



CTRT

“Downhole Tool Solutions”

**LEADERS IN COILED
TUBING CONNECTORS**

(Connector Catalog)

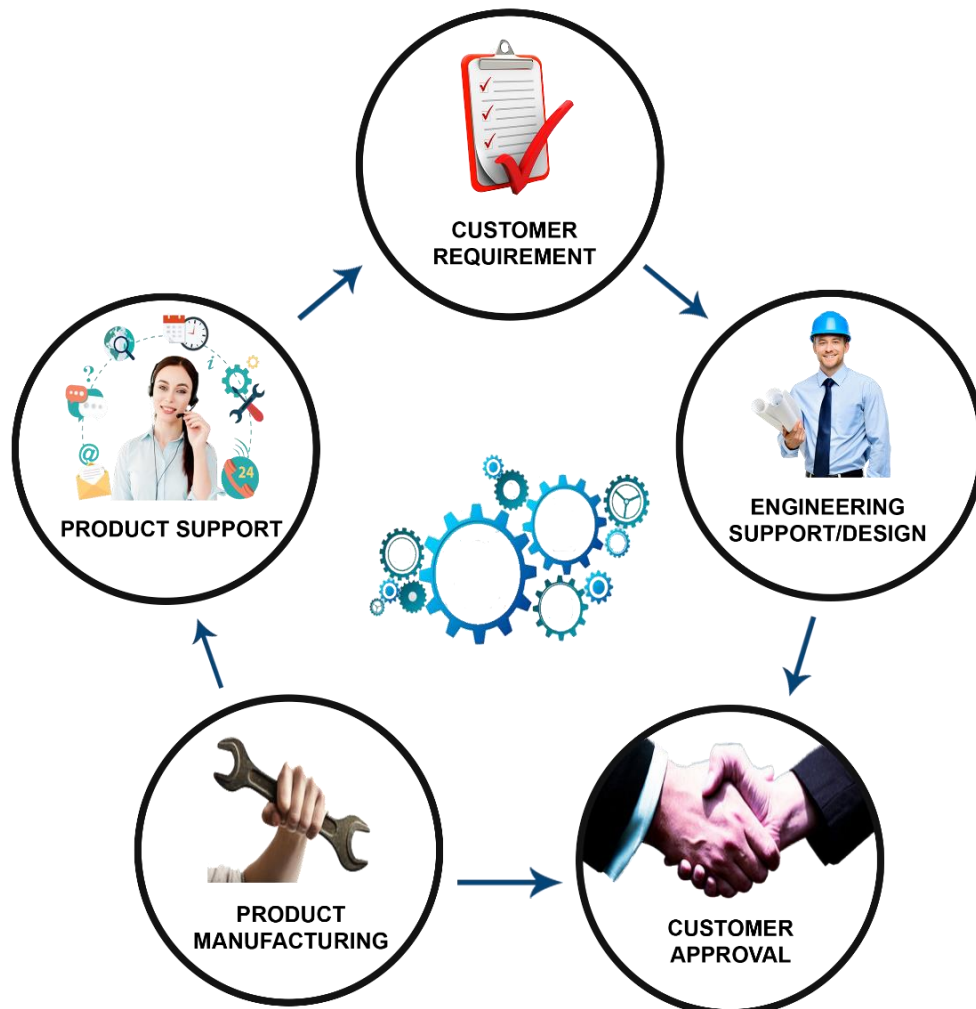
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Introduction

CTRT has been the global leader in Design & Manufacturing built Well Intervention Thru-Tubing Tools for over 20 years. Supported by the most qualified downhole tool design engineers located at our Lafayette, Louisiana testing and fulfillment facility and our industry leading manufacturing group located at our Broussard, Louisiana facility, we provide a closed loop sales & support process unmatched within the industry.

Enclosed is CTRT's **Coil Connector Product Line**. It covers every option and type of coil connector available for the purpose of isolating pressure, transferring tension and torsional loads from downhole tools onto the coil tubing. Coil connectors generally fall into two categories, Nonyielding (External & Internal Slip Type), Yielding (External & Internal Dimple Type and Roll-On's) and finally weld-on's that are used for larger coil tubing or when the others impose operating limitations.





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Coil Connector Pull/Tension Plates

The **CTRT Coil Connector Pull/Tension Plate** is utilized to confirm the make-up integrity of any Coiled Tubing End Connector following installation to the Coiled Tubing. It is a standard test component to validate pull capability of the coil connector.

The test sub incorporates a large diameter integrated base plate which is sized to prevent the tool from being pulled through the Stuffing Box Union, allowing a straight pull to be performed on the coil tubing connector prior to make-up of the tool string. The test sub can be provided with a lower box thread to allow installation of a needle valve for pressure testing purposes.

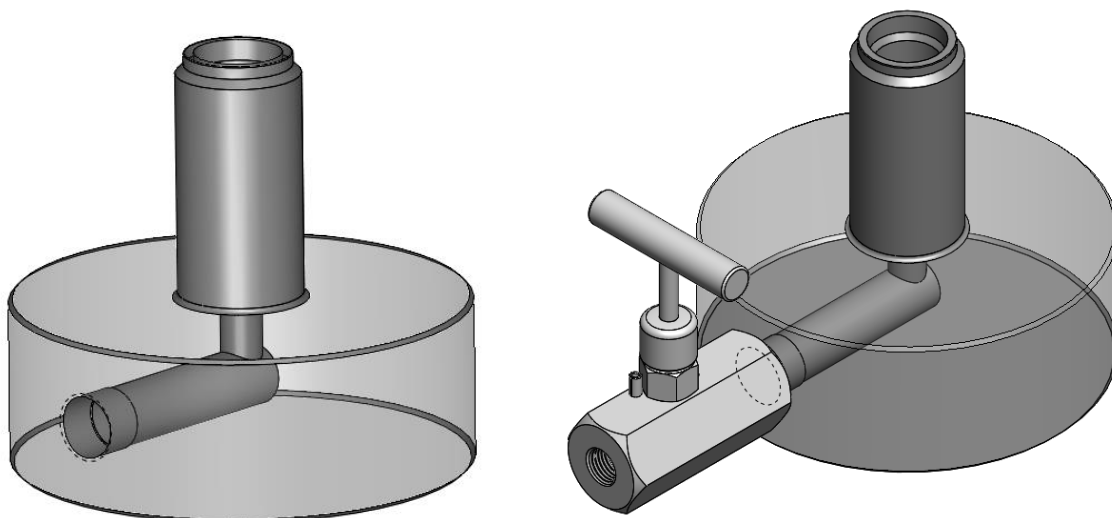
DESIGN ADVANTAGES & BENEFITS

- Simple, robust design
- Multiple connection options to suit customer requirements
- Flow thru-bore for fluid bypass
- Optional threaded port for needle valve
- Coil tubing diameters from 1.00" to 2-7/8"

Technical Specifications

Test Sub Minor O.D.	I.D.	Base Diameter	Test Pull Range	Connection(s)
1.500"	.500"	5.50"	7,500 lbs	¾" AMMT or CS
1.688"	.625"	5.50"	10,000 lbs	1.00" MT or CS
2.250"	.875"	6.00"	12,000/18,000 lbs	1.25 CS or 1.50 MT
2.950"	1.00"	8.00"	25,000 lbs	2-3/8" PAC
3.125"	1.00"	9.00"	30,000/40,000 lbs	2-3/8" Reg, or 2-7/8" PAC

Note: Test pull ranges are to be used only as a guide. End user to determine actual requirements based on coil unit, coil diameter, operator preference, specific tool string and well conditions.



External Slip Coil Connector Assembly

The **CTRT, Inc. Coiled Tubing External Slip Connector Assembly** has been designed for capabilities of handling higher tensile and torsional loads during increasingly demanding Thru-Tubing operations while providing efficient and reliable make-up to the coil tubing on location.

The connector consists of a top and bottom sub, slip and brass crush ring. The assembly primary components are manufactured of high strength alloy or stainless (available in Hostile Environment) and are designed to surpass the tensile and burst of the coil tubing and meet the tensile and torsional loads of Motor Head Assemblies, PDM Motors and "**Slammer**" Impact Hammer operations. O-rings seals are incorporated to ensure pressure integrity of Coiled Tubing during down-hole operation. Each designed Coil Connector has undergone *actual* pull test to validate strengths.



Design Advantages

- Dual O'Ring Seals
- 10,000 PSI Rating
- Non-Rotational
- Maximum Flow Rates
- Replaceable Slips

Coiled Tubing Diameter	1.00"	1.25"		1.50"		
Max O.D.	1.688"	1.688"	1.850"	1.935"-SL	2.125"	2.188"
Min I.D.	.750"	.750"	1.00"	.750"(1.00")	1.00."	1.00"
Thread Connection (*)	1.0" CS	1.0" CS/MT	1.25" CS	1.0" CS/MT(1.25" CS)	1.50" MT/1.25" CS	1.25" CS
Max Over-Pull @ 80% (lbs)	40,000	38,000	38,000	37,000	50,000	50,000
Make-up Length	8.875"	8.17"	9.375"	9.375"	9.000"	9.750"
Max Torsional Yield (ft-lbs)	1,710	1,400	2,630	1,400	2,100	3,275
O'Ring Size	-214	-218	-218	-222	-222	-222
Coil Minimum Dia. For Seal	.990"	1.240"	1.240"	1.490"	1.490"	1.490"
Commodity Order No.	100CTC169	125CTC169	125CTC185	150CTC193	150CTC212	150CTC 218

Coiled Tubing Diameter	1.75"	2.00"	2-3/8"		2-5/8"	
Max O.D.	2.188"-SL	2.875"	2.875"	3.125"-SL	3.250"	3.375"-SL/3.500"
Min I.D.	1.00"	1.375"	1.375"	1.375"/1.000"	1.375"/1.000"	1.500"
Thread Connection (*)	1.25" CS	2.37" PAC	2.37" PAC	2.37" PAC/API Reg	2.37" PAC/API Reg	2.38" Reg/ 2.87" PAC
Max Over-Pull @ 80% (lbs)	43,000	74,000	75,000	87,000	104,000	129,581
Max Torsional Yield (ft-lbs)	2,525	4,800	4,800	7,850	9,800	12,000
Make-up Length	9.375"	10.000"	9.875"	11.375"	11.375"	14.125"
O'Ring Size	-224	-224	-226	-332	-332	-334
Coil Minimum Dia. for Seal	1.740"	1.740"	1.990"	2.365"	2.365"	2.615"
Commodity Order No.	175CTC218	175CTC287	200CTC287	237CTC312	237CTC325	262CTC350

Typical thread connections. Customer specified thread connections available upon request.

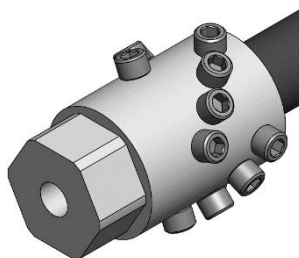
External Dimple Connectors

The **CTRT External Dimple Connector** has been designed as an alternate tool that allows the attachment of the tool string to the coil tubing. Instead of slip type coil connectors that uses an engagement slip that bites into the coil upon being torqued, the external dimple connector, engages via radius set plugs that seat into the recessed dimples in the coil tubing wall.

The dimple radius and depth geometry is created in the coil by use of a **Dimple Installation Guide** fixture with compressive indentation plugs that precisely places the progressive radius dimple locations to match the exact location of the external dimple connector being used. This dimple template is accomplished via a pneumatic driven impact device.

DESIGN ADVANTAGES & BENEFITS

- Dual O'Ring Seals
- 10,000 PSI Rating
- Non-Rotational
- Maximum Flow Rates
- High Torque



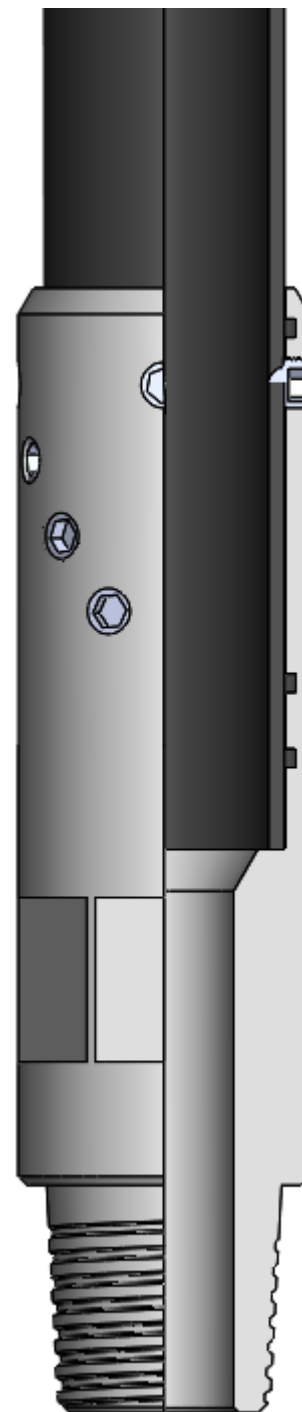
The External Dimple Connector consist of one main body component threaded with pin connection. Available in coil tubing sizes 1-1/4" to 2-7/8". Contact your CTRT representative who can assist you with your coil connector specifications.

External Dimple Technical Specifications

Coiled Tubing Diameter	2.00"	2-3/8"		2-5/8"
Max O.D.	2.875"	2.875"	3.125"	3.250"
Min I.D.	1.375"	1.375"	1.000"	1.000"
Thread Connection (*)	2-3/8" PAC	2-3/8" PAC	2-3/8" Reg	2-3/8" Reg
Make-up Length	8.000"	8.000"	8.000"	9.375"
Coil Minimum Dia. for Seal	1.990"	2.365"	2.365"	2.615"
Commodity Order No.	200EDC200	238EDC312	238EDC312	262EDC350

Dimple Installation Tool Technical Specifications

Coiled Tubing Diameter	2.00"	2-3/8"	2-5/8"
Max O.D.	4.600"	4.750"	5.000"
Min I.D.	2.13"	2.00"	2.38"
Length	6.50"	6.50"	7.00"
Redress Kits	200EDC-DCT-RDK	238EDC-DCT-RDK	262EDC-DCT-RDK
Commodity Order No.	200EDC-DCT-01	238EDC-DCT-01	262EDC-DCT-01



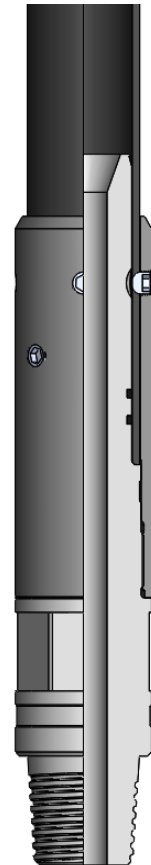
Internal/External Slim Line Dimple Connector

The **CTRT Internal/External Slim Line Coil Tubing Dimple Connector** has been designed to integrate the benefits of both an internal and external dimple style connector as an alternate connector makeup that allows the attachment of the tool string to the coil tubing. Instead of slip type coil connectors that use an engagement slip that bites into the coil upon being torqued, the IES dimple connector, engages via grub screws that perform dimples in the coil tubing wall and engages the coil thru support from both the I.D. and O.D. of the coil tubing.

The dimple radius and depth geometry is created in the coil by use of a **Dimple Installation Guide** fixture with compressive indentation plugs that precisely places the radius dimple locations to match the exact location of the IES dimple internal mandrel being used. Radius setting plugs are threaded and torqued from the external housing that locks to the O.D. of the coil at the exact dimple indentation location.

DESIGN ADVANTAGES & BENEFITS

- Dual O'Ring Seals
- 10,000 PSI Rating
- Non-Rotational
- Maximum Flow Rates
- Coil Supported From Both the I.D. & O.D.



The **Internal/External Slim Line Coil Dimple Connector** consist of two main body components that encapsulate the coil with a threaded pin connection for BHA makeup. Currently available in coil tubing sizes 2.00" to 2-5/8". Contact your CTRT representative who can assist you with your coil connector specifications.

Dimple Connector Technical Specifications

Coiled Tubing Diameter	2.00" SL	2-3/8" SL		2-5/8" SL
Max O.D.	2.875"	2.875"	3.125"	3.125"
Min I.D.	1.000"	1.000"	1.000"	1.000"
CT Wall	.134", .145", .156"	.134", .156", .175"	.134", .156", .175"	.134", .156", .175"
Thread Connection (*)	2-3/8" PAC	2-3/8" PAC	2-3/8" Reg	2-3/8" Reg
Make-up Length	12.250"	12.250"	12.250"	12.750"
O'Ring Size	TBD	.134"W (-225) .156"W (-224) .175"W (-224)	.134"W (-225) .156"W (-224) .175"W (-224)	.134"W (-227) .156"W (-227) .175"W (-226)
Coil Max I.D. for Seal	TBD	.134W (2.127") .156W (2.083") .175W (2.045")	.134W (2.127") .156W (2.083") .175W (2.045")	.134W (2.377") .156W (2.333") .175W (2.295")
Commodity Order No.	200IES287-XXX	238IES287-XXX	238IES312-XXX	262IES312-XXX

Note: Coil wall thickness must be identified at time of order to correctly size.

Dimple Installation Guide Technical Specifications

Coiled Tubing Diameter	2.00" SL	2-3/8" SL		2-5/8" SL
Max O.D.	3.500"	4.200"	4.200"	4.450"
Min I.D.	2.875"	2.875"	3.125"	3.125"
CT Wall	.134", .145", .156"	.134", .156", .175"	.134", .156", .175"	.134", .156", .175"
Length	12.250"	12.250"	12.250"	12.250"
Redress Kits	200IES-DCT-RDK	238IES-DCT-RDK	238IES-DCT-RDK	262IES-DCT-RDK
Commodity Order No.	200IES-DCT-01	238IES-DCT-01	238IES-DCT-01	262IES-DCT-01

Note: The Dimple Installation Guide is used to accurately align and produce the indentations in the coil tubing wall by using dimple indentation plugs.

Internal Slip Connector

The **CTRT Internal Slip Coil Connector** has been designed as an alternate slim line connection of coil tubing to the BHA. This internal slip type engages the internal diameter of the coil tubing to ensure that axial load is transferred into the coil tubing.

When used in conjunction with the **CTRT** patent pending **EZ Coil Tubing Seam Removal System**, the internal slip connector efficiently slides into the open end of the coil for a pressure retaining barrier.

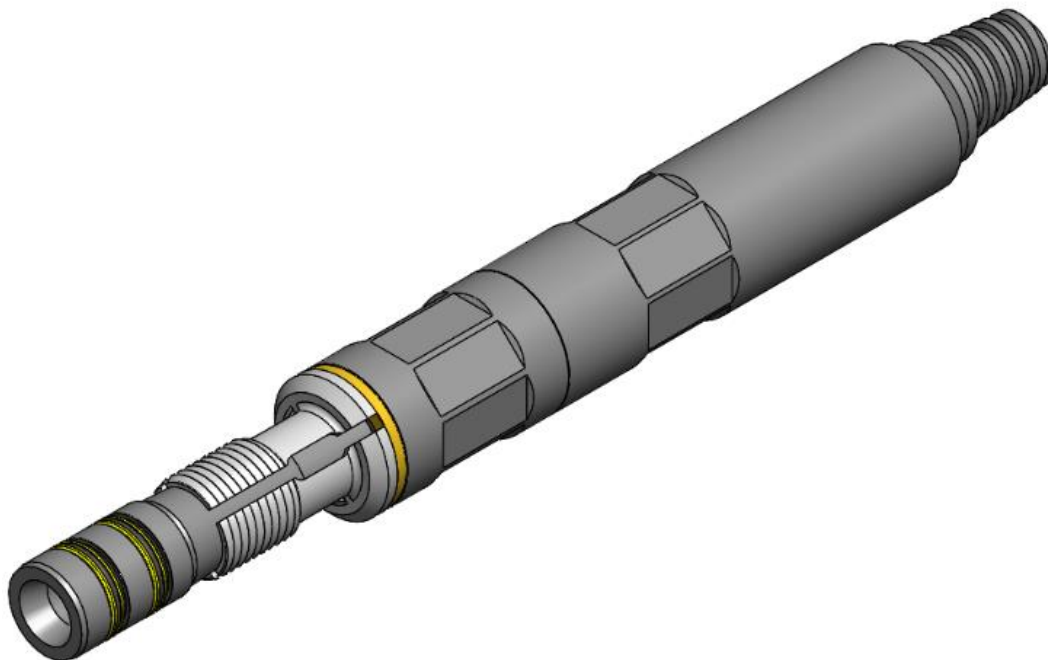
DESIGN ADVANTAGES & BENEFITS

- Dual O'Ring Seals
- 10,000 PSI Rating
- Non-Rotational
- Replaceable Slips

Technical Specifications

Coil Tubing Diameter	1.25"	1.50"	1.75"	2.00"
Coil Wall Thickness	.095" - .134"	.095" - .156"	.109" - .224"	.116" - .224"
Make -Up Length	12-7/8"	12-7/8"	12-7/8"	12-7/8"
Max O.D.	1-1/2"	1.50"SL & 1.68"	1.75"SL & 2.12"	2.00"SL & 2.12"
Min I.D.	0.531"	.562	.657"	.875"
Thread Connection (*)	3/4" AMMT	3/4" & 1.00" AMMT	1.50" AMMT	1.50" AMMT
Commodity Order No.	125ISC-XXX	150ISC-XXX	175ISC-XXX	200ISC-XXX

Typical thread connections. Customer specified thread connection available upon request. Coil wall thickness must be identified at time of order to correctly size.



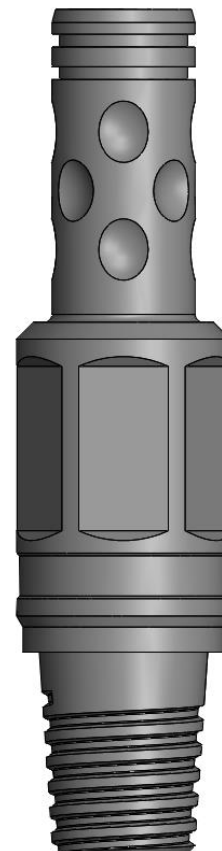
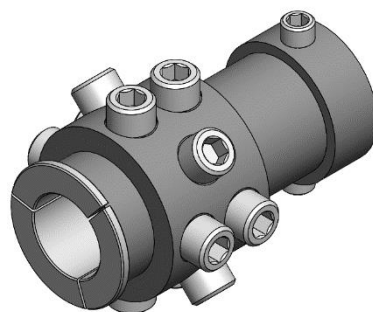
Internal Dimple Connectors

The **CTRT Coil Tubing Internal Dimple Connector** is a slim line one-piece design that allows attachment of the coil tubing to the BHA. Instead of slip type coil connectors that use an engagement slip that bites into the coil upon being torqued, the Internal Dimple Connector, engages by the forming of the Coil Tubing wall into the recess profiles on the connector.

The dimple radius and depth geometry are created in the coil by use of a **Dimple Installation Guide** tool with compressive indentation plugs that precisely places the radius dimple locations to match the exact location of the **CTRT** internal dimple connector. This installation guide is a single piece applicator that optimizes the ease of dimpling.

DESIGN ADVANTAGES & BENEFITS

- Dual O'Ring Seals
- 10,000 PSI Rating
- Non-Rotational
- Maximum Flow Rates
- Easy Make-Up with Optimal One-Piece Applicator



Dimple Connector Technical

Coiled Tubing Diameter	1.50"	1.75"	2.00" SL	2-3/8" SL
Max O.D.	1.68"	2.12"	2.00"	2.375"
Min I.D.	.750"	.750"	1.000"	1.000"
CT Wall	Must Specify	Must Specify	Must Specify	Must Specify
Thread Connection (*)	1.00" AMMT	1.50" AMMT	1.50" AMMT	1.50" AMMT
Make-up Length	3.25"	3.38"	3.38"	5.25"
Commodity Order No.	150IDC168-XXX	175IDC212-XXX	200IDC200-XXX	238IDC238-XXX

Note: Coil wall thickness must be identified at time of order to correctly size.

Dimple Installation Guide Technical Specifications

Coiled Tubing Diameter	1.50"	1.75"	2.00" SL	2-3/8" SL
Max O.D.	3.500"	4.600"	4.750"	5.000"
Min I.D.	1.69"	2.13"	2.00"	2.38"
Length	6.50"	6.50"	6.50"	7.00"
Redress Kits	150IDC-DCT-RDK	175IDC-DCT-RDK	200IDC-DCT-RDK	238IDC-DCT-RDK
Commodity Order No.	150IDC-DCT-01	238IDC-DCT-01	238IDC-DCT-01	262IDC-DCT-01

Note: The Dimple Installation Guide is used to accurately align and produce the indentations in the coil tubing wall by using dimple indentation plugs.

Internal Roll-On Connectors

The **CTRT Internal Roll-On Coil Connector** allows the attachment coil tubing to the coil tubing BHA via a threaded connection. The coil tubing is crimped via roller wheels into the radius profiles by a crimping tool that forms the coil into the mating shape on the coil connector providing a high strength tensile linear pull.

When used in conjunction with the **CTRT** patent pending **EZ Coil Tubing Seam Removal System**, the roll-on connector efficiently slides into the open end of the coil for a pressure retaining barrier.

The **CTRT Double Ended Roll-On Connector** allows the in-line attachment of two lengths of coil tubing and have the same O.D. as the coil tubing.

DESIGN ADVANTAGES & BENEFITS

- High Tensile Strength
- 10,000 PSI Rating
- Maximum Flow Rates
- Slim line Applications

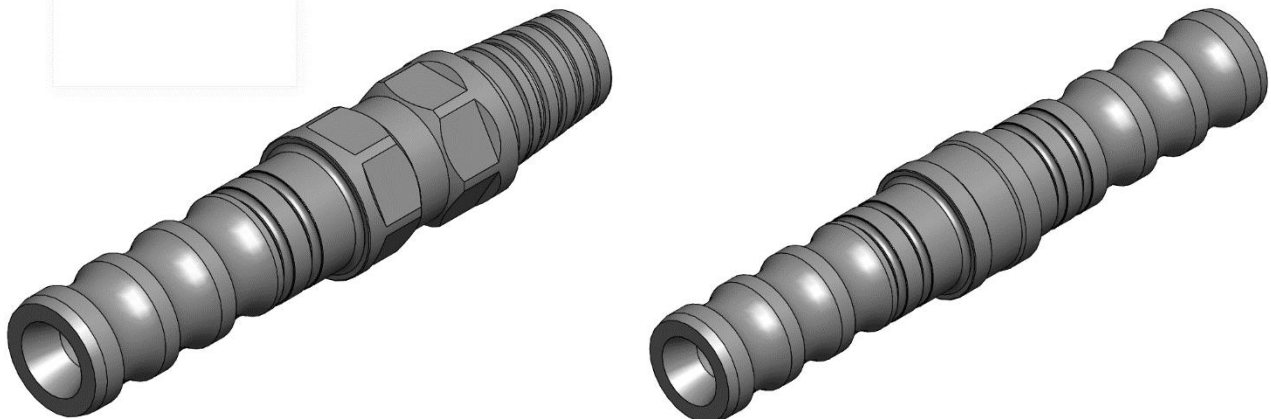


Technical Specifications

Coiled Tubing Diameter	1.25"	1.50"	1.75"
Coil Wall Thickness	Customer Specified	Customer Specified	Customer Specified
Max O.D.	1.25"	1.50"	1.75"
Min I.D.	0.531"	0.531"	0.657"
Thread Connection (*)	¾" AMMT	¾" AMMT	1.00" AMMT
Commodity Order No.	125-ROC-XXX	150-ROC-XXX	175-ROC-XXX

Typical thread connections. Customer specified thread connections available upon request

Note: -XXX Denotes Coil Tubing Wall Thickness



Weld-On Coil Connectors

The **CTRT Weld-On Coil Connector** allows the attachment coil tubing to the coil tubing BHA via a weld bead where the coil seats on shoulder of the connector. Weld-On Coil Connectors are typically used with larger coil tubing. Proper designed weld-on connectors will exhibit 100% of the torque and yield rating of the coil tubing.

CTRT's Weld-On Coil Connector incorporates a tapered insertion neck that provides a bend support to prevent concentrating bending loads at a single point where the coil tubing meets the connection shoulder. This eliminates all bending to the coil tubing heat affected zone. The connector also incorporates a milled seam slot, so no seam removal is necessary prior to insertion.

DESIGN ADVANTAGES & BENEFITS

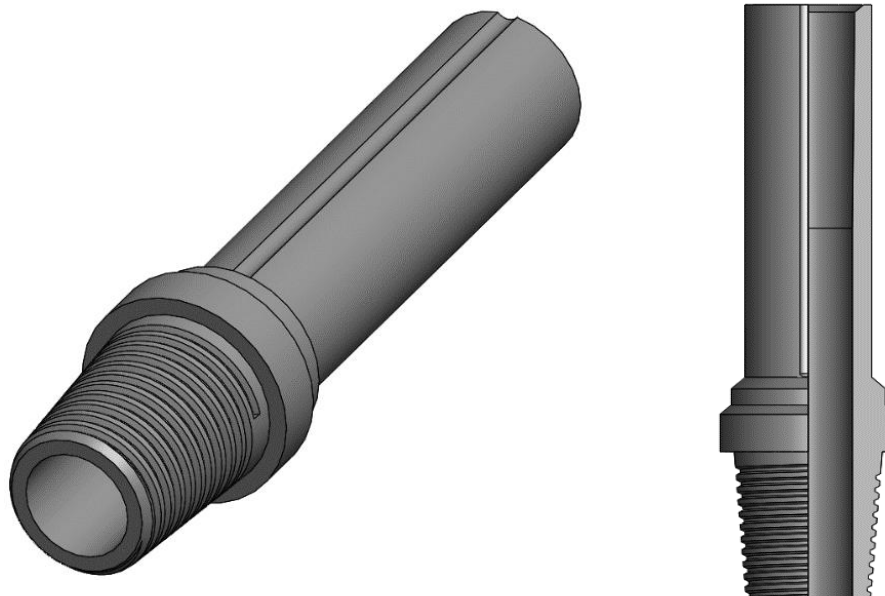
- Non-Rotational
- 10,000 PSI Rating
- Maximum Flow Rates
- High Torque

Technical Specifications

Coiled Tubing Diameter	2.00"	2-3/8"	2-5/8"
Coil Wall Thickness	Customer Specified	Customer Specified	Customer Specified
Max O.D.	2.87"	2.87"	3.12"
Min I.D.	1.38"	1.00"	1.00"
Thread Connection (*)	2-3/8" PAC	2-3/8" API Reg	2-3/8" API Reg
Commodity Order No.	200-WOC-XXX	238-WOC-XXX	262-WOC-XXX

Typical thread connections. Customer specified thread connections available upon request

Note: -XXX Denotes Coil Tubing Wall Thickness



EZ Coil Seam Removal System

The **CTRT** patent pending **Coil Tubing EZ Seam Removal System** is designed to quickly attach and remove the internal weld seam of coil tubing in preparation to accept an internal type coil connector. The makeup of the tool allows a specified internal coil diameter cutter centralized within the coil I.D. to make a single cut that removes the seam with a 125 RMS finish or better. This allows a sealing surface to accept the internal type coil connector.

The **EZ Coil Tubing Seam Removal System** utilizes a pneumatic driven impact device to drive the seam cutter and does not need any lubricating oil or secondary operation with a flapper type sanding wheel to prepare the coil for sealing.

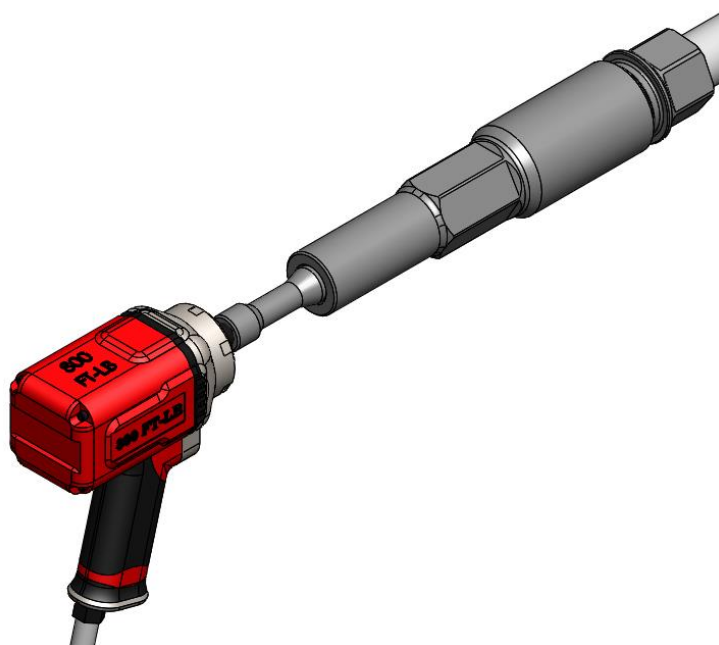
DESIGN ADVANTAGES & BENEFITS

- EZ on and off assembly
- No Lubricating Fluid Necessary
- Replaceable Seam Cutters
- Efficient Cutting Process

Technical Specifications

Coiled Tubing Diameter	1.25"	1.50"	1.75"
Max O.D.	1.68"	2.12"	2.00"
Coil Tubing Wall	Must Specify	Must Specify	Must Specify
Max Cutting Distance	4.50"	4.50"	4.50"
Make-up Length	13.00"	13.00"	13.00"
Commodity Order No.	125CSR-01	150CSR-01	175CSR-01

Note: Coil wall thickness must be identified at time of order to correctly size cutter.





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