

## Standard and Spiral

RDT drill collars are manufactured from 4145-modified continuous-line quenched and tempered steel. Strict metallurgical specifications are followed to ensure that full-length heat-treating produces a consistent maximum depth of hardness. After processing, each bar is inspected full-length ultrasonically and visually. This heat treated and carefully inspected steel is then bored with an inside diameter and drifted.

After thorough inspection, our drill collars are machined with an API

Stress-relief Groove and Bore Back in the pin and box, respectively. Our machining processes and the addition of our standard stress-relief features ensure that our products have the proper requirements to meet our customer's expectations.

At RDT we have spared no effort or expense in the design, manufacture and quality control of any of our products, and the RDT drill collar is no exception.

## API Certified Manufacturing Facility

Our API certification, attention to detail and our in-house testing lab assures you of quality, dependable products. Every effort has been made to create a line of drill collars that are balanced for optimum properties. Brinell hardness testing, tensile testing, impact testing, chemistry and microstructure examinations are all part of the tremendous care we take to guarantee strength, toughness and hardness. A hardness of 285 to 341 BHN and minimum impact values of 40 ft-lbs at ambient temperatures are ensured one inch below the mill surface.



## Features of All Our Drill Collars

- The bores of our drill collars are machined to close tolerance by precision drilling methods and are drifted to API specifications. The surface is “as rolled”, which is the original mill finish.
- All connections are chemically treated to prevent galling.
- Thread roots are cold-worked to provide longer fatigue life.
- All drill collars are shipped with thread protectors.

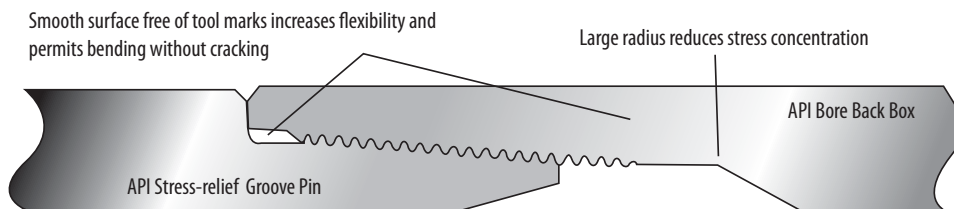


## Stress-Relief Features

Stress-relief features reduce the chance of failure due to the cyclic fatigue inherent in bending. RDT drill collars have an API Stress-relief Groove on the pin and a Bore Back Box which remove unengaged threads in highly stressed areas of the drill collar joint. This leads to fewer failures as bending occurs in the smooth surfaces, which are free from stress concentrations.



## Stress Relief Features



## Spiral Drill Collars

The spiral cut is designed to prevent, or at least greatly reduce, the likelihood of differential wall-sticking. The box end of the spiral collar is left uncut from 12 to 15 inches from the slip or 24 inches from the box end. The pin end is left uncut 48 inches from pin end shoulder. The spiral cutting process reduces the collar weight by approximately 4 percent.

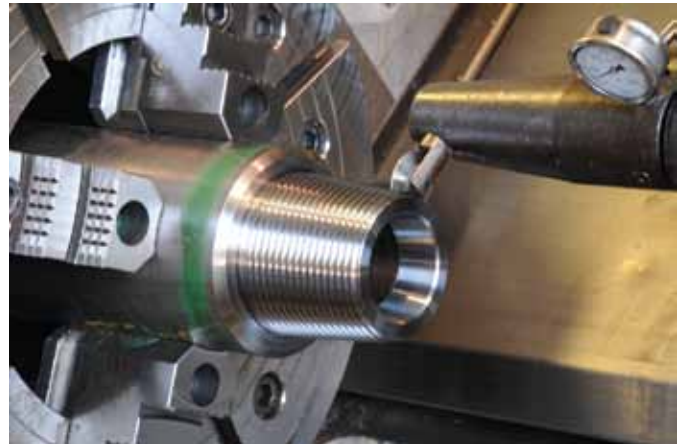
## Quality Control

Every stage in the manufacture of our drill collars is rigidly controlled. We perform continuous inspections on threading, which is one of the most critical operations in the manufacture of quality products. Lead and taper, thread profile, depth of thread, and gauge stand-off are all constantly monitored to guarantee API tolerances and uniformity.

## Technical Specifications

RDT is certified to use the API monogram. Specification 7-1 outlines certain requirements for the manufacture of drill collars and rotary-shouldered connections machined on the ends of drill collars. These specifications are designed to insure that parts will fit together and will be interchangeable regardless of manufacturer.

## Slip and Elevator Recess Option



**Note:** Slip and Elevator recesses may be used together or separately.

## Standard Sizes, Bores and Connections for Drill Collars

Collar Number <sup>1</sup> or Size and Type	Minimum Drill Collar OD	Bore Tolerance +1/16" -0"	Length (ft.) Tolerance +/- 6	Bending Strength Ratio <sup>2</sup>	Approximate Weight of 31 Ft. Drill Collar (lbs)
NC 23-31	3-1/8	1-1/4	30	2.57:1	660
NC 26-35 (2-3/8 IF)	3-1/2	1-1/2	30	2.42:1	800
NC 31-41 (2-7/8 IF)	4-1/8	2	30	2.43:1	1040
NC 38-47	4-3/4	2-1/4	31	1.85:1	1451
NC 38-50 (3-1/2 IF)	5	2-1/4	31	2.38:1	1652
NC 44-60	6	2-1/4	31	2.49:1	2561
NC 44-60	6	2-13/16	31	2.84:1	2353
NC 44-62	6-1/4	2-1/4	31	2.91:1	2806
NC 46-62 (4 IF)	6-1/4	2-13/16	31	2.63:1	2598
NC 46-65 (4 IF)	6-1/2	2-1/4	31	2.76:1	3085
NC 46-65 (4 IF)	6-1/2	2-13/16	31	3.05:1	2877
NC 50 (4 IF)	6-3/4	2-1/4	31	3.18:1	3364
NC 50-70 (4-1/2 IF)	7	2-1/4	31	2.54:1	3643
NC 50-70 (4-1/2 IF)	7	2-13/16	31	2.73:1	3434
NC 50-72 (4-1/2 IF)	7-1/4	2-13/16	31	3.12:1	3714
NC 56-77	7-3/4	2-13/16	31	2.70:1	4337
6-5/8 Reg	8	2-13/16	31	2.60:1	4675
6-5/8 Reg	8-1/4	2-13/16	31	2.93:1	5016
NC 61-90	9	2-13/16	31	3.17:1	6070
7-5/8 Reg	9-1/2	3	31	2.81:1	6727
7-5/8 Reg <sup>3</sup>	9-3/4	3	31	3.09:1	7130
NC 70-100	10	3	31	2.81:1	7532
8-5/8 Reg <sup>3</sup>	11	3	31	2.85:1	9269

1. The size and type in parentheses indicate interchangeable connections.

2. Ratio of box to pin section modulus (see API Specification RP7G for explanation)

3. Low-torque face.

All dimensions in inches unless otherwise specified.

Please contact your RDT representative for additional sizes and connections.

## Ordering Information

When ordering or requesting quotations on RDT drill collars, please specify:

1. Outside diameter, bore and length
2. Size and type of connection; each end of collar and special joint features
3. Slick or spiral
4. Other special features; fishing neck, elevator and slip recesses, and/or hard metal type
5. RDT can provide Pony Collars in 5, 10, 15 and 20 foot lengths
6. RDT can provide Non-Magnetic drill collars as per customer specifications

**NOTE:** Depending upon the OD, RDT API Range II Drill Collars are stocked in 30 and 31 foot lengths.

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