PTRF-1-1
Operation Manual

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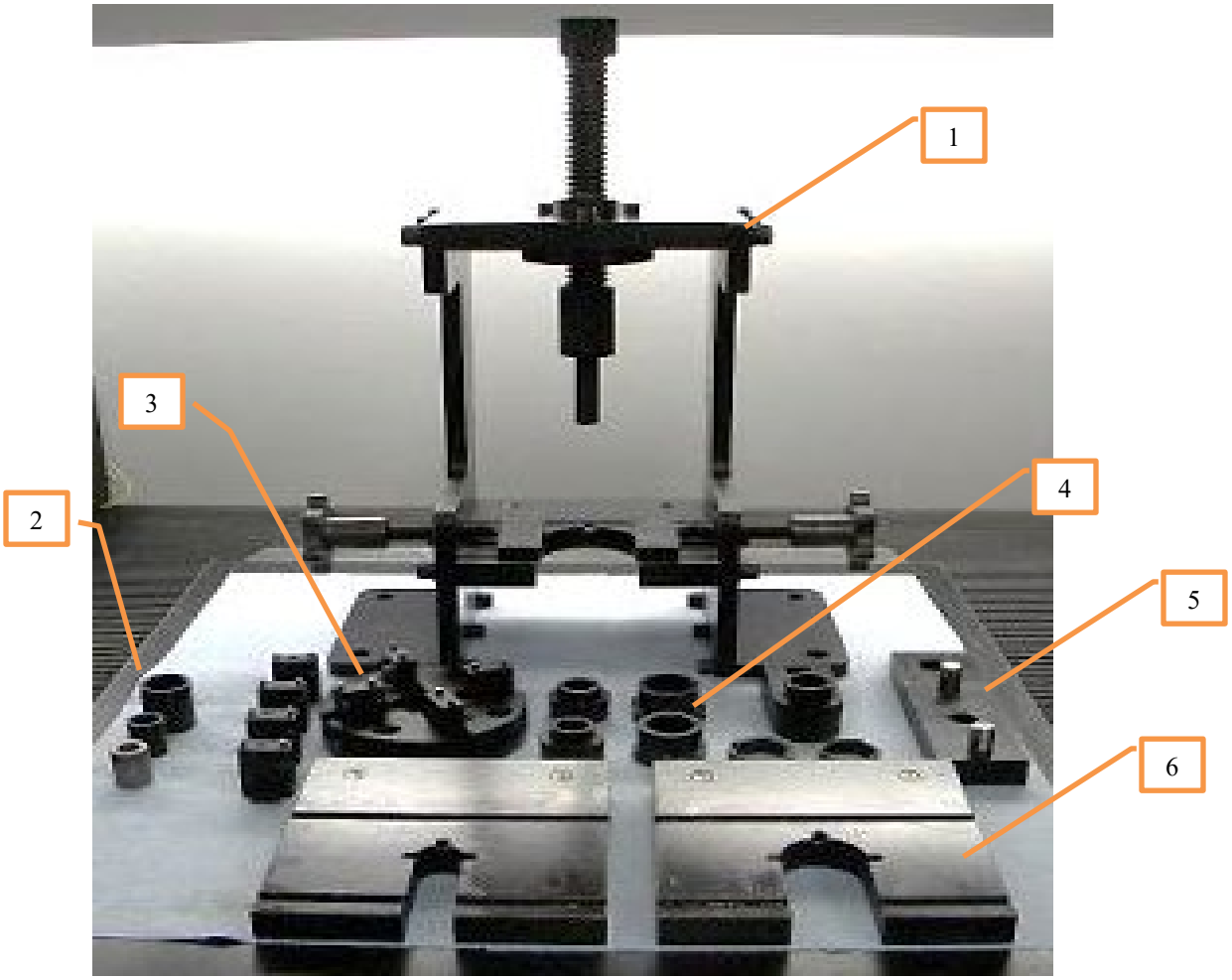
Introduction

The PTRF-1-1 is a fixture designed to securely handle a wide variety of pulse units for the purpose of correctly assembling and disassembling them during service procedures. Essentially, a purpose designed vice that enables secure gripping of the cylindrical pulse unit assembly without damage to components, a PTRF-1-1 is a valuable addition to any pulse tool service center.

Servicing a pulse tool is relatively simple but is a process that requires a basic level of training to understand and complete properly. It is recommended that only trained, maintenance technicians perform service on pulse units in conjunction with use of the PTRF-1-1

This manual is meant to illustrate the components and typical sequence of use when servicing pulse units. Due to the large variety of pulse unit sizes that the PTRF-1-1 is capable of servicing, it is impractical to show all combinations/permutations in one document. We invite contact with your local AIMCO Authorized Service center for specific questions/training or feel free to contact AIMCO Technical Service directly by visiting our website at www.aimco-global.com



1. PTRF-1-1 Universal Pulse Unit Repair Fixture
2. Press Caps
3. Chuck Block and Slide Pieces (Shown with slide pieces installed)
4. Hex Setter Adapters for UL and ULT Tools
5. ¾” Square Spanner
6. Small and Large Insert Plates

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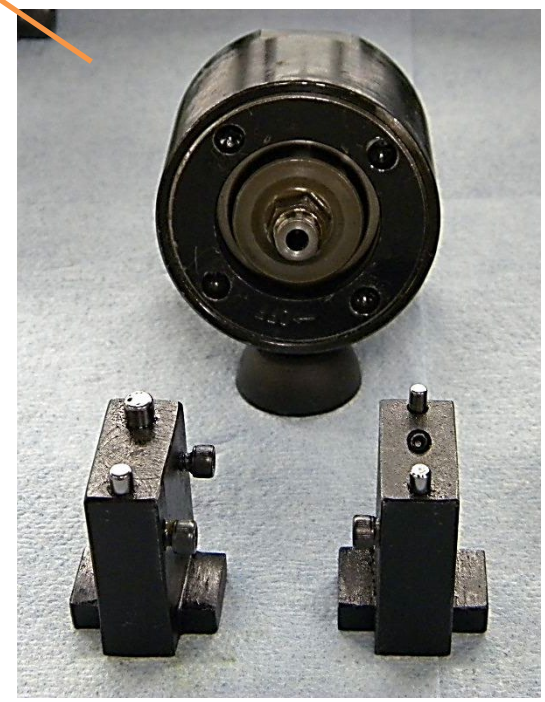

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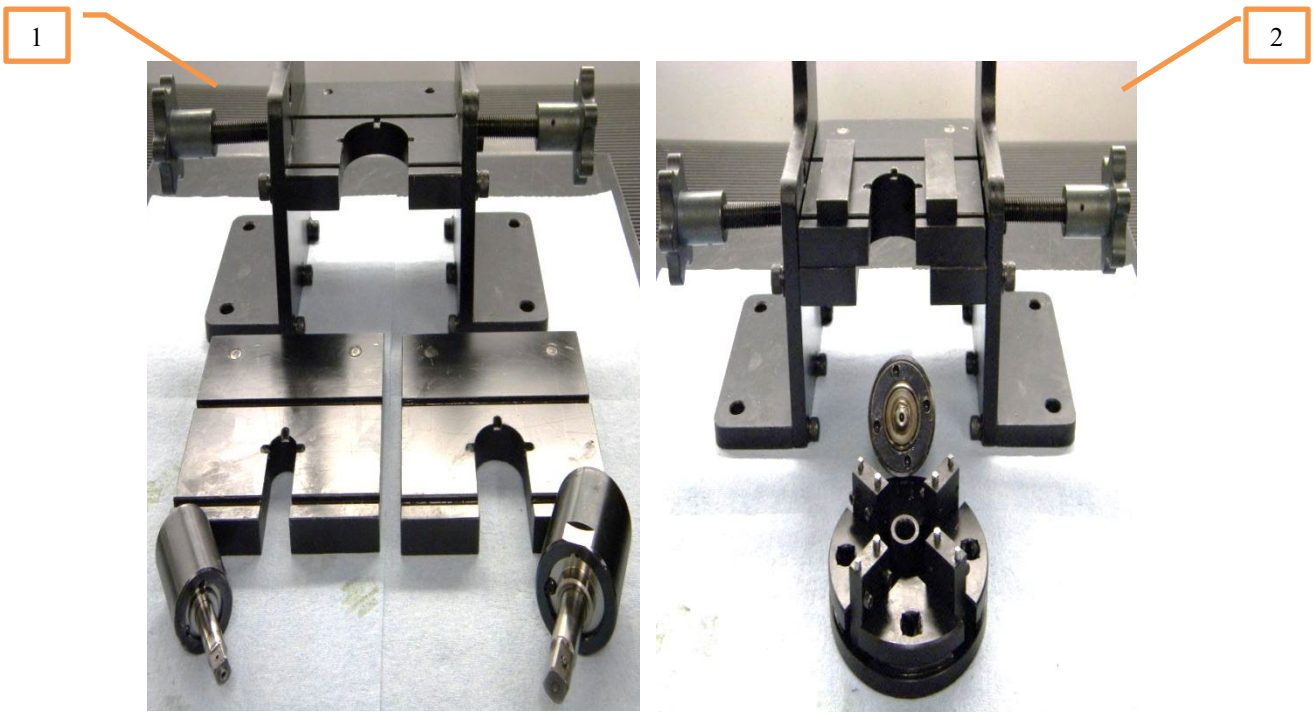
1. The Slide Pieces (Figure 1) have four different size pins in them that will need to be matched to the specific Pulse Unit that is being serviced. The depth of the pin within the slide piece should also be set to suit the specific Pulse Unit being serviced.

2. The PTRF Adapters (Figure 2) are used either individually or in combinations to suit the specific Pulse Unit being serviced.

1. Insert the Slide Pieces into the Chuck Block (Figure 1), select the proper Press Cap and install open side up into the Chuck Block. Fit the Pulse Unit onto the Pins in the Slide Pieces.

2. Select the appropriate PTRF Adapters and Press Cap that fit the Pulse Unit is being serviced. Fit to the Pulse Unit.



1. Select the proper Insert Plate for the Pulse Unit that is being serviced. Note: The Front Liner Plate should not rest on the Insert Plate.

2. Install the Clamp Plates into the Insert Plate and install the Clamp Plate Screws into the PTRF.

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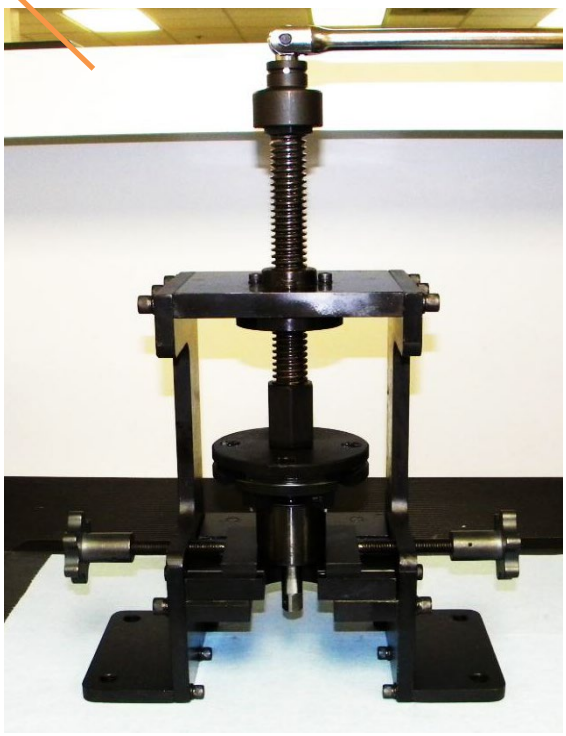

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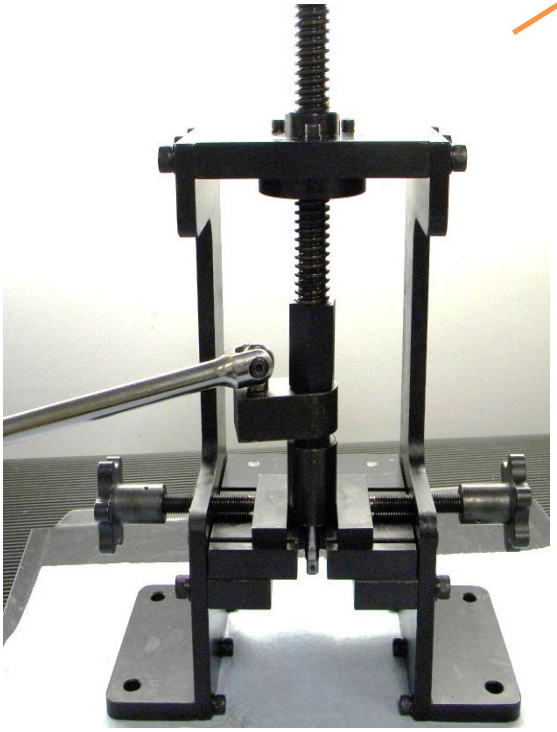

1. Install the Pulse Unit with the Chuck Block, or PTRF Adapter into the PTRF, lining up the flats on the side of the Pulse Unit with the Clamp Plates. Thread the Press Screw down through the Chuck Block, or PTRF Adapter, and onto the Press Cap. Tighten the Clamp Plate Screws and apply a quarter turn of pressure on the Press Screw. Secure the Chuck Block, or PTRF Adapter, with the Lock Nut on the Press Screw.

Note: Pulse Units that take the Pins are Left Hand Threads and units that take the PTRF Adapter are Right Hand Threads.

2. With a breaker bar, loosen the Liner Casing Setter on the Pulse Unit. On large Pulse Units, insert the ¾" Spanner into the two ½" squares holes in the Chuck Block.

Note: The Chuck Block will tighten up against the Lock Nut as the Liner Casing Setter is loosened.

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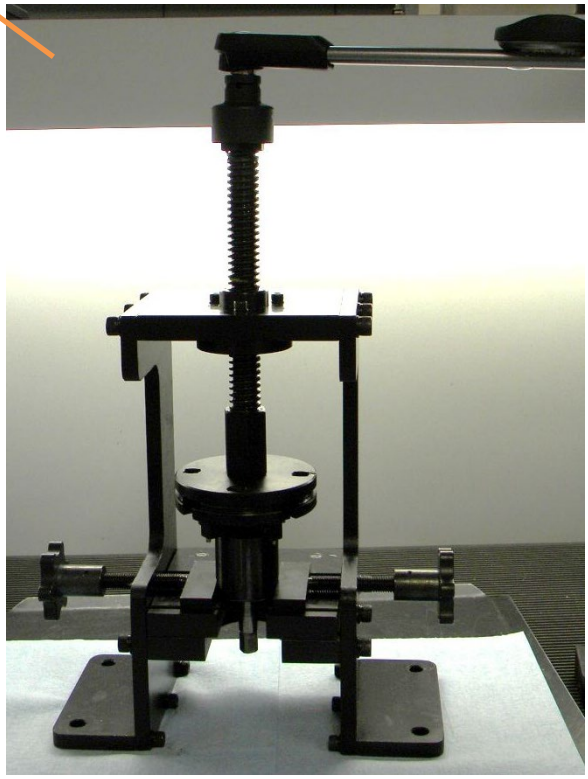

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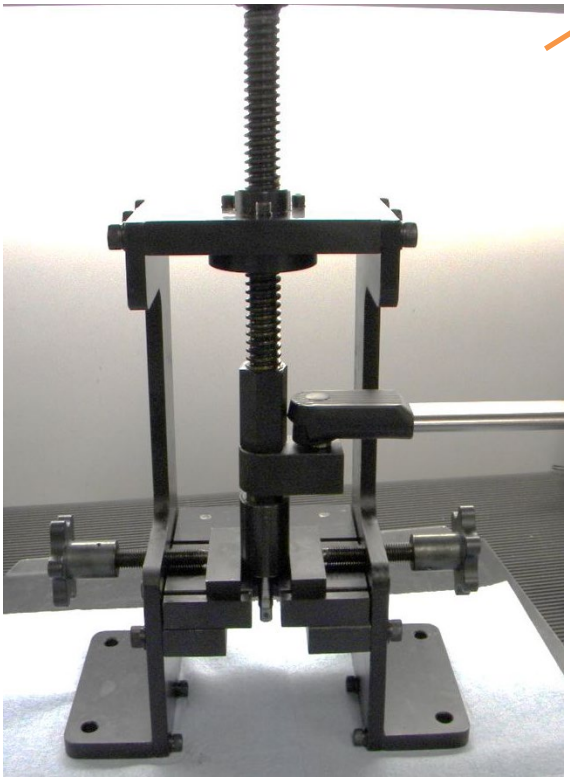

1. When re-installing the Liner Casing Setter, please consult the Fill and Draw Sheets to get the proper PTRF Press Load for the Pulse Unit being serviced. Apply this torque to the Press Screw with a properly calibrated Torque Wrench.
2. Consult the Fill and Draw Sheets for the proper torque to apply to the Liner Casing Setter for the Pulse Unit that is being serviced. Apply this torque to the Liner Casing Setter using a properly calibrated torque wrench.

Note: Pulse Units that take the Pins are Left Hand Threads and units that take the PTRF Adapter are Right Hand Threads.

Fill, Draw, & Torque Sheet

Key Model of this Tool Group	Full Volume of Liner Oil in Pulse Unit (approx.)	Volume to be Removed from the Full Volume (approx.)	Torque to Tighten Liner Casing Setter (approx.)	Torque to Tighten Liner Casing Setter (approx.)	Load to Press on Rear Liner Plate	Load to Press on Rear Liner Plate
					Hydraulic Press	P.T.R.F.
Model	**cc's**	**cc's**	**NM**	**Ft-Lbs**	**Tons**	**Ft-Lbs/Nm**
ALPHA-45(S)(D) & 61(D)	5.0	0.45+/-.05	70+/-5	52+/-4		
ALPHA-50(S)(D) & L61(D)	5.0	0.50+/-.05	70+/-5	52+/-4		
ALPHA-50MC, 60MC & 70MC	5.0	0.45+/-.05	70+/-5	52+/-4		
ALPHA-60(S)(D)	6.2	0.55+/-.05	85+/-5	63+/-4		
ALPHA-70(S)(C)(CH)	8.8	0.80+/-0.1	110+/-5	81+/-4	2	40/54
ALPHA-80	12.0	1.00+/-0.1	135+/-5	100+/-4	2	40/54
ALPHA-80MC & 90MC	6.2	0.55+/-.05	85+/-5	63+/-4		
ALPHA-90	14.0	1.00+/-0.1	150+/-5	110+/-4	3	60/81
ALPHA-100	19.0	1.70+/-0.1	185+/-10	137+/-7	3	60/81
ALPHA-100MC & 101MC	12.0	0.80+/-0.1	135 +/-5	100+/-4	2	40/54
ALPHA-110MC	12.0	0.95+/-0.1	135+/-5	100+/-4	2	40/54
ALPHA-130	24.0	2.00+/-0.1	185+/-10	137+/-7	3	60/81
ALPHA-130MC	24.0	1.80+/-0.1	185+/-10	137+/-7	3	60/81
ALPHA-140 & 140MC	31.5	2.30+/-0.1	200+/-10	148+/-7	3.5	70/95
ALPHA-160	48.0	2.40+/-0.1	260+/-10	192+/-7	4	80/108
ALPHA-180	48.0	4.80+/-0.1	290+/-10	214+/-7	4	80/108
ALPHA-T40D(S), T42D(S)(P), T45(S)(D)(P), T46(D), T47(S)(D)(P), T50(D) & T52(D)	5.0		70+/-5	52+/-4		
ALPHA-T60(D) & T62(D)(MI)	6.2		85+/-5	63+/-4		
ALPHA-T65(S) & T70(S)(C)(CH)	8.8	0.75+/-.05	110+/-5	81+/-4	2	40/54
ALPHA-T80	12.0	0.80+/-.05	135+/-5	100+/-4	2	40/54
ALPHA-T90	14.0	0.95+/-.05	150+/-5	110+/-4	3	60/81
ALPHA-T100	19.0	1.40+/-0.1	185+/-10	137+/-7	3	60/81
ALPHA-T130	24.0	1.80+/-0.1	185+/-10	137+/-7	3	60/81
ALPHA-T140	31.5	1.90+/-0.1	200+/-10	148+/-7	3.5	70/95
BP-T40 & BP-T50	5.6	0.30+/-0.01	85+/-5	63+/-4	1	20/27
BP-T60	6.2	0.41+/-0.01	85+/-5	63+/-4	1	20/27
U-50EC	5.0	0.15	50+/-5	37+/-4		
U-60EC	8.5	0.35	70+/-5	52+/-4		
U-80EC	9.0	0.40	70+/-5	52+/-4	3	60/81
U-100EC	18.0	0.90	70+/-5	52+/-4	3	60/81
U-300SD, U-310SD, U-350(S)(D)	5.0	0.15	50+/-5	37+/-4		
U-410(S)(D)	8.5	0.35	70+/-5	52+/-4		
U-480, U-501	9.0	0.40	70+/-5	52+/-4	3	60/81
U-610, U-610T	13.0	0.55	70+/-5	52+/-4	3	60/81
U-700, U-700T	18.0	0.90	70+/-5	52+/-4	3	60/81
U-800, U-800T	20.0	1.00	90+/-5	67+/-4	3	60/81
U-900, U-900T	25.0	1.25	100+/-5	74+/-4	3	60/81
U-1000, U-1000T	32.0	1.70	110 +/-5	81+/-4	3	60/81
U-1301, U-1301T	38.0	2.00	120+/-10	89+/-7	4	80/108

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Fill, Draw, & Torque Sheet

Key Model of this Tool Group	Full Volume of Liner Oil in Pulse Unit (approx.)	Volume to be Removed from the Full Volume (approx.)	Torque to Tighten Liner Casing Setter (approx.)	Torque to Tighten Liner Casing Setter (approx.)	Load to Press on Rear Liner Plate	Load to Press on Rear Liner Plate
					Hydraulic Press	P.T.R.F.
Model	**cc's**	**cc's**	**NM**	**Ft-Lbs**	**Tons**	**Ft-Lbs/Nm**
UA-40(S)(D)MC, 400AMC & UA-50(S)(D)MC, 500AMC	7.0	0.35+/-.01	85+/-5	63+/-4	1.5	30/41
UA-60(S)MC & 600AMC	8.2	0.40+/-.01	85+/-5	63+/-4	1.5	30/41
UA-70(S)MC & 700AMC	10.3	0.70+/-.05	110+/-5	81+/-4	2	40/54
UA-80AMC & 800AMC	12.0	0.80+/-.05	110+/-5	81+/-4	2	40/54
UA-90MC, 90AMC, 900AMC	15.8	0.90+/-.05	150+/-5	110+/-4	3	60/81
UA-100MC, 100AMC, 1000AMC	21.7	1.50+/-0.1	185+/-5	137+/-7	3	60/81
UA-130MC, 130AMC, 1300AMC	29.4	1.50+/-0.1	185+/-10	137+/-7	3	60/81
UA-150MC	35.7	2.0+/-0.1	200+/-10	148+/-7	3	60/81
UAT-30D(SD)	5.0	0.19+/-.01	85+/-5	63+/-4	1	20/27
UAT-40(S)(D), UAT-50(S)(D)	5.6	0.26+/-.01	85+/-5	63+/-4	1	20/27
UAT-60(S)(D)	6.2	0.35+/-.01	85+/-5	63+/-4	1	20/27
UAT-70(S)	8.8	0.60+/-.05	110+/-5	81+/-4	2	40/54
UAT-80	12.0	0.80+/-.05	135+/-5	100+/-4	2	40/54
UAT-90	14.0	0.90+/-.05	150+/-5	110+/-4	3	60/81
UAT-100	21.5	1.40+/-0.1	185+/-10	137+/-7	3	60/81
UAT-130	24.0	1.40+/-0.1	185+/-10	137+/-7	3	60/81
UAT-150	31.5	2.0+/-0.1	290+/-10	214+/-7	4.5	90/122
UAT-180	39.0	3.8+/-0.1	320+/-10	236+/-7	4.5	90/122
UAT-200	81.5	5.60+/-0.1	320+/-10	236+/-7	4.5	90/122
UBP-65	8.0	0.70+/-.05	85+/-5	63+/-4	3	60/81
UBP-T40 & T50	5.6	0.35 -.04	85+/-5	63+/-4	1	20/27
UBP-T60	6.2	0.45+/-.05	85+/-5	63+/-4	1	20/27
UDBP-T40 & T50	5.6	0.35 -.04	85+/-5	63+/-4	1	20/27
UDBP-T60	6.2	0.45+/-.05	85+/-5	63+/-4	1	20/27
UDBP-T70	8.8	0.70+/-.05	110+/-5	81+/-4	2	40/54
UDBP-TA40	5.6	0.26+/-.01	85+/-5	63+/-4	1.5	30/41
UDBP-TA50	5.6	0.28+/-.01	85+/-5	63+/-4	1.5	30/41
UDBP-TA60	6.2	0.37+/-.01	85+/-5	63+/-4	1.5	30/41
UDBP-TA70(P)	8.8	0.60+/-.05	110+/-5	81+/-4	2	40/54
UBX-AF500Z, AF600Z	8.9	0.85+/-0.01	85+/-5	63+/-4	1	20/27
UBX-AF700Z	12.0	1.2+/-0.05	110+/-5	81+/-4	2	40/54
UBX-AF900Z	15.3	1.6 +/-0.05	110+/-5	81+/-4	3	60/81
UBX-T60, T60D	8.9	0.85+/-.05	85+/-5	63+/-4	1	20/27
UBX-T70, T70-RF8	12.0	0.85+/-.05	110+/-5	81+/-4	1.5	30/41
UBX-T80	14.5	1.5+/-0.05	110+/-5	81+/-4	1.5	30/41
UDP-A60MC	5.6	0.30+.05	85+/-5	63+/-4	1.5	30/41
UDP-A80MC	8.8	0.65+.05	110+/-5	81+/-4	2	40/54
UDP-TA40	5.6	0.28+/-.01	85+/-5	63+/-4	1.5	30/41
UDP-TA40D	5.6	0.28+/-.01	85+/-5	63+/-4	1.5	30/41
UDP-TA50	5.6	0.28+/-.01	85+/-5	63+/-4	1.5	30/41
UDP-TA50D	5.6	0.28+/-.01	85+/-5	63+/-4	1.5	30/41
UDP-TA55	6.2	0.37+/-.01	85+/-5	63+/-4	1.5	30/41
UDP-TA55D	6.2	0.37+/-.01	85+/-5	63+/-4	1.5	30/41
UDP-TA60	6.2	0.37+/-.01	85+/-5	63+/-4	1.5	30/41
UDP-TA60D	6.2	0.37+/-.01	85+/-5	63+/-4	1.5	30/41
UEP-50(D) & 50MC(D)	5.5	0.35+/-.05	70+/-5	52+/-4	1	20/27
UEP-60(D) & 60MC(D)	6.8	0.55+/-.05	85+/-5	63+/-4	1	20/27
UEP-70 & 70MC	8.8	0.65+/-.05	110+/-5	81+/-4	2	40/54
UEP-80 & 80MC	14.0	0.90+/-.05	150+/-5	110+/-4	3	60/81
UEP-100 & 100MC	19	1.50+/-.05	185 /-10	137+/-7	3	60/81

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Fill, Draw, & Torque Sheet

Key Model of this Tool Group	Full Volume of Liner Oil in Pulse Unit (approx.)	Volume to be Removed from the Full Volume (approx.)	Torque to Tighten Liner Casing Setter (approx.)	Torque to Tighten Liner Casing Setter (approx.)	Load to Press on Rear Liner Plate	Load to Press on Rear Liner Plate
					Hydraulic Press	P.T.R.F.
Model	**cc's**	**cc's**	**NM**	**Ft-Lbs**	**Tons**	**Ft-Lbs/Nm**
UL-30(D)	5.0	0.31+/-.01	85+/-5	63+/-4		
UL-40(D), UL-40A(D)MC	5.0	0.35+/-.01	85+/-5	63+/-4	1	20/27
UL-50(S)(D) & 50(D)MC, UL-40(D)MC, UL-50A(D)MC	5.0	0.45+/-.05	85+/-5	63+/-4	1	20/27
UL-60(S)(D), 60MC, 60AMC	6.8	0.55+/-.05	85+/-5	63+/-4	1	20/27
UL-70, UL-70MC, 70AMC	8.0	0.65+/-.05	110+/-5	81+/-4	2	40/54
UL-80	14.0	0.80+/-.05	110+/-5	81+/-4	2	40/54
UL-90, UL-90MC, 90AMC, 900AMC	14.0	0.95+/-.05	150+/-5	110+/-4	3	60/81
UL-100	19	1.50+/-.05	185+/-10	137+/-7	3	60/81
UL-100MC, 100AMC	21.5	1.60+/-0.1	185+/-10	137+/-7	3	60/81
UL-130	27.0	1.70+/-0.1	185+/-10	137+/-7	3	60/81
UL-130MC, 130AMC	24.0	1.60+/-0.1	185+/-10	137+/-7	3	60/81
UL-150	36.6	2.60+/-0.1	200+/-10	148+/-7	3	60/81
ULT-30 (D)(S)	5.0	0.30+/-.01	85+/-5	63+/-4	1	20/27
ULT-40(S)(D) & 50(S)(D)(C),	5.6	0.35 -.04	85+/-5	63+/-4	1	20/27
ULT-60(S)(D)(C)	6.2	0.45+/-.05	85+/-5	63+/-4	1	20/27
ULT-70(S)(C)(CH)	8.8	0.70+/-.05	110+/-5	81+/-4	2	40/54
ULT-80	12.0	0.85+/-.05	110+/-5	81+/-4	2	40/54
ULT-90	14.0	1.00+/-.05	150+/-5	110+/-4	3	60/81
ULT-100	21.5	1.60+/-0.1	185+/-10	137+/-7	3	60/81
ULT-130	24.0	1.60+/-0.1	185+/-10	137+/-7	3	60/81
ULT-150	31.5	2.20+/-0.1	200+/-10	148+/-7	3.5	70/95
ULT-180	39.0	3.30+/-0.1	260+/-10	192+/-7	4	80/108
UX-450(S)(D)	5.0	0.50+/-.05	70+/-5	52+/-4		
UX-500(S)(D)(C)	5.0	0.50+/-.05	70+/-5	52+/-4		
UX-612(S)(D)(C)(A)	6.2	0.65+/-.05	85+/-5	63+/-4		
UX-622(D)	6.2	0.65+/-.05	85+/-5	63+/-4		
UX-700(S)(D)(C) & 80EC	8.8	0.80+/-0.1	110+/-5	81+/-4	2	40/54
UX-800(S)(C) & ST800	12.0	0.80+/-0.1	135+/-5	100+/-4	2	40/54
UX-900(S)(C) & 120EC	14.0	0.95+/-0.1	150+/-5	110+/-4	3	60/81
UX-1000(S)(C) & 130EC	19.0	1.50+/-0.1	185+/-10	137+/-7	3	60/81
UX-1300(S), T1300 & TL1300	24.0	1.80+/-0.1	185+/-10	137+/-7	3	60/81
UX-1400	31.5	2.00+/-0.1	200+/-10	148+/-7	3.5	70/95
UX-1620	33.5	2.20+/-0.1	200+/-10	148+/-7	4	80/108
UX-T700, T700L & TL700	8.8	0.70+/-.05	110+/-5	81+/-4	2	40/54
UX-T800 & TL800	12.0	0.80+/-.05	135+/-5	100+/-4	2	40/54
UX-T900 & TL900	14.0	0.95+/-.05	150+/-5	110+/-4	3	60/81
UX-T1000 & TL1000	19.0	1.40+/-0.1	185+/-10	137+/-7	3	60/81
UX-T1400 & TL1400	31.5	1.90+/-0.1	200+/-10	148+/-7	3.5	70/95
UX-T1620 & TL1620	33.5	2.10+/-0.1	200+/-10	148+/-7	4	80/108
UXR-1820(MC)	48.0	3.50+/-0.1	260+/-10	192+/-7	4	80/108
UXR-2000(S)(MC)	84.0	7.00+/-0.2	300+/-10	221+/-7	4	80/108
UXR-2400S(MC)	105.0	11.00+/-0.2	650+/-10	480+/-7	5	100/74
UXR-3000S	185.0	14.00+/-0.2	700+/-10	517+/-7	5	100/74
UXR-T1820 & TL1820	48.0	3.50+/-0.1	260+/-10	192+/-7	4	80/108
UXR-T2000 & TL2000	84.0	6.00+/-0.1	300+/-10	221+/-7	4	80/108
UXR-T2400S	105.0	10.50+/-0.2	650+/-10	480+/-7	5	100/74
UXR-T3000S	185.0	13.50+/-0.2	700+/-10	517+/-7	5	100/74

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