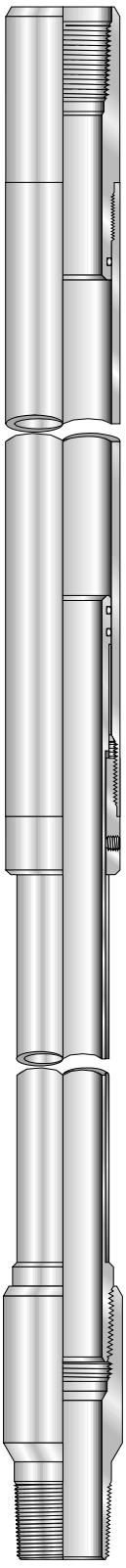


Telescoping Union

Hydroset Packer Accessories

Telescoping Unions

The Telescoping Union is a valuable accessory for multiple completions. It is designed to be used with the D-2, D-3 and D-4 Hydroset Packers. The union telescopes to adjust the spacing of strings between packers. This saves time by allowing the operator to quickly equalize uneven parallel strings and make necessary connections. The TIW Telescoping Union is manufactured in a standard extended length of 36 inches. Longer or shorter stroke telescoping unions are available on special order.

P-1 Landing Sub

The economical P-1 Landing Sub allows hydraulic packers to be set without a damaging pressure surge. On conventional hydraulic packers, pressure is built up to set the packer and then increased to shear out the ball and seat. As the seat shears, there is a powerful pressure surge through the packer. This surge may damage the formation, driving in undesirable fluids, or it may unseat the packer if the formation is not perforated.

To set hydraulic packers with the P-1 Landing Sub, the operator simply drops a ball and pressures up. The ball seat will not shear out. With the packer set, the pressure is released. Just before the pressure is entirely removed, the ball and seat section will fall out. This leaves the tubing fully open. There is no pressure surge to damage the formation.

The P-1 Landing Sub may also be used as a tubing tester. When run in the tubing, it allows pressuring up to test for tubing leaks. With the pressure released, the ball and seat fall out to leave the tubing fully open.

Short String Latch Options for Hydraulic- and Mechanical-Set Multistring Packers

TIW offers a variety of short string Seal Nipple Latches for running multiple strings individually or threaded top connections for running multiple strings simultaneously. In the schematic, the TIW Jay-Slot, Snap-Lock and Auto-Latch-Type Latches are used in various models of multistring packers and should be specified when ordering.

Figure A, the Auto-Latch configuration, requires no rotation for latching and provides a means of anchoring the seals into the packer, thus eliminating possible pump-out.

Figure B, the Snap-Lock, requires no rotation for latching or releasing and provides a positive surface indication when the seal is engaged.

Figure C, the Jay-Slot, engages automatically and requires only a ¼-right-hand turn at the packer for release.

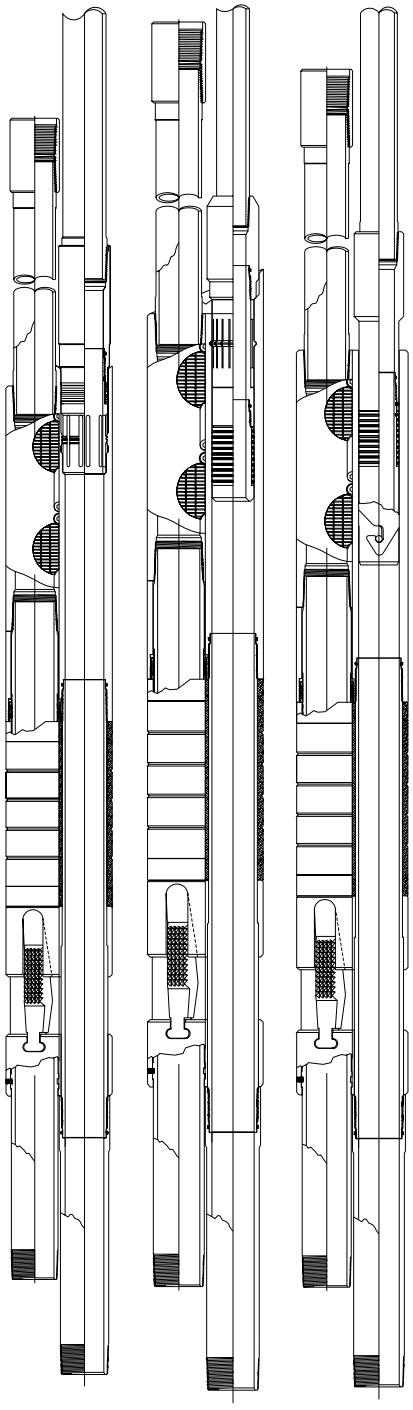
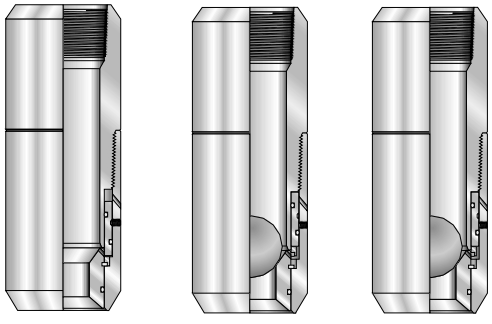


Fig. A Fig. B Fig. C



Running In Setting Seat Ejects

P-1
Landing Sub