

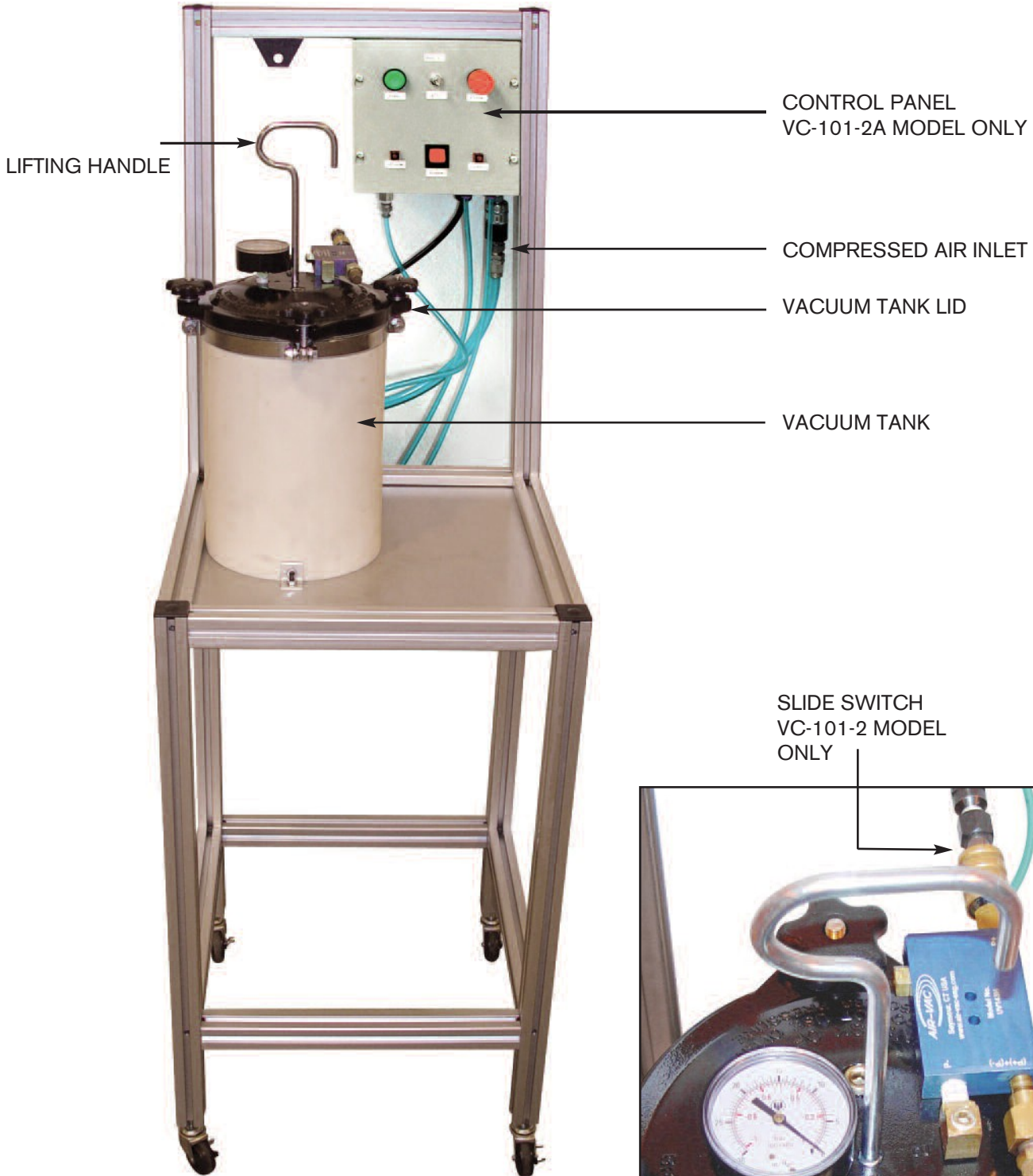


**Vacuum Tank**  
**VC-101-2(A)**  
**Operations Manual**

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# DESCRIPTION AND LAYOUT



# PROCEDURES

## WARNING:

- Read all instructions before operating this equipment.
- Wear proper protective gear.

## AIR PRESSURE:

- 75-80 PSI

## ELECTRIC:

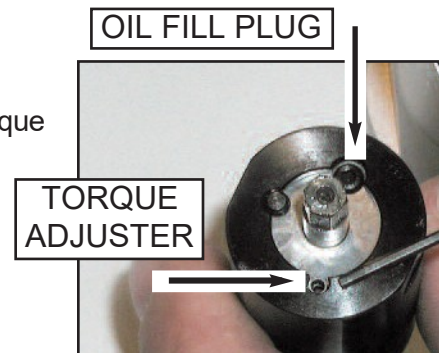
- 5 AMP 110 VAC

## SETTING UP VACUUM TANK:

- Connect 3/8" I.D. air hose to air inlet with full flow 3/8" fittings.
- Plug electric cord into surge protected power strip plugged into 110 VAC outlet.
- Turn power switch on.

## USING VACUUM FILL SYSTEM:

1. Remove lid from tank.
2. Remove the oil fill plug from the pulse unit and turn torque adjuster all the way out counter-clockwise.  
Note: Make sure the driving blade is not blocking the oil fill hole.



3. Set pulse unit or units into the tank and onto the plate. Note: Make sure the plate is in the raised position.
4. Pour Manufacturer Recommended Hydraulic Pulse Fluid into the tank so that the fluid level is approximately 1 inch (25 mm) from the top of the liner casing being serviced.  
**Note: Insure that the Manufacturer Recommended Hydraulic Pulse Fluid is stirred vigorously to insure consistency.**
5. Put lid back on tank.

STEP 3



STEP 4



# PROCEDURES

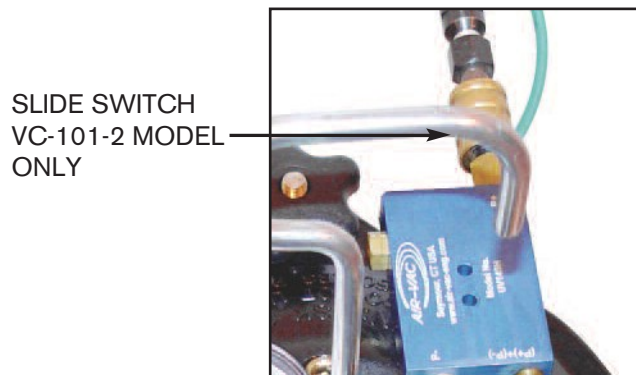
## PROCEDURE FOR USING VACUUM FILL TANK SYSTEM

### USING VACUUM FILL SYSTEM:

6. If you have the VC-101-2A, with the switch in the *auto* position, push the start button and proceed to step 10.



7. If you have the VC-101-2 slide the slide switch over so the vacuum starts.



8. After ten minutes with the vacuum in the green, lower the plate down into the oil.
9. After 30 seconds with plate lowered, turn the vacuum off. Once the normal air pressure returns, raise the plate on the inside of the tank.
10. Remove the lid from the tank.
11. Remove the excess oil from the top of the Pulse Unit so that the oil is level with the top of the oil fill hole.
12. Draw off the recommended amount of oil from the Pulse Unit and install Oil Fill Plug back into the Pulse Unit.
13. You are now ready to test your tool.

# FILL, DRAW, AND TORQUE TABLE

| 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+/-0.05   | 70+/-5  | 52+/-4  |                                   |                                   |
| ALPHA-50(S)(D) & L61(D)  | 5.0  | 0.50+/-0.05   | 70+/-5  | 52+/-4  |                                   |                                   |
| ALPHA-50MC, 60MC & 70MC  | 5.0  | 0.45+/-0.05   | 70+/-5  | 52+/-4  |                                   |                                   |
| ALPHA-60(S)(D)   | 6.2  | 0.55+/-0.05   | 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+/-0.05   | 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+/-0.05   | 110+/-5   | 81+/-4  | 2                                 | 40/54                             |
| ALPHA-T80  | 12.0   | 0.80+/-0.05   | 135+/-5   | 100+/-4   | 2                                 | 40/54                             |
| ALPHA-T90  | 14.0   | 0.95+/-0.05   | 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                            |

# FILL, DRAW, AND TORQUE TABLE

| 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+/-0.1  | 85+/-5  | 63+/-4  | 1.5                               | 30/41                             |
| UA-60(S)MC & 600AMC                           | 8.2  | 0.40+/-0.1  | 85+/-5  | 63+/-4  | 1.5                               | 30/41                             |
| UA-70(S)MC & 700AMC                           | 10.3   | 0.70+/-0.05   | 110+/-5   | 81+/-4  | 2                                 | 40/54                             |
| UA-80AMC & 800AMC                             | 12.0   | 0.80+/-0.05   | 110+/-5   | 81+/-4  | 2                                 | 40/54                             |
| UA-90MC, 90AMC, 900AMC                        | 15.8   | 0.90+/-0.05   | 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+/-0.01   | 85+/-5  | 63+/-4  | 1                                 | 20/27                             |
| UAT-40(S)(D), UAT-50(S)(D)                    | 5.6  | 0.26+/-0.01   | 85+/-5  | 63+/-4  | 1                                 | 20/27                             |
| UAT-60(S)(D)                                  | 6.2  | 0.35+/-0.01   | 85+/-5  | 63+/-4  | 1                                 | 20/27                             |
| UAT-70(S)                                     | 8.8  | 0.60+/-0.05   | 110+/-5   | 81+/-4  | 2                                 | 40/54                             |
| UAT-80  | 12.0   | 0.80+/-0.05   | 135+/-5   | 100+/-4   | 2                                 | 40/54                             |
| UAT-90  | 14.0   | 0.90+/-0.05   | 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+/-0.05   | 85+/-5  | 63+/-4  | 3                                 | 60/81                             |
| UBP-T40 & T50                                 | 5.6  | 0.35 -0.04  | 85+/-5  | 63+/-4  | 1                                 | 20/27                             |
| UBP-T60                                       | 6.2  | 0.45+/-0.05   | 85+/-5  | 63+/-4  | 1                                 | 20/27                             |
| UDBP-T40 & T50                                | 5.6  | 0.35 -0.04  | 85+/-5  | 63+/-4  | 1                                 | 20/27                             |
| UDBP-T60                                      | 6.2  | 0.45+/-0.05   | 85+/-5  | 63+/-4  | 1                                 | 20/27                             |
| UDBP-T70                                      | 8.8  | 0.70+/-0.05   | 110+/-5   | 81+/-4  | 2                                 | 40/54                             |
| UDBP-TA40                                     | 5.6  | 0.26+/-0.01   | 85+/-5  | 63+/-4  | 1.5                               | 30/41                             |
| UDBP-TA50                                     | 5.6  | 0.28+/-0.01   | 85+/-5  | 63+/-4  | 1.5                               | 30/41                             |
| UDBP-TA60                                     | 6.2  | 0.37+/-0.01   | 85+/-5  | 63+/-4  | 1.5                               | 30/41                             |
| UDBP-TA70(P)                                  | 8.8  | 0.60+/-0.05   | 110+/-5   | 81+/-4  | 2                                 | 40/54                             |
| UDP-A60MC                                     | 5.6  | 0.30+0.05   | 85+/-5  | 63+/-4  | 1.5                               | 30/41                             |
| UDP-A80MC                                     | 8.8  | 0.65+0.05   | 110+/-5   | 81+/-4  | 2                                 | 40/54                             |
| UDP-TA40                                      | 5.6  | 0.28+/-0.01   | 85+/-5  | 63+/-4  | 1.5                               | 30/41                             |
| UDP-TA40D                                     | 5.6  | 0.28+/-0.01   | 85+/-5  | 63+/-4  | 1.5                               | 30/41                             |
| UDP-TA50                                      | 5.6  | 0.28+/-0.01   | 85+/-5  | 63+/-4  | 1.5                               | 30/41                             |
| UDP-TA50D                                     | 5.6  | 0.28+/-0.01   | 85+/-5  | 63+/-4  | 1.5                               | 30/41                             |
| UDP-TA55                                      | 6.2  | 0.37+/-0.01   | 85+/-5  | 63+/-4  | 1.5                               | 30/41                             |
| UDP-TA55D                                     | 6.2  | 0.37+/-0.01   | 85+/-5  | 63+/-4  | 1.5                               | 30/41                             |
| UDP-TA60                                      | 6.2  | 0.37+/-0.01   | 85+/-5  | 63+/-4  | 1.5                               | 30/41                             |
| UDP-TA60D                                     | 6.2  | 0.37+/-0.01   | 85+/-5  | 63+/-4  | 1.5                               | 30/41                             |
| UEP-50(D) & 50MC(D)                           | 5.5  | 0.35+/-0.05   | 70+/-5  | 52+/-4  | 1                                 | 20/27                             |
| UEP-60(D) & 60MC(D)                           | 6.8  | 0.55+/-0.05   | 85+/-5  | 63+/-4  | 1                                 | 20/27                             |
| UEP-70 & 70MC                                 | 8.8  | 0.65+/-0.05   | 110+/-5   | 81+/-4  | 2                                 | 40/54                             |
| UEP-80 & 80MC                                 | 14.0   | 0.90+/-0.05   | 150+/-5   | 110+/-4   | 3                                 | 60/81                             |
| UEP-100 & 100MC                               | 19   | 1.50+/-0.05   | 185 /-10  | 137+/-7   | 3                                 | 60/81                             |

# FILL, DRAW, AND TORQUE TABLE

| 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+/-0.01   | 85+/-5  | 63+/-4  |                                   |                                   |
| UL-40(D), UL-40A(D)MC                          | 5.0  | 0.35+/-0.01   | 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+/-0.05   | 85+/-5  | 63+/-4  | 1                                 | 20/27                             |
| UL-60(S)(D), 60MC, 60AMC                       | 6.8  | 0.55+/-0.05   | 85+/-5  | 63+/-4  | 1                                 | 20/27                             |
| UL-70, UL-70MC, 70AMC                          | 8.0  | 0.65+/-0.05   | 110+/-5   | 81+/-4  | 2                                 | 40/54                             |
| UL-80  | 14.0   | 0.80+/-0.05   | 110+/-5   | 81+/-4  | 2                                 | 40/54                             |
| UL-90, UL-90MC, 90AMC, 900AMC                  | 14.0   | 0.95+/-0.05   | 150+/-5   | 110+/-4   | 3                                 | 60/81                             |
| UL-100   | 19   | 1.50+/-0.05   | 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+/-0.01   | 85+/-5  | 63+/-4  | 1                                 | 20/27                             |
| ULT-40(S)(D) & 50(S)(D)(C),                    | 5.6  | 0.35 -0.04  | 85+/-5  | 63+/-4  | 1                                 | 20/27                             |
| ULT-60(S)(D)(C)                                | 6.2  | 0.45+/-0.05   | 85+/-5  | 63+/-4  | 1                                 | 20/27                             |
| ULT-70(S)(C)(CH)                               | 8.8  | 0.70+/-0.05   | 110+/-5   | 81+/-4  | 2                                 | 40/54                             |
| ULT-80   | 12.0   | 0.85+/-0.05   | 110+/-5   | 81+/-4  | 2                                 | 40/54                             |
| ULT-90   | 14.0   | 1.00+/-0.05   | 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+/-0.05   | 70+/-5  | 52+/-4  |                                   |                                   |
| UX-500(S)(D)(C)                                | 5.0  | 0.50+/-0.05   | 70+/-5  | 52+/-4  |                                   |                                   |
| UX-612(S)(D)(C)(A)                             | 6.2  | 0.65+/-0.05   | 85+/-5  | 63+/-4  |                                   |                                   |
| UX-622(D)                                      | 6.2  | 0.65+/-0.05   | 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+/-0.05   | 110+/-5   | 81+/-4  | 2                                 | 40/54                             |
| UX-T800 & TL800                                | 12.0   | 0.80+/-0.05   | 135+/-5   | 100+/-4   | 2                                 | 40/54                             |
| UX-T900 & TL900                                | 14.0   | 0.95+/-0.05   | 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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