FINE FLOW

FLUONICS

Lined Composite Plastic

Pipe & Fittings

Lined Composite Plastic Pipe&Fittings

Material Properties

Materials

FRP

Fiber-Reinforced plastic (FRP)

FRP is a composite plastic made of a polymer matrix reinforced with fibers. The types of fiber include glass, carbon, aramid and basalt fibers. The polymers used in fabrication of FRP include epoxy, vinyl ester and polyester thermosetting plastic. Phenol formaldehyde resins are still in use. FRP composites are very attractive to engineering applications in aerospace, automotive, marine and construction industries.

PP+GF
PA+GF

Engineering Plastic

Engineering plastics have unique combinations of properties including heat resistance, mechanical strength, rigidity, chemical stability, self-lubrication and fire safety. They have numerous industrial applications particularly such as in manufacturing gears and skids, in chemical plants and in car industry.

PPS+GF

Super Engineering Plastic

Super engineering plastics have higher resistance to heat, chemicals and wear than engineering plastics. They have advantageous applications particularly in aerospace structures, semiconductor manufacturing equipment, and food and beverage processing machinery.

PFA

Perfluoroalkoxy

PFA (Perfluoroalkoxy) has similar advantageous processing properties to FEP (Fluorinated ethylene propylene), but it has ten times greater capability to withstand repeated bending without fracture and has better resistance to heat (up to 260˚C) than FEP.

PTFE

Polytetrafluoroethylene

PTFE (Polytetrafluoroethylene) is a synthetic fluoropolymer of tetrafluoroethylene. Teflon by Chemours is a well-known brand name of PTFE-based formulas. PTFE has useful properties including slippery surface, high melting point, and high resistance to attacks by various chemicals.

PVDF

Polyvinylidene Fluoride

PVDF (Polyvinylidene fluoride or polyvinylidene difluoride) has been used in special applications which require highest purity as well as high resistance to solvents, acids and hydrocarbons.

PIPE & FITTINGS

Pipe

Features

- Lined pipe for chemically corrosive media
- Plastic-metal hybrid structure
- FRP Pipe : filament winding method
- Pipe-Flange Connections : screw shaped structure

Technical specifications

Body type	One Lap-joint flange, One Fixed Flange
Available size	DN20 – DN200
Face to face	Max. 6000 mm
End connection	DIN 2501, PN16 | ANSI B16.5, Class 150 | JIS B 2220, 10K
Tightness check	ASTM F 1545
Pipe material	PIPE : FRP | FLANGE, STUB END : PPG or PPSG

Fittings

Features

- Lined fittings for chemically corrosive media
- Plastic-metal hybrid structure

Technical specifications

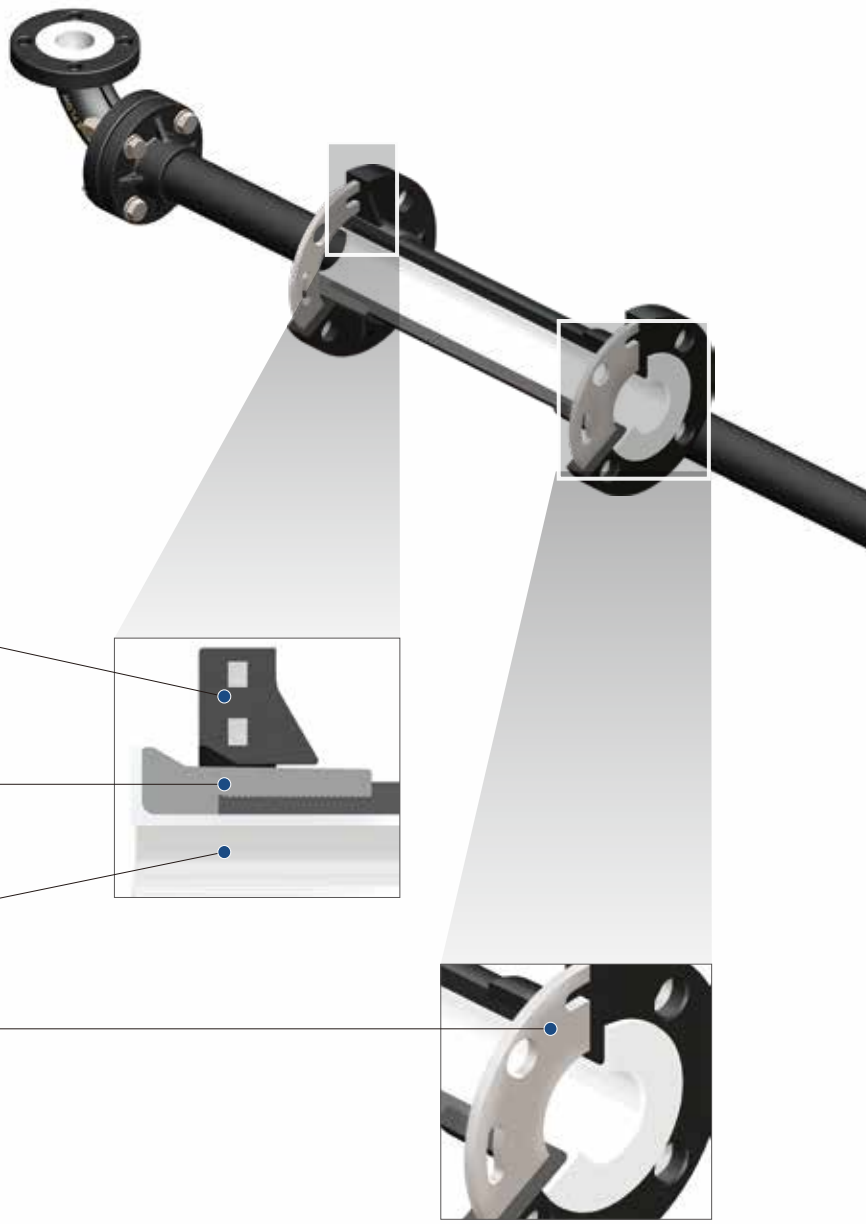
Body type	All Fixed Flange
Available size	DN20 – DN200
Face to face	ASME B16.5
End connection	DIN 2501, PN16 | ANSI B16.5, Class 150 | JIS B 2220, 10K
Tightness check	ASTM F 1545
Fitting material	BODY : PPG or PPSG with PFA

Applications

- Chemical process
- Water desalination
- Water and waste water technology
- Shipbuilding
- Semiconductor manufacturing
- Hazardous services (Acetic Acid, Sulfuric Acid etc.)

Pipe & Fittings has advanced Structure
(Plastic – Metal Hybrid Technology)
FINE FLOW's pipes & fittings with innovative Plastic-metal hybrid structure have not only provided longer durability and service life but also been suitable to more aggressive environment than ordinary plastic pipes and fittings.

PIPE



Features & Benefits

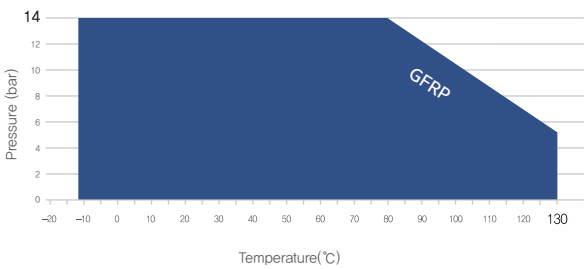
Flange End Connections
- Lap joint : Easy installation
- Class : ANSI 150#, JIS 10K, DIN PN16

Screw Shaped Structure
Ensures stability of jointing part.

Liner Materials Available
PFA, PTFE, PVDF

Advanced Structure(Plastic - Metal Hybrid Technology)
The structure enhances durability and service life even in more aggressive environment.

Pressure-Temperature Chart for Pipe



| FITTING

Features & Benefits

Liner Materials Available

PFA, PTFE, PVDF

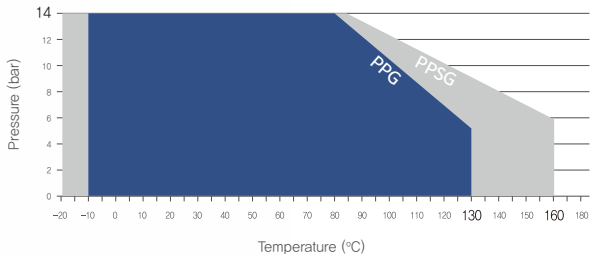
Flange End Connections

- Lap joint : Easy installation
- Class : ANSI 150#, JIS 10K, DIN PN16

Advanced Structure(Plastic – Metal Hybrid Technology)

The structure enhances durability and service life even in more aggressive environment.

Pressure–Temperature Chart for Fittings



Flange Bolt Torques

Size (DN)	Max. Recommended Flange Torque(N.m)
15	25
20	25
25	30
40	35
50	35
80	45
100	45
150	70
200	90

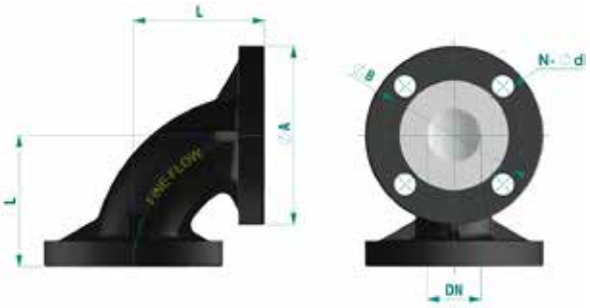
Dimension

Pipe

Unit : mm

DN	ØA			ØB			N-Ød			L	Ref.
	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN		
20	99	105		70	75		4-16	4-15		300 ~ 6000	B
25	108	125	115	79.2	90	85	4-16	4-19	4-14	300 ~ 6000	C
40	127	140	150	98.5	105	110	4-16	4-19	4-18	300 ~ 6000	D
50	155		165	120		125	4-19		4-18	300 ~ 6000	E
65	178		185	140		145	4-19		4-18	300 ~ 6000	F
80	190.5	185	200	152.4	150	160	4-19	8-19	8-18	300 ~ 6000	G
100	229	210	220	190.5	175	180	8-19	8-19	8-18	500 ~ 6000	H
150	285			240			8-23			500 ~ 6000	J
200	343	330	340	298.5	290	295	8-22	12-23	12-23	500 ~ 6000	K

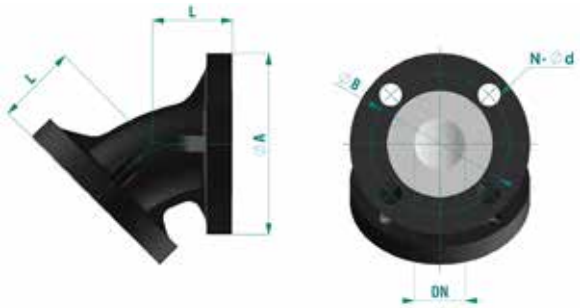
90° ELBOW



Unit : mm

DN	ØA			ØB			N-Ød			L	Ref.
	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN		
20	99	105		70	75		4-16	4-15		80	B
25	108	125	115	79.2	90	85	4-16	4-19	4-14	89	C
40	127	140	150	98.5	105	110	4-16	4-19	4-18	102	D
50	155		165	120		125	4-19		4-18	114	E
65	178		185	140		145	4-19		4-18	127	F
80	190.5	185	200	152.4	150	160	4-19	8-19	8-18	140	G
100	229	210	220	190.5	175	180	8-19	8-19	8-18	165	H
150	285			240			8-23			203	J
200	343	330	340	298.5	290	295	8-22	12-23	12-23	229	K

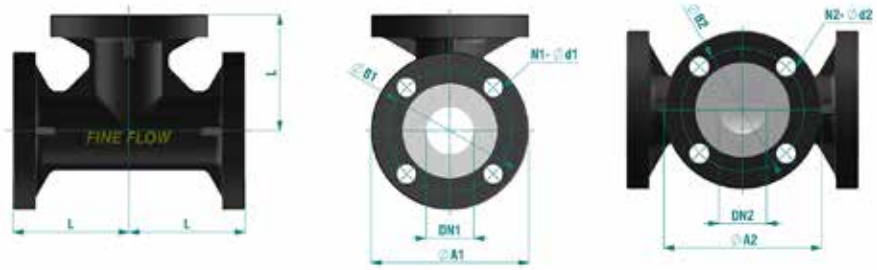
45° ELBOW



Unit : mm

DN	ØA			ØB			N-Ød			L	Ref.
	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN		
25	108	125	115	79.2	90	85	4-16	4-19	4-14	45	C
40	127	140	150	98.5	105	110	4-16	4-19	4-18	57	D
50	155		165	120		125	4-19		4-18	64	E
80	190.5	185	200	152.4	150	160	4-19	8-19	8-18	76	G
100	229	210	220	190.5	175	180	8-19	8-19	8-18	102	H
150	285			240			8-23			127	J
200	343	330	340	298.5	290	295	8-22	12-23	12-23	140	K

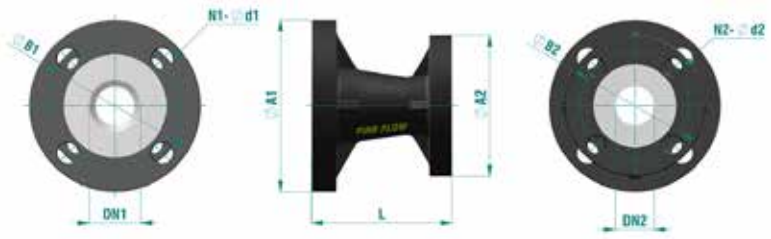
Tee (Equal, Reducing)



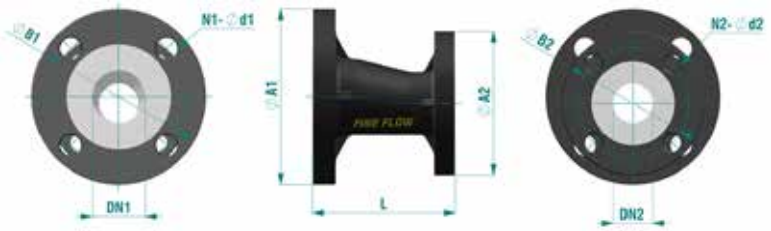
Unit : mm

DN1	DN2	ØA1			ØB1			N1-Ød1			ØA2			ØB2			N2-Ød2			L	Ref.
		ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN		
20	20	99	105		70	75		4-16	4-15		99	105		70	75		4-16	4-15		80	B
25	20	108	125	115	79.2	90	85	4-16	4-19	4-14	99	105		70	75		4-16	4-15		89	CB
	25										108	125	115	79.2	90	85	4-16	4-19	4-14		C
40	20	127	140	150	98.5	105	110	4-16	4-19	4-18	99	105		70	75		4-16	4-15		102	DB
	25										108	125	115	79.2	90	85	4-16	4-19	4-14		DC
	40										127	140	150	98.5	105	110	4-16	4-19	4-18		D
50	20	155		165	120		125	4-19		4-18	99	105		70	75		4-16	4-15		114	EB
	25										108	125	115	79.2	90	85	4-16	4-19	4-14		EC
	40										127	140	150	98.5	105	110	4-16	4-19	4-18		ED
	50										155		165	120		125	4-19		4-18		E
65	40	178		185	140		145	4-19		4-18	127	140	150	98.5	105	110	4-16	4-19	4-18	127	FD
	50										155		165	120		125	4-19		4-18		FE
	65										178		185	140		145	4-19		4-18		F
80	40	190.5	185	200	152.4	150	160	4-19	8-19	8-18	127	140	150	98.5	105	110	4-16	4-19	4-18	140	GD
	50										155		165	120		125	4-19		4-18		GE
	80										190.5	185	200	152.4	150	160	4-19	8-19	8-18		G
100	40	229	210	220	190.5	175	180	8-19	8-19	8-18	127	140	150	98.5	105	110	4-16	4-19	4-18	165	HD
	50										155		165	120		125	4-19		4-18		HE
	80										190.5	185	200	152.4	150	160	4-19	8-19	8-18		HG
	100										229	210	220	190.5	175	180	8-19	8-19	8-18		H
150	80	285			240			8-23			190.5	185	200	152.4	150	160	4-19	8-19	8-18	203	JG
	100										229	210	220	190.5	175	180	8-19	8-19	8-18		JH
	150											285			240			8-23			J
200	100	343	330	340	298.5	290	295	8-22	12-23	12-23	229	210	220	190.5	175	180	8-19	8-19	8-18	229	KH
	150											285			240			8-23			KJ
	200										343	330	340	298.5	290	295	8-22	12-23	12-23		K

Reducer (Concentric, Eccentric)



| Concentric Reducer

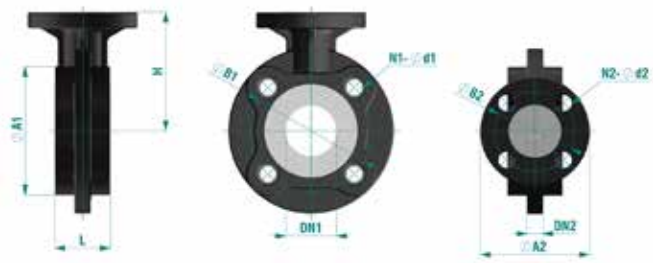


| Eccentric Reducer

Unit : mm

DN1	DN2	ØA1			ØB1			N1-Ød1			ØA2			ØB2			N2-Ød2			L	Ref.
		ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN		
25	20	108	125	115	79.2	90	85	4-16	4-19	4-14	99	105		70	75		4-16	4-15		100	CB
40	20	127	140	150	98.5	105	110	4-16	4-19	4-18	99	105		70	75		4-16	4-15		114	DB
	25										108	125	115	79.2	90	85	4-16	4-19	4-14		DC
50	20	155		165	120		125	4-19		4-18	99	105		70	75		4-16	4-15		127	EB
	25										108	125	115	79.2	90	85	4-16	4-19	4-14		EC
	40										127	140	150	98.5	105	110	4-16	4-19	4-18		ED
80	40	190.5	185	200	152.4	150	160	4-19	8-19	8-18	127	140	150	98.5	105	110	4-16	4-19	4-18	152	GD
	50										155		165	120		125	4-19		4-18		GE
100	40	229	210	220	190.5	175	180	8-19	8-19	8-18	127	140	150	98.5	105	110	4-16	4-19	4-18	178	HD
	50										155		165	120		125	4-19		4-18		HE
	80										190.5	185	200	152.4	150	160	4-19	8-19	8-18		HG
150	80	285			240			8-23			190.5	185	200	152.4	150	160	4-19	8-19	8-18	229	JG
	100										229	210	220	190.5	175	180	8-19	8-19	8-18		JH
200	100	343	330	340	298.5	290	295	8-22	12-23	12-23	229	210	220	190.5	175	180	8-19	8-19	8-18	279	KH
	150											285			240			8-23			KJ

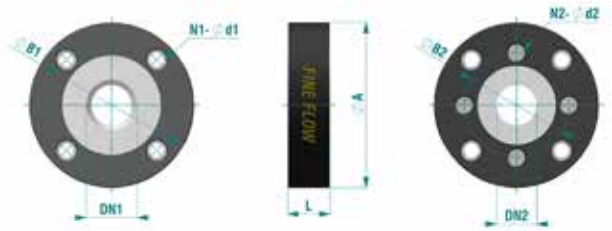
Instrument Tee



Unit : mm

DN1	DN2	ØA1			ØB1			N1-Ød1			ØA2			ØB2			N2-Ød2			L	Ref.
		ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN		
25	25	108	125	115	79.2	90	85	4-16	4-19	4-14										89	CC
40	25	127	140	150	98.5	105	110	4-16	4-19	4-18										102	DC
50	25	155		165	120		125	4-19		4-18										114	EC
80	25	190.5	185	200	152.4	150	160	4-19	8-19	8-18	108	125	115	79.2	90	85	4-16	4-19	4-14	140	GC
100	25	229	210	220	190.5	175	180	8-19	8-19	8-18										165	HC
150	25		285			240			8-23											203	JC
200	25	343	330	340	298.5	290	295	8-22	12-23	12-23										229	KC

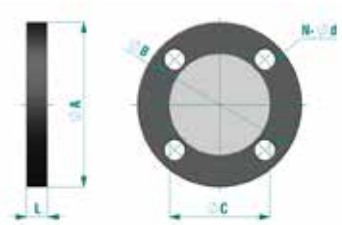
Reducing Flange



Unit : mm

DN1	DN2	ØA1			ØB1			N1-Ød1			ØB2			N2-Ød2			L	Ref.
		ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN		
25	20	108	125	115	79.2	90	85	4-1/2	4-M12	4-M12	70	75		4-1/2	4-M12	4-M12	40	CB
40	20	127	140	150	98.5	105	110	4-1/2	4-M16	4-M16	70	75		4-1/2	4-M12	4-M12	40	DB
	25										79.2	90	85	4-1/2	4-M16	4-M12	40	DC
50	20	155		165	120		125	4-5/8	4-M16	4-M16	70	75		4-1/2	4-M12	4-M12	40	EB
	25										79.2	90	85	4-1/2	4-M16	4-M12	40	EC
	40										98.5	105	110	4-1/2	4-M16	4-M16	40	ED
80	40	190.5	185	200	152.4	150	160	4-5/8	8-M16	8-M16	98.5	105	110	4-1/2	4-M16	4-M16	40	GD
	50										120		125	4-5/8	4-M16	4-M16	40	GE
100	40	229	210	220	190.5	175	180	8-5/8	8-M16	8-M16	98.5	105	110	4-1/2	4-M16	4-M16	40	HD
	50										120		125	4-5/8	4-M16	4-M16	40	HE
	80										152.4	150	160	4-5/8	8-M16	8-M16	40	HG
150	80		285			240		8-3/4	8-M20	8-M20	152.4	150	160	4-5/8	8-M16	8-M16	50	JG
	100										190.5	175	180	8-5/8	8-M16	8-M16	50	JH
200	100	343	330	340	298.5	290	295	8-3/4	12-M20	12-M20	190.5	175	180	8-5/8	8-M16	8-M16	50	KH
	150											240		8-3/4	8-M20	8-M20	50	KJ

Blind Flange



Unit : mm

DN	ØA			ØB			N–Ød			ØC	L	Ref.
	ANSI	JIS	DIN	ANSI	JIS	DIN	ANSI	JIS	DIN			
25	108	125	115	79.2	90	85	4–16	4–19	4–14	51	18	C
40	127	140	150	98.5	105	110	4–16	4–19	4–18	74	20	D
50	155		165	120		125	4–19		4–18	93	22	E
80	190.5	185	200	152.4	150	160	4–19	8–19	8–18	125	24	G
100	229	210	220	190.5	175	180	8–19	8–19	8–18	150	24	H
150	285			240			8–23			210	26	J
200	343	330	340	298.5	290	295	8–22	12–23	12–23	260	29	K

Ordering information

Type	Ref.
PIPE	P
90˚ ELBOW	90E
45˚ ELBOW	45E
EQUAL TEE	ET
REDUCING TEE	RT

Type	Ref.
CONCENTRIC REDUCER	CR
ECCENTRIC REDUCER	ER
INSTRUMENT TEE	IT
REDUCING FLANGE	RF
BLIND FLANGE	BF

Body material	Ref.
FRP (PIPE)	F
PPG (FITTING)	P
PPSG (FITTING)	S

Standard	Ref.
ANSI 150lbs	A
DIN PN 16	16
JIS 10k	J

Order example	90E	P	A	C
Type	90E			
Body material		P		
Standard			A	
Size				C

High Performance and Creative Technology Company

FLUONICS

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