



Grupo Legotec

Product Catalog

DOWNHOLE TOOLS



**QMS
REGISTERED**



Empresa Certificada API Q1 1588 / API QR 1743



ABOUT US

Legotec Group is an American Petroleum Institute (API) certified company. We specialize in the manufacturing of Drill Stem Subs, threading of rotary shouldered connections according to the following API QR Spec 7-1 license number: 7-1-1002.

All materials are validated by our Quality Management System making sure they meet all the standard specifications along with effective manufacturing process. Materials are fully certified with Test and Origin Certificate, assuring a high quality product.



API specifications are achieved through our strict manufacturing process and our drive towards excellence. Our quality control verifies that every thread complies with API standards.





Bit Sub

A bit sub is a short, threaded piece of pipe used to adapt parts of the drilling string that cannot otherwise be screwed together because of differences in thread size or design. Usually Bit subs are used to connect the drill bit to the next piece of equipment in the BHA. Because drill bits are “pin up” and all other drilling components are typically “pin down”, the bit sub functions as a crossover for BHA attachment. Bit subs can be bored out for installation of float valve assembly.



Float Sub

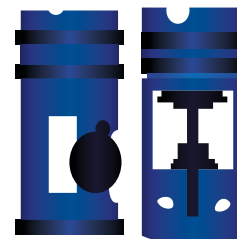
Float subs are used to house a float valve, also known as a back pressure valve. The float valve functions as a safety between the wellbore and the inside of the drillstring to prevent drilling fluids from backflowing up to surface. The flapper in the float valve, allows circulation but isolates the drill string from the well bore pressure. Float sub has pin and box connections matching with Bottom Hole Assembly and it is usually placed above bit or above mud motor. Decision on running a float sub in the string depends on company policy.

VALVE SIZE	OUTSIDE DIAMETER O.D.	INSIDE DIAMETER I.D.	CONNECTION	CONNECTION			OTHER POPULAR CONNECTIONS	
				DFR	LR	DBP	CONNECTION	LR
IR	3.125"-3.500"	1.125"-1.438"	2 3/8 REG	1.688"	9.125"	1.313"	NC23	9.125"
IF-2R	4.125"-4.500"	1.312"-1.500"	2 7/8 REG	1.938"	10.000"	1.500"	NC26	9.500"
2F-3R	4.750"-5.000"	1.500"-2.000"	3 1/2 REG	2.438"	10.500"	1.905"	NC31	10.250"
3F	4.875"-5.250"	2.000"	—	2.844"	—	—	3 1/2 FH	14.000"
3 1/2 IF	4.750"-5.250"	2.250"	—	3.156"	—	—	NC38	14.250"
4R	6.000"-7.000"	2.250"-2.813"	4 1/2 REG	3.500"	12.813"	2.938"	NC44	13.063"
4F	6.000"-7.000"	2.250"-2.813"	—	3.688"	—	—	NC46	16.750"
5R	7.000"-7.250"	2.250"-2.813"	5 1/2 REG	3.906"	14.750"	3.375"	NC50	14.500"
5F-6R	7.500"-9.000"	2.125"-2.813"	6 5/8 REG	4.813"	17.000"	4.281"	5 1/2 IF	17.000"
5F-6R	9.000"-10.000"	2.500"-3.000"	7 5/8 REG	4.813"	17.250"	4.281"	5 1/2 FH	17.000"
5F-6R	10.000"-11.000"	2.813"-3.000"	8 5/8 REG	4.813"	17.375"	4.281"	NC61	17.500"
6F	10.000"-11.000"	2.813"-3.000"	8 5/8 REG	5.719"	20.250"	5.188"	6 5/8 IF	19.875"

- a) If diameter DEP is the same as or smaller than bore, then disregard.
b) The ID of drill collar or sub and the ID of the bit pin shall be small enough to hold valve assembly.
c) LR - LFV + length of rotary shouldered pin + 6.4 mm (1/4 in).
d) Minimum total length face to face 36.000".

Technical Specification Of Valve Assembly

VALVE SIZE	IR	IF-2R	2F-3R	3F	3 1/2 IF	4R	4F	5R	5F-6R	6F
TER OF VALVE	1.656"	1.906"	2.406"	2.812"	3.125"	3.469"	3.656"	3.875"	4.781"	5.687"
LENGTH OF VALVE	5.875"	6.250"	6.500"	10.000"	10.000"	8.312"	12.000"	9.750"	11.750"	14.625"





Kelly Saver Sub

Kelly Saver Subs are manufactured from 4145M or 4140HT material grades. It's used to extend the life of the Kelly by taking the connection wear each time it is made up to a drill stem component. The saver sub connection is sacrificed because it can be easily repaired or inexpensively replaced. Kelly Saver Sub can be equipped with a rubber or brass protector to reduce BOP equipment and casing wear resulting from contact damage with the lower Kelly connection.

TYPE	OUTSIDE DIAMETER O.D.	INSIDE DIAMETER I.D.	LENGTH	CONNECTION	
				PIN	BOX
A	3.375"	1.250"	36.000"	NC26	NC26
B	3.375"	1.250"	48.000"	NC26	NC26
A	4.125"	1.750"	36.000"	NC31	NC31
B	4.125"	1.750"	48.000"	NC31	NC31
A	4.750"	2.250"	36.000"	NC38	NC38
B	4.750"	2.250"	48.000"	NC38	NC38
A	6.250"	2.812"	36.000"	NC46	NC46
B	6.250"	2.812"	48.000"	NC46	NC46
A	6.250" - 6.375"	2.812"	36.000"	NC50	NC50
B	6.250" - 6.375"	2.812"	48.000"	NC50	NC50
A	6.250" - 6.375"	3.250"	36.000"	5 1/2 FH	5 1/2 FH
B	6.250" - 6.375"	3.250"	48.000"	5 1/2 FH	5 1/2 FH
A	7.000"	3.250"	36.000"	NC56	NC56
B	7.000"	3.250"	48.000"	NC56	NC56

NOTES

a) The connection sizes and styles conform to the applicable sizes and styles, specified in Table 5 and Table 7 API 7-1 when connecting to kellys.



Swivel Sub

The swivel Sub is a mechanism that enables free rotation between connected sections of the tool string. The deep groove ball bearing and thrust bearing allow the mandrel of the tool to rotate the lower sub freely. Special electrical circuit incorporated in the tool ensures good power supply during rotation. This perfectly resolves any problems related to the rotation of the tool caused by twist of the cable.

Applications & Benefits:

OD can be customized to meet different requirements
H2S resistant

	OUTSIDE DIAMETER O.D.	INSIDE DIAMETER I.D.	MINIMUM TONG SPACE	LOWER PIN CONNECTION	UPPER PIN CONNECTION
Standard	7.750"	2.812"	8.000"	6 5/8 REG	6 5/8 REG
Optional	5.750"	2.250"	8.000"	4 1/2 REG	4 1/2 REG
Standard	7.750"	2.812"	8.000"	6 5/8 REG	6 5/8 REG
Optional	5.750"	2.250"	8.000"	4 1/2 REG	4 1/2 REG
Standard	7.750"	2.812"	8.000"	6 5/8 REG	6 5/8 REG
Optional	5.750"	2.250"	8.000"	4 1/2 REG	4 1/2 REG
Standard	7.750"	2.812"	8.000"	6 5/8 REG	6 5/8 REG
Optional	5.750"	2.250"	8.000"	4 1/2 REG	4 1/2 REG
Standard	7.750"	2.812"	8.000"	6 5/8 REG	6 5/8 REG
Optional	5.750"	2.250"	8.000"	4 1/2 REG	4 1/2 REG

INFORMATION

Swivel subs are made from AISI 4145. When ordering specify:

- a) Largest Diameter b) Bore c) Overall Length
d) Size & type of connection, Pin/Pin & special Joint features, if any.

Crossover Sub

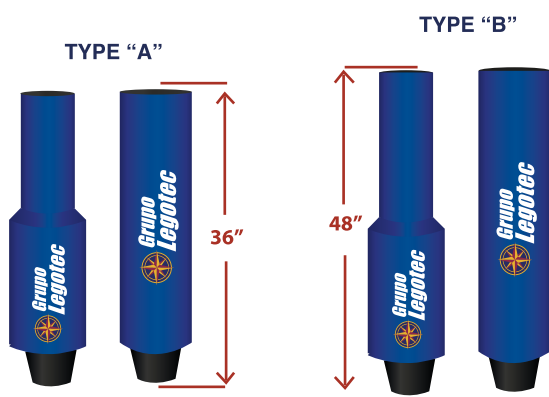
Crossover Subs are primarily used for a couple of purposes. They are used for crossing over from the size of a single connection to the other. Crossover sub is also used for prolonging the life of the more expensive components of the drill stems. Crossover sub is available primarily in 3 forms.

The connections of the Subs are available in 3 forms in the following types of configurations:

The Box – box

Box – pin

Pin – pin



CONNECTION	OUTSIDE DIAMETER O.D.	INSIDE DIAMETER I.D.
NC23	3.125"	1.125"-1.250"
NC26	3.375"- 3.875"	1.500"
NC31	4.125"- 4.375"	1.500"-2.000"
NC35	4.500"- 4.750"	2.000"
NC38	4.750"- 5.250"	2.250"-2.812"
NC40	5.250"- 5.750"	2.000"
NC44	5.500"- 6.250"	2.250"-2.812"
NC46	6.000"- 6.875"	2.250"-2.812"
NC50	6.375"- 7.250"	2.250"-2.812"
NC56	7.250"- 8.000"	2.250"-2.812"
NC61	8.000"- 9.000"	2.812"
NC70	9.250"-10.000"	2.812"- 3.000"
6 5/8 REG	7.500"- 8.250"	2.812"
7 5/8 REG	8.875"- 9.500"	2.812"- 3.000"
8 5/8 REG	10.000"-10.875"	3.000"

INFORMATION
Crossover subs are made from AISI 4145, They are available in all diameters and lengths. When ordering specify size and type.

a) Drill collar CO. b) Drill collar connection size and type Bore. c) Overall Length d) Diameter Length of the reduced section (for reduced section subs). Float bore. Size & type (for bit subs).

Lift Sub

Are of one-piece construction and manufactured from AISI 4145 or 4140HT alloy steel.

Lift subs are used to lift BHA components such as drilling motors, jars, shock tools, drill collars, etc. from the catwalk to the rig floor. Lift subs are simply screwed to the top of the tool and feature an elevator groove, engineered to API specifications 7-1, that the rig uses to pick up the tool.

They are two types:

Type A with 18 degree shoulder (Sloping shoulder).

Type B with 90 degree shoulder (Straight shoulder). They are normally manufactured with length 1200mm overall length. However this type of sub can be made to any lengths desired.



ELEVATOR RECESS DIAMETER DP	DIAMETER OF LIFT SHOULDER DL	OVERALL LENGTH L1	TOP LENGTH L2	ELEVATOR RECESS LENGTH L3	BOTTOM LENGTH L4
2.375"	3.375"	36.000"	4.000"	18.000"	14.000"
2.875"	4.125"	36.000"	4.000"	18.000"	14.000"
3.500"	4.750"	36.000"	4.000"	18.000"	14.000"
4.000"	6.000"	36.000"	4.000"	18.000"	14.000"
4.500"	6.250"	36.000"	4.000"	18.000"	14.000"
5.000"	6.500"	36.000"	4.000"	18.000"	14.000"
5.500"	7.000"	36.000"	4.000"	18.000"	14.000"
6.625"	8.000"	36.000"	4.000"	18.000"	14.000"

INFORMATION

Liftin subs can be either tapered or square shoulder types and are made from AISI 4145/4140. They are available in all diameters and lengths. When ordering specify size and type.

a) Drill collar OD. b) Drill collar connection size & type Bore. c) Tool Joint OD d) Tapered, square shoulder or combination e) Drill pipe OD.



Drill Collar

Component of a drillstring that provides weight on bit for drilling. Drill collars are thick-walled tubular pieces machined from ultrasonically tested bars of Chrome Molybdenum Alloy Steel (AISI 4145H modified materials) and available in all sizes and connections as per API Standards. The bars of steel are drilled from end to end to provide a passage to pumping drilling fluids through the collars. The outside diameter of the steel bars may be machined slightly to ensure roundness, and in some cases may be machined with helical grooves ("spiral collars"). Last, threaded connections, male on one end and female on the other, are cut so multiple collars can be screwed together along with other downhole tools to make a bottomhole assembly.

DRILL COLLAR NUMBER	DIAMETER			OPTIONAL CONECTIONS		WEIGHT (KG/M)	TORQUE DE APRETE		TORQUE DE APRETE	
	OUTSIDE DIAMETER (PULG)	INSIDE DIAMETER (PULG)	BEVEL DIAMETER (MM)	TYPE	WEIGHT		WEIGHT (KG/M)	WEIGHT (KG/M)	WEIGHT (KG/M)	WEIGHT (KG/M)
NC 23-31*	3 1/8	1 1/4	76.2	---	---	32.7	445	490	3283	3615
NC 26-35	3 1/2	1 1/2	82.9	2 3/8 IF	82.9	45	625	690	4611	5090
NC 31-41	4 1/8	2	100.4	2 3/8 IF	100.4	51.6	900	990	6639	7303
NC 35-47	4 3/4 (2)	2 1/4	114.7	NC 38-(3 1/2 XH)	116.3	69.7	1250	1350	9221	9959
NC 38-50	5	2 1/4	121	---	---	79.3	1750	1900	12910	14016
NC 40-55+	5 1/2	2 1/4	132.2	---	---	100.2	2300	2550	16967	18811
NC 40-57+	5 3/4	2 1/4	136.9	4 H 90-(4 FH)	139.7	113.3	2300	2550	16967	18811
NC 44-57	5 3/4	2 1/4	139.7	4 1/2 FH	140.5	113.3	2300	2800	3100	4.00
NC 44-60	6	2 1/4	144.5	4 H 90 - (4 1/2FH)	139.7	122.9	3150	3500	23238	25820
NC 44-60	6	2 13/16	144.5	NC 46-(4IF)	145.3	111.6	2450	2700	18074	19918
NC 44-62	6 1/4	2 1/4	149.2	4 1/2H 90-(NC 46)	152.4	134.7	3150	3500	23238	25820
NC 46-62	6 1/4	2 13/16	150	4 1/2 H 90	152.4	123.6	3000	3300	22131	24344
NC 46-65	6 1/2	2 1/4	154.8	5 H 90	155.6	148.1	3800	4200	28033	30983
NC 46-65	6 1/2	2 13/16	154.8	5 H 90	155.6	136.4	3000	3300	22131	24344
5 H 90	6 5/8	2 13/16	155.6	---	---	142.9	4000	4400	29508	32459
NC 46-67	6 3/4 (2)	2 1/4	159.5	5 H 90	161.9	161.5	3800	4200	28033	30983
NC 50-67+	6 3/4 (2)	2 13/16	159.9	5 H 90 (5 1/2 REG)	161.9	149.4	4350	4800	32090	35410
NC 50-70	7	2 1/4	164.7	5 1/2 H 90 (5 1/2 REG)	168.3	174.9	5150	5650	37992	41680



Stabilizer

Stabilizers are an integral part of the bottom hole assembly. They concentrate the weight of the drill collars on the bit, stiffen the BHA, and keep the drill collars away from the borehole wall, thus reducing the risk of stuck pipe.

Near bit stabilizers will always have a regular API box looking down the hole to adapt or connect the stabilizer to regular API connection on drilling bit, as well as being bored for float valve. In most cases near bit stabilizers are box by box, to adapt pin looking down the drill string, but are not limited from other adaptable connections (including pin up) for cross over connection purposes. These tools come with either welded on blades or integral blades.

OUTSIDE DIAMETER O.D.	INSIDE DIAMETER I.D.	UPPER NECK UN	LOWER NECK LN	BLADE DIAMETER BD	CONNECTION	
					BOX UN	BOX LN
4.750"	2.000"	30" Min Length	18" Min Length	5.125" to 7.375"	Nc38	3-1/2 REG
6.500"	2.812"	30" Min Length	18" Min Length	7.500" to 7.875"	NC46	4-1/2 REG
6.750"	2.812"	30" Min Length	18" Min Length	8.000" to 9.625"	NC50	4-1/2 REG
8.000"	2.812"	30" Min Length	18" Min Length	9.500" to 15.500"	6-5/8 REG	6-5/8 REG
8.000"	2.812"	30" Min Length	18" Min Length	15.625" to 20.000"	6-5/8 REG	7-5/8 REG
9.500"	3.000"	30" Min Length	18" Min Length	12.250" to 20.000"	7-5/8 REG	7-5/8 REG
9.500"	3.000"	30" Min Length	18" Min Length	15.625" to 26.000"	7-5/8 REG	7-5/8 REG
9.500" to 11.000"	3.000"	30" Min Length	18" Min Length	20.000" to 26.000"	7-5/8 REG	8-5/8 REG
11.000"	3.000"	30" Min Length	18" Min Length	> 26.000"	8-5/8 REG	8-5/8 REG

INFORMATION

String stabilizer and Near Bit Stabilizer are manufactured from AISI 4145/4140. They are available in all diameters and lengths when ordering please specify:

a) Drill collar Size and LD, b) Connection type and size c) Type stabilizer (Nearbit or String) d) Type of hardfacing

Pup Joints

Pup Joints are short drill pipe used to adjust the length of the drill string and are available in standard lengths of 5', 10', 15', 20' and can be ordered to match other drill pipe dimensions.

They are commonly used to adjust the length of the drill string to the elevation of rotary table for easy surface handling and drilling practices. They undergo the same stresses as drill pipe and their performance depends primarily on their superior mechanical properties. Pup joints are manufactured from AISI 4145H or 4140H-modified alloy, heat-treated to a Brinell Hardness range of 285-341 with a Charpy "V" notch minimum impact strength of 40 ft/lb at 70° F and one inch below the surface.



DRILL PIPE NOMINAL SIZE	LD	TOOL JOINT O.D.	CONNECTION SIZE & TYPE	ELEVATOR UPSET	SPACE LENGTHS			MECHANICAL PROPERTIES				AVAILABLE LENGTHS	APPROX WEIGHT
								TUBE		TOOL JOINT			
								TENSILE YIELD	TORSIONAL YIELD	TENSILE YIELD	TORSIONAL YIELD		
A"		C"		D"	E"	F"	(LB)	(PE-LB)	(LB)	(PE-LB)	G'	(LB)	
3 1/2	2 3/8	4 3/4 5	N.C. 38 (3 1/2 I.F.)	3 7/8	9 1/2	7	571,000	35,080	675,000	17,580 21,600	5 10 15 20	142 226 310 394	
3 1/2	2 11/14	4 3/4 5	N.C. 38 (3 1/2 I.F.)	3 7/8	9 1/2	7	434,330	29,030	538,400	16,000	5 10 15 20	131 198 265 332	
4	2 13/16	5 1/4 5 1/2	N.C. 40 (4 F.H.)	4 3/16	10	7	698,900	50,200	652,300	21,550	5 10 15 20	178 286 394 502	
4 1/2	3 1/4	6 6 1/4	N.C. 46 (4 I.F.)	4 11/16	10	7	836,950	68,850	826,100	30,450	5 10 15 20	219 348 477 607	
4 1/2	3 1/2	6 1/8 6 1/4 6 3/8	N.C. 50 (4 1/2 I.F.)	5	10	7	691,150	59,970	1,017,700	34,860 40,490 40,980	5 10 15 20	204 311 417 524	
4 1/2	3 1/4	6 1/8 6 1/4 6 3/8	N.C. 50 (4 1/2 I.F.)	5	10	7	534,550	48,970	861,100	34,200	5 10 15 20	180 263 345 428	
5	3 1/2	6 5/8	N.C. 50 (4 1/2 F.H.)	5 1/8	10	7	1101,500	98,600	1017,700	40,980	5 10 15 20	253 423 593 763	
5	3 1/4	6 5/8	N.C. 50 (4 1/2 I.F.)	5 1/8	10	7	944,950	88,700	861,100	34,200	5 10 15 20	228 374 520 655	

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