

Breakout Wrenches and Casing Clamp

TSi Part #: TI-150-2000 (Breakout Wrenches) and TSi Part #: TI-150-2170 (Casing Clamp)

About the Breakout Wrenches

All TSi Sonic Rigs include Breakout Wrenches designed to handle Terra Sonic Tooling. The Breakout Wrenches feature hydraulic fluid flow dividers that centralize the clamps as they close. To prevent the clamps from drifting open, pressure accumulators maintain constant pressure. TSi Breakout Wrenches are available with adapter plates for mounting to non-Terra Sonic Rigs, making it possible to utilize Terra Sonic tooling with a variety of rig brands.

About the Casing Clamp

TSi Casing Clamps, installed below the standard double Breakout Wrenches, fit around the tooling joints to prevent casing from falling down the borehole. The Casing Clamp reduces the need to change jaw block inserts for large-diameter casing.

Benefits of Using the Breakout Wrenches and Casing Clamp:

- **Enhanced Safety:** Hands-free clamping maximizes operator safety.
- **Drilling Productivity:** Reduced downtime increases productivity.
- **Tooling Lifespan:** Consistently tight drill joints lengthen rod and casing lifespan.
- **Smart Design:** The wrenches' jaw block inserts are vertically spaced 10" on centers to contact the tooling's heavy wall section between the center of the weld and the threads. This provides proper grip without deforming the tooling.
- **Reduced Maintenance Cost:** Interchangeable parts enable more efficient maintenance. TSi maintains an inventory of all parts.
- **Sustained Performance:** Jaw block inserts are easily replaced to maintain optimal performance.
- **Convenient Adaptability:** The height between the wrenches and casing clamp is adjustable.
- **Easy Access:** Moving parts are easily lubricated.
- **Dependable Endurance:** Tempered component parts increase durability.

Technical Specifications:

- Standard Tooling Handling Capability 3-1/2" to 9-1/4" O.D. (88.9 mm to 235.0 mm)
- Larger Tooling Handling Capability 10-1/2" to 12" O.D. (266.7 mm to 304.8 mm)
 - The current wrench design requires switching to the large jaw block assembly to accommodate larger-diameter drill casing.
 - Changing from the standard jaw block assembly to the large one requires removing the coiled retaining spring.
 - Due to the angle of its teeth, the large jaw block assembly provides more suitable surface contact with large-diameter casing.
- Clamping Force 35,000 lbs. (15.9 kg)
- Breaking Torque 30,365 lb-ft. (4198.1 kg-m)
- Working Pressure 2,750-2,800 psi (189.6 - 193.0 bar)
- Breakout Wrench (double) Weight 647 lbs. (293.5 kg)
- Casing Clamp Weight 323 lbs. (146.8 kg)
- Breakout Wrench (double) Height 14" (355.6 mm)
- Casing Clamp Height 7" (177.8 mm)
- Width 42" (1066.8 mm)
- Depth, center line—bracket 15-3/4" (400.1 mm)

Recommended Spare Parts List

Part Number	Description
T1-150-2060	Block Assembly, Wrench Jaw, 10-1/2" to 12"
8 T1-1502062	Block, Jaw Keeper, Wrench Jaw Assy, 10-1/2" to 12"
8 04-22866	Screw, Flange, 12 Point, 3/8-16" x 1-1/2", Plain (for large blocks)
4 T1-150-2050	Block Assembly, Wrench Jaw, 3-1/2" to 9-1/4"
4 T1-150-2052	Block, Jaw Keeper, Wrench Jaw Assy, 3-1/2" to 9-1/4"
4 04-22867	Screw, Flange, 12 Point, 3/8-16" x 1-3/4", Plain (for standard blocks)
12 05-33688	Washer, Lock, Split, High Collar, 3/8"
16 T1-150-2055	Inserts, Jaw Block, 2"
8 07-21655	Pin, Spring, Coiled, 3/4" Dia x 2-3/4" Lg., Wrenches
2 11-02009	Cylinder, Hydraulic, 3" Bore x 6" Stroke, Welded, Wrench Rotation
2 T1-150-2000-08-V	Support Ring, Wrench Rotation Cylinder
2 T1-150-2000-09	Pin, Cylinder, Outer
2 07-64256	Pin, Spring, Slotted, 1/4" Dia x 2-1/4" Long
1 09-00069	Kit, Seal, Breakout Clamp Cylinder 11-02033 and 11-02034
1 11-02033	Wrench Clamp Cylinder

Proper Clamping Procedure

Consistently practicing proper clamping techniques extends the rod, casing and core barrel lifespan. See the included diagram for the proper pipe position within breakout wrenches.