HENAN · CHINA

Angang Group Yongtong Ductile Cast Iron Pipe Co.,Ltd.

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YONGTONG PIPE

Content

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Anyang Iron & Steel Group Co., Ltd. (Hereinafter ANGANG) was established in 1958. Since reform and opening, ANGANG creates an excellent record of continuously making profit for 30 years and becomes one of the super modern steel enterprises in China, whose annual production are ten million tons. In 2008, the sales reached more than 50 billion yuan per year. Now ANGANG's business fields include mining, coking, smelting, mechanical machining, metallurgical construction, transport and trading, it can produce more than 30 kinds of different iron and steel products with about 2000 sizes and specifications including Middle thick plate, Coil plate, High speed wire rod, Reinforced bar, Round bar, Angel, Channel and Ductile iron pipes etc...In recent years ANGANG has been granted the honored titles for many times in China. ANGANG is dedicated to sustainable development, so as to seek the harmony between human and nature.

Angang Group Yongtong Ductile Cast Iron Pipe Co.,Ltd.
YONGTONG PIPE

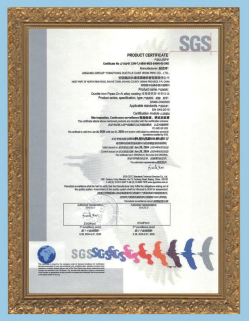
Angang Group Yongtong Ductile Cast Iron Pipe Co.,Ltd. is one of subsidiaries of the large state-owned enterprise, Anyang Iron&Steel Group Co.,Ltd aged of 67 years. As a modern factory of high start, high standard and high quality, it possesses the first level production lines with capacity of 940, 000 tons DN80~DN2600mm annual production for ductile iron pipe with T and Self-restrained joint. At present, we can supply pipe with many kinds coating inside and outside, including cement, zinc ,bitumen, epoxy, epoxy ceramic PE, polyurethane, FBE and so on, which are widely used to supply and drain water system.

The pig iron for Yongtong Pipe is produced by the same company and it has features of low P, low S, low Ti etc. This kind of pig iron is widely used in domestic and foreign for its excellence. The production line adopts advanced process, especially using 60m annealing furnace for ensuring the pipe's mechanical property, and γ -ray detector to test wall thickness of each pipe. We organize production and test pipe strictly according to international standard. Our management system has been assessed and certified by SGS as meeting the requirements of ISO9001 and Yongtong pipe has been certified by SGS satisfying the requirements of ISO2531, EN545, and EN598. Lining of pipe inside conform to ISO4179 and coating outside accord with ISO8179. What is more, ISO7186, BS6920 and other certificates we have gotten.

Through indefatigable effort, we self-developed Jacking Pipe with the characteristics of non excavation, and Yongtong pipe has been exported to countries and areas of Middle East, Europe, Central and Southern America, Southeast Asia, Africa and so on.

There are lots of qualified managers and technicians, and a well-trained team of after-sales service, which provides all services of manufacture, package, transportation, and installation. The staff will face to the future, devoting themselves to the pipeline system and benefiting mankind.

Qualification ceretificates



Qualification ceretificates

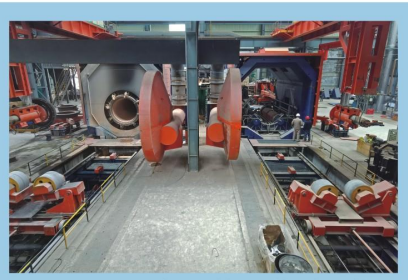
Production equipment

Blast furnace

Heating and sphereodization in induction furnace

Angang Group Yongtong Ductile Cast Iron Pipe Co.,Ltd.
YONGTONG PIPE

Production equipment



DN1000~DN2600 hot mold centrifugal machine

Pipe extracting

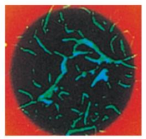
60m annealing furnace

Belt lining machine

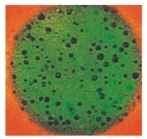
Bitumen coating

Quality control

Ductile cast iron is a kind alloy of iron, carbon and silicon, in which graphite exists in the type of spherical, generally the size of graphite is 6~7 class, and spheriodization grade of the pipe should be controlled 1～3 class (spheroidization rate is not below 80%). Thus after spheroidization, ductile cast iron possesses the nature of iron as well as the characteristics of steel. After annealing, its microstructure contains ferrite and a little pearlite possessing excellent mechanical properties.



Grey iron



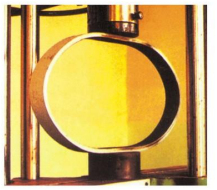
Ductile cast iron

Metallographic examination

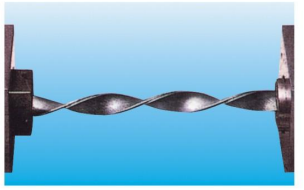
Fast analysis

Quality control

Hardness test



Ring crush test



Twist test

Item	Ductile cast iron pipe	Grey iron pipe	Steel pipe
Tensile strength(MPa)	≥420	150~260	≥400
Yield strength(MPa)	≥300	No confirmation	No confirmation
Bending strength(MPa)	≥590	200~360	≥400
Elongation(%) DN80~DN900	≥10	Neglected	≥18
Elongation(%) DN1000~DN2600	≥7	Neglected	≥18
Brinell hardness(HBW)	≤230	≤230	约140

Elongation test

Damage test

Type test

Test on line

During production process, we carry out tests on line strictly and test items includes: hydraulic pressure, cement lining thickness, zinc spraying thickness, bitumen coating thickness, dimension test, impressing test and so on. Especially, we have the most advanced γ –ray detector to test wall thickness of each pipe precisely so that we could ensure pipes quality conform to ISO2531 standard.

Minimum test pressure (MPA)

DN	K≥9
80~300	5
350~600	4
700~1000	3.2
1100~2000	2.5
2200~2600	1.8

Cement mortar lining thickness (mm)

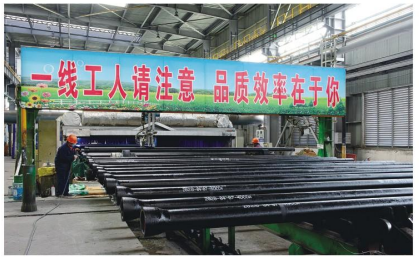
DN	Lining thickness	
	Norminal value	Minimum value
80~300	4.0	2.5
350~600	5.0	3.0
700~1200	6.0	3.5
1400~2000	9.0	6.0
2200~2600	12.0	7.0

Hydraulic pressure test

Dimension test

γ –ray testing online

Advanced technology



Automatically printing

Intelligent packaging

Water-cooling centrifugal casting machine, coreless medium-frequency induction furnace, advanced 60m regenerative annealing furnace, as well as Siemens PLC automatic tube drawing technology, passivated magnesium used in molten iron purification and spheroidization process, full-automatic intelligent core making center, the technology of intelligent finishing, grinding, marking, packing and so on, all these techniques and main equipments have reached the international advanced level.

Intelligent Manufacturing Center of Sand Core

Technical specification for T type joint pipe

Size	spigot DE	Socket weight	Unit weight for body				Total weight			
			K8	K9	C Class		K8	K9	C Class	
DN80	98	3.4	12.2	12.2	C40	9.1	77	77	C40	58
DN100	118	4.3	15.1	15.1	C40	11.1	95	95	C40	71
DN125	144	5.7	18.9	18.9	C40	13.9	119	119	C40	89
DN150	170	7.1	22.8	22.8	C40	16.5	144	144	C40	106
DN200	222	10.3	28.8	30.6	C40	22.6	183	194	C40	146
DN250	274	14.2	35.6	40.1	C40	32.7	228	255	C40	210
DN300	326	18.6	45.3	50.8	C40	43.9	290	323	C40	282
DN350	378	23.7	55.9	63.2	C30	51.8	359	403	C30	335
DN400	429	29.3	67.2	75.5	C30	60.8	433	482	C30	394
DN450	480	38.3	79.5	89.5	C30	72.3	515	575	C30	472
DN500	532	42.8	92.8	104.4	C30	87.2	600	669	C30	566
DN600	635	59.3	122.0	137.1	C30	120.6	791	882	C30	783
DN700	738	79.1	155.0	174.0	C25	142.2	1009	1123	C25	932
DN800	842	102.6	192.1	215.2	C25	177.1	1255	1394	C25	1165
DN900	945	129.9	231.9	260.2	C25	219.4	1521	1691	C25	1446
DN1000	1048	161.3	275.0	309.3	C25	266.0	1811	2017	C25	1759
DN1100	1152	194.7	323.1	366.6	C25	318.1	2133	2394	C25	2103
DN1200	1255	237.7	374.1	420.1	C25	373.9	2482	2758	C25	2481
DN1400	1462	385.3	487.1	547.3	C25	443.0	3308	3669	C25	3403
DN1500	1565	474.6	548.9	616.7	C25	572.7	3768	4175	C25	3911
DN1600	1668	526.1	614.3	690.3	C25	647.0	4212	4668	C25	4408
DN1800	1875	702.2	756.6	850.1	C25	809.5	5242	5803	C25	5559
DN2000	2082	885.1	913.5	1026.3	C25	994.7	6366	7043	C25	6853
DN2200	2288	1020.0	1084.3	1218.7	C25	1193.5	7526	8332	C25	8181
DN2400	2495	1258.8	1270.2	1427.2	C25	1411.0	8880	9822	C25	9725
DN2600	2702	1493.5	1470.6	1652.4	C25	1652.4	10317	11408	C25	11408

Competitive products

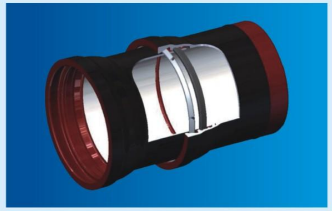
Jacking Pipe

DI jacking pipe possess high strength, so it can bear large jacking force. During pipeline construction, the advantages of non-excavation, no destroy on surface buildings and no impact on traffic, enable the pipes to be used in almost any climate and environment. Such kind of pipe can meet the requirements of saving operation time, higher efficiency, high safety and low cost.

Jacking pipe has got approval of new products and technologies by the housing and urban rural development department of Henan Province and the Department of science and technology of Henan Province, as well as "promotion certificate of new products and technologies of construction of Henan Province" issued by the Department of housing and urban rural development of Henan Province . Yongtong company plays leading roles in setting the T / CFA 02010202. 4-2017 national association standard.

Competitive products

Inner self-restrained pipe



The inner self anchored pipe has the characteristics of simple joint structure, high pressure capacity, high anti pull-out force and high resistance. The self anchored pipe invented by our company has two types: RJS and SIA, which both can be applied to drag pipe.

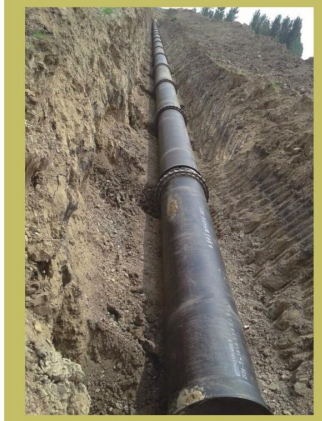
This kind of pipe is applicable to below conditions: 1. Soft soil foundation; 2. Foundation prone to settlement; 3. Areas with high requirements for pipeline safety; 4. For some bends and pipeline parts where buttress is not suitable; 5. Overhead line laying.

Maximum allowable deflection angle

DN	T Type pipe	Inner self-restrained joint pipe and drag pipe
80~300	3° 30'	3°
350~450	2° 30'	3°
500~600	2° 30'	2°
700~800	1° 30'	2°
900~1200	1° 30'	1.1°
1400~2600	1° 30'	–

Competitive products

Self-restrained joint pipe



The external self anchored joint can prevent the pipeline from slipping effectively. Comparing with T-type joint, a set of gland is added in the joint area which is composed of locking ring, welded bead at the pipe spigot end, retaining ring with curvature, special gland and bolts with hooked head. It has the characteristics of flexible connection as well as rigid connection.

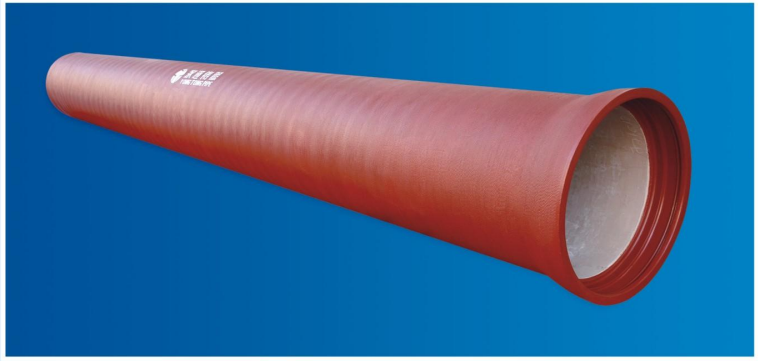
The external self anchored joint has good anti-stripping performances, which is adaptable with the foundation settlement caused by internal hydraulic pressure in the pipeline. And it is used in areas with certain slope and complex terrain.

Competitive products

Sewage pipe

Sewage pipe: with the high aluminum cement inner lining, epoxy resin coating outside. The thickness of epoxy layer is ⩾ 200um,It has excellent corrosion and wear resistance.

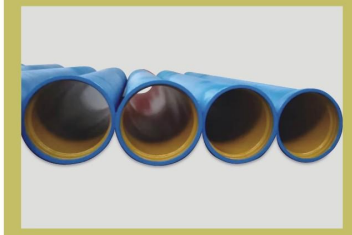
It applies in strong acid and alkali sewage pipeline system with pH value of 4 ~ 12, Industrial effluent as well as domestic wastewater transmission pipelines.



Competitive products

DI pipes with polyurethane (PU) printing

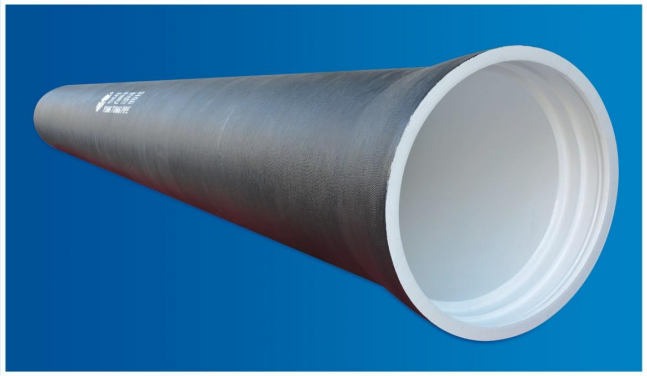
PU printing has the characteristics of high abrasion resistance, corrosion resistance, zero permeation, smooth surface and low resistance coefficient, anti-scaling and no volatile organic compounds etc. It can completely meet the requirements of environmental protection. Coating: thickness of internal coating ⩾ 1000 μm, thickness of external coating ⩾ 700 microns. Scope of application: water supply pipeline with high requirements of internal coating, low resistance coefficient and smooth surface, as well as the drainage pipeline with high corrosion, domestic sewage water containing acid and alkali, mine wastewater and seawater desalination, etc.



Competitive products

DI pipes with water soluble epoxy paint

After finishing cement mortar coating , spraying a layer of water soluble epoxy paint on the cement lining to form a tough protective layer, thickness of epoxy paint ≥ 200 um. Such paint has characteristic of strong adhesion, acid resistance, alkali resistance and salt resistance, solves the problem of water quality resulting from the increasing of PH value. Water soluble epoxy paint is mainly used for direct drinking water project.

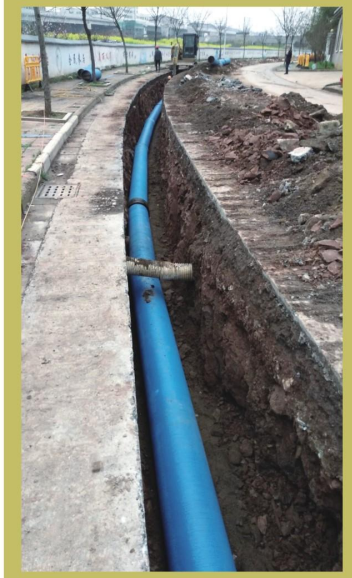


Competitive products

Gray-water Pipe

Pipes with external coating of blue epoxy resin and internal coating of high-alumina cement have the function of sulfuric acid corrosion resistance, freezing resistance. It has the characteristic of abrasion resistance and excellent resistance to all kinds of bad weather, thickness of blue epoxy resin ≥ 200 um.

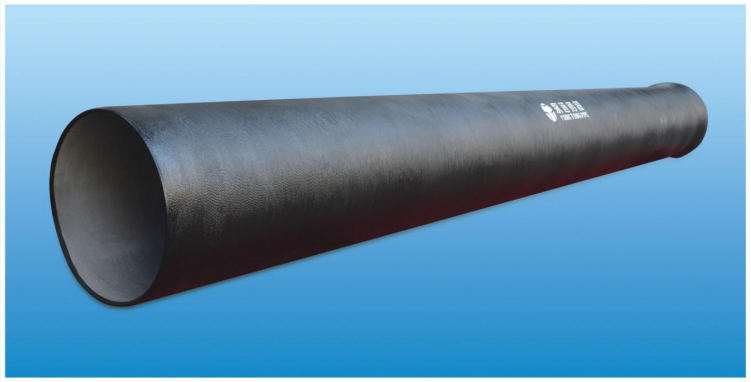
DI pipes are suitable for: 1. Transportation pipeline for treated waste water, including toilet flushing water, road greening water, car washing water, fire water and water for entertainment landscape etc. 2. Transportation pipeline for city gray-water, especially suitable for gray-water transportation and disposal projects.



Competitive products

DI pipes with internal coating of sulfur-resistance cement

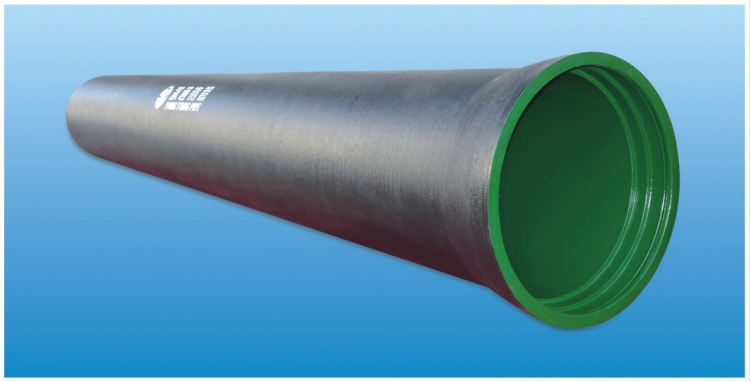
It is also known as sulfate resistant cement pipe, possess the advantages of high chemical corrosion resistance, favorable adhesiveness and nice Compaction. Mainly Used for seawater transportation engineering and drainage pipeline.



Competitive products

Epoxy ceramic Pipe

Pipes with epoxy ceramic have advantages of corrosion resistance, antistatic property, high abrasion resistance and long service life, etc, widely used for water supply project and urban sewage discharge project. Especially it has significant advantages when using in desert region or water-deficient area.

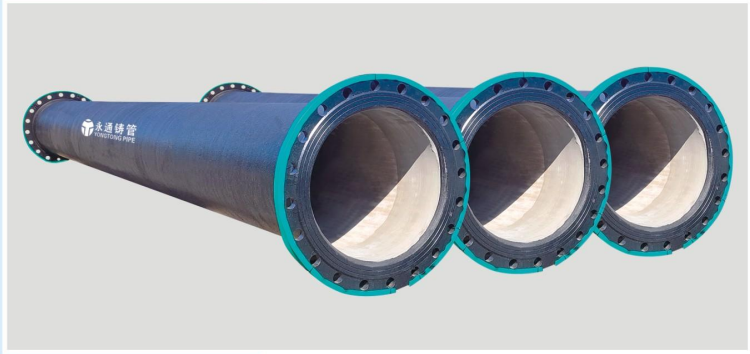


Competitive products

Flange pipe

Size range: DN80～1200mm, pressure class: PN10、PN16、PN25, unit length: 2m、3m、4m、5m、6m(or according to the requirements of clients).

Flange pipes are suitable for: pipe and valve connection, and the connection between different kinds of pipes. Special area where conventional flexible pipes can't be used.



Competitive products

Fittings and rubber rings

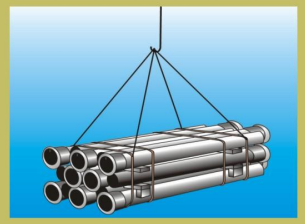
Fittings

We supply DN80mm- DN2400mm with the capacity of 12000 MT. Which is produced strictly according to ISO2531 and BS EN545 standard by using advanced EPC process.

Rubber rings

Rubber ring are produced strictly according to ISO4633 standard. And we have been awarded ISO9001 certificate. Products ranging, DN80-DN2600mm.

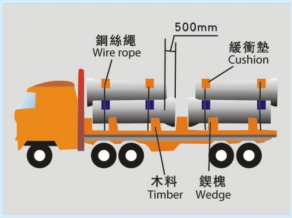
Hoisting and lifting

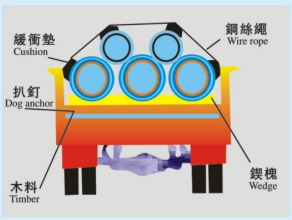


Take precaution of handling pipe with steel cable,hoisting belts and specialized rigging avoiding from pipe's rocking. While using steel cable,single cable is not admitted,for the purpose of protecting outer anti-corrosion layer,steel cable should be packed by rubber or other similar material. While using hook, it also should be covered with rubber or other similar material for protecting cement lining layer. Especially for pipe with relative large diameter, hook should be mounted a gasket with same shape as internal diameter of pipes while handling. It is not available fixing hook on the steel belts or socket side and spigot side of pipe while handling pipes in bundle.

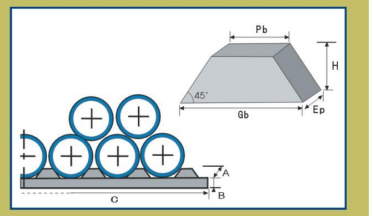
Logistics and transportation

Put two pieces or more woods on the platform of the vehicle while transporting, pipes are laid on the wood and fixed by wedge. The part over the vehicle body should not be more than 1/4 of overall length of pipe. If pipes are piled up more than one layer, each layer of pipes should reverse, and buffering rubber or gasket should be put on the space between two layers of pipes, at last pipes are fixed up with steel cable and buffering gasket. Check often if pipes can fall out during conveying, and check if stop wedge is not hard up. The vehicle should slow down on the uneven road or while swerving.

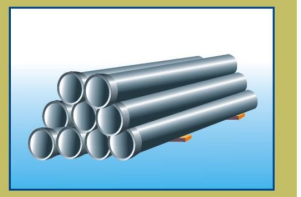




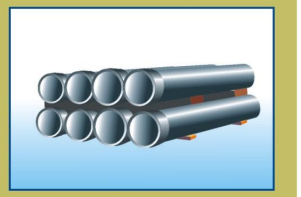
Stacking and storage



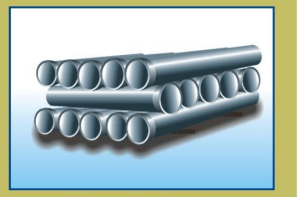
Under pipes there should be put wedge or crosstie while stacking pipes，and socket and spigot of pipes should be interleaved and on the stop wedge in cast of pipe 's rolling. Uneven and serious polluted ground, or slope and marshy are not available.



Plywood storage



Less pipes storage



Rectangle storage

Allowable stacking layers

K class			C class		
DN	Standard/layers	pyramid/layers	DN	Standard/layers	pyramid/layers
80	20	32	80	18	26
100	18	26	100	16	24
150	16	20	150	14	18
200	12	18	200	11	15
250	9	17	250	9	14
300	9	14	300	8	12
350	9	12	350	7	10
400	6	12	400	7	10
450	6	10	450	6	8
500	5	9	500	5	7
600	4	8	600	4	6
700	4	7	700	3	5
800	3	6	800	3	4
900	3	5	900	2	3
1000	3	3	1000	2	3
1100	2	3	1100	2	2
1200	2	2	1200	1	1
1400	1	2	1400	1	1
1500	1	2	1500	1	1
1600	1	2	1600	1	1
1800	1	1	1800	1	1
2000	1	1	2000	1	1
2200	1	1	2200	1	1
2400	1	1	2400	1	1
2600	1	1	2600	1	1

Product installation

1.Before the ditch is dug, obstacles on the digging area should be cleared away.

Ensuring that the soil can be backfilled sufficiently to the area below the pipes for the future backfill should be taken into account. More space of the ditch should be kept at pipe joints in order to operate easily.

Except for special situation, the verge of the ditch should be a straight line and the bed should be on the same level. When dug by mechanical method, 0.2-0.3m soil layer should be remained for manual operating.

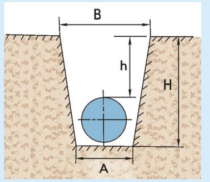
2.Dimensions of the ditch (without steel plate stage).(see figure a and the corresponding table)

3.Using a wire brush and a clean rag, carefully clean the inside of the socket particularly the gasket recesses. In particular, remove any deposits of earth, sand, etc. also clean the spigot of the pipe to be jointed and the gasket itself, get smooth edge. (See figure 1)

4.For ductile cast iron pipe typed DN100~300mm, insert folded gasket into the socket end to make brake facing block embed tightly in the base. Press the protrude of gasket till the gasket fixed evenly in the socket. For pipe typed above DN400mm, bend two ends of the gasket, then press two protrudes outwards one by one, thus more easily insert the gasket into the base. The internal face of brake facing block can't be extend from the brake of the socket. Check the gasket proper or not in respect of the right figure. (See fig2-1, fig2-2, fig2-3)

Dimension table of the ditch

DN	A(m)	B(m)	h(m)	H(m)
100	0.50	0.76	1.20	1.32
150	0.50	0.76	1.20	1.37
200	0.60	0.88	1.20	1.42
250	0.60	0.89	1.20	1.47
300	0.60	0.90	1.20	1.52
350	0.70	1.01	1.20	1.57
400	0.80	1.15	1.30	1.73
500	1.10	1.47	1.30	1.83
600	1.30	1.73	1.50	2.13
700	1.50	1.95	1.50	2.23
800	1.70	2.17	1.50	2.34
900	1.90	2.39	1.50	2.44



图a

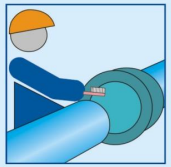


图1

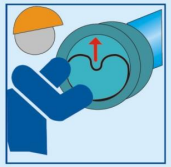


图2－1

图2－2

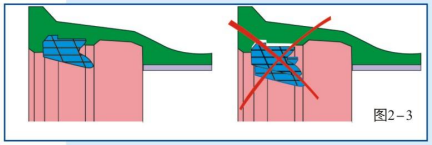


图2－3

图3

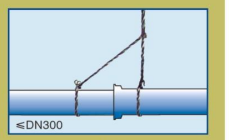


图4-1

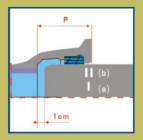


图4-3

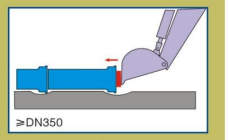


图4-2

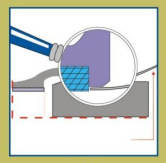


图5

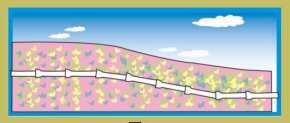


图6-1

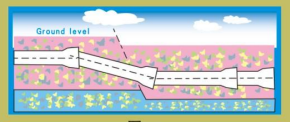


图6-2

5. Lubricate interface of gasket and spigot end. Lubrication could be soap water or nonpoisonous alkaline lubrication.

6. Insert spigot into socket till touch gasket at the same axle. It must be straightened properly to make the central axle of pipe or fittings coincide. While connecting pipe, different pipe adopts different tools. Insert pipe carefully and continuously, if existing larger resistance force, pipe connection should be stopped immediately then draw out the pipe and check the position of rubber gasket and socket and spigot end. After removing troubles, insert again. The insert depth required should be between two white lines (See fig 4-1, fig 4-2, fig 4-3)

7. Insert straight scale into the circular space between socket and pipe wall till touch the rubber gasket and measure the depth even or not along pipe's cycle. Check the pipes connected with each other whether along the same axle, otherwise the ditch bottom should be adjusted to make irregularity even. (See fig.5)

8. After finish assembling joint, in respect of diameter adjust angular deflection which should satisfy the requirements mentioned in the right list. (See fig6-1, fig6-2)

9. Backfill: Generally, pipeline needed testing should be tested water pressure after all backfilled, in particular, the joints could be not backfilled, but the middle part of pipe should be backfilled completely for avoiding pipe movement prior to testing. It is not essential to select earth for backfilling, whereas the part touching with the pipe directly had better select sand or fine earth while excavating. Attention that at the both sides of pipeline should all be filled with sand, same as the pipeline bottom, in particular try to exhaust groundwater and avoid the pipeline subsiding after installation.

Safety points for attention while assembling pipeline

① .It is necessary to wear safety helmet while entering the pipeline ditch.

② .It is necessary to inspect the pipeline ditch whether existing dangerous landslide, if exist, absolutely prohibited to enter the ditch.

③ .While assembling large-diameter pipes with correction jack, the jack must be grasped up and down by two persons.

④.While installing joint, cotton padded gloves must be used as far as possible.

⑤ .It is prohibited to enter the pipe deeply alone after finishing assembling pipeline or for inspecting hydraulic pressure.

In particular, if entering the pipeline which have been assembled and buried for a while or broken off for accident, in which would be often filled with CO (carbon monoxide), under this situation, the person should pay full attention and take CO (carbon monoxide) detector.

Project performance

DN1200 Jacking pipe in Jiangxi province

DN800 drag pipe in Zhejiang Province

DN600 sewage pipe network for Jiujiang section of the Yangtze river

DN800 pipe in Gansu province

DN1200 pipe for ecological greening Project

DN1200 pipe for Xiaolangdi Dam diverting water for the Yellow River

DN800 Pipe in Botswana pipe

DN1000 self-restrained joint pipe

DN1000 Drag pipe