GRP

Glass Reinforced Polyester Pipes

Product Catologue

AKBOR®

PIPE INDUSTRY and TRADE INC

"we gave direction to water..."

www.akbor.com.tr

AKBOR®

"We Gave Direction To Water..."

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Foreword

AKBOR Pipe Industry and Trade Company is located in the industrial zone of Aksaray, Turkey, with a closed area of 7.000 m^2 and open area of 60.000 m^2.

Key staff of AKBOR including production, quality and planning technical personnel are the pioneers of GRP pipes design and manufacturing in Turkey.

We manufacture GRP pipes by using continuous filament superwinding process on automatic machinery controlled by the latest technology equipment including high performance PLC and HMI's.

Our standard manufacturing ranges of GRP pipes and fittings are from 300 mm to 4200 mm diameter and up to 40 bars pressure.

We have acquired ISO 9001 quality management certificate from AFAQ-AFNOR International and ISO 14000 for marketing, sales, manufacturing and testing of GRP pipes and connecting parts. AKBOR GRP pipes are designed, manufactured and tested according to AWWA and ASTM standards and meet specifications of BSI, DIN, ISO, EN and TSE standards.

AKBOR quality policy is to insure the maximum quality work by supporting the customer from the design phase up to the commissioning including installation and supervision of the GRP pipes.

AKBOR GRP pipes are manufactured using high technology systems. Life of GRP pipes is over 50 years and the pipes are maintenance free

general properties

General Properties

Typical technical properties and related advantages of GRP pipes can be summarized as follows.

Properties	Advantages
Non-metallic material, inert chemically resistant	Long effective service life- 50 years. No need for expensive cathodic protection systems. No need for expensive internal and external coatings. Particularly low maintenance costs.
The GRP couplings are chemically resistant and watertight	Easy to assemble- saves time. Effective sealing under pressure and vacuum. Coupling enabling angular deflection, allowing change of direction without requiring additional fittings
Low weight (about ¼ of a steel pipe and 1/10 of a concrete pipe)	Quick and easy installation. There is no need for heavy equipment to transport pipes. Cheaper transportation
Long pipe sections	Few connections- very fast installation
Excellent inner smoothness	High Hysen-Willams factor – significant energy savings. Smooth inner surface provides excellent hydraulic properties, unchanged throughout its working life. The energy savings in time are equivalent to the purchase cost of the pipe.
The pipe's physical properties comply with international standards	High – quality product

Product Range

AKBOR Continuous Filament Superwinding Technologies produce pipes and fittings in the following ranges;

Lengths	0,3 m to 15 m
Diameter Range (DN)	300 mm to 4200 mm,
Pressure Classes (PN)	1 bar to 40 bar
Stiffness Classes (SN)	2500 N/m^2 to 10000 N/m^2

Applications

Due to its long life, GRP pipes are preferred in the following applications:

- Main pipes and branch lines for potable water distribution systems.
- Pipes for sewage systems.
- Pipes for irrigation systems.
- Pipes for waste water systems.
- Pipes for hydraulic-electric power stations systems.
- Pipes for cooling systems of power stations.
- Pipes for submarine systems.
- Pipes for systems in chemical plants.

With the proven semi and full automatic system, AKBOR produces GRP pipes and fittings complying with international standards.

continuous filament winding technology

Raw Materials

Raw materials are provided to AKBOR according to its related Quality Control System certificates. All the raw materials are subjected to sample tests before use, including visual and packaging tests which are stipulated in the international standards.

Resins

Resins, classified in to three groups which are ortophtalic, isophtalic and bisphonolic are high grade thermosetting types depending on their applications. Organic Peroxide is usally used for curing the resins.

Fiber Glass

Fiber Glass shall be compatible with the impregnating resins and is used for improving the mechanical properties of the GRP pipes. Fiber glass is calsified into five groups; hoop, chop, surface mate, woven roving, chopped strand mat.

Silica Sand

Silica sand is an inert filling material used for improving the stiffness of the pipes. It is a cost effective material.

Other Raw Materials

Organic peroxide, styrene, cobalt, polyester films are also used as complementary materials.

Continuous Filament Winding Process

In order to keep the quality of GRP pipes within the requirements of related international ASTM and AWWA standards, it is necessary to control perfectly all the process parameters. The latest advanced technology and control system available in the market of manufacturing GRP pipes are the Continious Filament Superwinding Process developed and used by AKBOR. The PDI data such as diameter, stiffness and pressure class are entered manually by the Operator.

The manufacturing of GRP pipe is carried out through a mandrel formed by winding a continuous steel band over a horizontal beam provided with supporting discs sized according to the diameter of the required pipe. The steel band moves in the axial way sliding over the ball bearings inserted in beam grooves. At the end of the mandrel, the steel band is guided by exit head into the mandrel inner tube, which supports the exit head. On the opposite end of the mandrel near the cam, the steel band is wound on the mandrel again. In this way the steel band forms a smooth surface mandrel with advancing in the axial direction.

The glass fiber laminate is applied onto the moving mandrel according to the following procedure.

Firstly a polyester film is wound on the mandrel, followed by a surfacing mat, both of them are supported by proper winders.

Glass roving together with chopped glass, sand aggregate, polyester resin are applied simultaneously on the proper mandrel positions according to GRP pipe design specifications. At the end, a layer of surfacing mat is applied.

According to the process philosophy, the layer applied next to the steel tape provides the required chemical resistance (inner layer), while the material supplied over the liner layer represents the mechanical resistant outer layer.

Following curing phase the GRP pipe is cut to the preset length and conveyed by runout table to calibration/chamfering, hydro test and coupling stations.

Our values; customer-focused high product quality, continuous innovations, environmental consciousness, occupational health and safety, continuous training and improvement of our employees, mutual respect and confidence, effective team work supported by research department

quality policy

Our Mission

- Manufacturing high quality GRP pipes in conformity with international standard and raising client satisfaction to an optimum level.
- Ensuring the profit and right of our shareholders, employees and clients.
- Creating new job opportunities by investing sustainable projects.
- Training and investing Research and Development (R&D) with the idea of continuous innovation.
- Being sensitive to environmental issues.

Our Vision

Becoming a Leader Company in the world of GRP pipes.



Total Quality Management

All the phases of products starting from acceptance of raw materials to site supervision of pipe installation must be controlled with great care, keeping products quality at high level continuously.

AKBOR uses the latest advanced technology and control system available in the market of GRP pipe which is the continuous filament superwinding process.



Performance Standarts

AKBOR GRP pipes and fittings are manufactured in conformity with all related ASTM, AWWA and TSE standards.

ASTM

ASTM has issued different standards covering all type of GRP pipes. The standards are applicable to GRP pipes with diameters from 300 mm to 4200 mm:

ASTM Standard 3517	GRP pipes and joining systems used in both above ground and underground water systems including service, distribution piping and transmission piping systems.
ASTM Standard 3262	GRP pipes conveying sanitary sewage, storm water, and some industrial wastes by gravity flow.
ASTM Standard 3754	GRP pipes used in pressure systems conveying sanitary sewage, storm water, and many industrial wastes, and corrosive fluids.

AWWA C950

Manufacturing GRP pipes conveying water under pressure.

BSI, DIN, ISO, EN, GOST R and TSE Standards

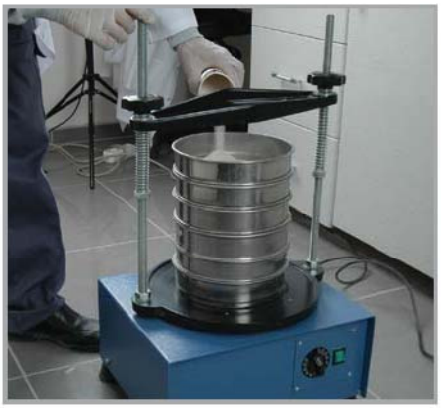
AKBOR GRP Pipes conforms to BS and DIN Standards. We have also acquired Turkish TS 4355 Standards and ISO 14001 quality certificate from Turkish Standards Institute. AKBOR take preventive measures for environmental pollution, reduce wastes to minimum levels, encourage recycling and dispose of non-recyclable wastes.

Laboratory

Acceptance tests of the raw materials, the tests of the product in process and the tests of finished products are performed in accordance with the Quality Assurance Program of AKBOR and in conformity to the requirements of ISO 9001 and ISO 14001.

Raw Material Acceptance Tests

- Viscosity, gel time, reactivity, density, barcoll, and wet time of resin,
- Particles dimension, humidity loss, firing loss and wet time of silica sand,
- Tex control, humidity measurement and firing loss test of fiber glass,
- Auxiliary materials tests including gasket tests are made in conformity to AKBOR Quality Assurance Plan.

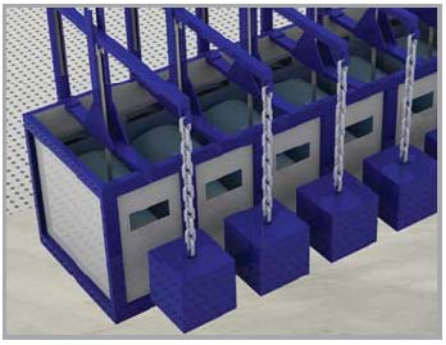




Process Control Tests

Set-up control, mandrel diameter control, curing temperature control and periodic resin gel time, visual control are routine control tests for each pipe in AKBOR.


Product Control Tests

- Axial and circumferencial tensile strengths and stiffness tests,
- Pipe barcoll test,
- Pipe ID/OD diameters, thickness and length measurements,
- Pipe pressure tests,
- Coupling pressure tests,
- Impact load withstand test
- Long term tests are made in conformity to international standards.



The dimension of AKBOR GRP pipes and fittings ranges meet the requirement of the local and international market.

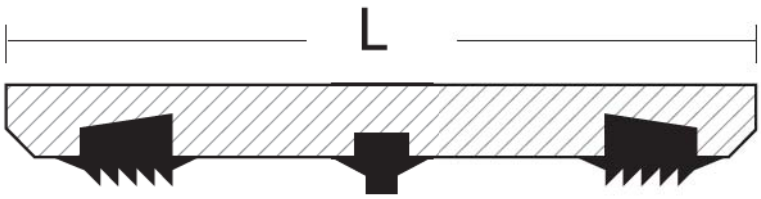
technical data

Manufacturing Range of GRP Pipes

Standards manufacturing ranges of AKBOR GRP Pipes and Fittings are given in below. Intermediate diameter can be manufactured upon customer request.

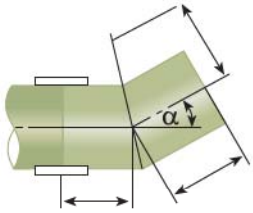
Nominal Diameter (mm)	Nominal Diameter (inch)	Outside Diameter Min (mm)	Outside Diameter Max (mm)
300	12"	323,6	324,6
350	14"	375,6	376,6
400	16"	426,5	427,5
450	18"	477,3	478,3
500	20"	529,2	530,2
600	24"	616,1	617,1
700	28"	718,1	719,1
800	32"	820,1	821,1
900	36"	923,1	924,1
1000	40"	1024,2	1025,2
1100	44"	1126,1	1127,1
1200	48"	1228,1	1229,1
1300	52"	1330,2	1331,2
1400	56"	1432,2	1433,2
1500	60"	1534,2	1535,2
1600	64"	1636,2	1637,2
1700	68"	1738,2	1739,2
1800	72"	1840,1	1841,1
1900	76"	1942,2	1943,2
2000	80"	2044,2	2045,2
2100	84"	2146,1	2147,1
2200	88"	2248,2	2249,2
2300	92"	2350,1	2351,1
2400	96"	2452,2	2453,2
2500	100"	2553,8	2554,8
2600	104"	2655,2	2656,2

GRP Couplings

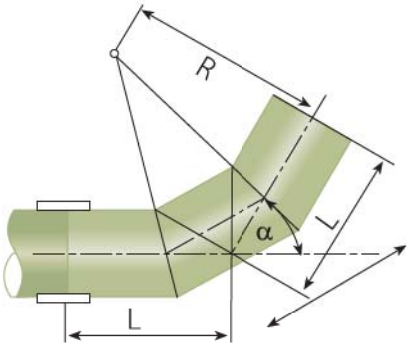


Nominal Diameter (mm)	Coupling Width L (mm)	CTP Coupling Outside Diameter (mm)					
		PN:6	PN:10	PN:16	PN:20	PN:25	PN:32
300	270	367,2	368,2	367,2	385,2	385,2	390,2
350	270	419,2	420,2	422,2	432,2	432,2	437,2
400	270	469,2	471,2	473,2	483,2	483,2	484,2
450	270	520,2	522,2	524,2	534,2	534,2	534,2
500	270	572,2	574,2	576,2	586,2	586,2	586,2
600	330	665,2	667,2	669,2	679,2	679,2	679,2
700	330	768,2	770,2	774,2	784,2	784,2	792,2
800	330	870,2	873,2	879,2	889,2	889,2	909,2
900	330	972,2	977,2	983,2	993,2	1000,2	1020,2
1000	330	1075,2	1080,2	1087,2	1097,2	1109,2	1128,2
1100	330	1177,2	1182,2	1189,2	1198,2	1211,2	1231,2
1200	330	1280,2	1285,2	1292,2	1301,2	1314,2	1334,2
1300	330	1382,1	1387,1	1394,1	1403,1	1416,1	1436,1
1400	330	1485,2	1490,2	1497,2	1506,2	1519,2	1539,2
1500	330	1587,1	1592,1	1599,1	1608,1	1621,1	1641,1
1600	330	1689,2	1694,2	1701,2	1710,2	1723,2	1743,2
1700	330	1792,1	1797,1	1804,1	1813,1	1826,1	1846,1
1800	330	1894,2	1899,2	1906,2	1915,2	1928,2	1948,2
1900	330	1996,5	2001,5	2008,5	2017,5	2030,5	2050,5
2000	330	2099,2	2104,2	2111,2	2120,2	2133,2	2153,2
2100	330	2201,0	2206,0	2213,0	2222,0	2235,0	2255,0
2200	330	2303,6	2308,6	2315,6	2324,6	2337,6	2357,6
2300	330	2406,0	2411,0	2418,0	2427,0	2440,0	2460,0
2400	330	2508,2	2513,2	2520,2	2529,2	2542,2	2562,2
2500	330	2626,0	2631,0	2638,0	2647,0	2660,0	2680,0
2600	330	2729,6	2734,6	2741,6	2750,6	2763,6	2783,6

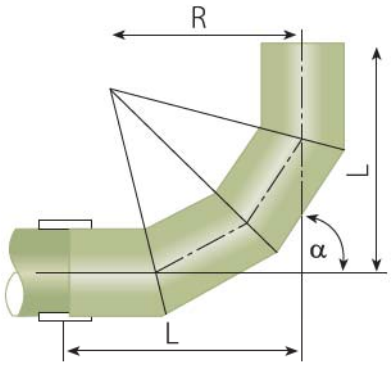
Elbows



α≤30°



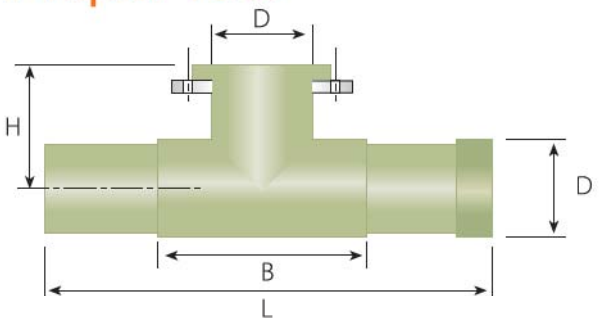
30°<α≤60°

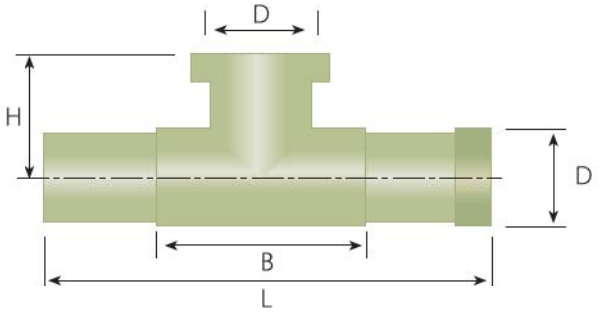


60°<α≤90°

DN	R	11,25° L	22,50° L	30° L	45° L	60° L	90° L
300	450,2	275,1	300,2	325,2	400,1	450,2	650,1
350	525,2	275,1	300,2	325,2	425,1	500,2	700,1
400	600,2	325,1	350,2	375,2	475,1	550,2	800,1
450	675,2	325,1	375,2	400,2	525,1	625,2	950,1
500	750,2	325,1	375,2	400,2	525,1	625,2	950,1
600	900,2	325,1	400,2	450,2	600,1	700,2	1075,1
700	1050,2	400,1	425,2	475,2	650,1	775,2	1200,1
800	1170,2	400,1	450,2	525,2	700,1	850,2	1350,1
900	1200,2	400,1	475,2	550,2	725,1	875,2	1400,1
1000	1270,2	425,1	500,2	575,2	750,1	925,2	1450,1
1100	1320,2	475,1	525,2	600,2	800,1	1000,2	1550,1
1200	1370,2	475,1	525,2	600,2	825,1	1025,2	1600,1
1300	1420,2	500,1	550,2	650,2	875,1	1075,2	1650,1
1400	1470,2	500,1	575,2	675,2	900,1	1100,2	1700,1
1500	1570,2	550,1	650,2	725,2	1025,1	1250,2	1900,1
1600	1670,2	600,1	675,2	800,2	1100,1	1300,2	2000,1
1700	1770,2	675,1	775,2	850,2	1200,1	1400,2	2200,1
1800	1870,2	675,1	775,2	850,2	1200,1	1400,2	2200,1
1900	1970,2	700,1	800,2	900,2	1300,1	1500,2	2400,1
2000	2070,2	700,1	800,2	900,2	1300,1	1500,2	2400,1
2100	2170,2	775,1	875,2	950,2	1400,1	1600,2	2600,1
2200	2270,2	775,1	875,2	950,2	1400,1	1600,2	2600,1
2300	2370,2	800,1	900,2	1000,2	1500,1	1700,2	2800,1
2400	2470,2	800,1	900,2	1000,2	1500,1	1700,2	2800,1
2500	2600,2	1000,1	1100,2	1200,2	1700,1	1900,2	3000,1
2600	2700,2	1000,1	1100,2	1200,2	1700,1	1900,2	3000,1

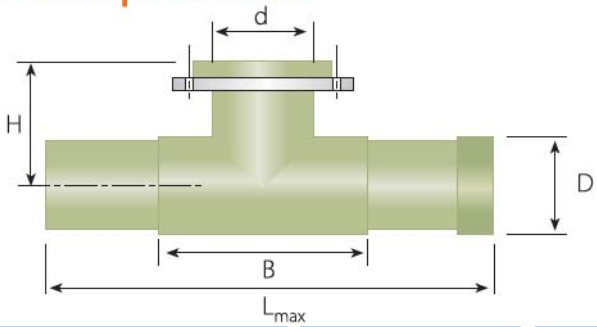
Equal Tees

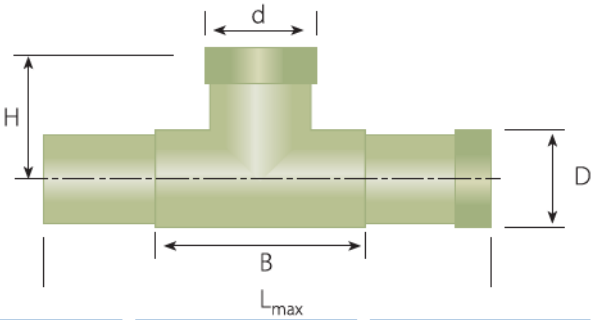




Nominal Diameter (mm)	B (mm)	L (mm)	H (mm)
300	600	1200	550
350	700	1300	575
400	800	1400	600
450	900	1500	625
500	1000	1600	650
600	1200	1800	800
650	1300	1900	825
700	1400	2000	850
800	1600	2200	900
900	1800	2400	950
1000	2000	2600	1000
1100	2200	2800	1300
1200	2400	3000	1350
1300	2600	3200	1400
1400	2800	3400	1450
1500	3000	3600	1500
1600	3200	3800	1550
1700	3400	4200	1650
1800	3600	4200	1650
1900	3800	4600	2000
2000	4000	4600	2000
2100	4200	5000	2100
2200	4400	5000	2100
2300	4600	5400	2200
2400	4800	5400	2200
2500	5000	5800	2400
2600	5200	5800	2400

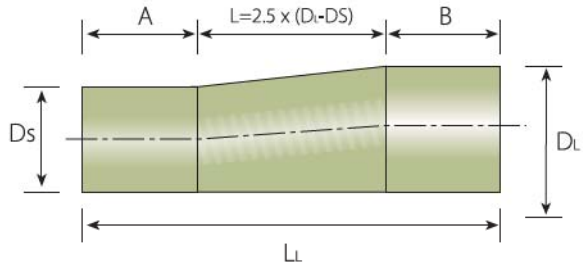
Inequal Tees



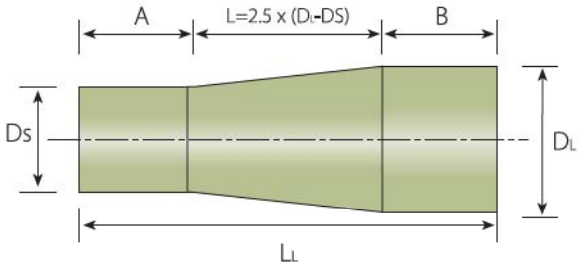


Nominal Diameter (mm)	d (mm)	B (mm)	L (mm)	H (mm)
300	50-250	2d	1100	550
350	50-300	2d	1200	575
400	50-350	2d	1300	600
450	50-400	2d	1400	625
500	50-450	2d	1500	650
600	50-500	2d	1600	800
650	50-600	2d	1700	825
700	50-650	2d	1800	850
800	50-700	2d	2000	900
900	50-800	2d	2200	950
1000	50-900	2d	2400	1000
1100	50-1000	2d	2600	1300
1200	50-1100	2d	2800	1350
1300	50-1200	2d	3000	1400
1400	50-1300	2d	3200	1450
1500	50-1400	2d	3400	1500
1600	50-1500	2d	3600	1550
1700	50-1600	2d	4000	1650
1800	50-1700	2d	4000	1650
1900	50-1800	2d	4400	2000
2000	50-1900	2d	4400	2000
2100	50-2000	2d	4800	2100
2200	50-2100	2d	4800	2100
2300	50-2200	2d	5200	2200
2400	50-2300	2d	5200	2200
2500	50-2400	2d	5600	2400
2600	50-2500	2d	5600	2400

Reducers



Reducer (Eccentric)

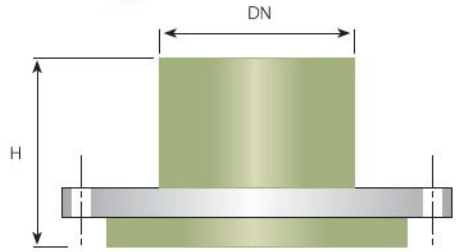


Reducer (Concentric)

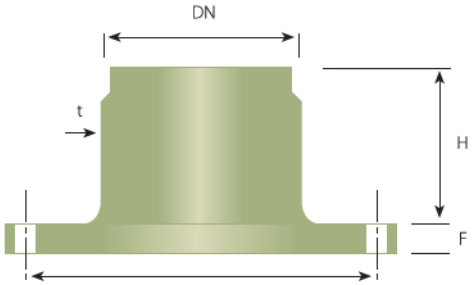
Nominal Diameter D_L(mm)	Nominal Diameter D_S(mm)	A=B (mm)	L (mm)	L_L (mm)
300	200	400	250	1050
300	250	400	125	925
350	250	400	250	1050
350	300	400	125	925
400	300	400	250	1050
400	350	400	125	925
450	350	400	250	1050
450	400	400	125	925
500	350	400	375	1175
500	400	400	250	1050
600	400	400	500	1300
600	500	400	250	1050
700	500	400	500	1300
700	600	400	250	1050
800	600	400	500	1300
800	700	400	250	1050
900	700	400	500	1300
900	800	400	250	1050
1000	800	400	500	1300
1000	900	400	250	1050
1100	900	400	500	1300
1100	1000	400	250	1050
1200	1000	500	500	1500
1200	1100	500	250	1250

Nominal Diameter D_L(mm)	Nominal Diameter D_S(mm)	A=B (mm)	L (mm)	L_L (mm)
1300	1100	500	500	1500
1300	1200	500	250	1250
1400	1200	500	500	1500
1400	1300	500	250	1250
1500	1300	500	500	1500
1500	1400	500	250	1250
1600	1500	600	500	1450
1600	1400	600	250	1700
1700	1500	600	500	1700
1700	1600	600	250	1450
1800	1400	600	1000	2200
1800	1600	600	500	1700
1900	1700	600	500	1700
1900	1800	600	250	1450
2000	1600	600	1000	2200
2000	1800	600	500	1700
2100	1900	600	500	1700
2100	2000	600	250	1450
2200	2000	600	500	2200
2200	2100	600	250	1700
2300	2100	600	500	1700
2300	2200	600	250	1450
2400	2200	600	500	1700
2400	2300	600	250	1450

Flanges



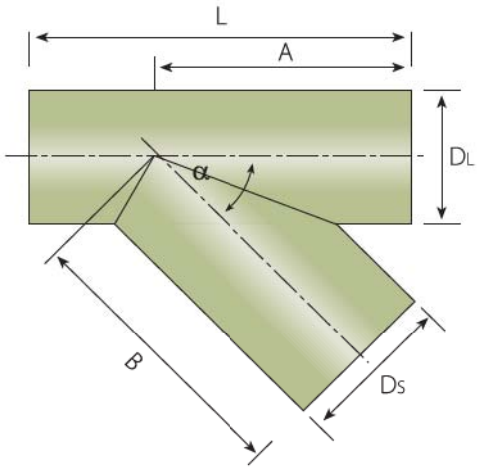
Loose Flanges (SLIP-ON)



Flange (PLAIN)

Nominal Diameter (mm)	PN 0-16		
	F (mm)	T (mm)	H (mm)
300	40	20	600
350	45	23	600
400	45	23	600
450	50	25	600
500	50	25	600
600	60	30	600
700	65	33	600
800	70	35	600
900	75	38	600
1000	80	40	600
1100	90	45	700
1200	95	48	700
1300	100	50	800
1400	105	53	800
1500	105	53	800
1600	110	55	900
1700	115	58	900
1800	120	60	1000
1900	125	63	1000
2000	130	65	1000
2100	135	68	1100
2200	140	70	1100
2300	145	73	1200
2400	150	75	1200
2500	160	78	1300
2600	165	81	1300

WYE Fittings



Nominal Diameter D_L(mm)	Nominal Diameter D_S(mm)	B (mm)	A (mm)	L (mm)	Nominal Diameter D_L(mm)	Nominal Diameter D_S(mm)	A (mm)	B (mm)	L (mm)
300	200	600	624	1100	900	800	1200	1049	1550
300	300	700	695	1200	900	900	1300	1119	1600
350	250	650	660	1200	1000	800	1200	1049	1550
350	300	700	695	1200	1000	900	1300	1119	1600
350	350	750	730	1200	1000	1000	1400	1190	1700
400	300	700	695	1200	1200	1000	1400	1190	1700
400	350	750	730	1200	1200	1100	1500	1261	1750
400	400	800	766	1200	1200	1200	1600	1331	1800
450	350	750	730	1250	1400	1200	1600	1331	1850
450	400	800	766	1250	1400	1300	1700	1402	1900
450	450	850	801	1300	1400	1400	1800	1473	1900
500	300	700	695	1200	1600	1200	1600	1331	1850
500	400	800	766	1250	1600	1400	1800	1473	2000
500	500	900	836	1300	1600	1600	2000	1614	2100
600	400	800	766	1250	1800	1400	1800	1473	2000
600	500	900	836	1350	1800	1600	2000	1614	2100
600	600	1000	904	1400	1800	1800	2200	1756	2200
700	500	900	836	1350	2000	1600	2000	1614	2100
700	600	1000	907	1400	2000	1800	2200	1756	2200
700	700	1100	978	1500	2000	2000	2400	1897	2300
800	600	1000	907	1400	2400	1800	2200	1756	2200
800	700	1100	978	1500	2400	2000	2400	1897	2400
800	800	1200	1049	1550	2400	2400	2800	2180	2600
900	700	1100	978	1500					

Couplings and fittings are manufactured in conformity to international standards.

coupling and fitting parts

Coupling

Glass reinforced polyester pipes are connected by couplings providing 100 % leak-tightness. Couplings are manufactured using the same raw materials and technology of GRP pipes.

Couplings manufactured by GRP pipes are machined in the grinder in conformity with AKBOR gasket dimensions and tolerances. AKBOR EPDM gasket provides 2-way leak-tightness.

The gaskets are manufactured by elastomeric material which permits minor angular deviation of the pipe and flexible pipe-coupling installation. All those features permit the continuous operation either in case of earthquake or in soil-erosion.

Due to the simple design of the coupling system, installation work can continue safely even in bad meteorological-conditions.

Manufacturing Fittings and Special Parts

AKBOR manufactures special parts such as Elbows, Tees, Reducers, WYE Joints, Flanges and Manholes by using the GRP pipes.

The manufactured GRP pipes are cut at required angles and shapes and connected by Qualified AKBOR technician using GRP materials.

AKBOR can manufacture all types of standard fittings given in the related tables or non-standard special fittings requested by customers.

On customer request, we are also able to manufacture the fitting parts at site.

installation - references

Installation of pipes

AKBOR provides technical and site installation supervision to its customers, free of charge.

■ MALATYA-Gökpınar, DSI Irrigation Project

■ IRAQ, Potable Project.

■ KONYA, Koski Sewage Project (Menhole)

■ TURKMENISTAN, Irrigation Project

■ ALBANIA, Irrigation Project

■ ALBANIA, HPP Project

■ KONYA, Irrigation Project

■ NAXCIVAN, HPP Project

Logistics

AKBOR Logistic and Shipment Department Provides his clients safe, cheap and just on time delivery.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PACIFIC GROUP
SAFETY FIRST

Some of References

- **MALATYA Gökpınar Potable Water Project, DSİ (Turkish Water Works),**
  7 000 mt. DN 1000-1100 PN 16 Atm SN 2500 N/m²
- **TURKMENISTAN- Ashkabat Potable Water Project,**
  35 000 mt, DN 400-600-1000 PN 16 Atm SN 2500 N/m²
- **AZERBAIJAN NAXCIVAN- Potable Water Project,**
  9 000 mt,DN 400-600-1000 PN 16 Atm SN 2500 N/m²
- **KAYSERİ-SARIOĞLAN Plain Irrigation Project, DSİ(Turkish Water Works),**
  45 000 mt. DN 450-2300 PN 4-6-10 Atm SN 2500 N/m²
- **KONYA Sewage Project, KOSKİ,**
  10 500 mt. DN 300-1000 PN 4 Atm SN 10000 N/m²
- **ALBANIA, Hydroelectric Power Plant Project,**
  1 600 mt. DN 600 - 1400 PN 10 Atm SN 10000 N/m²
- **KONYA Çağlayan Bozkır Lake Project, DSİ(Turkish Water Works),**
  12 500 mt. DN 800 PN 6-10-16 Atm SN 2500 N/m²
- **AKSARAY Sewer Collector Line Project, ILBank-Goverment Infrastructure Ass.**
  5 000 mt. DN 1400 PN 6 Atm SN 10000 N/m²
- **IRAQ Irrigation Project,**
  9 000 mt. DN 1200 PN 6 Atm SN 5000 N/m²
- **BALIKESİR Havran Plain Irrigation Project, DSİ(Turkish Water Works),**
  33 000 mt. DN 450-1600 PN 4-6-10 Atm SN 2500 N/m²
- **TURKMENISTAN- Water Refinery Project,**
  34 000 mt. DN 300- 400- 500-600 PN 6 Atm SN 2500 N/m²
- **TURKMENISTAN-Doğuakdeniz Construction,**
  1 200 mt. DN 600 PN 6 Atm SN 2500 N/m²
- **SAMSUN Havza Hacıdede Lake Project, DSİ(Turkish Water Works),**
  8 000 mt. DN 500-600 PN 6-10-16 Atm SN 2500 N/m²

Some of References

- YALOVA Esenköy Water Refinery Project, İller Bank,
  2 800 mt. DN 400-500 PN 12.5 Atm SN 2500 N/m²
- TURKMENISTAN Turkmenbası Airport Sewage Project,
  4 800 mt. DN 400-500-600 PN 6 SN 2500 N/m²
- YOZGAT Plain Irrigation Project, DSİ(Turkish Water Works),
  5 000 mt. DN 500-600 PN 6-10-16 Atm SN 2500 N/m²
- ANTALYA Airport Sewage Project,
  4 800 mt. DN 400-500-600 PN 6 SN 2500 N/m²
- AMASYA Suluova Irrigation Project, DSİ(Turkish Water Works),
  5 000 mt. DN 500-600 PN 6-10-16 Atm SN 2500 N/m²
- BURSA Orhaneli Lake Project, DSİ(Turkish Water Works),
  5 000 mt. DN 500-600 PN 6-10-16 Atm SN 2500 N/m²
- NAXCIVAN HES Project,
  1 200 mt. DN 2400 PN 10 Atm SN 2500 N/m²
- ERZURUM Esenkent HES Project,
  2 400 mt. DN 600 PN 40 Atm SN 5000 N/m²
- TUKMENİSTAN Enev Project,
  27 864 mt. DN 300-400-500-600 PN 6-10 Atm SN 5000 N/m²
- KONYA Bozkır Project, DSİ(Turkish Water Works),
  3 609 mt. DN 600-900-1000-1100 PN 10 Atm SN 5000 N/m²
- SİVAS Pusat Project, DSİ(Turkish Water Works),
  13 311 mt. DN 2100 PN 4-6-10-16 Atm SN 2500 N/m²
- TURKMENISTAN Serdar Infrastructure Project,
  2 846 mt. DN 600-800-1000 PN 6 Atm SN 10000 N/m²
- IRAQ Baghdat Infrastructure Project,
  1 780 mt. DN 1200-1600 PN 10 Atm SN 5000 N/m²


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Name and Address of the certified organization
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Scope of the Certificate
DESIGN AND PRODUCTION OF
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MARKA TESCİL BELGESİ
Marka No : 2007 59371 - Ticaret
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Certificate
N° QUAL/2008/33262
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CERTIFICATE OF CONFORMITY TO TURKISH STANDARDS
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ФЕДЕРАЛЬНАЯ СЛУЖБА ПО НАДЗОРУ
В СФЕРЕ ЗАЩИТЫ ПРАВ ПОТРЕБИТЕЛЕЙ И БЛАГОПОЛУЧИЯ ЧЕЛОВЕКА
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