

THROUGH-THE-TUBE PLUGGING TECH TIP

When performing Through-the-tube (TTT) Plugging, the installation load from the hydraulic ram causes the pull rod to stretch and the compression tube to compress. The combined stretch and compression of the extensions takes away from effective travel of the pin relative to the ring. To explain differently, the small ram (PAP-6600) has a total stroke of 1” (25.4mm). If using the PAP-0200 as indicated below, the combined stretch and compression of a 20 foot (6.1m) extension assembly will be approximately 0.85” (21.6mm), refer to Table 1. This translates to approximately 0.15” (3.8mm) of pin travel relative to the ring (1” of ram stroke minus 0.85” of stretch/compression = 0.15” pin movement (25.4mm or ram stroke minus 21.6mm of stretch/compression equals 3.8mm of pin travel relative to the ring)). So when a full stroke of the ram is seen during installation the plug at the far end of the exchanger has only stroked by approximately 0.15” (3.8mm). This is why the TTT Plugging instructions indicate that the ram must be repeatedly stroked to the installation pressure and when released, the knurled nut cannot be tightened by more than ¼ of a turn. This repeated stroking insures that the plug will be properly installed.

Question: What is the longest length of TTT extension we can use?

Answer: The rule of thumb is roughly 20feet (6.1m) for the small ram (PAP-6600) and 40feet (12.2m) for the large ram (PAP-1750). Tubes longer than 40 feet (12.2m) can be plugged using the TTT technique provided a hydraulic ram with enough stroke to overcome the stretch/compression is utilized. Please contact Sales for information regarding your specific application.

Table 1 below shows the combined stretch/compression of our 20foot (6.1m) Rod and Tube Extension Assemblies. Note that the stretch/compression will be less for shorter extension assemblies and more for longer extension assemblies.

Table 1. Rod and Tube Extension Assembly Stretch / Compression During TTT Plugging.

Part Number	Stretch/Compression of 20ft. Assembly (in)	Breakaway Pressure (psi)	Pull Rod OD (in)	Compression Tube OD (in)	Breakaway Thread
PAP-0200	0.85	2700	5/16	7/16	12-28
PAP-0201	0.71	3000	5/16	1/2	12-28
PAP-0202	0.72	4000	3/8	9/16	1/4-28
PAP-0213	0.80	6600	1/2	11/16	5/16-24
PAP-0203	0.68	6600	1/2	3/4	5/16-24
PAP-0204	0.40	3200 (Lg. Ram)	3/4	1 1/8	1/2-20
PAP-0205	0.32	3200 (Lg. Ram)	7/8	1 1/4	1/2-20

Happy plugging!

.....Jim Berneski, Engineering Manager

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