



Bull Dog Spear

MAN-TTT-212 (R01)

Thru-Tubing Technology

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Bull Dog Spear

Description

The Bull Dog Spear is a simple means of retrieving a fish from the wellbore. It can be run on wireline as well as on coil tubing. The spear consists of an external fishing neck, mandrel and a grapple.

Operation

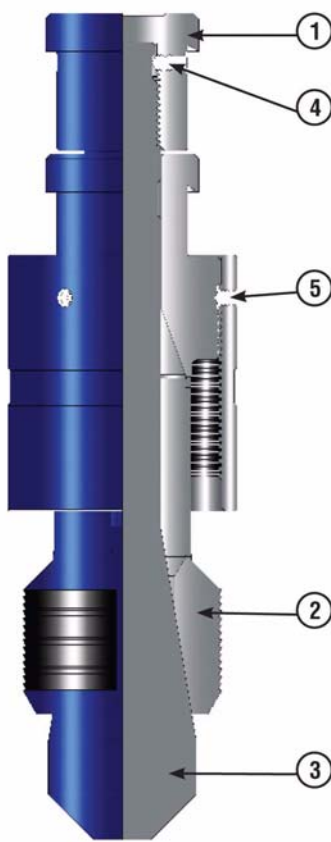
Once the spear is engaged in the fish, pull upward to wedge the mandrel under the grapple. The harder the pull, the harder the grapple will bite into the fish. The spear has a unique feature unlike other bull dog spears; the spear can be released from the fish. Release the running tool from the spear, run back in the hole with a "JD" pulling tool dressed with an "L" core, and latch onto the grapple that has an external fishing neck. Pulling upward will disengage the grapple and retrieval of the spear is possible. The range of catch is set up for an internal diameter of 0.562-2.062 inches.



Note: Unless otherwise indicated, all the strength figures given in this manual, are the result of calculations based on the yield strength of the material used in the manufacture of this product. These strength calculations are considered accurate within plus or minus 20% and are to be used only as a guide. They do not constitute a guarantee, actual or implied. In use, appropriate allowance should be made as a safety factor.

Bull Dog Spear

TT0212-059A BOM, Schematic and Specs



ITEM	QTY	TOOL PARTS DESCRIPTION	PART NUMBER
1	1	Fishing Neck 2" External	TT0212-138A-001
2	1	Grapple 0.562 - 0.625 Catch 0.593 Nominal	TT0213-059A-002
3	1	Mandrel	TT0212-059A-003
4	2	Steel Allen Set Screws 10-24 x 1/4"	PUR-TSAS120-016
5	3	Socket Head Cap Screws 1/4-20 x 5/16"	PUR-TSHC160-020

Tool Name: 1.750 in. OD Bull-Dog Spear w/0.562 in.–0.625 in. Catch

Product Code: TT0212-059A

Tool OD: 1.750 in. **Tool I.D.:** N/A

Material: AISI 4140 HT 30-36 Rc

Tool Length: 10.13 in.

Minimum Yield: 105,000 psi

Strength Properties of Tool:

Minimum Yield Point and Load to Yield: The external fish neck lip of the Fish Neck Sub, 37,500 lbs; the Grapple engagement taper of the Mandrel, 9,850 lbs. Maximum allowable bearing load on engagement taper of Mandrel, 15,300 lbs.

Burst Point and Burst Pressure: N/A.

Torsional Weak Point and Ft-Lbs to Yield: N/A.

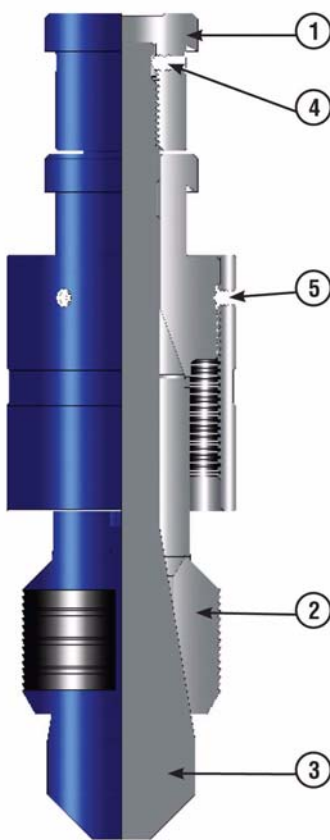
Miscellaneous Information:

Catch Range: 0.562in. – 0.625 in. ID (0.593 in. Nominal).

Fishing Profiles: Fish Neck Sub - 2 in. external (1.375 in. OD), Grapple Fishing Neck - 2 in. external (1.375 in. OD).

Bull Dog Spear

TT0212-066A BOM, Schematic and Specs



ITEM	QTY	TOOL PARTS DESCRIPTION	PART NUMBER
1	1	Fishing Neck 2" External	TT0212-138A-001
2	1	Grapple 0.625 - 0.718 Catch 0.656 Nominal	TT0213-066A-002
3	1	Mandrel	TT0212-059A-003
4	2	Steel Allen Set Screws 10-24 x 1/4"	PUR-TSAS120-016
5	3	Socket Head Cap Screws 1/4-20 x 5/16"	PUR-TSHC160-020

Tool Name: 1.750 in. OD Bull-Dog Spear w/0.625 in. – 0.718 in. Catch

Product Code: TT0212-066A

Tool OD: 1.750 in. **Tool ID:** N/A

Material: AISI 4140 HT 30-36 Rc

Tool Length: 10.13 in.

Minimum Yield: 105,000 psi

Strength Properties of Tool:

Minimum Yield Point and Load to Yield: The external fish neck lip of the Fish Neck Sub, 37,500 lbs; the Grapple engagement taper of the Mandrel, 13,400 lbs. Maximum allowable bearing load on engagement taper of Mandrel, 15,300 lbs.

Burst Point and Burst Pressure: N/A.

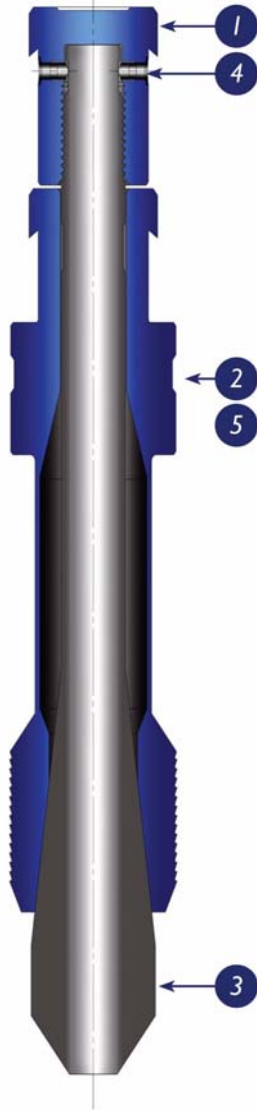
Torsional Weak Point and Ft-Lbs to Yield: N/A.

Miscellaneous Information:

Catch Range: 0.625 in. – 0.718 in. ID (0.656 in. Nominal).

Fishing Profiles: Fish Neck Sub – 2 in. external (1.375 in. OD), Grapple Fishing Neck - external (1.375 in. OD)

TT0212-078A BOM, Schematic and Specs



ITEM	QTY	TOOL PARTS DESCRIPTION	PART NUMBER
1	1	Fishing Neck 2" External	TT0212-138A-001
2	1	Grapple 0.750 - 0.843 Catch 0.781 Nominal	TT0213-078A-002
3	1	Mandrel	TT0212-078A-003
4	2	Steel Allen Set Screws 10-24 x 1/4"	PUR-TSAS120-016
5	3	Socket Head Cap Screws 1/4-20 x 5/16"	PUR-TSHC160-020

Tool Name: 1.750 in. OD Bull-Dog Spear w/0.750 in. – 0.843 in. Catch

Product Code: TT0212-078A

Tool OD: 1.750 in. **Tool ID:** N/A

Material: AISI 4140 HT 30-36 Rc

Tool Length: 11.22 in.

Minimum Yield: 105,000 psi

Strength Properties of Tool:

Minimum Yield Point and Load to Yield: The external fish neck lip of the Fish Neck Sub, 37,500 lbs; the Grapple engagement taper of the Mandrel, 17,500 lbs. Maximum allowable bearing load on engagement taper of Mandrel, 31,200 lbs.

Burst Point and Burst Pressure: N/A.

Torsional Weak Point and Ft-Lbs to Yield: N/A.

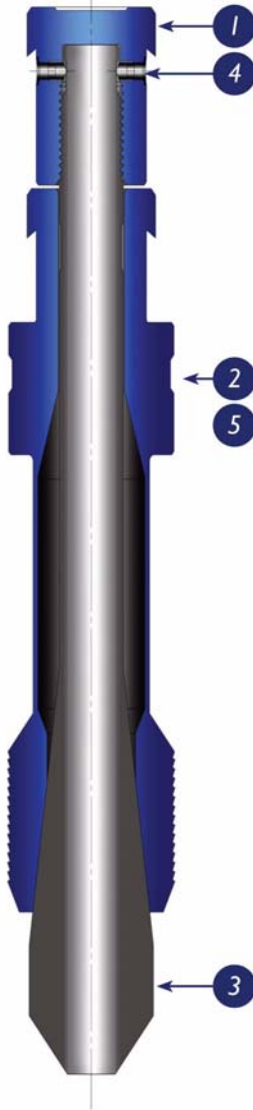
Miscellaneous Information:

Catch Range: 0.750 in. – 0.843 in. ID (0.781 in. Nominal).

Fishing Profiles: Fish Neck Sub – 2 in. external (1.375 in. OD), Grapple Fishing Neck – 2 in. external (1.375 in. OD).

Bull Dog Spear

TT0212-091A BOM, Schematic and Specs



ITEM	QTY	TOOL PARTS DESCRIPTION	PART NUMBER
1	1	Fishing Neck 2" External	TT0212-138A-001
2	1	Grapple 0.875 - 0.968 Catch 0.906 Nominal	TT0213-091A-002
3	1	Mandrel	TT0212-078A-003
4	2	Steel Allen Set Screws 10-24 x 1/4"	PUR-TSAS120-016
5	3	Socket Head Cap Screws 1/4-20 x 5/16"	PUR-TSHC160-020

Tool Name: 1.750 in. OD Bull-Dog Spear w/0.875 in. – 0.968 in. Catch

Product Code: TT0212-091A **Tool OD:** 1.750 in. **Tool ID:** N/A

Material: AISI 4140 HT 30-36 Rc **Tool Length:** 11.21 in.

Minimum Yield: 110,000 psi

Strength Properties of Tool:

Minimum Yield Point and Load to Yield: The external fish neck lip of the Fish Neck sub, 37,500 lbs; the Grapple engagement taper of the Mandrel, 24,300 lbs.

Burst Point and Burst Pressure: N/A.

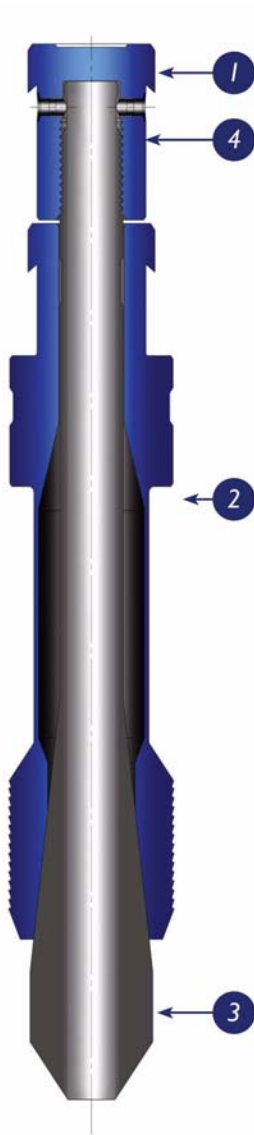
Torsional Weak Point and Ft-Lbs to Yield: N/A.

Miscellaneous Information:

Catch Range: 0.875 in. – 0.968 in. ID (0.906 in. Nominal).

Fishing Profiles: Fish Neck sub: 2 in. external (1.375 in. OD). Grapple Fishing Neck: 2 in. external (1.375 in. OD).

TT0212-103A BOM, Schematic and Specs



ITEM	QTY	TOOL PARTS DESCRIPTION	PART NUMBER
1	1	Fishing Neck 2" External	TT0212-138A-001
2	1	Grapple 0.938 -1.062 Catch 1.031 Nominal	TT0213-103A-002
3	1	Mandrel	TT0212-103A-003
4	2	Steel Allen Set Screws 10-24 x 1/4"	PUR-TSAS120-016

Tool Name: 1.750 in. OD Bull-Dog Spear w/0.938 in. – 1.062 in. Catch

Product Code: TT0212-103A **Tool OD:** 1.750 in. **Tool ID:** N/A

Material: AISI 4140 HT 30-36 Rockwell C **Tool Length:** 9.77 in.

Minimum Yield: 105,000 psi

Strength Properties of Tool:

Minimum Yield Point and Load to Yield: The external fish neck lip of the Fish Neck Sub, 37,500 lbs; the Grapple engagement taper of the Mandrel, 18,850 lbs. Maximum allowable bearing load on engagement taper of Mandrel, 23,500 lbs.

Burst Point and Burst Pressure: N/A.

Torsional Weak Point and Ft-Lbs to Yield: N/A.

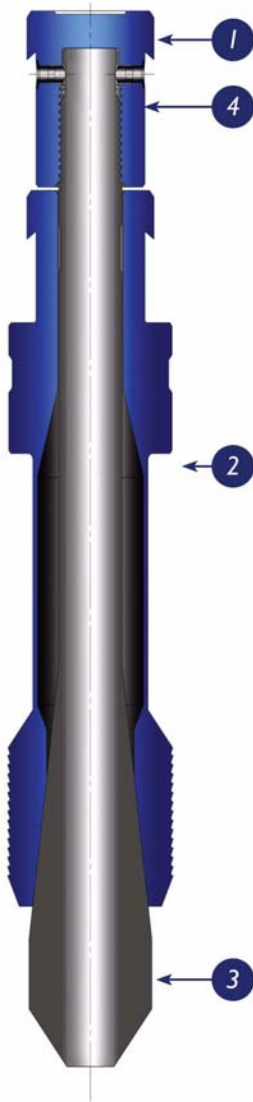
Miscellaneous Information:

Catch Range: 0.938 in. – 1.062 in. ID (1.031 in. Nominal).

Fishing Profiles: Fish Neck Sub – 2 in. external (1.375 in. OD), Grapple Fishing Neck – 2 in. external (1.375 in. OD).

Bull Dog Spear

TT0212-116A BOM, Schematic and Specs



ITEM	QTY	TOOL PARTS DESCRIPTION	PART NUMBER
1	1	Fishing Neck 2" External	TT0212-138A-001
2	1	Grapple 1.063 - 1.188 Catch 1.155 Nominal	TT0213-116A-002
3	1	Mandrel	TT0212-103A-003
4	2	Steel Allen Set Screws 10-24 x 1/4"	PUR-TSAS120-016

Tool Name: 1.750 in. OD Bull-Dog Spear w/1.063 in. – 1.188 in. Catch

Product Code: TT0212-116A **Tool OD:** 1.750in. **Tool ID:** N/A

Material: AISI 4140 HT 30-36 Rc **Tool Length:** 9.77 in.

Minimum Yield: 110,000 psi

Strength Properties of Tool:

Minimum Yield Point and Load to Yield: The external fish neck lip of the Fish Neck sub, 37,500 lbs; the Grapple engagement taper of the Mandrel, 49,500 lbs.

Burst Point and Burst Pressure: N/A.

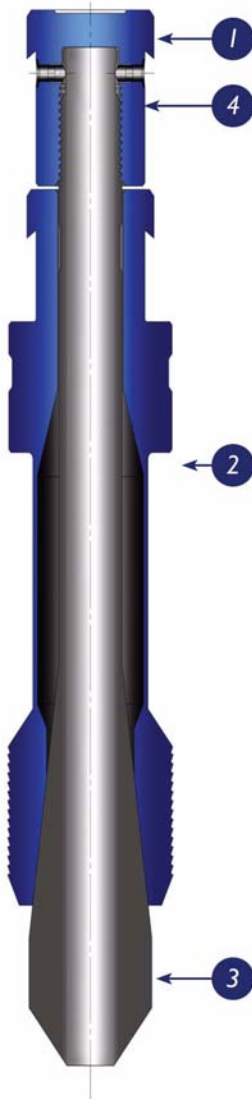
Torsional Weak Point and Ft-Lbs to Yield: N/A.

Miscellaneous Information:

Catch Range: 1.063 in. – 1.188 in. ID (1.155 in. Nominal).

Fishing Profiles: Fish Neck sub: 2 in. external (1.375 in. OD). Grapple Fishing Neck: 2 in. external (1.375 on. OD).

TT0212-128A BOM, Schematic and Specs



ITEM	QTY	TOOL PARTS DESCRIPTION	PART NUMBER
1	1	Fishing Neck 2" External	TT0212-138A-001
2	1	Grapple 1.188 - 1.313 Catch 1.281 Nominal	TT0213-128A-002
3	1	Mandrel	TT0212-103A-003
4	2	Steel Allen Set Screws 10-24 x 1/4"	PUR-TSAS120-016

Tool Name: 1.750 in. OD Bull-Dog Spear w/1.188 in. – 1.313 in. Catch

Product Code: TT0212-128A

Tool OD: 1.750 in. **Tool ID:** N/A

Material: AISI 4140 HT 30-36 Rockwell C

Tool Length: 9.77 in.

Minimum Yield: 105,000 psi

Strength Properties of Tool:

Minimum Yield Point and Load to Yield: The external fish neck lip of the Fish Neck Sub, 37,500 lbs; the Grapple engagement taper of the Mandrel, 39,900 lbs. Maximum allowable bearing load on engagement taper of Mandrel, 23,500 lbs.

Burst Point and Burst Pressure: N/A.

Torsional Weak Point and Ft-Lbs to Yield: N/A.

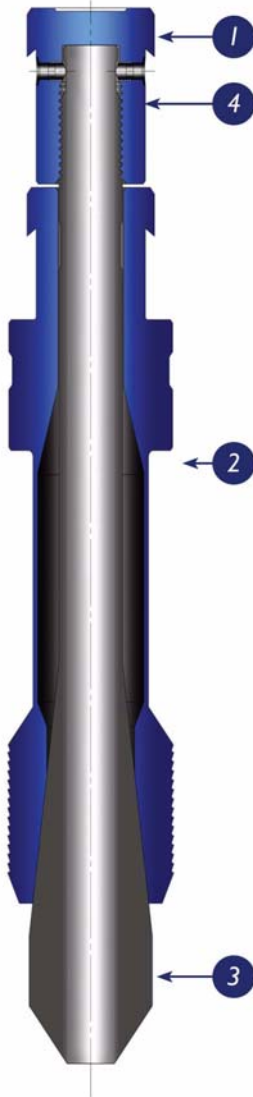
Miscellaneous Information:

Catch Range: 1.188 in. – 1.313 in. ID (1.281 in. Nominal).

Fishing Profiles: Fish Neck Sub – 2 in. external (1.375 in. OD), Grapple Fishing Neck – 2 in. external (1.375 in. OD).

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TT0212-141A BOM, Schematic and Specs



ITEM	QTY	TOOL PARTS DESCRIPTION	PART NUMBER
1	1	Fishing Neck 2" External	TT0212-138A-001
2	1	Grapple 1.343 - 1.468 Catch 1.406 Nominal	TT0213-141A-002
3	1	Mandrel	TT0212-103A-003
4	2	Steel Allen Set Screws 10-24 x 1/4"	PUR-TSAS120-016

Tool Name: 1.750 in. OD Bull-Dog Spear w/1.343 in. – 1.468 in. Catch

Product Code: TT0212-141A **Tool OD:** 1.750 in. **Tool ID:** N/A

Material: AISI 4140 HT 30-36 Rockwell C **Tool Length:** 9.77 in.

Minimum Yield: 105,000 psi

Strength Properties of Tool:

Minimum Yield Point and Load to Yield: The external fish neck lip of the Fish Neck Sub, 37,500 lbs; the Grapple engagement taper of the Mandrel, 50,500 lbs. Maximum allowable bearing load on engagement taper of Mandrel, 23,500 lbs.

Burst Point and Burst Pressure: N/A.

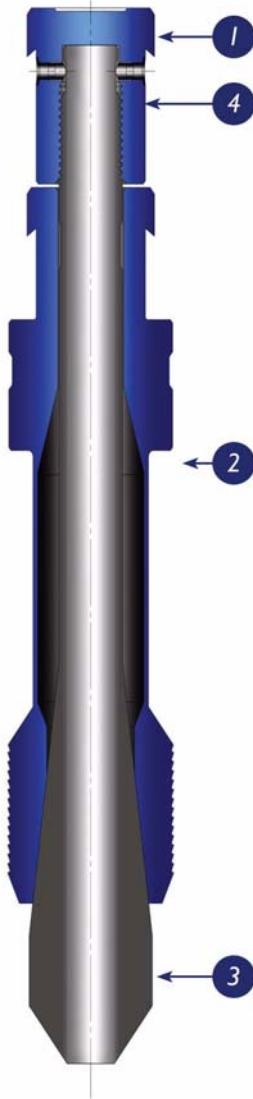
Torsional Weak Point and Ft-Lbs to Yield: N/A.

Miscellaneous Information:

Catch Range: 1.343 in. – 1.468 in. ID (1.406 in. Nominal).

Fishing Profiles: Fish Neck Sub – 2 in. external (1.375 in. OD), Grapple Fishing Neck – 2 in. external (1.375 in. OD).

TT0212-153A BOM, Schematic and Specs



ITEM	QTY	TOOL PARTS DESCRIPTION	PART NUMBER
1	1	Fishing Neck 2" External	TT0212-138A-001
2	1	Grapple 1.468 - 1.593 Catch 1.531 Nominal	TT0213-153A-002
3	1	Mandrel	TT0212-153A-003
4	2	Steel Allen Set Screws 10-24 x 1/4"	PUR-TSAS120-016

Tool Name: 1.750 in. OD Bull Dog Spear w/1.468 in. - 1.593 in. Catch

Product Code: TT0212-153A **Tool OD:** 1.750 in. **Tool ID:** N/A

Material: AISI 4140 HT **Tool Length:** 9.2 in.

Minimum Yield: 100,000 psi

Strength Properties of Tool:

Minimum Yield Point and Load to Yield: The external fish neck lip of the Fish Neck sub, 37,500 lbs; the Grapple engagement taper of the Mandrel, 49,500 lbs.

Burst Point and Burst Pressure: N/A.

Torsional Weak Point and Ft-Lbs to Yield: N/A.

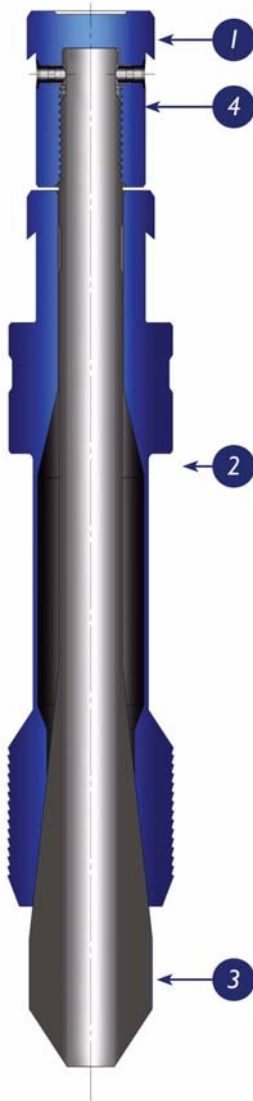
Miscellaneous Information:

Catch Range: 1.468 in. - 1.593 in. ID (1.531 in. Nominal).

Fishing Profiles: Fish Neck sub: 2 in. external (1.375 in. OD). Grapple: 2 in. external (1.375 in. OD).

Bull Dog Spear

TT0212-166A BOM, Schematic and Specs



ITEM	QTY	TOOL PARTS DESCRIPTION	PART NUMBER
1	1	Fishing Neck 2" External	TT0212-138A-001
2	1	Grapple 1.593 - 1.718 Catch 1.656 Nominal	TT0213-166A-002
3	1	Mandrel	TT0212-153A-003
4	2	Steel Allen Set Screws 10-24 x 1/4"	PUR-TSAS120-016

Tool Name: 2.000 in. OD Bull Dog Spear w/1.593 in. - 1.718 in. Catch

Product Code: TT0212-166A **Tool OD:** 2.000 in. **Tool ID:** N/A

Material: AISI 4140 HT 30-36 Rockwell C **Tool Length:** 9.19 in.

Minimum Yield: 105,000 psi

Strength Properties of Tool:

Minimum Yield Point and Load to Yield: The external fish neck lip of the Fish Neck Sub, 37,500 lbs; the Grapple engagement taper of the Mandrel, 78,800 lbs. Maximum allowable bearing load on engagement taper of Mandrel, 81,100 lbs.

Burst Point and Burst Pressure: N/A.

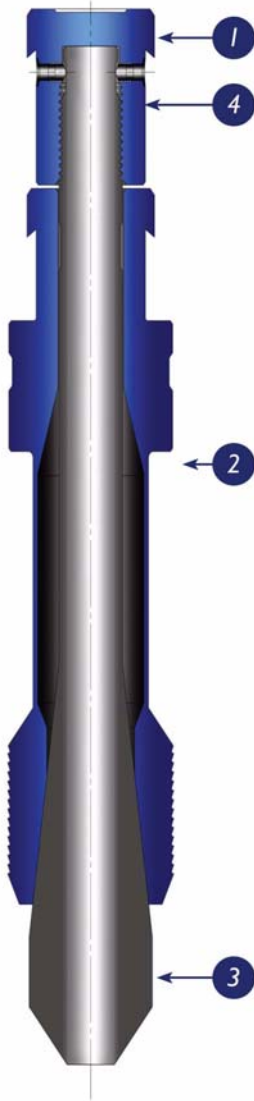
Torsional Weak Point and Ft-Lbs to Yield: N/A.

Miscellaneous Information:

Catch Range: 1.593 in. - 1.718 in. ID (1.656 in. Nominal).

Fishing Profiles: Fish Neck Sub – 2 in. external (1.375 in. OD), Grapple – 2 in. external (1.375 in. OD).

TT0212-178A BOM, Schematic and Specs



ITEM	QTY	TOOL PARTS DESCRIPTION	PART NUMBER
1	1	Fishing Neck 2" External	TT0212-138A-001
2	1	Grapple 1.688 - 1.813 Catch 1.781 Nominal	TT0213-178A-002
3	1	Mandrel	TT0212-153A-003
4	2	Steel Allen Set Screws 10-24 x 1/4"	PUR-TSAS120-016

Tool Name: 2.000 in. OD Bull Dog Spear w/1.688 in. - 1.813 in. Catch

Product Code: TT0212-178A **Tool OD:** 2.000 in. **Tool ID:** N/A

Material: AISI 4140 HT 30-36 Rockwell C **Tool Length:** 9.19 in.

Minimum Yield: 105,000 psi

Strength Properties of Tool:

Minimum Yield Point and Load to Yield: The external fish neck lip of the Fish Neck Sub, 37,500 lbs; the Grapple engagement taper of the Mandrel, 96,000 lbs. Maximum allowable bearing load on engagement taper of Mandrel, 81,100 lbs.

Burst Point and Burst Pressure: N/A.

Torsional Weak Point and Ft-Lbs to Yield: N/A.

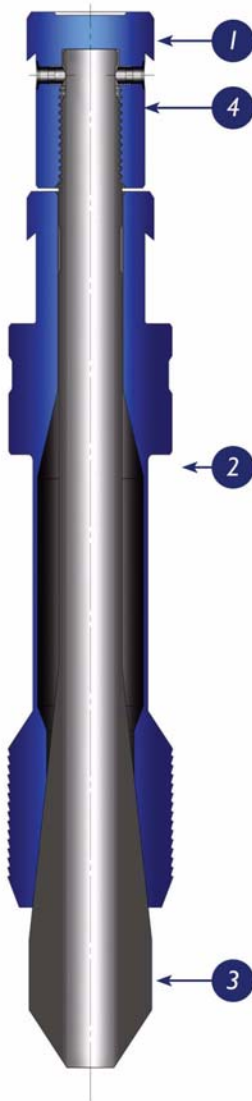
Miscellaneous Information:

Catch Range: 1.688 in. - 1.813 in. ID (1.781 in. Nominal).

Fishing Profiles: Fish Neck Sub – 2 in. external (1.375 in. OD), Grapple – 2 in. external (1.375 in. OD).

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TT0212-191A BOM, Schematic and Specs



ITEM	QTY	TOOL PARTS DESCRIPTION	PART NUMBER
1	1	Fishing Neck 2" GS	TT0212-138A-001
2	1	Grapple 1.813 - 1.938 Catch 1.906 Nominal	TT0213-191A-002
3	1	Mandrel	TT0212-191A-003
4	2	Steel Allen Set Screws 10-24 x 1/4"	PUR-TSAS120-016

Tool Name: 2.375 in. OD Bull Dog Spear w/1.813 in. - 1.938 in. Catch

Product Code: TT0212-191A **Tool OD:** 2.375 in. **Tool ID:** N/A

Material: AISI 4140 HT 30-36 Rockwell C **Tool Length:** 9.77 in.

Minimum Yield: 105,000 psi

Strength Properties of Tool:

Minimum Yield Point and Load to Yield: The external fish neck lip of the Fish Neck Sub, 37,500 lbs; the Grapple engagement taper of the Mandrel, 134,500 lbs. Maximum allowable bearing load on engagement taper of Mandrel, 138,000 lbs.

Burst Point and Burst Pressure: N/A.

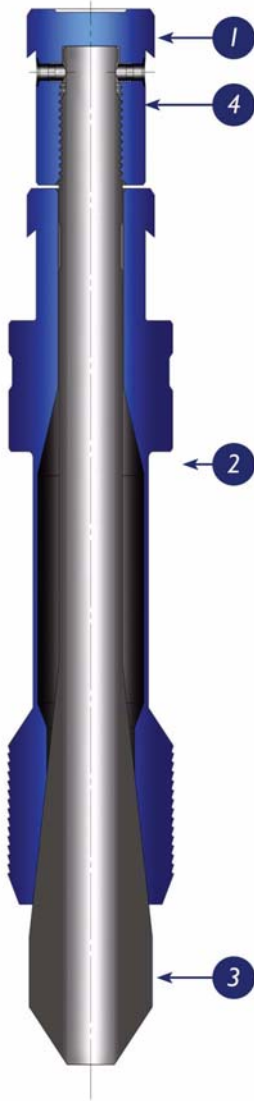
Torsional Weak Point and Ft-Lbs to Yield: N/A.

Miscellaneous Information:

Catch Range: 1.813 in. - 1.938 in. ID (1.906 in. Nominal).

Fishing Profiles: Fish Neck Sub – 2 in. external (1.375 in. OD), Grapple – 2 in. external (1.375 in. OD).

TT0212-203A BOM, Schematic and Specs



ITEM	QTY	TOOL PARTS DESCRIPTION	PART NUMBER
1	1	Fishing Neck 2" External	TT0212-138A-001
2	1	Grapple 1.938 - 2.093 Catch 2.031 Nominal	TT0213-203A-002
3	1	Mandrel	TT0212-191A-003
4	2	Steel Allen Set Screws 10-24 x 1/4"	PUR-TSAS120-016

Tool Name: 2.375 in. OD Bull Dog Spear w/1.938 in. – 2.093 in. Catch

Product Code: TT0212-203A **Tool OD:** 2.375 in. **Tool ID:** N/A

Material: AISI 4140 HT 30-36 Rockwell C **Tool Length:** 9.77 in.

Minimum Yield: 105,000 psi

Strength Properties of Tool:

Minimum Yield Point and Load to Yield: The external fish neck lip of the Fish Neck Sub, 37,500 lbs; the Grapple engagement taper of the Mandrel, 154,500 lbs. Maximum allowable bearing load on engagement taper of Mandrel, 138,000 lbs.

Burst Point and Burst Pressure: N/A.

Torsional Weak Point and Ft-Lbs to Yield: N/A.

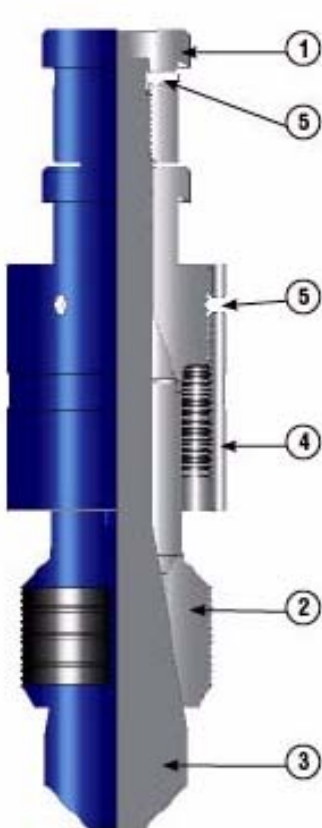
Miscellaneous Information:

Catch Range: 1.938 in. – 2.093 in. ID (2.013 in. Nominal).

Fishing Profiles: Fish Neck Sub, 2 in. external (1.375 in. OD), Grapple – 2 in. external (1.375 in. OD).

Bull Dog Spear

TT0212-225A BOM, Schematic and Specs



ITEM	QTY	TOOL PARTS DESCRIPTION	PART NUMBER
1	1	2-1/2" FISHING NECK	TT0212-225A-001
2	1	GRAPPLE 2.250-2.350 Catch 2.281" NOMINAL	TT0213-225A-002
3	1	MANDREL	TT0212-225A-003
4	1	ADJUSTER SLEEVE	TT0212-225A-004
5	5	10-24 X 1/4" SOCKET SET SCREW W/CONE POINT	PUR-TSAS120-016

Tool Name: 2.250 in. OD Bull-Dog Spear w/2.250 in. - 2.350 in. Catch

Product Code: TT0212-225A **Tool OD:** 2.625 in. **Tool ID:** N/A

Material: AISI 4140 HT 30-36 Rc **Tool Length:** 9.50 in.

Minimum Yield: 110,000 psi

Strength Properties of Tool:

Minimum Yield Point and Load to Yield: The external fish neck lip of the Fish Neck sub, 43,500 lbs; the Grapple engagement taper of the Mandrel, 54,450 lbs.

Burst Point and Burst Pressure: N/A.

Torsional Weak Point and Ft-Lbs to Yield: N/A.

Miscellaneous Information:

Catch Range: 2.250 in. – 2.350 in. ID (2.281 in. Nominal).

Fishing Profiles: Fish Neck sub: 2-1/2 in. external (1.750 in. OD). Grapple: 2-1/2 in. external (1.750 in. OD).

1.0 Pre-Assembly



Warning: *Make sure all tool parts and components have been thoroughly cleaned or serious damage and/or injury could occur!*



Note: *Verify that the correct redress kit and quantities are used as specified on the Bill Of Materials (for example, 5 each etc....). Lay out all redress kit components on a clean surface.*



Note: *Make sure to lubricate all O-rings and threaded surfaces.*



Note: *Visually inspect all parts for damage or wear. Thread parts together without the O-rings to check fit. Repair or replace damaged parts.*



Caution: *Always file wrench marks or burrs and clean off debris!*



Caution: *This tool should always be disassembled, cleaned thoroughly, inspected and reassembled after each job!*

2.0 Assembly

2.1 Grease the entire ID of the Grapple (item #2), then insert the Mandrel (item #3), threads first, into the Grapple fingers.

2.2 If you are not using a Bull Dog Spear, sizes TT0212-059A - TT0212-91A, then proceed to step 2.3. Otherwise insert the 3 Cap Screws (item #5) into the Grapple and tighten.

2.3 Grease the Fishing Neck (item #1) and screw it onto the Mandrel until it Bottoms out (there may be some Mandrel threads still showing, this is normal).

2.4 Finally, insert the 2 Set Screws (item #4) into the Fishing Neck and tighten.

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3.0 Disassembly

3.1 Remove and discard the 2 Set Screws (item #4).

3.2 Remove the Fishing Neck (item #1).

3.3 If present remove the Cap Screws (refer to step 2.2).

3.4 Remove the Grapple (item #2) from the Mandrel (item #3).



Note: If the Grapple wickers are dull or damaged, the Grapple should be replaced.



Note: Visually inspect tool for swelling after each use. Damaged or swelled components must be replaced.



Note: It is recommended that a Magnetic Particle Inspection (MPI) be completed on all components after each job.