0.02
65	270	185	330	280	40	0.03
80	280	200	350	280	45	0.04
100	330	220	400	320	68	0.05
125	360	250	460	360	90	0.06
150	390	285	520	360	120	0.09
200	460	340	630	400	190	0.16
250	530	405	730	500	222	0.22
300	630	460	840	640	370	0.03
350	690	520	940	640	467	0.33
400	750	580	1070	720	650	0.55
500	880	715	1260	800	1,123	0.80
600	1000	840	1480	800	1,685	1.20
700	1130	910	1620	800	2,250	1.70
800	1250	1025	1820	900	3,195	2.40
900	1380	1125	2040	900	4,200	3.20
1000	1500	1225	2200	900	5,000	4.20

DUCTILE IRON

GATE VALVE



FACE TO FACE: DIN 3202-1 F15

Pressure Rating: PN 25

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN40 - DN1000

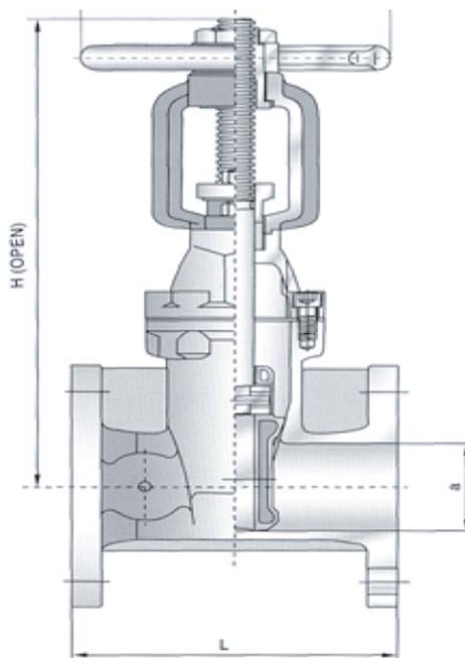
MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Bonnet	GGG 40 / 50
Seat ring on the body	Gunmetal
Seat ring on the wedge	Gunmetal
Stem	Stainless steel 1.4021
Stem nut	Gunmetal
Stem guide bush	Gunmetal
O-rings	EPDM or NBR
Bolts/Nuts	Stainless Steel A2
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE



Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
40	240	150	280	200	21	0.01
50	250	165	290	225	27	0.02
65	270	185	330	280	40	0.03
80	280	200	350	280	45	0.04
100	330	235	400	320	68	0.05
125	360	270	460	360	90	0.06
150	390	300	520	360	120	0.09
200	460	360	630	400	190	0.16
250	530	425	730	500	222	0.22
300	630	485	840	640	370	0.03
350	690	555	940	640	467	0.33
400	750	620	1070	720	650	0.55
500	880	730	1260	800	1,123	0.80
600	1000	845	1480	800	1,685	1.20
700	1130	960	1620	800	2,250	1.70
800	1250	1085	1820	900	3,195	2.40
900	1380	1185	2040	900	4,200	3.20
1000	1500	1320	2200	900	5,000	4.20

DUCTILE IRON

GATE VALVE

FACE TO FACE: DIN 3202-1 F15

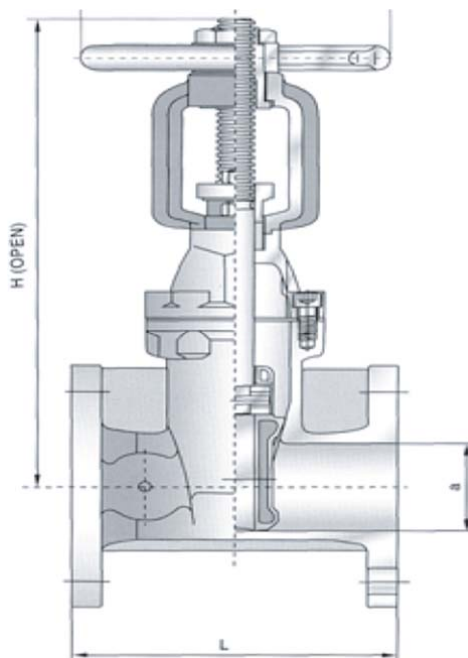
Pressure Rating: PN 40

Flange Drilling: EN 1092-2 / ISO 7005-2.

Size: DN40 - DN400

MATERIALS

Body	GGG 40 / 50
Wedge	GGG 40 / 50 rubber lined
Bonnet	GGG 40 / 50
Seat ring on the body	Gunmetal
Seat ring on the wedge	Gunmetal
Stem	Stainless steel 1.4021
Stem nut	Gunmetal
Stem guide bush	Gunmetal
O-rings	EPDM or NBR
Bolts/Nuts	Stainless Steel A2
Corrosion protection	Epoxy powder coated RAL 5015
Hand wheel	Cast iron, Steel black coated



DUCTILE IRON

GATE VALVE

Size DN (mm)	L (mm)	Flange D (mm)	Dimensions		Weight (kg)	Volume (m3)
			H (mm)	B (mm)		
40	240	150	280	200	21	0.01
50	250	165	290	225	27	0.02
65	270	185	330	280	40	0.03
80	280	200	350	280	45	0.04
100	330	235	400	320	68	0.05
125	360	270	460	360	90	0.06
150	390	300	520	360	120	0.09
200	460	375	630	400	190	0.16
250	530	450	730	500	222	0.22
300	630	515	840	640	370	0.03
350	690	580	940	640	467	0.33
400	750	660	1070	720	650	0.55



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