CEMENTING TOOLS EQUIPMENT

WENNIAN

Casing Centralizers, Float Shoe & Collars, Cementing Plug & Baskets

About WENNIAN

Established in 1999, Hebei Wennian Trading Co., Ltd is exporting **cementing tools** for oil and gas industries. After 20 years development, we have enriched our production line including centralizers, floating equipment, cementing plugs and baskets. Besides, we can supply the API casing pipes for your projects.

We insist on "Quality Is First" and the key to our win-win cooperation with our customers, so we are developing and researching more precious products and considerate service for all our customers.

We declare that all our products our customer received are accord with and even surpass API 10D, 10F and 5CT standard. And we are qualified by the ISO 9001 certifications.

300+	100+	50+	1000+
Experience	Country	Workers	Products

COMPANY HISTORY

1999

The Start

Hebei Wennian Trading Co., Ltd Established, mainly specialized in centralizers, casings, and related products.

2005

Business Expansion

The company expanded its operations, growing from an original team of 10 to a team of 25.

2015

Rapid Growth

The company entered a phase of rapid growth, establishing strategic partnerships with large international drilling contractors.

2024

Today

The company has further expanded its scale, now providing products and services to over 100 countries and regions worldwide.

—— ABOUT SUPPLIER PARTNERS OF WENNIAN

ADVANCED EQUIPMENT & SKILLED WORKERS

We brought in advanced equipment to improve our production efficiency, shorten production cycle and increase product qualification rates.
All our skilled workers compete for the post through training and test, they can help to reduce production loss and increase product qualification rates.




STRICT QUALITY CONTROL

All the products, including centralizers, stop collars and floating equipment will be strictly test and only qualified products can be delivered to our customers.

› All production are accord with ISO 9001 and API 10F, 5CT, 10D standard.
› All tolerances are within industrial and standard requirements.
› All products will be tested during and after production and recheck before loading for the best quality guarantee.



PERFECT PACKAGE

All our products are properly packed according to the products features and transporting conditions. The common package is wooden cases and plastic films. The perfect package can protect centralizers and other cementing tools from corrosion and rust as well as fracture during long time transporting. Additional, we can customize package including logos, labels and other items as customers request.



MORE CHOICES.....

More products can be purchased Online at **www.drinol.com**

WENNIAN

products catalog

CONTENTS

BOW SPRINGCENTRALIZER

Single Piece, Hinged & Slip–On Types

Bow spring centralizer is deigned for primary cementing, applied in vertical, deviated and horizontal wells where low starting force as high restoring force.

It is used to keep casing in the center of wellbore and reduce friction between casing and well bore.

Bow spring centralizer consists of several metal strips shaped like a hunting bow and attached to a tool or to the outside of casing. It is a critical step in quality cementing as the lack of proper centralization can lead to severe cementing problems including lack of zonal isolation and improper casing support.

Categories ▼

Slip–on Single Piece Bow Spring Centralizer

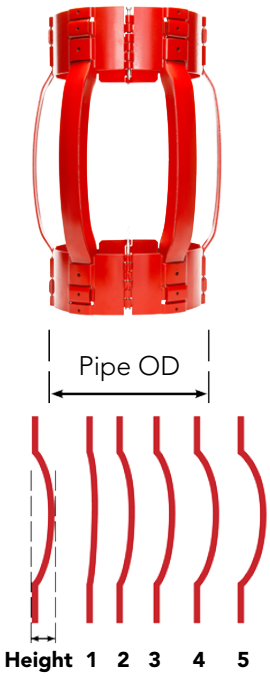
› It is used to position the casing in the center of the wellbore in vertical deviated and horizontal wells.
› It can reduce the effect of channeling by reducing pipe movement before cement sets in and improving the cement flow for more uniform cement thickness in the well bore.
› Special high strength steel which imparts excellent hardness and spring action ensuring an unmatched ability to come back to its original shape after undergoing rigorous stress loads conditions.
› It is formed from single sheet of special steel resulting in no weld between bows and end collars, increasing the robustness and ability to withstand higher lateral and side loads during casing running.
› Zero weak points, such as hinges, welds or mechanical interlocks.
› Available in 4-1/2" to 20" sizes and special sizes are also available.

Hinged Non–Welded Bow Spring Centralizer

Single bow hinged non-welded centralizer

Double bow hinged non-welded centralizer

› It is consists of bows, end collar with hinges and hinge pins. The formed bows are attached the end collar using rivets onto the hinged end collars. And the centralizers use hinged pins to secure the end collars together around the casing.
› The hinged designs is convenient for assemble and storage. When assembles, just place the two assembled haves on the pipe and insert the pins in the end collar hinge. Unassembled centralizers are packed and stored in compact package, which can reduce transporting and storage space and costs.
› Hinged non-welded bow spring casing centralizer is a simple, low cost spring design which can performs well in both vertical and slightly deviated wells as the bow springs are slightly larger than the wellbore.
› Combines the highest restoring force with the lowest starting force at all bow heights.
› The bows are heat treated in special furnace to ensure centralizers to provide the best centralization as well as help in faster running of casing.
› The bows angles are available in a range to accommodate any well profiles.
› Available in single bow or double bow design.
› Available in sizes 4-1/2" to 20" and special sizes are also available.



Adjustable bow heights

MORE CHOICES.....

More products can be purchased Online at **www.drinol.com**

Hinged Non–Welded Positive Casing Centralizer

› Hinged design for easy transporting, storing and installing.
› Use hinged pins to secure the hinged end collars together around the casing.
› Straight formed positive bars are attached onto the hinged end collar with rivets.
› Easy installation and normally run over a stop collar or coupling.
› U-profile design instead of spring bows can ensure maximum fluid passage and reduce frictional drag force in deviated hole conditions.
› Almost 100% standoff when run inside a cased hole.
› Flat U profile is fitted in self locking retaining lips for firm and positive hold.
› Available in sizes 4-1/2" to 20" and special sizes are also available.

Hinged Welded Bow Spring Centralizer

› It has more restoring force than non-welded centralizers.
› The bow springs are strongly welded to the end collar under required temperature and condition with extra low hydrogen coated electrodes.
› Hinged design is easy to transport, store and installation.
› End collars are designed with a reinforcing rib stamped into the end collar to give maximum structural toughness.
› Bow spring heights can be adjustable.
›Available in sizes 4-1/2" to 20" and special sizes are also available.

Slip–On Welded Bow Spring Centralizer

› It is composed of welded bow springs and seamless end collars.
› Slip on centralizers are designed with roll formed peripheral ridges to provide extra rigidity.
› It is directly installed on the pipe by slipping on and can be provided with stop collars with set screws.
› Adjustable bow heights for optimum starting and restoring force.
› Powder coating or painting to prevent from rust and corrosion in well bore.
› Available in sizes 4-1/2" to 20" and special sizes are also available.

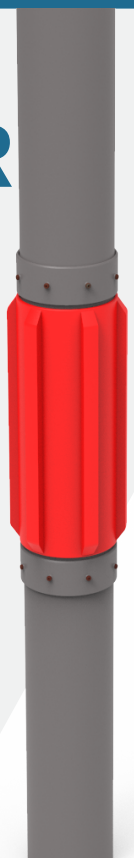
Slip–On Welded Positive Casing Centralizer

› Specially designed with flat bottom U profile with different depths permit maximum fluid passage.
› Bow springs are strongly welded to seamless end collars under required temperature conditions with correct grade electrode.
› Provide 100% standoff (concentricity) when run inside a case hole.
› Just install onto the casing by slipping on the centralizer.
› Available in sizes 4-1/2" to 20" and special sizes are also available.

Specifications ▼

Size (inch)	Bow Quantity	Outside Diameter	Inner Diameter	Overall Length
4-1/2" × 6"	4	160	116	450/575
4-1/2" × 6-1/4"	4	167	116	450/575
4-1/2" × 7-7/8"	4	210	116	450/575
4-1/2" × 8-1/2"	4	230	116	450/575
5" × 6"	4	160	128	450/540
6" × 6-3/4"	4	180	128	450/575
5" × 7-7/8"	4	210	128	450/575
5-1/2" × 7-7/8"	5	210	140	450/575
5-1/2" × 8-1/2"	5	216/245	140	450/575
5-1/2" × 8-3/4"	5	222/250	140	450/575
5-1/2" × 9-7/8"	5	251/264	140	450/575
5-1/2" × 9-1/2"	5	242/264	140	450/575
7" × 8-1/2"	6	216/230	179	450/575
7" × 8-3/4"	6	222/233	179	450/575
7" × 9-1/2"	6	242/264	179	450/575
7" × 9-7/8"	6	251/264	179	550/650
9-5/8" × 12-1/4"	8	346	245	550/650
9-5/8" × 13-3/8"	8	346/352	245	550/650
9-5/8" × 12-13/16"	8	378	245	550/650
10-3/4" × 14-3/4"	9	405	275	550/650
10-3/4" × 15-1/2"	9	374	275	550/650
13-3/8" × 17-1/2"	10	440/466	342	550/650
13-5/8" × 17-1/2"	12	440/466	342	550/650
20" × 26"	12	696	510	550/610/650

SOLID RIGID CENTRALIZER



Spiral/Straight Vanes and Rollers

Solid rigid centralizers are one series of casing centralizers, which are integral part of cementing processing. They are built out of solid steel bar or cast iron with a fixed blade height and are sized to fit a specific casing or hole size.

It is available in steel or aluminum materials with spiral or straight blade body construction in standard and customized sizes to match different casing sizes and wellbore conditions. Roller centralizers are also available for customers' requirements.

Solid rigid centralizers are available in deviated or horizontal wells. But it is rarely selected in the vertical wells because of the smaller diameter than the wellbore.

Categories ▼

Straight vane solid centralizer

Spiral vane solid centralizer

Straight/Spiral Vane Solid Centralizer

› Available in straight or spiral vane types
› It is used in areas where a good primary cementing job is required, including deviated and horizontal wells, liner overlaps and shoe joints.
› Spiral vane is developed in response to the need for better cementing and can provide optimum flow area in high deviated and horizontal well.
› Reduced flow area between the spiral blades produces a vortex motion of the fluids for more fluid velocity with direction.
› Made of cast steel, which is high tensile and solid for shock and impact resistance.
› 360 degree overlapping solid vanes provide maximum wall contact and fluid swirl.
› Powder coating treatment provide excellent corrosion and rust resistance performance.
› Vane ends are beveled 30 degree relative to the casing centerline to provide excellent lead into restrictions and reduced drag when running in the wellbore. Besides, it keeps running forces at a minimum.
› Wide vanes distribute load from the casing string into the wellbore without gouging.
› Standard size is 4-1/2" to 20". Any special sizes or combinations can be customized on request.
› Available in with or without set screws for eliminating of stop collars.

Straight roller solid centralizer

Spiral roller solid centralizer

Straight/Spiral Roller Solid Centralizer

› Fully heat treated rollers are fixed on every straight or spiral blades/vanes.
› Better capacity than the straight/spiral vanes solid centralizers because of rigid body and rolling friction between the roller and inside of well or casing.
› Made of cast steel, which is high tensile and solid for shock and impact resistance.
› Roller/wheeled centralizers are mainly used for high deviated wells and horizontal wells to centralize casing.
› Can remove wellbore cake and improve mud replacement efficiency.
› Provide superior wear resistance and remain functional throughout the life of the well and can aid in casing/tubing retrieval.
› Smaller roller-contact area reduces the risk of differential sticking and maintains standoff when running casing through open holes.
› Rollers are crimped in place, eliminating the welding process, while ensuring the rollers cannot bread free and fall intot he wellbore.
› Available in sizes 4-1/2" to 20".

Straight vane aluminum solid centralizer

Spiral vane aluminum solid centralizer

Straight/Spiral Vane Aluminum Solid Centralizer

› Made of high tensile, solid, cast aluminum for shock, impact and corrosion resistance.
› Used in areas where a good primary cementing job is required, including deviated and horizontal wells, liner overlaps and shoe joints.
› Suitable for either cased or open hole.
› Spiral vanes fully overlap to give 100% wellbore coverage and increase annular turbulence to improve wellbore cleanout.
› Vane ends are beveled 30 degree relative to the casing centerline to provide excellent lead into restrictions and reduced drag when running in the wellbore. Besides, it keeps running forces at a minimum.
› Wide vanes distribute load from the casing string into the wellbore without gouging.
› Standard size is 4-1/2" to 20". Any special sizes or combinations can be customized on request.

Slip–On Stand Off Band Centralizer

› The centralizer is made of stamped steel.
› It is designed for vertical well configurations where lateral loads are at a minimum.
› It is designed to provide a positive stand off the casing for both cased and open holes.
› The stand off centralizer is required where close tolerance between the casing and the hole is being encountered.
› It allows for reciprocation and rotation during cementing and can be installed between set screw stop collar.
› Available in all sizes ranging from 4-1/2" to 20" and any special sizes or combinations are available on request.

Slip–On Welded Straight Cage Rigid Centralizer

› It is designed for high deviated horizontal well where casing centralization is the main consideration.
› Rolled alloy steel ars are welded to the one piece roll formed end collar under required temperature.
› Provide superior toughness over other material.
› Its insured positive standoff, maximum flow, maximum well bore stabilization, maximum holding strength and decreased drag.
› It is directly installed on pipe by slipping on and with or without setscrews for elimination of stop collar.
› All centralizers are painted or coated with polyester powder.
› Available in all sizes ranging from 4-1/2" to 20" and any special sizes and combinations are available on request.

Specifications ▼

Size (in.)	Inside Diameter (mm)	Height (mm)	Total Height (mm)	Max. Outside Diameter (mm)
5" × 6-1/2"	128–131	110	650	175
5" × 6-1/4"	130–132	110	650	170
5" × 12-1/4"	128–131	105	690	330
5" × 20"	128–131	105	720	535
5-1/2" × 7"	142–148	55	650	215
5-1/2" × 8-1/2"	142–148	55	650	225
5-1/2" × 8-1/2"	142–148	110	650	225
6" × 8-1/2"	156–158	55	650	235
7" × 8-1/2"	181–186	55	650	235
7" × 8-1/2"	181–186	110	650	235
7" × 9-5/8"	181–186	55	650	255
7" × 9-5/8"	181–186	110	650	255
7-5/8" × 9-1/2"	196–200	110	650	250
7-5/8" × 9-5/8"	197–201	55	650	275
7-5/8" × 12-1/4"	197–201	55	650	275
8-5/8" × 12-1/4"	223–228	55	650	330
9-5/8" × 12-1/4"	250–255	55	650	330
9-5/8" × 12-1/4"	250–255	110	650	330
10-3/4" ×12-1/4"	274–276	55	650	330
10-3/4" ×12-1/4"	274–276	110	650	330
13-3/8" × 17-1/2"	342–347	55	650	450
13-3/8" × 17-1/2"	342–347	110	650	450
18-5/8" × 24"	476	55	600	610
20" × 26"	510	55	600	660

Applications ▼

The solid rigid centralizer ensure positive centering in deviated or horizontal holes. It can provide mechanism to centralize the casing in the wellbore and allow uniform cement flow around the casing by reducing the effects of channeling and protect the casing at all points.

But since the centralizers are smaller than the wellbore, they will not provide a good centralization as the bow spring centralizers do in vertical wells.

HINGED AND SLIP-ON STOP COLLARS

Accord with API 10D Recommendations

Stop collars are designed to grip the casing centralizers and cement baskets in its intended locations and provide the desired standoff. They are available in hinged stop collars and slip-on stop collars and they can be divided into different structures for various conditions and requirements. The stop collars are coated by powder baking or paint baking in high temperature to increase their corrosion and rust resistance performance. Stop collar sizes are ranging from 4-1/2" to 20".

Categories ▼

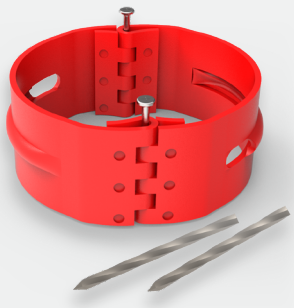
Hinged Bolted Stop Collars

Hinged bolted stop collar is intended to lock on the casing without being slipped over the casing and offers quick and easy installation. It has higher holding forces than the centralizer starting force.
It utilizes a nut-bolt assembly to fix together and draws the stop collar into a friction grip around the perimeter of the casing.

Performance features

› Can be locked on the casing pipe without having to be slipped on at the end of the casing pipe.
› The locking mechanism is at 180° of the hinge.
› Cross-bolt design makes it efficient and user-friendly.
› Economical stop collars.
› Suitable for subcritical annular tolerance.
› Can be installed on any position on the casing.
› Used to limit the axial movement of centralizers and cement baskets
› Available in 4-1/2" to 20".

Hinged With Spiral Nail



Hinged spiral nail stop collar is used in both upset and non-upset casing to provide maximum clearance during rotation. It has a groove in the middle position, where the a spiral nail can br driven into for improved grip on the casing. The broader band firmly grips the collar in the casing pipe position.

Performance features

› It is hinged at two places 180° apart.
› It utilizes one spiral nail driven in each half to grips the collar to the casing pipe.
› Hinged design avoids slipping on at the end of the casing for easy installation.
› The most effective where low annular clearance is encountered.

Hinged Type With Set Screws

Hinged type with set screws are a combination of hinged type stop collar and set screw stop collar. There has a row of set screws on the hinged collar, which has both easy installed structures and high holding forces performance.

Performance features

› It is hinged at two places 180° apart and can be latched onto the casing pipe without being slipped on at the end of the casing pipe for easy installation.
› A single row of set screws on the stop collar body to supply the gripping force to hold the collar to the casing.
› Provide operational flexibility for numerous well applications.
› Available in sizes ranging from 3-1/2" to 20".
› Special sizes and combinations can be customized on request.

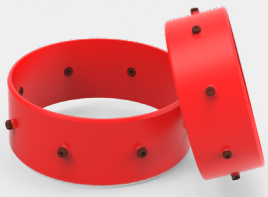
Slipped On With Set Screws

It is a high cost-utility ratio stop collars. There has a row of set screws on the single piece and seamless stop collar body to grip easily and firmly around the casing. The slipped on set screw type stop collars are tested to provide the highest holding force among all stop collar types.

Performance features

› Single piece and seamless construction.
› Available in single or double side beveled. The bevel provides a good lead-in edge for a rigid centralizer.
› It is used when holding force requirements is very high.
› Recommended for small hole operations and predominantly used on both sides of rigid or semi-rigid centralizers.
› Available in 2-3/4" to 20".
› Special sizes and combinations can be customized.

Single beveled



Double beveled

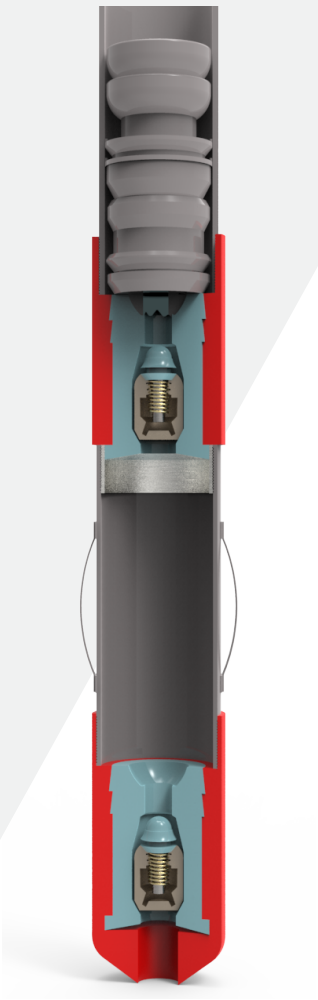
CEMENT FLOAT SHOE & COLLAR

Float collar and float shoe are important floating equipment in petroleum and natural gas fields. They are used to guide the casing to set in the hole and ensure the quality of cementing. They are widely used in the lower section of the well to help decrease strain on the derrick while directing packaging past edges and bog zones in the opening.

the float shoe contains a backpressure valve that prevent fluids from entering the casing while the pipe is lowered into the hole and prevents cement from flowing back into the casing after placement, while enabling circulation down through the casing.

The float collar include a backpressure valve and serve basically the same function as the float shoe.

The float collar is run in a casing assembly, usually several joints above the float shoe. It provide a seat for the cement plugs, to help top plugs shuts off fluid flow and prevents over-displacement of the cement. The space between the float shoe and float collar provides a containment area to entrap the likely-contaminated fluids from the wiping action of the cementing plug, securing the contaminated fluid away from the shoe where a strong cement bond is of primary importance.



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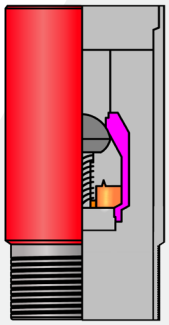
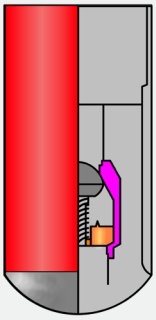




Single Valve Float Shoe & Collar

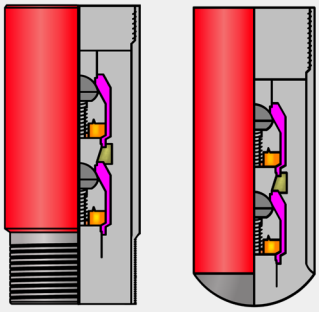
The single valve type of float shoe and collar is the most economical and common seen type, which ensures the valve the maximum circulation rate in vertical, horizontal and deviational wells. And all materials are PDC drillable and all production is processed on CNC machines.
The plunger type single valve can help to prevent cement back-flow, provide casing buoyancy during the run-in. It can also act as an an internal BOP during the process of running and cementing the casing..

Performance features

› The most economical and common seen type
› Free-floating ball abrades
› Valve parts will not damage PDC bits
› All materials are PDC drillable
› Fast drill-out and no springs
› Operator-controlled buoyancy-regulated by filling casing at surface

Options

› Available with cement nose, aluminium nose or bladed nose.
› Available in 3-1/2" to 30" sizes.
› Special sizes/configurations are available as customers' requirements.



Double Valve Cement Float Shoe & Collar

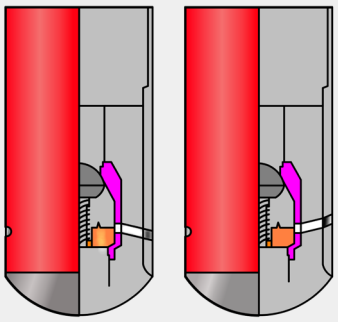
Double valve type of cement float shoe and collar is the advanced configuration of single valve type. It acts as an extra back pressure calve sealing against pressure from below when floating in a linear or casing.

Performance features

› Fast Drill-out
› Valve parts will not damage PDC Bits.
› Double valve acts as an extra back pressure valve.
› All materials are PDC Drillable.

Options

› Available from sizes 4-1/2" till 36"+ any sizes configurations.
› Special sizes and configurations are available as request.
› Available with shoes with cement nose, aluminum nose or bladed nose.



Down Jet / Up Jet Cement Float Shoe

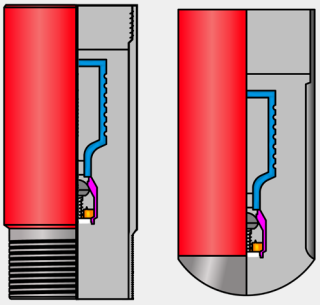
Down jet or up jet cement float shoe make it easy to circulate through down-jets or center of the shoe while running in the hole. This provides a means of washing casing/liner to seat if required. Once converted, has the ability for the cement to be pumped through up-jets for optimum cement placement. Parts force circulation flow in a downward jetting action.
The down-jets/up-jets cement float shoe is also available with double valve for extra back pressure, valve sealing against pressure from below when floating in a liner or casing.

Performance features

› Circulate through down-jets or center of the shoe.
› Fast drill-out
› All materials are PDC drillable.
› Cost effective

Options

› Available in sizes 9-5/8" to 30" configurations.
› Also available with double valve



Stab–in Cement Float Shoe & Collar

Stab-in cement float shoe and collar is widely used for cementing large diameter casing, lowered on the drill pipe. The string presents special cementing consideration due to high displacement volume of large diameter casing.
The drill pipe is tabbed directly into the float shoe or collar and cement is pumped through the drill pipe until it returns to reach the surface. Then the cement is displaced to the bottom of the drill pipe, a wiper dart can be use. The drill pipe is then picked up, circulated and pulled out of the hole.

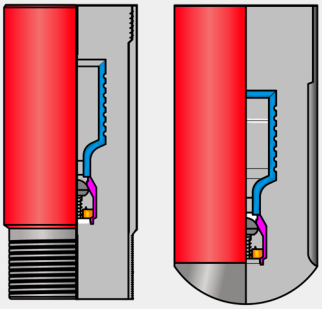
Performance features

› Improves displacement accuracy
› Get better cementing quality
› Reduces cement volume
› Reduce rig time
› Protect casing.

Options

› Available from sizes 9-5/8" to 30"
› Available with double valve

Duplex Cement Float Shoe & Collar

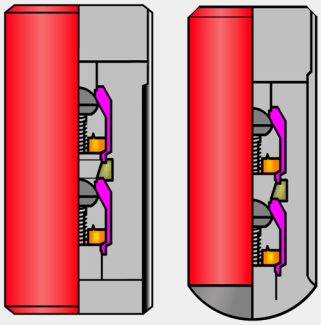


Duplex cement float shoe and collar are furnished with heavy duty duplex connection. These heavy duty connections have 4" O.D. left-hand threads, 3-1/4" to 1" bores and are capable of carrying 100,000 lbs with a minimum safety factor of 2. special accessories are available for using with large duplex equipment. The tubing seal nipple has field-proven Chevron seals for positive sealing of the nipple in the seal bore.
Duplex cement float shoe and collar has an expandable left-hand latch mechanism which allows the nipple to be "stabbed" into the duplex connection and when up-strain is applied the latch is expanded to provide full engagement in the duplex assembly. The nipple is realeased by rotating to the right, unscrewing the latch mechanism of the duplex connection. Left-hand square thread subs with 4" O.D., left-hand threads are also available for use with large duplex equipment.

Performance features
› Is supplied with plunger valve in most of the application
› Material is seamless casing grade steel.
› PDC drillable.
› Reduce rig time.
› Protect casing.

Options
› Available from sizes 9-5/8" to 30".
› Also available with double valve.

Butt Weld Cement Float Shoe and Collar

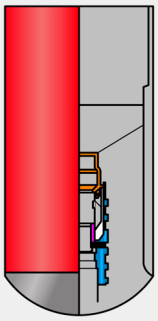


Butt weld cement float shoe and collars are designed with non-thread structure, which have beveled upper end, which is convenient for directly welding onto the casing pipe.
The O.D. of butt weld casing collar matches with the casing O.D.

Performance features
› Same performance with other types of cement collar and shoes.
› Upper end is beveled and not recessed for directly welding to the casing pipe.

Options
Available from sizes 5-1/2" to 20" sizes configurations.

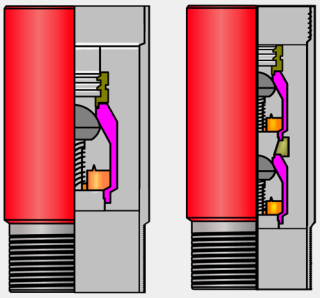
Auto–Fill Cement Float Shoe and Collar



Auto Fill Cement Float Shoe & Collar permits the casing to fill automatically while being run in the hole. The valve is always in the open position allowing maximum filling of the casing as it is lowered into the well bore. The circulation may be established at any time during or after casing is run. The flapper type back pressure valve does not become operative until the drop ball is dropped or pumped down. Like differential fill-up equipment, the shoe is activated by the same ball. From this point on, like differential fill-up shoe, this model Auto Fill Cement Float Shoe acts as conventional floating equipment. All Auto Fill Cement Float Shoes & Collar are PDC drillable. This is especially effective on liner job and sensitive hole conditions.

Performance features
› Auto-fill-up and pump-out sleeves are available to convert into an automatic fill-uo unit.
› Withstand various differential pressures.
› Is installed in short 8 round API casing couplings in sallow well applications.

Options
› Available in sizes 9-5/8" to 30".
› Non-rotating auto fill float collar is also available.
› Available with double valve.



Non–Rotational Cement Float Collar

Non-rotational cement float Collar is Non-Rotational type pressure and cementing plug activated. The latch down type anti-rotational feature of the plug which is compatible with the Float Collar eliminates rotation during drilling. The Cement Float Collar is also available with double valve for extra back pressure valve sealing against pressure from below when floating in a liner or casing.

Performance features

› Match with non-rotational cementing plugs.
› Eliminates rotation during drilling.
› Operator-controlled buoyancy-regulated by filling casing at surface.
› Manufactured to withstand various differential pressures.
› Float equipment's are PDC drillable

Options

› Available from sizes 9-5/8" to 30".
› Withstand available with double valve.

Specifications ▼

Material:
floating equipment (float shoe and float collar) is made of seamless casing grade steel. And we can supply all grade of steel. And all our materials are PDC drillable.

Connection thread:
› API: EUE, NUE, LTC, STC, BTC.
› GOST: OTTM

Specifications	MAX. O.D. (mm)	Positive Pressure (MPa)	Reverse Pressure	Max. O.D. (mm)
2-3/8" (Φ60.3 mm)	Φ72.4/Φ77.8	25	30	Φ20
2-7/8" (Φ73 mm)	Φ88.9/Φ93.6	25	30	Φ25
3-1/2" (Φ88.9 mm)	Φ108/Φ114.3	25	30	Φ35
4" (Φ101.6 mm)	Φ120.7/Φ127	25	30	Φ35
4-1/2" (Φ114.3 mm)	Φ127/Φ141.3	25	30	Φ50
5" (Φ127 mm)	Φ141.3	25	30	Φ50
5-1/2" (Φ139.7 mm)	Φ153.67	25	30	Φ55
5-3/4" (Φ146 mm)	Φ166	25	30	Φ55
6-5/8" (Φ168.27 mm)	Φ188	25	30	Φ65
7" (Φ177.8 mm)	Φ195	25	30	Φ65
7-5/8" (Φ193.67 mm)	Φ216	25	30	Φ65
7-3/4" (Φ196.85 mm)	Φ220	25	30	Φ65
7-7/8"(Φ200.03 mm)	Φ225	25	30	Φ65
8-5/8" (Φ219.1 mm)	Φ243	25	30	Φ65
9-5/8" (Φ244.5 mm)	Φ270	25	30	Φ65
9-7/8" (Φ250.83 mm)	Φ276	25	30	Φ65
10-3/4" (Φ273 mm)	Φ299	25	30	Φ65
11-3/4" (Φ298.45 mm)	Φ325	25	30	Φ65
12-3/4" (Φ324 mm)	Φ351	25	30	Φ65
13-3/8" (Φ339.7 mm)	Φ365	21	21	Φ65
13-5/8" (Φ346.08 mm)	Φ371	21	21	Φ65
16" (Φ406.4 mm)	Φ432	21	21	Φ65
16-3/4" (Φ426 mm)	Φ451	21	21	Φ65
18-5/8" (Φ473.1 mm)	Φ508	21	21	Φ65
20" (Φ508 mm)	Φ533.4	21	21	Φ65

CEMENTING PLUG

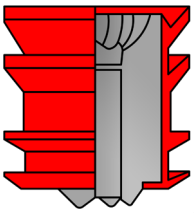
Reduce Drill Time and Save Costs

Cementing plugs are used to remove the mud during cementing operations. Top cementing plugs and bottom cementing plugs are used in the cementing process. The top and bottom cementing plus general have different colors (bottom plugs are red and top plugs are black) in production for easy usage in operation.

The top cementing plug has a solid body that provides positive indication of contact with cementing floating collar and bottom plug through an increase in pump pressure.

The bottom cementing plug with a hollow body is installed ahead of the cement slurry to minimize contamination by fluids inside the casing prior to cementing.

Non–rational Top Plug



Non–rational Bottom Plug

Categories ▼

Conventional/Standard Cementing Plug

Conventional top and bottom cementing plugs significantly reduce the drill out time to save cost. The bottom plug separates the cement from drill mud and features a rubber diaphragm which is opened once the plug has landed and latched into the conventional cementing float collar.
The top cementing plug is used as a floow-up plug to displace cement to provide a anti-rotational feature to eliminate rotation during drilling and save drill out time when it is latched into the upper end of the bottom plug.

Performance features

› Aim to reduce the drill out time and save cost.
› Top plugs are used as a fllow plug to displace the cement and land on the upper end of the bottom plug.
› The body consists of ebonite inserted molded with elastomer, which is easy to fracture than the rubber and aluminum structure, thus reducing the drill out time significantly.
› No metal parts are used therefore the plugs are PDC drillable.

Options

› Available in sizes from 4-1/2" to 20"
› Available in NR, SBR, NBR and HNBR grades.

Conventional/Standard Top Plug

Conventional/Standard Bottom Plug

Non–Rotational Plug

Non-rotating cementing plugs are designed to decrease the drill out times. Reinforced locking teeth are built into the plugs, which lock together between the plug and the float equipment to eliminate rotation of the plug during drill out. The top cementing plug are latched to the anti-rotational float collar.

Performance features

› Non-rotational.
› Decrease drill out time.
› PDC drillable.

Options

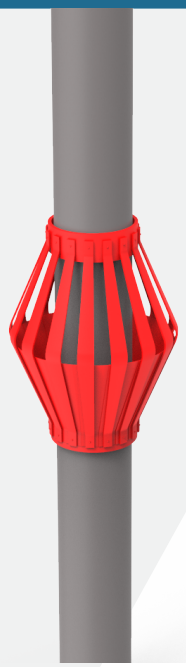
› Available in sizes from 4-1/2" to 20".
› Available in NR, SBR, NBR and HNBR grades.

Specifications ▼

Casing size	Casing weight range		O.D. of Rubber Cup		Working Temperature	Working Pressure	Burst Pressure	Hardness
inch	kg/m	lb/ft	mm	inch		MPa	MPa	
4-1/2	14.14–17.26	9.50–11.60	110	4.331	-30 °C to 150 °C	≥15	1–2	75–95
5	17.11–35.86	11.50–24.10	122	4.803	-30 °C to 150 °C	≥15	1–2	75–95
5-1/2	20.83–39.88	14.00–26.80	135	5.315	-30 °C to 150 °C	≥15	1–2	75–95
7	25.30–56.55	17.00–38.00	170	6.693	-30 °C to 150 °C	≥15	1–2	75–95
7-5/8	35.72–63.69	24.00–42.80	185	7.283	-30 °C to 150 °C	≥15	1–2	75–95
9-5/8	53.57–79.62	36.00–53.50	235	9.252	-30 °C to 150 °C	≥15	1–2	75–95
10-3/4	60.27–97.77	40.50–65.70	260	10.236	-30 °C to 150 °C	≥15	1–2	75–95
13-3/8	71.43–107.15	48.00–72.00	333	13.110	-30 °C to 150 °C	≥15	1–2	75–95
20	139.89–197.93	94.00–133.00	498	19.606	-30 °C to 150 °C	≥15	1–2	75–95

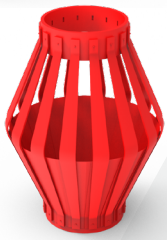
CEMENTING BASKETS

Hinged & Slip–on Types with steel Plates or Canvas Fins



Cementing baskets are normally installed on the casing, tubing and liner strings above the weak formation to protect weak formations from hydrostatic pressure exerted by the weight of cement columns. They can also be used in single or multistage cement jobs. The cementing basket allow cement to flow in an upward direction and hold the weight of the cement column once cementing operation ceases.

Canvas liner slip-on cementing basket



Metal fins slip-on cementing basket

Categories ▼

Slip–on Cementing Baskets

Slip on cementing basket is made of reinforced steel ribs on the seamless end collars. It is available in canvas cementing and overlapping metal fins. The structure is simple and can defend leak effectively.

Performance features

› Can be used with relevant small casing.
› Not infected by the temperature and causticity liquid.
› Can be expanded or contracted as needed and can be rotated or reciprocated.
› Available in 4-1/2" to 20" sizes.
› Special sizes are also available.

Hinged Cementing Baskets

The hinged welded cement baskets is used in situations where a weak formation is required in helping a cement column.
They consist of reinforced steel ribs welded to the hinged end collars and overlapping metal fins, which provide flexibility and fluid passage to provide maximum strength and uniformity during cementing operations.

Performance features

› Reinforced steel ribs are hardened and tempered.
› Has the ability to accommodate much larger than nominal hole sizes.
› Available with welded and non-welded convex shape bows.
› t is run on casing or liners above weak or porous formations to provide protection.
› Overlapping metal fins provide flexibility and fluid passage.
› Hinged design make it easy to install and replace.
› Available in 4-1/2" to 20" sizes.
› Special sizes are also available.› Available in NR, SBR, NBR and HNBR grades.

Specifications ▼

Casing Size inch	No.of Bow	Total L.	O.D. inch	O.D. mm	Min Hole inch
4-1/2	10	24-1/2	12-1/2	317.5	6
5	10	24-1/2	13	342.9	6
5-1/2	12	24-1/2	13-1/2	342.9	7-1/4
6-5/8	12	24-1/2	14-5/8	371.5	8-3/8
7	14	24-1/2	15	381.0	8-3/8
7-5/8	14	24-1/2	15-5/8	396.9	9-1/2
8-5/8	16	24-1/2	16-5/8	422.3	10-5/8
9-5/8	18	24-1/2	17-5/8	447.7	11-5/8
10-3/4	18	24-1/2	18-3/4	476.3	12-3/4
11-3/4	20	24-1/2	19-3/4	501.7	13-3/4
11-3/8	24	24-1/2	21-3/8	542.9	15-1/2
16	28	24-1/2	24	609.6	18
18-5/8	34	24-1/2	26-5/8	676.3	20-5/8

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DRILL PIPE SCREEN

Drill pipe screen, also called drill pipe spill, is an integral part of any directional drilling application. It has tapered structure and is used in drill pipe when oil well drilling to filter the drilling fluid and protect the MWD instruments. In this way, the impurities are filtered out and the clean drilling fluid could prevent the impurities clogging bit port.

Categories ▼

Drilling pipe screen is available in rod/bar type, slotted type and perforated type in retrievable and non-retrievable drill pipe mud screens.

The drilling pipe screen is made of stainless steel material through special surface treatment to extend its long service life and improve corrosion and erosion resistance performance.

Perforated Type Drilling Pipe Screen

› Material: stainless steel 304 or 316.
› Length: 12", 18", 24", 36".
› Thickness: 7 gauge
› Hole diameter: 5/16", 1/4", 3/16"
› Sizes: 3-1/2", 4", 4-1/2", 5" and 5-1/2"

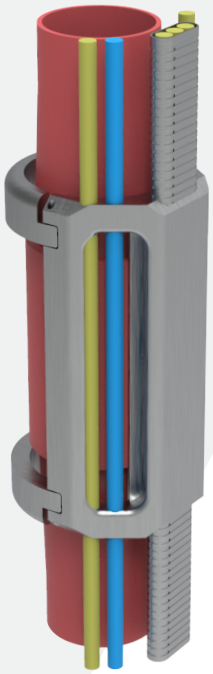
Slot Type Drilling Pipe Screen

› Material: stainless steel 304 or 316.
› Length: 2' or 3'
› Thickness: 1/4".
› Slot length: 1/4"
› Outer diameter: 1-3/4", 2", 2-1/2", 2-7/8"

Rod Type Drilling Pipe Screen

› Material: stainless steel 304 or 316.
› Length: 2' or 3'
› Rod diameter: 3/16" or 1/4".

ESP CABLE PROTECTOR



Protect Round, Square or Flat Cables & Control Lines

ESP cable protector, also called control line protector, are used to protect any configuration of ESP cables, control lines, encapsulated bundles in the wellbore. There are channels to shield cables or lines when they transit across the tubing coupling to prevent from damage during installation or retrieval of completions.

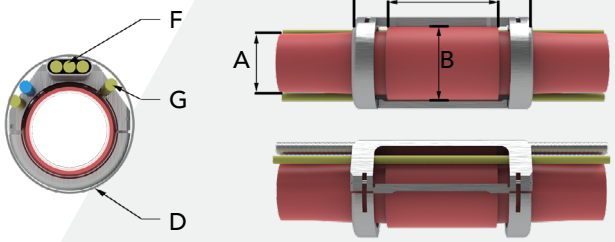
The ESP cable protector is made of carbon steel or stainless steel and is suitable for 2-7/8" to 7" O.D. tubing sizes. The control line protector is appropriated for flat, square and round cables and lines.

Categories ▼

According to the production process, the ESP cable protector is divided into casting type and stamping type. And each one is divided into cross coupling protectors and mid joint protectors.

Casting ESP Cable Protector — Cross Coupling

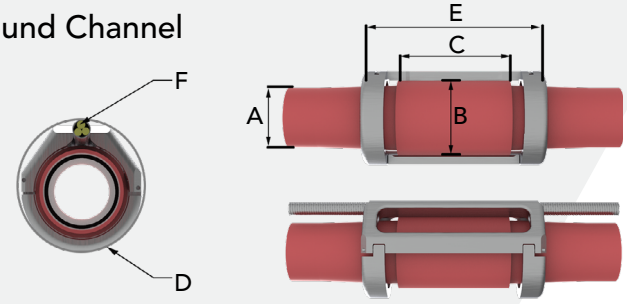
Flat Channel



A Tubing O.D.
B Coupling O.D.
C Coupling Length
D Running O.D.
E Protector Length
F Cable Size
G Control Line

Tubing O.D. (A)	Coupling Specification	Running O.D. (D)	Protector Length (E)	Cable Size (F)	Control Line (G)
2-3/8"	EUE	4.54" – 4.61"	8.82"	AWG #1 16 × 47 AWG #2 15 × 45 AWG #4 14 × 40 AWG #5 13 × 38	1/8" 1/4" 3/8"
2-7/8"		5.03" – 5.10"	9.21"		
3-1/2"		5.71" – 5.77"	9.69"		
4"		6.21" – 6.27"	9.96"		
4-1/2"		6.71 – 6.75"	9.96"		

Round Channel

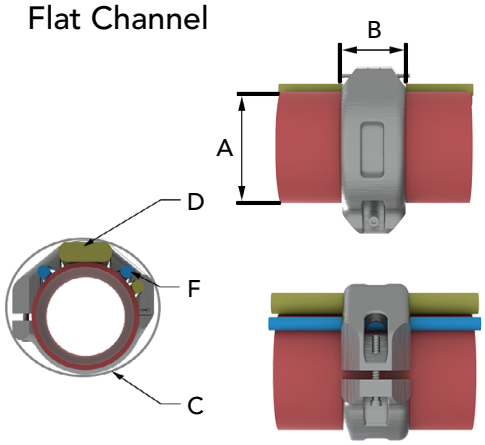


A Tubing O.D.
B Coupling O.D.
C Coupling Length
D Running O.D.
E Protector Length
F Cable Size

Tubing O.D. (A)	Coupling Specification	Running O.D. (D)	Protector Length (E)	Cable Size (F)
2-3/8"	EUE	5.34" – 5.41"	8.82"	AWG #1 ϕ40 AWG #2 ϕ38 AWG #3 ϕ36 AWG #4 ϕ34
2-7/8"		5.83" – 5.90"	9.21"	
3-1/2"		6.51" – 6.57"	9.69"	
4"		7.01" – 7.07"	9.96"	
4-1/2"		7.31" – 7.35	10.2"	

Casting ESP Cable Protector — Mid–Joint

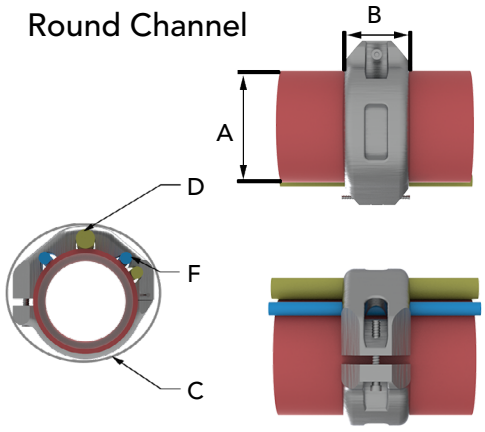
Flat Channel



A Tubing O.D. D Cable Size
B Protector Length E Control Line
C Runing O.D.

Tubing O.D. (A)	Running O.D. (C)	Protector length (B)	Cable Size (D)	Control Line (E)
2-3/8"	4.3"	1.78"	AWG #1 16 × 47 AWG #2 15 × 45 AWG #4 14 × 40 AWG #5 13 × 38	1/8" 1/4" 3/8"
2-7/8"	4.79"			
3-1/2"	5.47"			
4"	5.95"			
4-1/2"	6.43"			

Round Channel

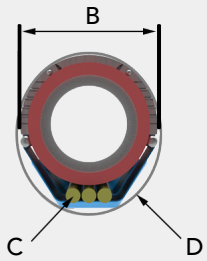


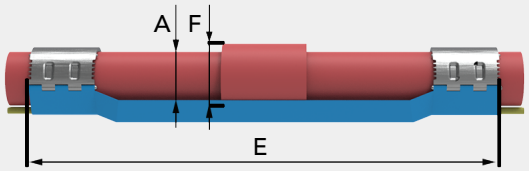
A Tubing O.D. D Cable Size
B Protector Length E Control Line
C Runing O.D.

Tubing O.D. (A)	Running O.D. (C)	Protector length (B)	Cable Size (D)	Control Line (E)
2-3/8"	4.66"	1.78"	AWG #1 ϕ40 AWG #2 ϕ38 AWG #3 ϕ36 AWG #4 ϕ34	1/8" 1/4" 3/8"
2-7/8"	5.12"			
3-1/2"	5.73"			
4"	6.22"			
4-1/2"	6.69"			

Stamping ESP Cable Protector — Cross Coupling

Flat Channel

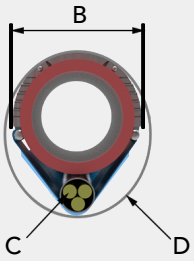


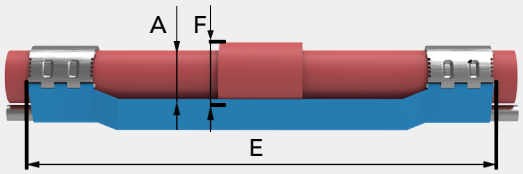


A Tubing O.D. D Runing O.D.
B Collar O.D. E Protector Length
C Cable Size F Coupling O.D.

Tubing O.D. (A)	Coupling Specification	Collar O.D. (B)	Running O.D. (D)	Protector Length (E)	Cable Size (C)
2-3/8"	EUE	3.19"	3.85" – 3.96"	25.2"	AWG #1 16 × 47 AWG #2 15 × 45 AWG #4 14 × 40 AWG #5 13 × 38
2-7/8"		3.7"	4.39" – 4.5"		
3-1/2"		4.33"	5.05" – 5.16"		
4"		4.8"	5.52" – 5.64"		
4-1/2"		5.315"	5.99" – 6.11"		

Round Channel



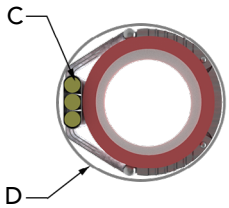


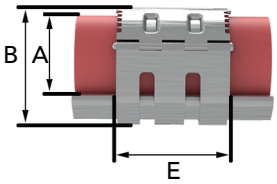
A Tubing O.D.
B Collar O.D.
C Cable Size
D Runing O.D.
E Protector Length
F Coupling O.D.

Tubing O.D. (A)	Coupling Specification	Collar O.D. (B)	Running O.D. (D)	Protector Length (E)	Cable Size (C)
2-3/8"	EUE	3.19"	4.49" – 4.73"	25.2"	AWG #1 ϕ40 AWG #2 ϕ38 AWG #3 ϕ36 AWG #4 ϕ34
2-7/8"		3.7"	5.05" – 5.29"		
3-1/2"		4.33"	5.73" – 5.97"		
4"		4.8"	6.23" – 6.47"		
4-1/2"		5.315"	6.71" – 6.95"		

Stamping ESP Cable Protector – Mid-Joint

Flat Channel

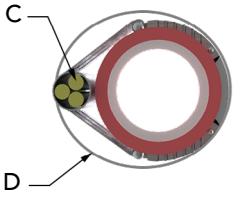


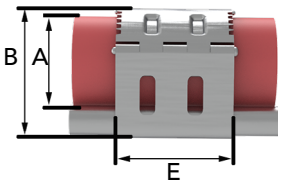


A Tubing O.D.
B Collar O.D.
C Cable Size
D Runing O.D.
E Protector Length

Tubing O.D. (A)	Collar O.D. (B)	Running O.D. (D)	Protector Length (E)	Cable Size (C)
2-3/8"	3.19"	3.62" – 3.73"	3.94"	AWG #1 16 × 47 AWG #2 15 × 45 AWG #4 14 × 40 AWG #5 13 × 38
2-7/8"	3.7"	4.09" – 4.2"		
3-1/2"	4.33"	4.69" – 4.8"		
4"	4.8"	5.16" – 5.27"		
4-1/2"	5.315"	5.65" – 5.76"		

Round Channel





A Tubing O.D.
B Collar O.D.
C Cable Size
D Runing O.D.
E Protector Length

Tubing O.D. (A)	Collar O.D. (B)	Running O.D. (D)	Protector Length (E)	Cable Size (C)
2-3/8"	3.19"	4.24" – 4.48"	3.94"	AWG #1 ϕ40 AWG #2 ϕ38 AWG #3 ϕ36 AWG #4 ϕ34
2-7/8"	3.7"	4.74" – 4.98"		
3-1/2"	4.33"	5.37" – 5.61"		
4"	4.8"	5.86" – 6.10"		
4-1/2"	5.315"	6.37" – 6.61"		

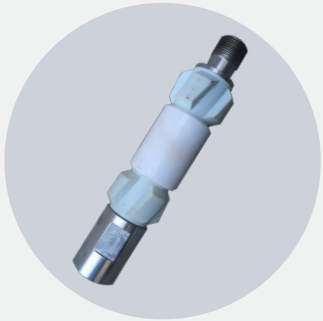
SUCKER ROD CENTRALIZER

Extend Sucker Rod Life and Reduce Friction

Sucker rod centralizer is mainly used in pumping well to centralize sucker rod and reduce the friction between tubing and sucker rod.

Due to the elastic deformation of sucker rod, rod and oil tube wall is easy to produce friction and sucker rod break easily. when rod go up and down inside of the tubing.

Sucker rod centralizer has strong flexibility and larger outer diameter to centralize sucker rod. The centralizer casing has high strength and wear resistant structure, so when contact with oil tube, it can reduce the friction.



Specifications ▼

Material: nylon, ceramic.
Centralizer body Rockwell hardness (HRC): M85 – M114.
Centralizer body compressive strength: 60–90 MPa.
Sucker rod diameter: 3/4", 5/8", 7/8" and 1".
Body material: 35 CrMo, 45 CrMo, stainless steel.

Item	Centralizer I.D. (mm)	Centralizer O.D. (mm)
SRC-01	19	58
SRC-02	22	58
SRC-03	25	58/72

Using Guidance ▼

1. If it is little partial-wear well section, a set of sucker rod centralizer will be installed on three sucker rods.
2. If it is less serious partial-wear well section, a set of this product will be installed on two sucker rods.
3. If it is serious partial-wear well section, a set of this product will be installed on a sucker rod.
4. If it is the most serious partial-wear well section (and in the inflection point), in addition to installing a set of this product on a sucker rod, and another nylon centralizer should be installed on the middle of the rod.

API CASING PIPE

Full Ranges of Options for Your Wellbore Projects

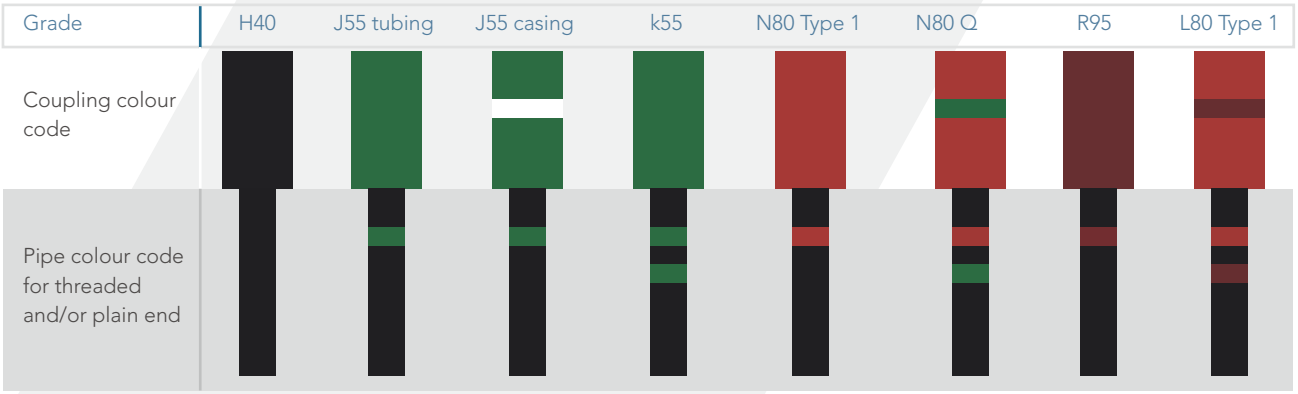
API casing pipe is produced according to the API 5CT standard. It is most often used in underground construction projects to encase or protect utility lines from being damaged.

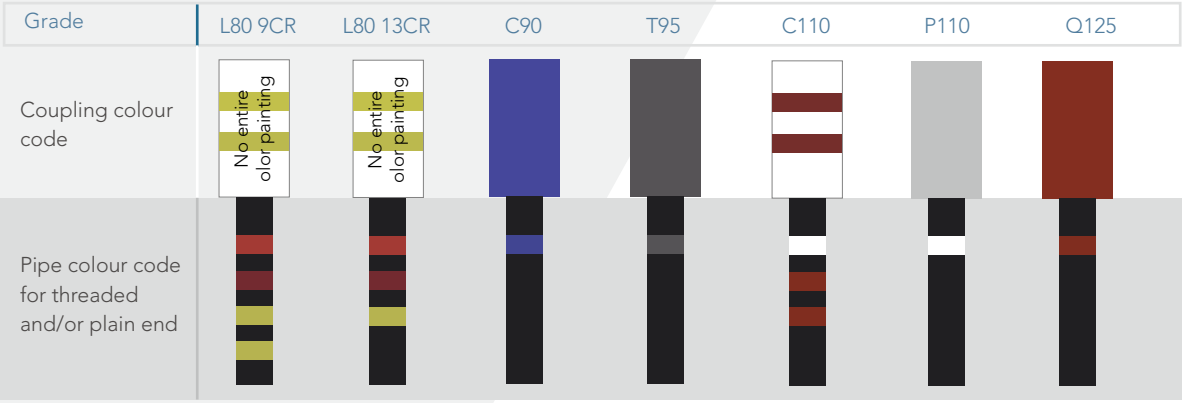
It is widely used in the cementing projects to serve as the structural retainer for the wall of oil and gas wells or wellbore. It is inserted into a well bore and cemented in place to protect both subsurface formations and the wellbore from collapsing and allow drilling fluid to circulate and extraction to take place.

Category ▼

The category of API casing pipe is based on the material and color.

The main categories are including H40, J55, K55, N80-1, N80-Q, M65, L80-1, C90-1, T95, P110, Q125.





Specifications ▼

Material: H40, J55, K55, N80-1, N80-Q, M65, L80-1, C90-1, T95, P110, Q125, etc.
Outer diameter: 4-1/2" to 20".
WT: 5.21 mm to 16.13 mm (9.5 PPF to 133PPF)
Standard: API 5CT.
Thread connection: STC, LTC, BTC, XC and Premium connection
Length: R1, R2, R3

Sizes		OD (mm)	Weight (kg/m)	WT (mm)	Type of End							
					H40	J55/K55	M65	L80/C95	N80-1/ N80-Q	C90/T95	P110	Q125
1	2											
1	2	3	4	5	6	7	8	9	10	11	12	13
4-1/2	9.5	114.3	14.14	5.21	PS	PS	PS	–	–	–	–	–
4-1/2	10.5	114.3	15.63	5.69	–	PSB	PSB	–	–	–	–	–
4-1/2	11.6	114.3	17.26	6.35	–	PSLB	PLB	PLB	PLB	PLB	PLB	–
4-1/2	13.5	114.3	20.09	7.37	–	–	PLB	PLB	PLB	PLB	PLB	–
4-1/2	15.1	114.3	22.47	8.56	–	–	–	–	–	–	PLB	PLB
5	11.5	127	17.11	5.59	–	PS	PS	–	–	–	–	–
5	13	127	19.35	6.43	–	PSLB	PSLB	–	–	–	–	–
5	15	127	22.32	7.52	–	PSLBE	PLB	PLBE	PLBE	PLBE	PLBE	–
5	18	127	26.79	9.19	–	–	PLB	PLBE	PLBE	PLBE	PLBE	PLBE
5	21.4	127	31.85	11.1	–	–	PLB	PLB	PLB	PLB	PLB	PLB
5	23.2	127	34.53	12.14	–	–	–	PLB	PLB	PLB	PLB	PLB
5	24.1	127	35.86	12.7	–	–	–	PLB	PLB	PLB	PLB	PLB
5-1/2	14	139.7	20.83	6.2	PS	PS	PS	–	–	–	–	–
5-1/2	15.5	139.7	23.07	6.98	–	PSLBE	PSLB	–	–	–	–	–
5-1/2	17	139.7	25.3	7.72	–	PSLBE	PLB	PLBE	PLBE	PLBE	PLBE	–
5-1/2	20	139.7	29.76	9.17	–	–	PLB	PLBE	PLBE	PLBE	PLBE	–
5-1/2	23	139.7	34.23	10.54	–	–	PLB	PLBE	PLBE	PLBE	PLBE	PLBE
5-1/2	26.8	139.7	39.88	12.7	–	–	–	–	–	P	–	–
5-1/2	29.7	139.7	44.2	14.27	–	–	–	–	–	P	–	–
5-1/2	32.6	139.7	48.51	15.88	–	–	–	–	–	P	–	–
5-1/2	35.3	139.7	52.53	17.45	–	–	–	–	–	P	–	–
5-1/2	38	139.7	56.55	19.05	–	–	–	–	–	P	–	–
5-1/2	40.5	139.7	60.27	20.62	–	–	–	–	–	P	–	–
5-1/2	43.1	139.7	64.14	22.22	–	–	–	–	–	P	–	–
6-5/8	20	168.28	29.76	7.32	PS	PSLB	PSLB	–	–	–	–	–
6-5/8	24	168.28	35.72	8.94	–	PSLBE	PLB	PLBE	PLBE	PLBE	PLBE	–
6-5/8	28	168.28	41.67	10.59	–	–	PLB	PLBE	PLBE	PLBE	PLBE	–
6-5/8	32	168.28	47.62	12.06	–	–	–	PLBE	PLBE	PLBE	PLBE	PLBE
7	17	177.8	25.3	5.87	PS	–	–	–	–	–	–	–
7	20	177.8	29.76	6.91	PS	PS	PS	–	–	–	–	–
7	23	177.8	34.23	8.05	–	PSLBE	PLB	PLBE	PLBE	PLBE	–	–
7	26	177.8	38.69	9.19	–	PSLBE	PLB	PLBE	PLBE	PLBE	PLBE	–
7	29	177.8	43.16	10.36	–	–	PLB	PLBE	PLBE	PLBE	PLBE	–
7	32	177.8	47.62	11.51	–	–	PLB	PLBE	PLBE	PLBE	PLBE	–
7	35	177.8	52.09	12.65	–	–	–	PLBE	PLBE	PLBE	PLBE	PLBE
7	38	177.8	56.55	13.72	–	–	–	PLBE	PLBE	PLBE	PLBE	PLBE
7	42.7	177.8	63.54	15.88	–	–	–	–	–	P	–	–
7	46.4	177.8	69.05	17.45	–	–	–	–	–	P	–	–
7	50.1	177.8	74.56	19.05	–	–	–	–	–	P	–	–
7	53.6	177.8	79.77	20.62	–	–	–	–	–	P	–	–
7	57.1	177.8	84.97	22.22	–	–	–	–	–	P	–	–
7-5/8	24	193.68	35.72	7.62	PS	–	–	–	–	–	–	–
7-5/8	26.4	193.68	39.29	8.33	–	PSLBE	PSLB	PLBE	PLBE	PLBE	–	–
7-5/8	29.7	193.68	44.2	9.52	–	–	PLB	PLBE	PLBE	PLBE	PLBE	–
7-5/8	33.7	193.68	50.15	10.92	–	–	PLB	PLBE	PLBE	PLBE	PLBE	–
7-5/8	39	193.68	58.04	12.7	–	–	–	PLBE	PLBE	PLBE	PLBE	PLBE
7-5/8	42.8	193.68	63.69	14.27	–	–	–	PLB	PLB	PLB	PLB	PLB
7-5/8	45.3	193.68	67.41	15.11	–	–	–	PLB	PLB	PLB	PLB	PLB
7-5/8	47.1	193.68	70.09	15.88	–	–	–	PLB	PLB	PLB	PLB	PLB
7-5/8	51.2	193.68	76.19	17.45	–	–	–	–	–	P	–	–
7-5/8	55.3	193.68	82.3	19.05	–	–	–	–	–	P	–	–
7-3/4	46.1	196.85	68.6	15.11	–	–	–	P	P	P	P	P

Sizes		OD (mm)	Weight (kg/m)	WT (mm)	Type of End							
					H40	J55/K55	M65	L80/C95	N80-1/ N80-Q	C90/T95	P110	Q125
8-5/8	24	219.08	35.72	6.71	–	PS	PS	–	–	–	–	–
8-5/8	28	219.08	41.67	7.72	PS	–	PS	–	–	–	–	–
8-5/8	32	219.08	47.62	8.94	PS	PSLBE	PSLB	–	–	–	–	–
8-5/8	36	219.08	53.57	10.16	–	PSLBE	PSLB	PLBE	PLBE	PLBE	–	–
8-5/8	40	219.08	59.53	11.43	–	–	PLB	PLBE	PLBE	PLBE	PLBE	–
8-5/8	44	219.08	65.48	12.7	–	–	–	PLBE	PLBE	PLBE	PLBE	PLBE
8-5/8	49	219.08	72.92	14.15	–	–	–	PLBE	PLBE	PLBE	PLBE	
9-5/8	32.3	244.48	48.07	7.92	PS	–	–	–	–	–	–	–
9-5/8	36	244.48	53.57	8.94	PS	PSLB	PSLB	–	–	–	–	–
9-5/8	40	244.48	59.53	10.03	–	PSLBE	PSLB	PLBE	PLBE	PLBE	–	–
9-5/8	43.5	244.48	64.73	11.05	–	–	PLB	PLBE	PLBE	PLBE	PLBE	–
9-5/8	47	244.48	69.94	11.99	–	–	PLB	PLBE	PLBE	PLBE	PLBE	PLBE
9-5/8	53.5	244.48	79.62	13.84	–	–	–	PLBE	PLBE	PLBE	PLBE	PLBE
9-5/8	58.4	244.48	86.91	15.11	–	–	–	PLB	PLB	PLB	PLB	PLB
9-5/8	59.4	244.48	88.4	15.47	–	–	–	–	–	P	–	–
9-5/8	64.9	244.48	96.58	17.07	–	–	–	–	–	P	–	–
9-5/8	70.3	244.48	104.62	18.64	–	–	–	–	–	P	–	–
9-5/8	75.6	244.48	112.5	20.24	–	–	–	–	–	P	–	–
10-3/4	32.75	273.05	48.74	7.09	PS	–	–	–	–	–	–	–
10-3/4	40.5	273.05	60.27	8.89	PS	PSB	PSB	–	–	–	–	–
10-3/4	45.5	273.05	67.71	10.16	–	PSBE	PSB	–	–	–	–	–
10-3/4	51	273.05	75.9	11.43	–	PSBE	PSB	PSBE	PSBE	PSBE	PSBE	–
10-3/4	55.5	273.05	82.59	12.57	–	–	PSB	PSBE	PSBE	PSBE	PSBE	–
10-3/4	60.7	273.05	90.33	13.84	–	–	–	–	–	PSBE	PSBE	PSBE
10-3/4	65.7	273.05	97.77	15.11	–	–	–	–	–	PSB	PSB	PSB
10-3/4	73.2	273.05	108.93	17.07	–	–	–	–	–	P	–	–
10-3/4	79.2	273.05	117.86	18.64	–	–	–	–	–	P	–	–
10-3/4	85.3	273.05	126.94	20.24	–	–	–	–	–	P	–	–
11-3/4	42	298.45	62.5	8.46	PS	–	–	–	–	–	–	–
11-3/4	47	298.45	69.94	9.53	–	PSB	PSB	–	–	–	–	–
11-3/4	54	298.45	80.36	11.05	–	PSB	PSB	–	–	–	–	–
11-3/4	60	298.45	89.29	12.42	–	PSB	PSB	PSB	PSB	PSB	PSB	PSB
11-3/4	65	298.45	96.73	13.56	–	–	–	P	P	P	P	P
11-3/4	71	298.45	105.66	14.78	–	–	–	P	P	P	P	P
13-3/8	48	339.72	71.43	8.38	PS	–	–	–	–	–	–	–
13-3/8	54.5	339.72	81.1	9.65	–	PSB	PSB	–	–	–	–	–
13-3/8	61	339.72	90.78	10.92	–	PSB	PSB	–	–	–	–	–
13-3/8	68	339.72	101.19	12.19	–	PSB	PSB	PSB	PSB	PSB	PSB	–
13-3/8	72	339.72	107.15	13.06	–	–	–	PSB	PSB	PSB	PSB	PSB
16	65	406.4	96.73	9.53	PS	–	–	–	–	–	–	–
16	75	406.4	111.61	11.13	–	PSB	PSB	–	–	–	–	–
16	84	406.4	125.01	12.57	–	PSB	PSB	–	–	–	–	–
16	109	406.4	162.21	16.66	–	P	–	P	P	–	P	P
18-5/8	87.5	473.08	130.21	11.05	PS	PSB	PSB	–	–	–	–	–
20	94	508	139.89	11.13	PSL	PSLB	PSLB	–	–	–	–	–
20	106.5	508	158.49	12.7	–	PSLB	PSLB	–	–	–	–	–
20	133	508	197.93	16.13	–	PSLB	–	–	–	–	–	–

Remarks:

P – Plain end;

S – Short round thread;

L – Long round thread;

B – Buttress thread;

E – Extreme-line

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