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# 2018 CATALOG

40K psi Water Blasting  
Parts and Accessories

*Accessories*

*Control Guns*

*Fittings*

*Rigid Lances*

*Flex Lances*

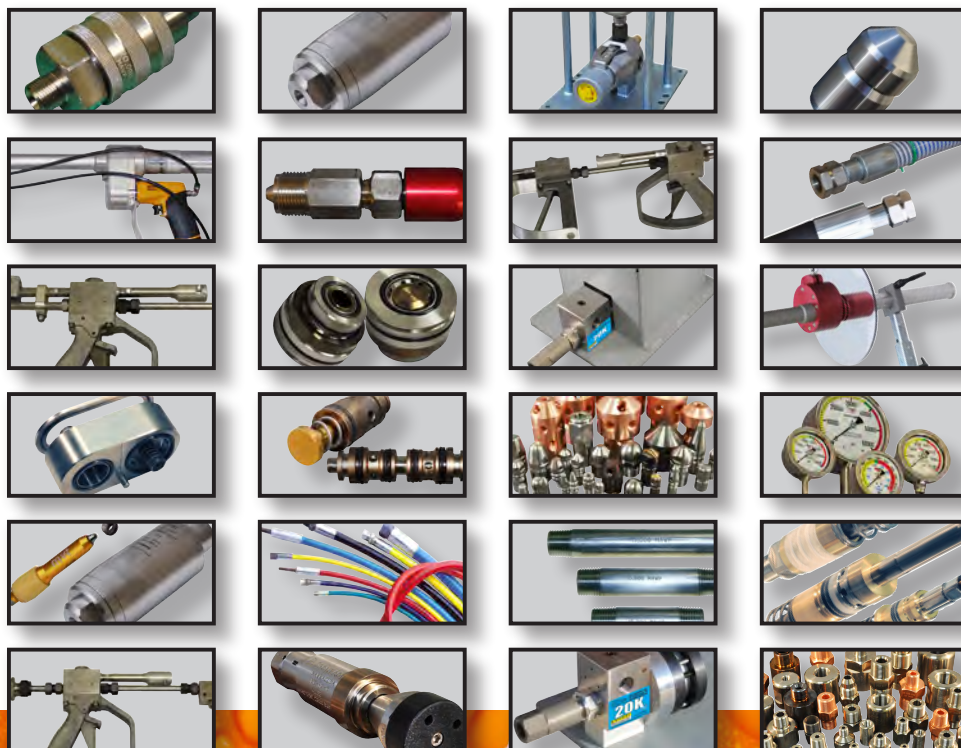
*Hoses*

*Nozzles*

*Pump Parts*

*Safety Products*

# CALDER



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# 40K



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- Stock Parker & Spir Star flex lances and hoses
- Safety products
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***One Direct Source for all your  
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SURFACE NOZZLES

**40K HP Standard Nozzles** The economical **APS** stainless steel **HP Standard** style nozzles come in pressure ratings to match your flex or rigid lances. The **40K-HP Standard Nozzle** is designed to go with lances with either right or left hand Autoclave-type high pressure threads, a special seating design that eliminates the requirement for gland nuts and collars, wrench flats for easy installation, and offer a wide range of options for precision drilled orifices.

Please specify drilling pattern, pressure and flow when ordering.



| LH Part #  | RH Part #  | 40K-STD HP | Dimensions          |
|------------|------------|------------|---------------------|
| 16-011-001 | 16-011-101 | 1/4" HP    | .375" OD x 1.225" L |
| 16-012-001 | 16-012-101 | 3/8" HP    | .468" OD x 1.375" L |
| 16-013-001 | 16-013-101 | 9/16" HP   | .687" OD x 1.625" L |

**40K Button Tip Flex Lance Nozzles** The **APS Button-Tip** compact stainless steel nozzles come in pressure ratings to match your flex lances. They are ideal for cleaning small diameter tubes with small radius bends. The 40K-BT nozzles have Autoclave-type HP threads. All offer many options for precision drilled orifices.

Please specify drilling pattern, pressure, flow and whether right or left hand threaded when ordering.



| LH Part #  | RH Part #  | 40K-BT HP | Dimensions          |
|------------|------------|-----------|---------------------|
| 16-014-001 | 16-014-101 | 1/4" HP   | .375" OD x 1.016" L |
| 16-015-001 | 16-015-101 | 3/8" HP   | .468" OD x 1.375" L |
| 16-016-001 | 16-016-101 | 9/16" HP  | .687" OD x 1.562" L |

| Part ID    | Description                     | Dimensions                      |
|------------|---------------------------------|---------------------------------|
| 16-020-007 | 10-32 RH MALE MP/HP             | .250" OD x 1.125" L BLANK (40K) |
| 16-020-008 | NOZZLE, BALL TYPE, 9/16"-18 LHM | .680 X 1.00" OD                 |



| Part ID    | Description                                                       |
|------------|-------------------------------------------------------------------|
| 16-022-003 | Blank, 5.16" 24UH RH (F) ADMAC 40K Nozzle (.375 O.D.) ADMAC STYLE |



**40K TLX Nozzles** The **APS** stainless steel **TLX Nozzles** come in pressure ratings to match your flex or rigid lances. The 40K-TLX have Autoclave-type HP threads. All have wrench flats for easy installation on the lance. All offer many options for 3 or 4 rows of precision drilled orifices.

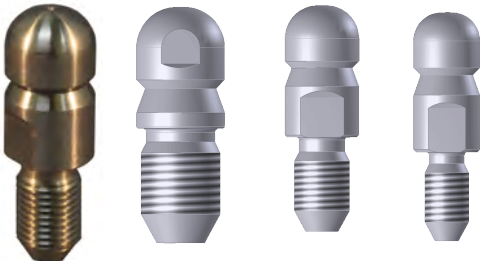


| LH Part #  | RH Part #  | 40K-TLX HP | Dimensions          |
|------------|------------|------------|---------------------|
| 16-017-001 | 16-017-101 | 1/4" HP    | .375" OD x 1.337" L |
| 16-018-001 | 16-018-101 | 3/8" HP    | .468" OD x 1.650" L |
| 16-019-001 | 16-019-101 | 9/16" HP   | .687" OD x 2.000" L |

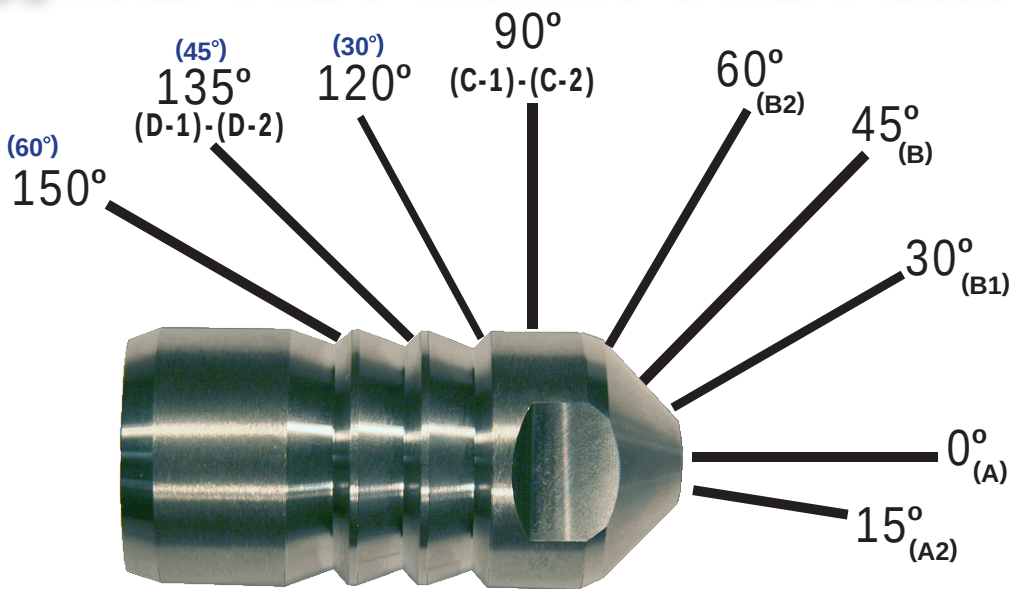
**20K-40K Male Machine Thread Lance Nozzles** The **APS Button-Tip** compact stainless steel nozzles come in pressure ratings to match your flex lances. They are ideal for cleaning small diameter tubes with small radius bends. The **40K-MMT** have Autoclave-type HP threads, and offer many options for precision drilled orifices.

Please specify drilling pattern, pressure and flow when ordering.

| LH Part #  | RH Part #                       | 40K-MMT HP       | Dimensions          |
|------------|---------------------------------|------------------|---------------------|
| 16-020-004 | 16-020-001                      | 1/4"-28 HP       | .375" OD x 0.875" L |
| 16-020-005 | 16-020-002                      | 3/8"-24 HP       | .468" OD x 1.000" L |
| 16-020-006 | 16-020-003                      | 9/16"-18 HP      | .687" OD x 1.125" L |
|            | 16-020-007                      | 10-32 HP         | .687" OD x 1.125" L |
| 16-020-010 | BLANK, 1/4"-28 HP RHM 40K SHORT | BUTTON NOZZLE SS |                     |



Typical Tube Nozzle Drill Patterns



Use this handy reference when designing your customized drilled orifice locations.  
If you have any questions, call our highly experienced staff.

| Nozzle Number | Orifice Diam./In. | 2,000 PSI | 4,000 PSI | 5,000 PSI | 6,000 PSI | 7,000 PSI | 8,000 PSI | 9,000 PSI |
|---------------|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 0.12          | 0.012             | 0.154     | 0.218     | 0.244     | 0.267     | 0.288     | 0.308     | 0.327     |
| 0.13          | 0.013             | 0.181     | 0.256     | 0.286     | 0.313     | 0.338     | 0.362     | 0.384     |
| 0.14          | 0.014             | 0.210     | 0.297     | 0.332     | 0.363     | 0.392     | 0.419     | 0.445     |
| 0.15          | 0.015             | 0.241     | 0.340     | 0.381     | 0.417     | 0.450     | 0.481     | 0.511     |
| 0.16          | 0.016             | 0.274     | 0.387     | 0.433     | 0.474     | 0.512     | 0.548     | 0.581     |
| 0.18          | 0.018             | 0.347     | 0.490     | 0.548     | 0.600     | 0.649     | 0.693     | 0.735     |
| 0.2           | 0.020             | 0.428     | 0.605     | 0.677     | 0.741     | 0.801     | 0.856     | 0.908     |
| 0.21          | 0.021             | 0.472     | 0.667     | 0.746     | 0.817     | 0.883     | 0.944     | 1.001     |
| 0.22          | 0.022             | 0.518     | 0.732     | 0.819     | 0.897     | 0.969     | 1.036     | 1.099     |
| 0.24          | 0.024             | 0.616     | 0.872     | 0.974     | 1.067     | 1.153     | 1.233     | 1.307     |
| 0.25          | 0.025             | 0.669     | 0.946     | 1.057     | 1.158     | 1.251     | 1.337     | 1.419     |
| 0.26          | 0.026             | 0.723     | 1.023     | 1.144     | 1.253     | 1.353     | 1.447     | 1.534     |
| 0.28          | 0.028             | 0.839     | 1.186     | 1.326     | 1.453     | 1.569     | 1.678     | 1.780     |
| 0.31          | 0.031             | 1.028     | 1.454     | 1.626     | 1.781     | 1.924     | 2.057     | 2.181     |
| 0.32          | 0.032             | 1.096     | 1.550     | 1.732     | 1.898     | 2.050     | 2.191     | 2.324     |
| 2             | 0.036             | 1.387     | 1.961     | 2.193     | 2.402     | 2.594     | 2.773     | 2.942     |
| 3             | 0.043             | 1.978     | 2.798     | 3.128     | 3.427     | 3.701     | 3.957     | 4.197     |
| 4             | 0.047             | 2.364     | 3.343     | 3.737     | 4.094     | 4.422     | 4.727     | 5.014     |
| 4.5           | 0.050             | 2.675     | 3.783     | 4.229     | 4.633     | 5.004     | 5.350     | 5.674     |
| 5             | 0.052             | 2.893     | 4.092     | 4.575     | 5.011     | 5.413     | 5.786     | 6.137     |
| 5.5           | 0.055             | 3.237     | 4.577     | 5.118     | 5.606     | 6.055     | 6.473     | 6.866     |
| 6             | 0.059             | 3.725     | 5.267     | 5.889     | 6.451     | 6.968     | 7.449     | 7.901     |
| 6.5           | 0.060             | 3.852     | 5.447     | 6.090     | 6.672     | 7.206     | 7.704     | 8.171     |
| 7             | 0.062             | 4.113     | 5.817     | 6.503     | 7.124     | 7.695     | 8.226     | 8.725     |
| 7.5           | 0.065             | 4.521     | 6.393     | 7.148     | 7.830     | 8.457     | 9.041     | 9.590     |
| 8             | 0.067             | 4.803     | 6.793     | 7.594     | 8.319     | 8.986     | 9.606     | 10.189    |
| 8.5           | 0.069             | 5.094     | 7.204     | 8.055     | 8.823     | 9.530     | 10.188    | 10.806    |
| 9             | 0.071             | 5.394     | 7.628     | 8.528     | 9.342     | 10.091    | 10.788    | 11.442    |
| 9.5           | 0.073             | 5.702     | 8.064     | 9.016     | 9.876     | 10.667    | 11.404    | 12.096    |
| 10            | 0.075             | 6.019     | 8.512     | 9.516     | 10.425    | 11.260    | 12.037    | 12.768    |
| 10.5          | 0.077             | 6.344     | 8.972     | 10.031    | 10.988    | 11.868    | 12.688    | 13.458    |
| 11            | 0.078             | 6.510     | 9.206     | 10.293    | 11.275    | 12.179    | 13.020    | 13.809    |
| 11.5          | 0.080             | 6.848     | 9.684     | 10.828    | 11.861    | 12.811    | 13.696    | 14.527    |
| 12            | 0.082             | 7.195     | 10.175    | 11.376    | 12.461    | 13.460    | 14.389    | 15.262    |
| 12.5          | 0.084             | 7.550     | 10.677    | 11.937    | 13.077    | 14.124    | 15.100    | 16.016    |
| 13            | 0.085             | 7.731     | 10.933    | 12.223    | 13.390    | 14.463    | 15.461    | 16.399    |
| 14            | 0.089             | 8.475     | 11.986    | 13.401    | 14.680    | 15.856    | 16.951    | 17.979    |
| 15            | 0.093             | 9.254     | 13.088    | 14.632    | 16.029    | 17.313    | 18.509    | 19.631    |
| 16            | 0.095             | 9.657     | 13.657    | 15.268    | 16.726    | 18.066    | 19.313    | 20.485    |
| 18            | 0.100             | 10.700    | 15.132    | 16.918    | 18.533    | 20.018    | 21.400    | 22.698    |
| 20            | 0.106             | 12.022    | 17.002    | 19.009    | 20.823    | 22.492    | 24.045    | 25.503    |
| 21            | 0.109             | 12.713    | 17.978    | 20.100    | 22.019    | 23.783    | 25.425    | 26.967    |
| 25            | 0.118             | 14.898    | 21.070    | 23.557    | 25.805    | 27.873    | 29.797    | 31.604    |
| 27            | 0.125             | 16.719    | 23.644    | 26.434    | 28.957    | 31.278    | 33.437    | 35.465    |
| 30            | 0.130             | 18.083    | 25.573    | 28.591    | 31.320    | 33.830    | 36.166    | 38.359    |
| 35            | 0.140             | 20.972    | 29.659    | 33.159    | 36.324    | 39.235    | 41.943    | 44.488    |
| 40            | 0.156             | 26.039    | 36.825    | 41.172    | 45.101    | 48.715    | 52.078    | 55.237    |
| 50            | 0.167             | 29.841    | 42.201    | 47.183    | 51.686    | 55.827    | 59.682    | 63.302    |
| 60            | 0.187             | 37.416    | 52.915    | 59.160    | 64.807    | 70.000    | 74.833    | 79.372    |
| 70            | 0.203             | 44.093    | 62.357    | 69.717    | 76.371    | 82.491    | 88.186    | 93.536    |
| 80            | 0.210             | 47.186    | 66.732    | 74.608    | 81.729    | 88.278    | 94.373    | 100.098   |
| 90            | 0.219             | 51.318    | 72.574    | 81.140    | 88.885    | 96.007    | 102.635   | 108.861   |
| 100           | 0.250             | 66.874    | 94.574    | 105.737   | 115.829   | 125.110   | 133.748   | 141.862   |

| Nozzle Number | Orifice Diam./In. | 10,000 PSI | 15,000 PSI | 20,000 PSI | 25,000 PSI | 30,000 PSI | 36,000 PSI | 40,000 PSI |
|---------------|-------------------|------------|------------|------------|------------|------------|------------|------------|
| 0.12          | 0.012             | 0.345      | 0.422      | 0.487      | 0.545      | 0.597      | 0.654      | 0.689      |
| 0.13          | 0.013             | 0.404      | 0.495      | 0.572      | 0.639      | 0.700      | 0.767      | 0.809      |
| 0.14          | 0.014             | 0.469      | 0.574      | 0.663      | 0.741      | 0.812      | 0.890      | 0.938      |
| 0.15          | 0.015             | 0.538      | 0.659      | 0.761      | 0.851      | 0.932      | 1.021      | 1.077      |
| 0.16          | 0.016             | 0.612      | 0.750      | 0.866      | 0.968      | 1.061      | 1.162      | 1.225      |
| 0.18          | 0.018             | 0.775      | 0.949      | 1.096      | 1.226      | 1.343      | 1.471      | 1.550      |
| 0.2           | 0.020             | 0.957      | 1.172      | 1.353      | 1.513      | 1.658      | 1.816      | 1.914      |
| 0.21          | 0.021             | 1.055      | 1.292      | 1.492      | 1.668      | 1.828      | 2.002      | 2.110      |
| 0.22          | 0.022             | 1.158      | 1.418      | 1.638      | 1.831      | 2.006      | 2.197      | 2.316      |
| 0.24          | 0.024             | 1.378      | 1.688      | 1.949      | 2.179      | 2.387      | 2.615      | 2.756      |
| 0.25          | 0.025             | 1.495      | 1.831      | 2.115      | 2.364      | 2.590      | 2.837      | 2.991      |
| 0.26          | 0.026             | 1.617      | 1.981      | 2.287      | 2.557      | 2.801      | 3.069      | 3.235      |
| 0.28          | 0.028             | 1.876      | 2.297      | 2.653      | 2.966      | 3.249      | 3.559      | 3.752      |
| 0.31          | 0.031             | 2.299      | 2.816      | 3.252      | 3.635      | 3.982      | 4.363      | 4.599      |
| 0.32          | 0.032             | 2.450      | 3.001      | 3.465      | 3.874      | 4.243      | 4.649      | 4.900      |
| 2             | 0.036             | 3.101      | 3.798      | 4.385      | 4.903      | 5.371      | 5.883      | 6.202      |
| 3             | 0.043             | 4.424      | 5.418      | 6.256      | 6.995      | 7.662      | 8.394      | 8.848      |
| 4             | 0.047             | 5.285      | 6.473      | 7.474      | 8.357      | 9.154      | 10.028     | 10.570     |
| 4.5           | 0.050             | 5.981      | 7.326      | 8.459      | 9.457      | 10.360     | 11.349     | 11.963     |
| 5             | 0.052             | 6.469      | 7.923      | 9.149      | 10.229     | 11.205     | 12.275     | 12.939     |
| 5.5           | 0.055             | 7.238      | 8.864      | 10.235     | 11.443     | 12.536     | 13.732     | 14.475     |
| 6             | 0.059             | 8.329      | 10.200     | 11.778     | 13.169     | 14.425     | 15.802     | 16.657     |
| 6.5           | 0.060             | 8.613      | 10.549     | 12.181     | 13.619     | 14.919     | 16.342     | 17.226     |
| 7             | 0.062             | 9.197      | 11.264     | 13.007     | 14.542     | 15.930     | 17.450     | 18.394     |
| 7.5           | 0.065             | 10.109     | 12.380     | 14.296     | 15.983     | 17.509     | 19.180     | 20.217     |
| 8             | 0.067             | 10.740     | 13.154     | 15.189     | 16.982     | 18.603     | 20.378     | 21.480     |
| 8.5           | 0.069             | 11.391     | 13.951     | 16.109     | 18.011     | 19.730     | 21.613     | 22.782     |
| 9             | 0.071             | 12.061     | 14.772     | 17.057     | 19.070     | 20.890     | 22.884     | 24.122     |
| 9.5           | 0.073             | 12.750     | 15.615     | 18.031     | 20.159     | 22.084     | 24.191     | 25.500     |
| 10            | 0.075             | 13.458     | 16.483     | 19.033     | 21.279     | 23.310     | 25.535     | 26.916     |
| 10.5          | 0.077             | 14.186     | 17.374     | 20.061     | 22.429     | 24.570     | 26.915     | 28.371     |
| 11            | 0.078             | 14.556     | 17.828     | 20.586     | 23.016     | 25.212     | 27.619     | 29.113     |
| 11.5          | 0.080             | 15.312     | 18.754     | 21.655     | 24.211     | 26.522     | 29.053     | 30.625     |
| 12            | 0.082             | 16.088     | 19.703     | 22.751     | 25.437     | 27.865     | 30.524     | 32.175     |
| 12.5          | 0.084             | 16.882     | 20.676     | 23.875     | 26.693     | 29.240     | 32.031     | 33.764     |
| 13            | 0.085             | 17.286     | 21.171     | 24.446     | 27.332     | 29.941     | 32.798     | 34.573     |
| 14            | 0.089             | 18.951     | 23.211     | 26.801     | 29.965     | 32.825     | 35.958     | 37.903     |
| 15            | 0.093             | 20.693     | 25.344     | 29.265     | 32.719     | 35.842     | 39.263     | 41.387     |
| 16            | 0.095             | 21.593     | 26.446     | 30.537     | 34.141     | 37.400     | 40.970     | 43.186     |
| 18            | 0.100             | 23.926     | 29.303     | 33.836     | 37.830     | 41.440     | 45.396     | 47.851     |
| 20            | 0.106             | 26.883     | 32.925     | 38.018     | 42.506     | 46.562     | 51.007     | 53.766     |
| 21            | 0.109             | 28.426     | 34.815     | 40.200     | 44.946     | 49.235     | 53.935     | 56.852     |
| 25            | 0.118             | 33.314     | 40.801     | 47.113     | 52.674     | 57.702     | 63.209     | 66.628     |
| 27            | 0.125             | 37.384     | 45.786     | 52.869     | 59.109     | 64.751     | 70.931     | 74.768     |
| 30            | 0.130             | 40.434     | 49.522     | 57.183     | 63.932     | 70.034     | 76.719     | 80.869     |
| 35            | 0.140             | 46.894     | 57.433     | 66.318     | 74.146     | 81.223     | 88.976     | 93.788     |
| 40            | 0.156             | 58.225     | 71.311     | 82.343     | 92.062     | 100.849    | 110.475    | 116.451    |
| 50            | 0.167             | 66.726     | 81.723     | 94.365     | 105.503    | 115.573    | 126.604    | 133.452    |
| 60            | 0.187             | 83.666     | 102.469    | 118.321    | 132.287    | 144.913    | 158.744    | 167.331    |
| 70            | 0.203             | 98.595     | 120.754    | 139.435    | 155.893    | 170.772    | 187.071    | 197.190    |
| 80            | 0.210             | 105.512    | 129.225    | 149.217    | 166.829    | 182.752    | 200.195    | 211.024    |
| 90            | 0.219             | 114.750    | 140.539    | 162.281    | 181.435    | 198.752    | 217.722    | 229.499    |
| 100           | 0.250             | 149.535    | 183.142    | 211.475    | 236.436    | 259.003    | 283.723    | 299.070    |

| Nozzle Number | Orifice Diam./in. | 2,000 PSI | 4,000 PSI | 5,000 PSI | 6,000 PSI | 7,000 PSI | 8,000 PSI | 9,000 PSI | 10,000 PSI | 15,000 PSI | 20,000 PSI | 25,000 PSI | 30,000 PSI |
|---------------|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|
| 0.15          | 0.015             | 0.291     | 0.412     | 0.460     | 0.504     | 0.544     | 0.582     | 0.617     | 0.651      | 0.797      | 0.920      | 1.029      | 1.127      |
| 0.16          | 0.016             | 0.331     | 0.468     | 0.524     | 0.573     | 0.619     | 0.662     | 0.702     | 0.740      | 0.907      | 1.047      | 1.171      | 1.282      |
| 0.18          | 0.018             | 0.419     | 0.593     | 0.663     | 0.726     | 0.784     | 0.838     | 0.889     | 0.937      | 1.148      | 1.325      | 1.482      | 1.623      |
| 0.20          | 0.020             | 0.517     | 0.732     | 0.818     | 0.896     | 0.968     | 1.035     | 1.097     | 1.157      | 1.417      | 1.636      | 1.829      | 2.004      |
| 0.21          | 0.021             | 0.570     | 0.807     | 0.902     | 0.988     | 1.067     | 1.141     | 1.210     | 1.275      | 1.562      | 1.804      | 2.017      | 2.209      |
| 0.22          | 0.022             | 0.626     | 0.885     | 0.990     | 1.084     | 1.171     | 1.252     | 1.328     | 1.400      | 1.714      | 1.980      | 2.213      | 2.424      |
| 0.24          | 0.024             | 0.745     | 1.054     | 1.178     | 1.290     | 1.394     | 1.490     | 1.580     | 1.666      | 2.040      | 2.356      | 2.634      | 2.885      |
| 0.25          | 0.025             | 0.808     | 1.143     | 1.278     | 1.400     | 1.512     | 1.617     | 1.715     | 1.807      | 2.214      | 2.556      | 2.858      | 3.131      |
| 0.26          | 0.026             | 0.874     | 1.236     | 1.382     | 1.514     | 1.636     | 1.749     | 1.855     | 1.955      | 2.394      | 2.765      | 3.091      | 3.386      |
| 0.28          | 0.028             | 1.014     | 1.434     | 1.603     | 1.756     | 1.897     | 2.028     | 2.151     | 2.267      | 2.777      | 3.206      | 3.585      | 3.927      |
| 0.29          | 0.029             | 1.088     | 1.538     | 1.720     | 1.884     | 2.035     | 2.175     | 2.307     | 2.432      | 2.979      | 3.440      | 3.846      | 4.213      |
| 0.31          | 0.031             | 1.243     | 1.758     | 1.965     | 2.153     | 2.325     | 2.486     | 2.637     | 2.779      | 3.404      | 3.930      | 4.394      | 4.814      |
| 0.32          | 0.032             | 1.324     | 1.873     | 2.094     | 2.294     | 2.478     | 2.649     | 2.809     | 2.961      | 3.627      | 4.188      | 4.682      | 5.129      |
| 2.00          | 0.036             | 1.676     | 2.370     | 2.650     | 2.903     | 3.136     | 3.352     | 3.556     | 3.748      | 4.590      | 5.300      | 5.926      | 6.492      |
| 2.00          | 0.039             | 1.967     | 2.782     | 3.110     | 3.407     | 3.680     | 3.934     | 4.173     | 4.399      | 5.387      | 6.221      | 6.955      | 7.619      |
| 2.00          | 0.040             | 2.069     | 2.926     | 3.272     | 3.584     | 3.871     | 4.139     | 4.390     | 4.627      | 5.667      | 6.544      | 7.316      | 8.014      |
| 2.00          | 0.041             | 2.174     | 3.075     | 3.438     | 3.766     | 4.067     | 4.348     | 4.612     | 4.861      | 5.954      | 6.875      | 7.687      | 8.420      |
| 3.00          | 0.043             | 2.391     | 3.382     | 3.781     | 4.142     | 4.474     | 4.783     | 5.073     | 5.347      | 6.549      | 7.562      | 8.455      | 9.262      |
| 4.00          | 0.047             | 2.857     | 4.040     | 4.517     | 4.948     | 5.345     | 5.714     | 6.061     | 6.388      | 7.824      | 9.035      | 10.101     | 11.065     |
| 4.50          | 0.050             | 3.233     | 4.573     | 5.112     | 5.600     | 6.049     | 6.467     | 6.859     | 7.230      | 8.855      | 10.225     | 11.432     | 12.523     |
| 4.00          | 0.051             | 3.364     | 4.757     | 5.319     | 5.827     | 6.293     | 6.728     | 7.136     | 7.522      | 9.213      | 10.638     | 11.893     | 13.029     |
| 5.00          | 0.052             | 3.497     | 4.946     | 5.530     | 6.057     | 6.543     | 6.994     | 7.419     | 7.820      | 9.577      | 11.059     | 12.364     | 13.544     |
| 5.50          | 0.055             | 3.912     | 5.533     | 6.186     | 6.776     | 7.319     | 7.825     | 8.299     | 8.748      | 10.714     | 12.372     | 13.832     | 15.152     |
| 6.00          | 0.059             | 4.502     | 6.367     | 7.118     | 7.798     | 8.423     | 9.004     | 9.550     | 10.067     | 12.329     | 14.237     | 15.917     | 17.437     |
| 6.50          | 0.060             | 4.656     | 6.585     | 7.362     | 8.064     | 8.711     | 9.312     | 9.877     | 10.411     | 12.751     | 14.724     | 16.461     | 18.033     |
| 7.00          | 0.062             | 4.972     | 7.031     | 7.861     | 8.611     | 9.301     | 9.943     | 10.546    | 11.117     | 13.615     | 15.721     | 17.577     | 19.255     |
| 7.50          | 0.065             | 5.464     | 7.728     | 8.640     | 9.465     | 10.223    | 10.929    | 11.592    | 12.219     | 14.965     | 17.280     | 19.319     | 21.163     |
| 8.00          | 0.067             | 5.806     | 8.211     | 9.180     | 10.056    | 10.862    | 11.612    | 12.316    | 12.982     | 15.900     | 18.359     | 20.527     | 22.486     |
| 8.50          | 0.069             | 6.158     | 8.708     | 9.736     | 10.665    | 11.520    | 12.315    | 13.062    | 13.769     | 16.863     | 19.472     | 21.770     | 23.848     |
| 9.00          | 0.071             | 6.520     | 9.220     | 10.309    | 11.292    | 12.197    | 13.039    | 13.830    | 14.578     | 17.855     | 20.617     | 23.051     | 25.251     |
| 9.50          | 0.073             | 6.892     | 9.747     | 10.897    | 11.938    | 12.894    | 13.784    | 14.621    | 15.411     | 18.875     | 21.795     | 24.368     | 26.693     |
| 10.0          | 0.075             | 7.275     | 10.288    | 11.503    | 12.601    | 13.610    | 14.550    | 15.433    | 16.267     | 19.923     | 23.006     | 25.721     | 28.176     |
| 10.5          | 0.077             | 7.668     | 10.844    | 12.124    | 13.282    | 14.346    | 15.336    | 16.267    | 17.147     | 21.000     | 24.249     | 27.111     | 29.699     |
| 11.0          | 0.078             | 7.869     | 11.128    | 12.441    | 13.629    | 14.721    | 15.737    | 16.692    | 17.595     | 21.549     | 24.883     | 27.820     | 30.475     |
| 11.5          | 0.080             | 8.277     | 11.706    | 13.088    | 14.337    | 15.485    | 16.555    | 17.559    | 18.509     | 22.668     | 26.175     | 29.265     | 32.058     |
| 12.0          | 0.082             | 8.696     | 12.299    | 13.750    | 15.063    | 16.269    | 17.393    | 18.448    | 19.446     | 23.816     | 27.500     | 30.746     | 33.681     |
| 12.5          | 0.084             | 9.126     | 12.906    | 14.429    | 15.806    | 17.073    | 18.252    | 19.359    | 20.406     | 24.992     | 28.858     | 32.264     | 35.344     |
| 13.0          | 0.085             | 9.344     | 13.215    | 14.775    | 16.185    | 17.482    | 18.689    | 19.822    | 20.895     | 25.591     | 29.549     | 33.037     | 36.190     |
| 14.0          | 0.089             | 10.244    | 14.488    | 16.198    | 17.744    | 19.166    | 20.489    | 21.732    | 22.907     | 28.056     | 32.396     | 36.220     | 39.677     |
| 15.0          | 0.093             | 11.186    | 15.819    | 17.687    | 19.375    | 20.927    | 22.372    | 23.729    | 25.013     | 30.634     | 35.373     | 39.549     | 43.323     |
| 16.0          | 0.095             | 11.672    | 16.507    | 18.456    | 20.217    | 21.837    | 23.345    | 24.761    | 26.100     | 31.966     | 36.911     | 41.268     | 45.207     |
| 18.0          | 0.100             | 12.933    | 18.290    | 20.449    | 22.401    | 24.196    | 25.867    | 27.436    | 28.920     | 35.419     | 40.899     | 45.726     | 50.091     |
| 20.0          | 0.106             | 14.532    | 20.551    | 22.977    | 25.170    | 27.187    | 29.064    | 30.827    | 32.494     | 39.797     | 45.954     | 51.378     | 56.282     |
| 25.0          | 0.118             | 18.008    | 25.468    | 28.474    | 31.191    | 33.691    | 36.017    | 38.202    | 40.268     | 49.318     | 56.947     | 63.669     | 69.746     |
| 27.0          | 0.125             | 20.208    | 28.579    | 31.952    | 35.002    | 37.806    | 40.417    | 42.868    | 45.187     | 55.343     | 63.904     | 71.447     | 78.267     |
| 30.0          | 0.130             | 21.857    | 30.911    | 34.559    | 37.858    | 40.891    | 43.715    | 46.366    | 48.874     | 59.859     | 69.119     | 77.277     | 84.653     |
| 35.0          | 0.140             | 25.349    | 35.849    | 40.081    | 43.906    | 47.424    | 50.699    | 53.774    | 56.683     | 69.422     | 80.162     | 89.623     | 98.178     |
| 40.0          | 0.156             | 31.475    | 44.512    | 49.766    | 54.516    | 58.884    | 62.949    | 66.768    | 70.379     | 86.197     | 99.531     | ****       | ****       |
| 50.0          | 0.167             | 36.070    | 51.010    | 57.031    | 62.475    | 67.480    | 72.140    | 76.516    | 80.654     | 98.781     | ****       | ****       | ****       |
| 60.0          | 0.187             | 45.227    | 63.960    | 71.509    | 78.335    | 84.611    | 90.453    | 96.654    | ****       | ****       | ****       | ****       | ****       |
| 70.0          | 0.203             | 53.297    | 75.373    | 84.270    | 92.313    | 99.710    | 95.940    | ****      | ****       | ****       | ****       | ****       | ****       |
| 80.0          | 0.210             | 57.036    | 80.661    | 90.182    | 98.789    | ****      | ****      | ****      | ****       | ****       | ****       | ****       | ****       |
| 90.0          | 0.219             | 62.030    | 87.723    | 98.077    | ****      | ****      | ****      | ****      | ****       | ****       | ****       | ****       | ****       |
| 100           | 0.250             | 80.833    | ****      | ****      | ****      | ****      | ****      | ****      | ****       | ****       | ****       | ****       | ****       |

# SURFACE NOZZLES

**40K Patented High-Performance Sapphire Orifice Assemblies** The APS High-Performance Sapphire Nozzle Assemblies are compact inserts made to screw into the most typical UHP rotary nozzle holder bodies common to UHP cleaning applications.

**17-001-007 through 17-001-060**  
ASSEMBLY, .3/8"-24 RH HIGH PERFORMANCE  
TESTED SAPPHIRE ORIFICE

**17-002-007 through 17-002-060**  
ASSEMBLY, 3/8"-24 RH HIGH PERFORMANCE  
SAPPHIRE ORIFICE (STAT-TESTED)

**17-015-007 through 17-015-060**  
ASSEMBLY, 7/16"- 20 RH HIGH PERFORMANCE  
SAPPHIRE ORIFICE (STAT-TESTED)

**17-016-007 through 17-016-060**  
ASSEMBLY 1/4"-28 RH HIGH PERFORMANCE  
SAPPHIRE ORIFICE (STAT-TESTED)

**17-022-007 through 17-022-060**  
ASSEMBLY 1/4"-28 RH HIGH PERFORMANCE  
TESTED SAPPHIRE ORIFICE

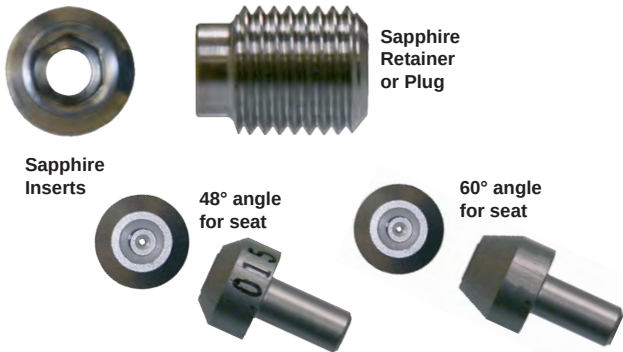
| Part #     |            |            |            |            | Jet Size |
|------------|------------|------------|------------|------------|----------|
| 17-001-000 |            | 17-015-000 | 17-016-000 | 17-022-000 | PLUG     |
| 17-001-007 | 17-002-007 | 17-015-007 | 17-016-007 | 17-022-007 | 0.007"   |
| 17-001-008 | 17-002-008 | 17-015-008 | 17-016-008 | 17-022-008 | 0.008"   |
| 17-001-009 | 17-002-009 | 17-015-009 | 17-016-009 | 17-022-009 | 0.009"   |
| 17-001-010 | 17-002-010 | 17-015-010 | 17-016-010 | 17-022-010 | 0.010"   |
| 17-001-011 | 17-002-011 | 17-015-011 | 17-016-011 | 17-022-011 | 0.011"   |
| 17-001-012 | 17-002-012 | 17-015-012 | 17-016-012 | 17-022-012 | 0.012"   |
| 17-001-013 | 17-002-013 | 17-015-013 | 17-016-013 | 17-022-013 | 0.013"   |
| 17-001-014 | 17-002-014 | 17-015-014 | 17-016-014 | 17-022-014 | 0.014"   |
| 17-001-015 | 17-002-015 | 17-015-015 | 17-016-015 | 17-022-015 | 0.015"   |
| 17-001-016 | 17-002-016 | 17-015-016 | 17-016-016 | 17-022-016 | 0.016"   |
| 17-001-017 | 17-002-017 | 17-015-017 | 17-016-017 | 17-022-017 | 0.017"   |
| 17-001-018 | 17-002-018 | 17-015-018 | 17-016-018 | 17-022-018 | 0.018"   |
| 17-001-019 | 17-002-019 | 17-015-019 | 17-016-019 | 17-022-019 | 0.019"   |
| 17-001-020 | 17-002-020 | 17-015-020 | 17-016-020 | 17-022-020 | 0.020"   |
| 17-001-021 | 17-002-021 | 17-015-021 | 17-016-021 | 17-022-021 | 0.021"   |
| 17-001-022 | 17-002-022 | 17-015-022 | 17-016-022 | 17-022-022 | 0.022"   |
| 17-001-023 | 17-002-023 | 17-015-023 | 17-016-023 | 17-022-023 | 0.023"   |
| 17-001-024 | 17-002-024 | 17-015-024 | 17-016-024 | 17-022-024 | 0.024"   |
| 17-001-025 | 17-002-025 | 17-015-025 | 17-016-025 | 17-022-025 | 0.025"   |
| 17-001-026 | 17-002-026 | 17-015-026 | 17-016-026 | 17-022-026 | 0.026"   |

| Part #     |            |            |            |            | Jet Size |
|------------|------------|------------|------------|------------|----------|
| 17-001-027 | 17-002-027 | 17-015-027 | 17-016-027 | 17-022-027 | 0.027"   |
| 17-001-028 | 17-002-028 | 17-015-028 | 17-016-028 | 17-022-028 | 0.028"   |
| 17-001-029 | 17-002-029 | 17-015-029 | 17-016-029 | 17-022-029 | 0.029"   |
| 17-001-031 | 17-002-031 | 17-015-031 | 17-016-031 | 17-022-031 | 0.031"   |
| 17-001-034 | 17-002-034 | 17-015-034 | 17-016-034 | 17-022-034 | 0.034"   |
| 17-001-035 | 17-002-035 | 17-015-035 | 17-016-035 | 17-022-035 | 0.035"   |
| 17-001-036 | 17-002-036 | 17-015-036 | 17-016-036 | 17-022-036 | 0.036"   |
| 17-001-037 | 17-002-037 | 17-015-037 | 17-016-037 | 17-022-037 | 0.037"   |
| 17-001-038 | 17-002-038 | 17-015-038 | 17-016-038 | 17-022-038 | 0.038"   |
| 17-001-039 | 17-002-039 | 17-015-039 | 17-016-039 | 17-022-039 | 0.039"   |
| 17-001-040 | 17-002-040 | 17-015-040 | 17-016-040 | 17-022-040 | 0.040"   |
| 17-001-043 | 17-002-043 | 17-015-043 | 17-016-043 | 17-022-043 | 0.043"   |
| 17-001-050 | 17-002-050 | 17-015-050 | 17-016-050 | 17-022-050 | 0.050"   |
| 17-001-051 | 17-002-051 | 17-015-051 | 17-016-051 | 17-022-051 | 0.051"   |
| 17-001-052 | 17-002-052 | 17-015-052 | 17-016-052 | 17-022-052 | 0.052"   |
| 17-001-056 | 17-002-056 | 17-015-056 | 17-016-056 | 17-022-056 | 0.056"   |
| 17-001-057 | 17-002-057 | 17-015-057 | 17-016-057 | 17-022-057 | 0.057"   |
| 17-001-058 | 17-002-058 | 17-015-058 | 17-016-058 | 17-022-058 | 0.058"   |
| 17-001-059 | 17-002-059 | 17-015-059 | 17-016-059 | 17-022-059 | 0.059"   |
| 17-001-060 | 17-002-060 | 17-015-060 | 17-016-060 | 17-022-060 | 0.060"   |



**40K High-Performance Sapphire Orifice Insert** The APS High-Performance Sapphire Orifice Nozzle Inserts are compact inserts made to drop into the typical nozzle jewel screw common to UHP jetting applications.

Please specify orifice size, pressure and flow when ordering.



| 48° - Part # | 60° - Part # | Jet Size |
|--------------|--------------|----------|
| 17-003-000   | 17-009-000   | PLUG     |
| 17-003-001   |              | RETAINER |
| 17-003-007   |              | 0.007"   |
| 17-003-008   | 17-009-008   | 0.008"   |
| 17-003-009   | 17-009-009   | 0.009"   |
| 17-003-010   | 17-009-010   | 0.010"   |
| 17-003-011   | 17-009-011   | 0.011"   |
| 17-003-012   | 17-009-012   | 0.012"   |
| 17-003-013   | 17-009-013   | 0.013"   |
| 17-003-014   | 17-009-014   | 0.014"   |
| 17-003-015   |              | 0.015"   |
| 17-003-016   | 17-009-016   | 0.016"   |
| 17-003-018   | 17-009-018   | 0.018"   |
| 17-003-019   | 17-009-019   | 0.019"   |

| 48° - Part # | 60° - Part # | Jet Size |
|--------------|--------------|----------|
| 17-003-020   | 17-009-020   | 0.020"   |
| 17-003-021   |              | 0.021"   |
| 17-003-022   | 17-009-022   | 0.022"   |
| 17-003-025   | 17-009-025   | 0.025"   |
| 17-003-026   |              | 0.026"   |
| 17-003-027   |              | 0.027"   |
| 17-003-028   | 17-009-028   | 0.028"   |
| 17-003-031   |              | 0.031"   |
| 17-003-032   |              | 0.032"   |
| 17-003-033   |              | 0.033"   |
| 17-003-034   |              | 0.034"   |
| 17-003-035   |              | 0.035"   |
| 17-003-036   |              | 0.036"   |
| 17-003-038   |              | 0.038"   |

## Sapphire Nozzle Flow Chart (gpm)

| NOZZLE NUMBER | Orifice Dia. ins. | 35,000 psi. | 40,000 psi. |
|---------------|-------------------|-------------|-------------|
| 0.005         | 0.005             | (0.098)     | (0.104)     |
| 0.006         | 0.006             | (0.140)     | (0.150)     |
| 0.007         | 0.007             | (0.191)     | (0.204)     |
| 0.008         | 0.008             | (0.250)     | (0.267)     |
| 0.009         | 0.009             | (0.316)     | (0.338)     |
| 0.010         | 0.010             | (0.390)     | (0.417)     |
| 0.011         | 0.011             | (0.472)     | (0.505)     |
| 0.012         | 0.012             | (0.562)     | (0.601)     |
| 0.013         | 0.013             | (0.660)     | (0.705)     |
| 0.014         | 0.014             | (0.765)     | (0.818)     |
| 0.015         | 0.015             | (0.878)     | (0.939)     |
| 0.016         | 0.016             | (0.999)     | (1.068)     |

| NOZZLE NUMBER | Orifice Dia. ins. | 35,000 psi. | 40,000 psi. |
|---------------|-------------------|-------------|-------------|
| 0.017         | 0.017             | (1.128)     | (1.206)     |
| 0.018         | 0.018             | (1.264)     | (1.352)     |
| 0.019         | 0.019             | (1.409)     | (1.506)     |
| 0.020         | 0.020             | (1.561)     | (1.669)     |
| 0.021         | 0.021             | (1.721)     | (1.840)     |
| 0.022         | 0.022             | (1.889)     | (2.019)     |
| 0.023         | 0.023             | (2.064)     | (2.207)     |
| 0.024         | 0.024             | (2.248)     | (2.403)     |
| 0.025         | 0.025             | (2.439)     | (2.607)     |
| 1.0           | 0.026             | (2.838)     | (2.820)     |
| 0.027         | 0.027             | (2.845)     | (3.041)     |
| 0.028         | 0.028             | (3.060)     | (3.271)     |

| NOZZLE NUMBER | Orifice Dia. ins. | 35,000 psi. | 40,000 psi. |
|---------------|-------------------|-------------|-------------|
| 0.029         | 0.029             | (3.282)     | (3.509)     |
| 0.030         | 0.030             | (3.512)     | (3.755)     |
| 1.5           | 0.031             | (3.750)     | (4.009)     |
| 0.32          | 0.032             | (3.996)     | (4.272)     |
| 0.33          | 0.033             | (4.250)     | (4.543)     |
| 0.34          | 0.034             | (4.511)     | (4.823)     |
| 0.35          | 0.035             | (4.781)     | (5.111)     |
| 2             | 0.036             | (5.058)     | (5.407)     |
| 2.1           | 0.037             | (5.343)     | (5.711)     |
| 2.2           | 0.038             | (5.635)     | (6.024)     |
| 2.3           | 0.039             | (5.936)     | (6.346)     |
| 2.4           | 0.040             | (6.244)     | (6.675)     |



**40K High-Performance Sapphire Insert Assemblies** The APS High-Performance Sapphire Nozzle Inserts are compact inserts made to drop into the typical nozzle jewel screw common to UHP jetting applications.

17-006 Series is screw-type.

17-010 Series is slotted-type.



**17-010**  
Slotted-Type M4x.5



**17-006**  
Hex-Type M4x.5

| Slotted Part # | Jet Size                                 |
|----------------|------------------------------------------|
| 17-010-100     | SCREW, M4 X .5 SLOTTED SS TYPE D JEWEL   |
| 17-006-000     | SLEEVE                                   |
| 17-010-101     | PLUG M4 X .5 SLOTTED                     |
| 17-010-000     | PLUG ASSY, SAPPHIRE SLOTTED JEWEL NOZZLE |
| 17-010-008     | 0.008"                                   |
| 17-010-009     | 0.009"                                   |
| 17-010-010     | 0.010"                                   |
| 17-010-011     | 0.011"                                   |
| 17-010-012     | 0.012"                                   |
| 17-010-013     | 0.013"                                   |
| 17-010-014     | 0.014"                                   |
| 17-010-015     | 0.015"                                   |
| 17-010-016     | 0.016"                                   |
| 17-010-017     | 0.017"                                   |
| 17-010-018     | 0.018"                                   |
| 17-010-019     | 0.019"                                   |
| 17-010-020     | 0.020"                                   |
| 17-010-021     | 0.021"                                   |
| 17-010-022     | 0.022"                                   |
| 17-010-023     | 0.023"                                   |
| 17-010-024     | 0.024"                                   |
| 17-010-025     | 0.025"                                   |
| 17-010-026     | 0.026"                                   |
| 17-010-027     | 0.027"                                   |
| 17-010-028     | 0.028"                                   |
| 17-010-029     | 0.029"                                   |
| 17-010-030     | 0.003"                                   |
| 17-010-031     | 0.031"                                   |
| 17-010-032     | 0.032"                                   |
| 17-010-033     | 0.033"                                   |
| 17-010-034     | 0.034"                                   |
| 17-010-035     | 0.035"                                   |
| 17-010-036     | 0.036"                                   |
| 17-010-037     | 0.037"                                   |
| 17-010-038     | 0.038"                                   |
| 17-010-039     | 0.039"                                   |
| 17-010-040     | 0.040"                                   |
| 17-010-041     | 0.041"                                   |
| 17-010-042     | 0.042"                                   |
| 17-010-043     | 0.043"                                   |
| 17-010-044     | 0.044"                                   |
| 17-010-045     | 0.045"                                   |
| 17-010-046     | 0.046"                                   |
| 17-010-047     | 0.047"                                   |
| 17-010-048     | 0.048"                                   |
| 17-010-049     | 0.049"                                   |
| 17-010-050     | 0.050"                                   |
| 17-010-051     | 0.051"                                   |
| 17-010-052     | 0.052"                                   |

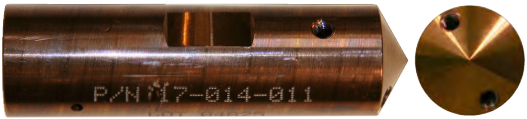
| Screw Part # | Jet Size                             |
|--------------|--------------------------------------|
| 17-006-000   | JEWEL SCREW HEX SS TYPE D JEWEL      |
| 17-006-001   | SLEEVE                               |
| 17-006-002   | PLUG M4 X .5 HEX                     |
| 17-006-112   | PLUG ASSY, SAPPHIRE HEX JEWEL NOZZLE |
| 17-006-008   | 0.008"                               |
| 17-006-009   | 0.009"                               |
| 17-006-010   | 0.010"                               |
| 17-006-011   | 0.011"                               |
| 17-006-012   | 0.012"                               |
| 17-006-013   | 0.013"                               |
| 17-006-014   | 0.014"                               |
| 17-006-015   | 0.015"                               |
| 17-006-016   | 0.016"                               |
| 17-006-017   | 0.017"                               |
| 17-006-018   | 0.018"                               |
| 17-006-019   | 0.019"                               |
| 17-006-020   | 0.020"                               |
| 17-006-021   | 0.021"                               |
| 17-006-022   | 0.022"                               |
| 17-006-023   | 0.023"                               |
| 17-006-024   | 0.024"                               |
| 17-006-025   | 0.025"                               |
| 17-006-026   | 0.026"                               |
| 17-006-027   | 0.027"                               |
| 17-006-028   | 0.028"                               |
| 17-006-029   | 0.029"                               |
| 17-006-030   | 0.003"                               |
| 17-006-031   | 0.031"                               |
| 17-006-032   | 0.032"                               |
| 17-006-033   | 0.033"                               |
| 17-006-034   | 0.034"                               |
| 17-006-035   | 0.035"                               |
| 17-006-036   | 0.036"                               |
| 17-006-037   | 0.037"                               |
| 17-006-038   | 0.038"                               |
| 17-006-039   | 0.039"                               |
| 17-006-040   | 0.040"                               |
| 17-006-041   | 0.041"                               |
| 17-006-042   | 0.042"                               |
| 17-006-043   | 0.043"                               |
| 17-006-044   | 0.044"                               |
| 17-006-045   | 0.045"                               |
| 17-006-046   | 0.046"                               |
| 17-006-047   | 0.047"                               |
| 17-006-048   | 0.048"                               |
| 17-006-049   | 0.049"                               |
| 17-006-050   | 0.050"                               |
| 17-006-051   | 0.051"                               |
| 17-006-052   | 0.052"                               |

Please specify orifice size, pressure and flow when ordering.

# SURFACE NOZZLES

## 40K Button-Tip Tube Cleaning Nozzles with Sapphire Inserts

The **APS Button-Tip Tube Cleaning Nozzles** use the sapphire inserts listed on the previous page. These compact nozzles are made of hardened stainless steel and are ideal for most ultra-high pressure rigid lance tube cleaning applications. Each requires the use of an "Admac style" brass button #17-000-000 to attach to the rigid lance.



| Part #     | Size         | # Jets x Inc.                           | O.D. x L        |
|------------|--------------|-----------------------------------------|-----------------|
| 17-014-001 | 9/16"-18 UHF | 3 Jets @ 15° Inc. Forward               | .875" x 1.000"  |
| 17-014-002 | 9/16"-18 UHF | 2 Jets @ 20° Inc. Forward               | .875" x 1.000"  |
| 17-014-003 | 9/16"-18 UHF | 2 Jets @ 20° Inc. Forward               | .875" x 1.000"  |
| 17-014-004 | 9/16"-18 UHF | 4 Jets @ 20° Inc. Forward               | .875" x 1.000"  |
| 17-014-005 | 9/16"-18 UHF | 4 Jets @ 20° Inc. Forward               | .875" x 1.000"  |
| 17-014-006 | 9/16"-18 UHF | 4 Jets @ 30° Inc. Forward               | .875" x 1.000"  |
| 17-014-007 | 9/16"-18 UHF | 4 Jets @ 45° Inc. Forward               | .875" x 1.000"  |
| 17-014-008 | 9/16"-18 UHF | 2 Jets @ 60° Inc. Forward               | .875" x 1.000"  |
| 17-014-009 | 9/16"-18 UHF | 4 Jets @ 60° Inc. Forward               | .875" x 1.000"  |
| 17-014-010 | 9/16"-18 UHF | 4 Jets @ 45° Inc. Forward               | .937"           |
| 17-014-011 | 9/16"-18 UHF | 4 Jets, 2 @ 60° Inc. Fwd., 2 @ 10° Back | .875"           |
| 17-014-015 | 9/16"-18 UHF | 4 Jets, 2 @ 60° Back, 2 @ 100° Back     | .875"           |
| 17-014-016 | 9/16"-18 UHF | 2 @ 90° Side Jets                       | 1.000" x 1.500" |
| 17-014-017 | 9/16"-18 UHF | 4 @ 90° Side Jets                       | 1.000" x 1.500" |
| 17-014-018 | 9/16"-18 UHF | 2 @ 80° Side Jets                       | 1.000" x 1.500" |
| 17-014-019 | 9/16"-18 UHF | 4 @ 80° Side Jets                       | 1.000" x 1.500" |

| Part #     | Size         | # Jets x Inc.                                         | O.D. x L        |
|------------|--------------|-------------------------------------------------------|-----------------|
| 17-014-020 | 9/16"-18 UHF | 4 Jets, 2 @ 40° Inc. Fwd., 2 @ 60° Inc. Fwd.          | 1.000" x 2.000" |
| 17-014-021 | 9/16"-18 UHF | 4 Jets, 3 @ 30° Inc. Fwd., 1 @ 5° Inc. Fwd.           | 1.000" x 3.000" |
| 17-014-022 | 9/16"-18 HP  | 2 Jets @ 160° Back                                    | 1.000" x 1.500" |
| 17-014-023 | 9/16"-18 HP  | 4 Jets @ 160° Back                                    | 1.000" x 1.500" |
| 17-014-024 | 9/16"-18 HP  | 2 Jets @ 180° Back                                    | 1.000" x 1.500" |
| 17-014-025 | 9/16"-18 HP  | 4 Jets @ 180° Back                                    | 1.000" x 1.500" |
| 17-014-026 | 9/16"-18 HP  | 2 Jets @ 200° Back                                    | 1.000" x 1.500" |
| 17-014-027 | 9/16"-18 HP  | 4 Jets @ 200° Back                                    | 1.000" x 1.500" |
| 17-014-028 | 9/16"-18 HP  | 6 Jets @ 60° Inc. Forward                             | 1.500" x 2.500" |
| 17-014-029 | 9/16"-18 HP  | 5 Jets, 1 @ 0°, 2 @ 90° Inc. Fwd., 2 @ 45° Back       | .750" x 2.500"  |
| 17-014-030 | 9/16"-18 UHF | 4 Jets, 2 @ 90° Inc. Fwd., 2 @ 90° Back               | .937" x 2.000"  |
| 17-014-031 | 9/16"-18 UHF | 2 Jets @ 60° Inc. Forward                             | 1.000" x 3.000" |
| 17-014-032 | 9/16"-18 UHF | 2 Jets @ 20° Inc. Forward                             | 1.125" x 3.000" |
| 17-014-033 | 9/16"-18 UHF | 2 Jets @ 20° Inc. Forward                             | .875" x 3.000"  |
| 17-014-034 | 9/16"-18 UHF | 6 Jets, 2 @ 20° Inc. Fwd., 2 @ 40° Back, 2 @ 60° Back | .875" x 2.000"  |
| 17-014-035 | 9/16"-18 UHF | 4 Jets, 2 @ 90° Inc. Fwd., 2 @ 45° Back               | .995" x 2.00"   |

## 40K Button-Tip Tube Cleaning Nozzles with Sapphire Inserts

The **APS Button-Tip Tube Cleaning Nozzles** use the sapphire inserts listed on the previous page. These compact nozzles are made of hardened stainless steel and are ideal for most ultra-high pressure rigid lance tube cleaning applications. Each requires the use of an "Admac style" brass button #17-000-000 to attach to the rigid lance.

Please specify orifice size, pressure and flow when ordering.



| Part #     | Size    | # Jets x Inc.               | O.D.  |
|------------|---------|-----------------------------|-------|
| 17-011-001 | 3/8"-24 | 1 Jet @ 0° Forward          | .490" |
| 17-011-002 | 3/8"-24 | 1 Jet @ 15° Forward         | .490" |
| 17-011-003 | 3/8"-24 | 3 Jets @ 8° Forward         | .490" |
| 17-011-004 | 3/8"-24 | 2 Jets @ 10° Forward        | .490" |
| 17-011-005 | 3/8"-24 | 2 Jets @ 10° Forward        | .490" |
| 17-011-006 | 3/8"-24 | 3 Jets @ 10° Forward        | .490" |
| 17-011-007 | 3/8"-24 | 2 Jets @ 20° Forward        | .490" |
| 17-011-008 | 3/8"-24 | 3 Jets @ 20° Forward        | .490" |
| 17-011-009 | 3/8"-24 | 2 Jets @ 30° Forward        | .490" |
| 17-011-010 | 3/8"-24 | 3 Jets @ 30° Forward        | .490" |
| 17-011-011 | 3/8"-24 | 2 Jets @ 45° Forward        | .490" |
| 17-011-012 | 3/8"-24 | 3 Jets @ 45° Forward        | .490" |
| 17-011-013 | 3/8"-24 | 1 Jet @ 10° Forward 1 @ 90° | .490" |
| 17-011-014 | 3/8"-24 | 4 Jets @ 30° Forward        | .625" |
| 17-011-015 | 3/8"-24 | 1 Jet @ 10° Forward 1 @ 90° | .560" |
| 17-011-016 | 3/8"-24 | 2 Jets @ 20° Forward        | .490" |
| 17-011-017 | 3/8"-24 | 3 Jets @ 50° Forward        | .590" |

| Part #     | Size     | # Jets x Inc.                  | O.D.  |
|------------|----------|--------------------------------|-------|
| 17-013-001 | 9/16"-18 | 2 Jets @ 30° Forward / 1 @ 5°  | .490" |
| 17-013-002 | 9/16"-18 | 2 Jets @ 10° Forward / 2 @ 90° | .490" |
| 17-013-003 | 9/16"-18 | 2 Jets @ 10° Forward           | .490" |
| 17-013-004 | 9/16"-18 | 3 Jets @ 15° Forward           | .490" |
| 17-013-005 | 9/16"-18 | 4 Jets @ 10° Forward           | .490" |
| 17-013-006 | 9/16"-18 | 2 Jets @ 30° Forward           | .490" |
| 17-013-007 | 9/16"-18 | 2 Jets @ 30° Forward           | .490" |
| 17-013-008 | 9/16"-18 | 4 Jets @ 30° Forward           | .490" |
| 17-013-009 | 9/16"-18 | 4 Jets @ 30° Forward           | .490" |
| 17-013-010 | 9/16"-18 | 4 Jets @ 45° Forward           | .490" |
| 17-013-011 | 9/16"-18 | 2 Jets @ 20° Forward           | .490" |
| 17-013-012 | 9/16"-18 | 3 Jets @ 30° Forward           | .490" |
| 17-013-013 | 9/16"-18 | 3 Jets @ 30° Forward           | .490" |
| 17-013-014 | 9/16"-18 | 2 Jets @ 45° Forward           | .625" |
| 17-013-015 | 9/16"-18 | 3 Jets @ 45° Forward           | .560" |
| 17-013-016 | 9/16"-18 | 2 Jets @ 10° Forward           | .490" |
| 17-013-017 | 9/16"-18 | 4 Jets @ 10° Forward           | .590" |
| 17-013-018 | 9/16"-18 | 3 Jets @ 10° Forward           | .560" |
| 17-013-019 | 9/16"-18 | 3 Jets @ 10° Forward           | .560" |
| 17-013-020 | 9/16"-18 | 4 Jets @ 30° Forward / 2 @ 90° | .560" |
| 17-013-021 | 9/16"-18 | 2 Jets @ 40° Forward / 2 @ 60° | .875" |
| 17-013-022 | 9/16"-18 | 1 Jet @ 0° Forward / 4 @ 65°   | .687" |



## 40K Male Button-Tip Tube Cleaning Nozzles with Sapphire Inserts

The **APS Male Button-Tip Tube Cleaning Nozzles** use the sapphire inserts listed on the previous page. These rugged nozzles are made of hardened stainless steel and are ideal for most ultra-high pressure rigid lance tube cleaning applications. Each requires the use of an "Admac style" brass button #17-000-000 to attach to the rigid lance.

Please specify orifice size, pressure and flow when ordering.



| Part #     | Size     | # Jets x Inc.                   | O.D.  |
|------------|----------|---------------------------------|-------|
| 17-012-001 | 7/16"-20 | 2 Jets @ 20° Forward / 1 @ 0°   | .550" |
| 17-012-002 | 7/16"-20 | 2 Jets @ 30° Forward            | .550" |
| 17-012-003 | 7/16"-20 | 2 Jets @ 20° Forward            | .550" |
| 17-012-004 | 7/16"-20 | 2 Jets @ 30° Forward / 1 @ 0°   | .550" |
| 17-012-005 | 7/16"-20 | 2 Jets @ 45° Forward            | .550" |
| 17-012-006 | 7/16"-20 | 2 Jets @ 45° Forward            | .550" |
| 17-012-007 | 7/16"-20 | 2 Jets @ 30° Forward / 1 @ 0°   | .550" |
| 17-012-008 | 7/16"-20 | 4 Jets @ 30° Forward            | .650" |
| 17-012-009 | 7/16"-20 | 2 Jets @ 30° Forward / 2 @ 150° | .650" |
| 17-012-010 | 7/16"-20 | 2 Jets @ 30° Forward            | .650" |

**40K APLM Pineapple Line Mole Nozzles** The APS APLM Pineapple-Type Line Mole Nozzles are made from stainless steel with a special copper coating to prevent galling during installation. APLM nozzles have 9/16 and 3/4" NPT inlets with 1/4" or 3/8" NPT (F) ports, and a choice of port locations. These are used with line mole inserts listed on the next page. Wrench flats allow for easy installation.



| Part ID    | Description                                                                                                                                                                                          |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16-025-008 | NOZZLE, SP-9/16" HP RH 40K PINEAPPLE (3-3/8"-24 PORTS @ B @ 60°, 6-3/8"-24 PORTS @ C @ 90°, 6-3/8"-24 PORTS @ D (45°) (2"- DIA.)                                                                     |
| 16-025-021 | NOZZLE, SP-7/8"-14 TYPE M 40K BUTTON NOSE PINEAPPLE (2-1/4"-28 JEWEL PORT @ D @ 45° BACK W/90° SPACING, 1-1/4"-28 JEWEL PORT @ C @ 90°, 1-1/4"-28 JEWEL PORT AT A @ 75°) (1-3/8" DIA. X 2.125" LONG) |
| 16-025-105 | NOZZLE, SP-9/16" HP LH 40K PINEAPPLE (4-1/4"-28 PORTS @ B @ 60°, 4-1/4"-28 PORTS @ C @ 90°, 4-1/4"-28 PORTS @ D @ 45° (1-5/8" DIA.)                                                                  |
| 16-025-106 | NOZZLE, SP-9/16" HP LH 40K PINEAPPLE (4-3/8"-24 PORTS @ C) (2-3/4" DIA.) MAN. 296.2000 550.0000 NOZZLES                                                                                              |
| 16-025-108 | NOZZLE, SP-9/16" HP LH 40K PINEAPPLE (4 MIS-ALIGNED 3/8"-24 PORTS @ C (90°) (2-3/4" DIA.) MAN. 0.0000 350.0000 NOZZLES                                                                               |
| 16-025-109 | NOZZLE, SP-9/16" HP LH 40K PINEAPPLE (2-1/4"-28 PORTS @ B (60° INC.), 2-1/4"-28 PORTS @ C (90°) (1-5/8" DIA.)                                                                                        |
| 16-025-110 | NOZZLE, SP-9/16" HP RH 40K PINEAPPLE (4-1/4"-28 PORTS @ 2C1 @ 90°, 2 @ 2C2(90°) (1-3/8" DIA.) MAN. 0.0000 500.0000 NOZZLES                                                                           |
| 16-025-111 | NOZZLE, SP-9/16" HP LH 40K PINEAPPLE (2-3/8"-24 RH JETS @ A2 @ 75° FWD.), 4-3/8"-24 RH JETS @ B (45° FWD.) (2-3/4" DIA.)                                                                             |
| 16-025-113 | NOZZLE, SP-9/16" HP LH 40K PINEAPPLE (2-1/4"-28 RH JETS @ A2 @ 75° FWD., 4-1/4"-28 RH JETS @ B @ 45° FWD.) (1-9/16" DIA.)                                                                            |
| 16-025-115 | NOZZLE, SP-9/16" HP LH 40K PINEAPPLE (2-1/4"-28 RH JETS @ A2 @ 75° FWD.), 4-1/4"-28 RH JETS @ B (45° FWD.) (1-15/16" DIA.)                                                                           |
| 16-025-118 | NOZZLE, SP-9/16" HP LH 40K PINEAPPLE (2-3/8"-24 RH JETS @ A2 @ 75° FWD.), 4-3/8"-24 RH JETS @ B (45° FWD.), 2-3/8"-24 RH JET (2-3/4" DIA.)                                                           |
| 16-025-120 | NOZZLE, SP-9/16" HP LH 40K PINEAPPLE (4-3/8"-24 RH JETS @ B (45° FWD.), 2-3/8"-24 RH JETS @ C1 (90°), 2-3/8"-24 RH JETS @ C2 (90°) MIS-ALIGNED (2-3/4" DIA.)                                         |

### Various 40K Carrier Nozzles

Perfect for the APS Cobra gun on page 19



| Part #     | Description                                                                                                                      |
|------------|----------------------------------------------------------------------------------------------------------------------------------|
| 17-005-001 | CARRIER, HIGH PRODUCTION 4-JET(OFFSET) X 1.990 O.D. SS NOZZLE (3126)                                                             |
| 17-005-007 | CARRIER, HIGH PRODUCTION 24° INC. 4-JET EQUALLY SPACED X 1.490 O.D. SS NOZZLE (3144-4)                                           |
| 17-005-008 | CARRIER, HIGH PRODUCTION 24° INC. 5-JET EQUALLY SPACED X 1.490 O.D. SS NOZZLE (3144-5)                                           |
| 17-005-138 | NOZZLE, 3-JETS @ 30° INC. ANGLE JEWELLED EQUALLY SPACED STYLE (1.990 O.D. X 3-3/8" LONG X 9/16" UHF BUTTON) SS (J/S TYPE: 53970) |
| 17-005-137 | CARRIER, 9/16" UH RH (F) BUTTON X 2 - 3/8"-24 JETS @ B @ 30° INC. (5" PATTERN @ 6" AWAY)                                         |
| 17-005-136 | CARRIER, 9/16" UH RH (F) BUTTON X 2 - 3/8"-24 JETS @ B @ 20° INC.                                                                |

**40K Radial Pancake Nozzle Assemblies** APS offers a wide variety of sizes in "pancake style" nozzles for tube cleaning applications. Each is made of hardened stainless steel, features 4 jets @ 90° that use high pressure sapphire inserts, and the cut-outs on the 3" and above save a great deal of added weight. The largest is 6" wide.

Please specify orifice size, pressure and flow when ordering.



| Part #     | Size | # Jets |
|------------|------|--------|
| 17-010-001 | 2"   | 4      |
| 17-010-002 | 4"   | 4      |
| 17-010-003 | 5"   | 4      |
| 17-010-004 | 6"   | 4      |
| 17-010-005 | 3"   | 4      |
| 17-010-006 | 5.5" | 4      |



**Sapphire Insert Screwdriver** APS offers this specialized quality screwdriver for use in installing the slotted sapphire nozzle inserts into the sleeves. It features a magnetic butt, pocket clip, and 1/8" blade.



| Part #     | Description                                   |
|------------|-----------------------------------------------|
| 17-006-100 | Screwdriver Assembly, Hex Jewel W/Magnet Assy |
| 17-006-101 | Screwdriver Assembly, Slotted Jewel W/Magnet  |



## FITTINGS

**40K Slimline Couplings** APS makes a variety of slimline couplings especially for water jetting service. All are made from high durability stainless steel. A wide range of sizes are available. Please specify size when ordering.



| Part #     | Description                               | PSI / Bar  |
|------------|-------------------------------------------|------------|
| 22-001-001 | 1/4" HP RHF x 1/4" HP RHF                 | 40K / 2758 |
| 22-001-002 | 1/4" UH/HP RHF x 1/4" UH/HP LHF           | 40K / 2758 |
| 22-001-003 | 1/4" UH/HP LHF x 1/4" UH/HP LHF           | 40K / 2758 |
| 22-001-004 | 5/16" UH RHF x 5/16" UH RHF               | 40K / 2758 |
| 22-001-005 | 3/8" UH/HP RHF x 3/8" UH/HP RHF           | 40K / 2758 |
| 22-001-006 | 3/8" UH/HP RHF x 3/8" UH/HP LHF           | 40K / 2758 |
| 22-001-007 | 3/8" HP LHF x 3/8" HP LHF                 | 40K / 2758 |
| 22-001-008 | 7/16" UH RHF BUTTON x 7/16" UH RHF Button | 40K / 2758 |
| 22-001-009 | 9/16" UH RHF BUTTON x 1/4" UH RHF Button  | 40K / 2758 |
| 22-001-010 | 9/16" UH RHF BUTTON x 5/16" UH RHF Button | 40K / 2758 |
| 22-001-011 | 9/16" UH RHF BUTTON x 5/16" UH RHF Button | 40K / 2758 |
| 22-001-012 | 9/16" UH F BUTTON x 7/16" UH RHF Button   | 40K / 2758 |
| 22-001-013 | 9/16" UH RHF BUTTON x 9/16" UH RHF Button | 40K / 2758 |
| 22-001-014 | 9/16" UH RHF BUTTON x 9/16" UH LHF Button | 40K / 2758 |

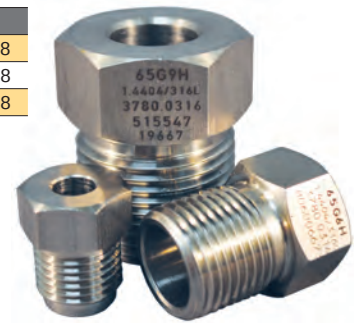
| Part #     | Description                 | PSI / Bar  |
|------------|-----------------------------|------------|
| 22-001-015 | 9/16" HP RHF x 9/16" HP RHF | 40K / 2758 |
| 22-001-016 | 9/16" HP RHF x 9/16" HP LHF | 40K / 2758 |
| 22-001-017 | 9/16" HP LHF x 9/16" HP LHF | 40K / 2758 |
| 22-001-018 | 3/4" HP RHF x 3/4" HP RHF   | 40K / 2758 |
| 22-001-019 | 3/4" HP RHF x 3/4" HP LHF   | 40K / 2758 |
| 22-001-020 | 3/4" HP LHF x 3/4" HP LHF   | 40K / 2758 |
| 22-001-021 | 1" HP RHF x 1" HP RHF       | 40K / 2758 |
| 22-001-022 | 1" HP RHF x 1" HP RHF       | 40K / 2758 |
| 22-001-023 | 1" HP RHF x 1" HP LHF       | 40K / 2758 |
| 22-001-024 | 1" HP LHF x 1" HP LHF       | 40K / 2758 |
| 22-001-025 | 9/16" HP RHF x 1/4" HP RHF  | 40K / 2758 |
| 22-001-026 | 9/16" HP RHF x 3/8" HP RHF  | 40K / 2758 |
| 22-001-027 | 9/16" HP LHF x 1/4" HP LHF  | 40K / 2758 |
| 22-001-028 | 9/16" HP LHF x 3/8" HP LHF  | 40K / 2758 |

**40K Gland Nuts & Collars** Advanced Pressure Systems proudly offers a growing line of quality water jetting fittings for every pressure and application.



| Part #     | Description                        | PSI/Bar    |
|------------|------------------------------------|------------|
| 22-003-001 | Gland Nut, 1/4" High Pressure      | 40K / 2758 |
| 22-003-002 | Gland Nut, 3/8" High Pressure      | 40K / 2758 |
| 22-003-003 | Gland Nut, 9/16" High Pressure 60K | 40K / 2758 |

| Part #     | Description                     | PSI/Bar    |
|------------|---------------------------------|------------|
| 22-002-001 | Collar, 1/4" High Pressure 60K  | 40K / 2758 |
| 22-002-002 | Collar, 3/8" High Pressure 60K  | 40K / 2758 |
| 22-002-003 | Collar, 9/16" High Pressure 60K | 40K / 2758 |



**40K Rigid Lances** Advanced Pressure Systems proudly offers a growing line of quality rigid lances every pressure and application. When ordering, please specify left or right hand thread, length, and thread size.



| Part #     | Connection | I.D. & O.D.       | PSI/Bar    |
|------------|------------|-------------------|------------|
| 52-005-XXX | 3/8" HP    | .370 OD x .156 ID | 40K / 2758 |
| 52-003-XXX | 9/16" HP   | .557 OD x .250 ID | 40K / 2758 |
| 52-000-XXX | 1/4" HP    | .247 OD x .089 ID | 60K / 4137 |
| 52-001-XXX | 3/8" HP    | .370 OD x .125 ID | 60K / 4137 |
| 52-002-XXX | 9/16" HP   | .557 OD x .187 ID | 60K / 4137 |

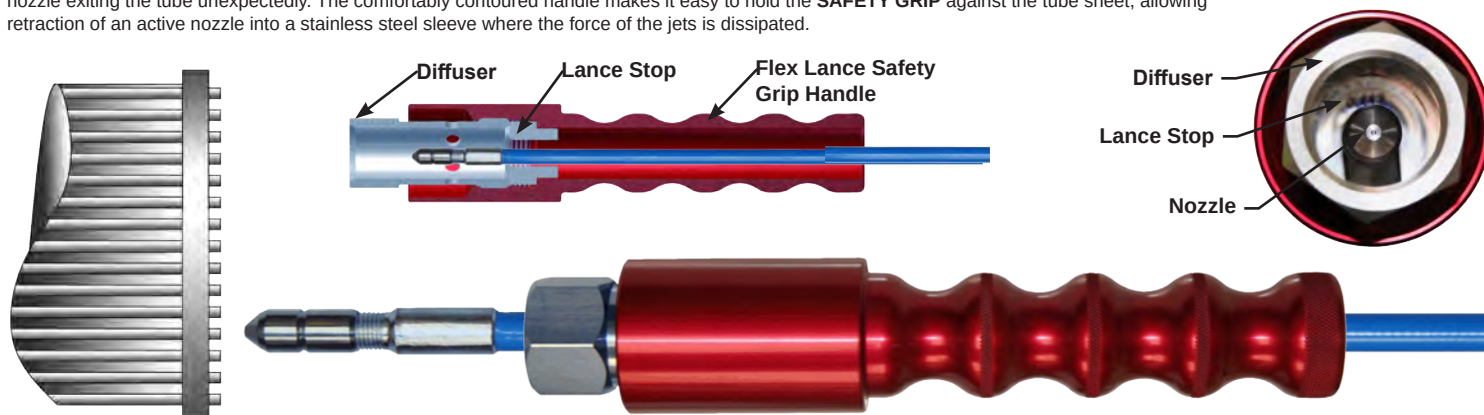
**40K & 60K Flex Lance Stingers/Nipples** Advanced Pressure Systems proudly offers a growing line of quality rigid lances for every pressure and application. Left hand or right hand threaded, coned, button seal and UHM threads are available. When ordering, please specify length and thread size.

| Part #     | Thread   | Length, In. | PSI/Bar    |
|------------|----------|-------------|------------|
| 22-616-003 | 9/16" HP | 3"          | 40K / 2758 |
| 22-616-004 | 9/16" HP | 4"          | 40K / 2758 |
| 22-616-006 | 9/16" HP | 6"          | 40K / 2758 |
| 22-616-008 | 9/16" HP | 8"          | 40K / 2758 |
| 22-616-012 | 9/16" HP | 12"         | 40K / 2758 |
| 22-616-018 | 9/16" HP | 18"         | 40K / 2758 |
| 22-616-024 | 9/16" HP | 24" (2 Ft.) | 40K / 2758 |
| 22-616-036 | 9/16" HP | 36" (3 Ft.) | 40K / 2758 |
| 22-616-048 | 9/16" HP | 48" (4 Ft.) | 40K / 2758 |

| Part #     | Thread  | Length, In. | PSI/Bar    |
|------------|---------|-------------|------------|
| 22-014-003 | 1/4" HP | 3"          | 60K / 4137 |
| 22-014-004 | 1/4" HP | 4"          | 60K / 4137 |
| 22-014-006 | 1/4" HP | 6"          | 60K / 4137 |
| 22-014-008 | 1/4" HP | 8"          | 60K / 4137 |
| 22-014-012 | 1/4" HP | 12"         | 60K / 4137 |
| 22-014-018 | 1/4" HP | 18"         | 60K / 4137 |
| 22-014-024 | 1/4" HP | 24" (2 Ft.) | 60K / 4137 |
| 22-014-036 | 1/4" HP | 36" (3 Ft.) | 60K / 4137 |
| 22-014-048 | 1/4" HP | 48" (4 Ft.) | 60K / 4137 |
| 22-015-003 | 3/8" HP | 3"          | 60K / 4137 |
| 22-015-004 | 3/8" HP | 4"          | 60K / 4137 |
| 22-015-006 | 3/8" HP | 6"          | 60K / 4137 |
| 22-015-008 | 3/8" HP | 8"          | 60K / 4137 |

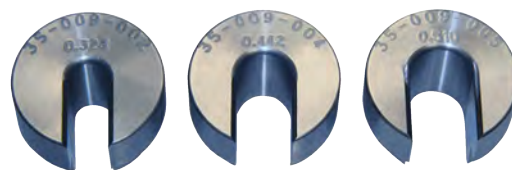
| Part #     | Thread   | Length, In. | PSI/Bar    |
|------------|----------|-------------|------------|
| 22-015-012 | 3/8" HP  | 12"         | 60K / 4137 |
| 22-015-018 | 3/8" HP  | 18"         | 60K / 4137 |
| 22-015-024 | 3/8" HP  | 24" (2 Ft.) | 60K / 4137 |
| 22-015-036 | 3/8" HP  | 36" (3 Ft.) | 60K / 4137 |
| 22-015-048 | 3/8" HP  | 48" (4 Ft.) | 60K / 4137 |
| 22-016-003 | 9/16" HP | 3"          | 60K / 4137 |
| 22-016-004 | 9/16" HP | 4"          | 60K / 4137 |
| 22-016-006 | 9/16" HP | 6"          | 60K / 4137 |
| 22-016-008 | 9/16" HP | 8"          | 60K / 4137 |
| 22-016-012 | 9/16" HP | 12"         | 60K / 4137 |
| 22-016-018 | 9/16" HP | 18"         | 60K / 4137 |
| 22-016-024 | 9/16" HP | 24" (2 Ft.) | 60K / 4137 |
| 22-016-036 | 9/16" HP | 36" (3 Ft.) | 60K / 4137 |
| 22-016-048 | 9/16" HP | 48" (4 Ft.) | 60K / 4137 |

**Flex Lance Safety Grip** The **FLEX LANCE SAFETY GRIP** is designed to minimize the risk of injury to flex lance operators caused by a live nozzle exiting the tube unexpectedly. The comfortably contoured handle makes it easy to hold the **SAFETY GRIP** against the tube sheet, allowing retraction of an active nozzle into a stainless steel sleeve where the force of the jets is dissipated.



The **FLEX LANCE SAFETY GRIP** is simple to install and is quickly adapted to handle various lance sizes by selecting the appropriately sized **LANCE STOP**.

| Part #     | Flex Lance Safety Grip                           |
|------------|--------------------------------------------------|
| 35-009-000 | COMPLETE ASSEMBLY: Small Flex Lance Safety Grip* |
| 35-009-001 | HANDLE: Small Flex Lance Safety Grip             |
| 35-009-007 | DIFFUSER: Small Flex Lance Safety Grip           |



**Installation of LANCE STOPS:** Simply unscrew the **DIFFUSER** from the **SAFETY GRIP HANDLE**, which will allow the **LANCE STOP** to be removed. Insert the new lance into the back of the **SAFETY GRIP HANDLE**. Select the correct size **LANCE STOP** for the lance to be used and place it onto the lance behind the nozzle end fitting. Insert the nozzle through the **DIFFUSER** and tighten the assembly into the **HANDLE**. (Note: the larger diameter end of the Lance Stop must be next to the end fitting.)

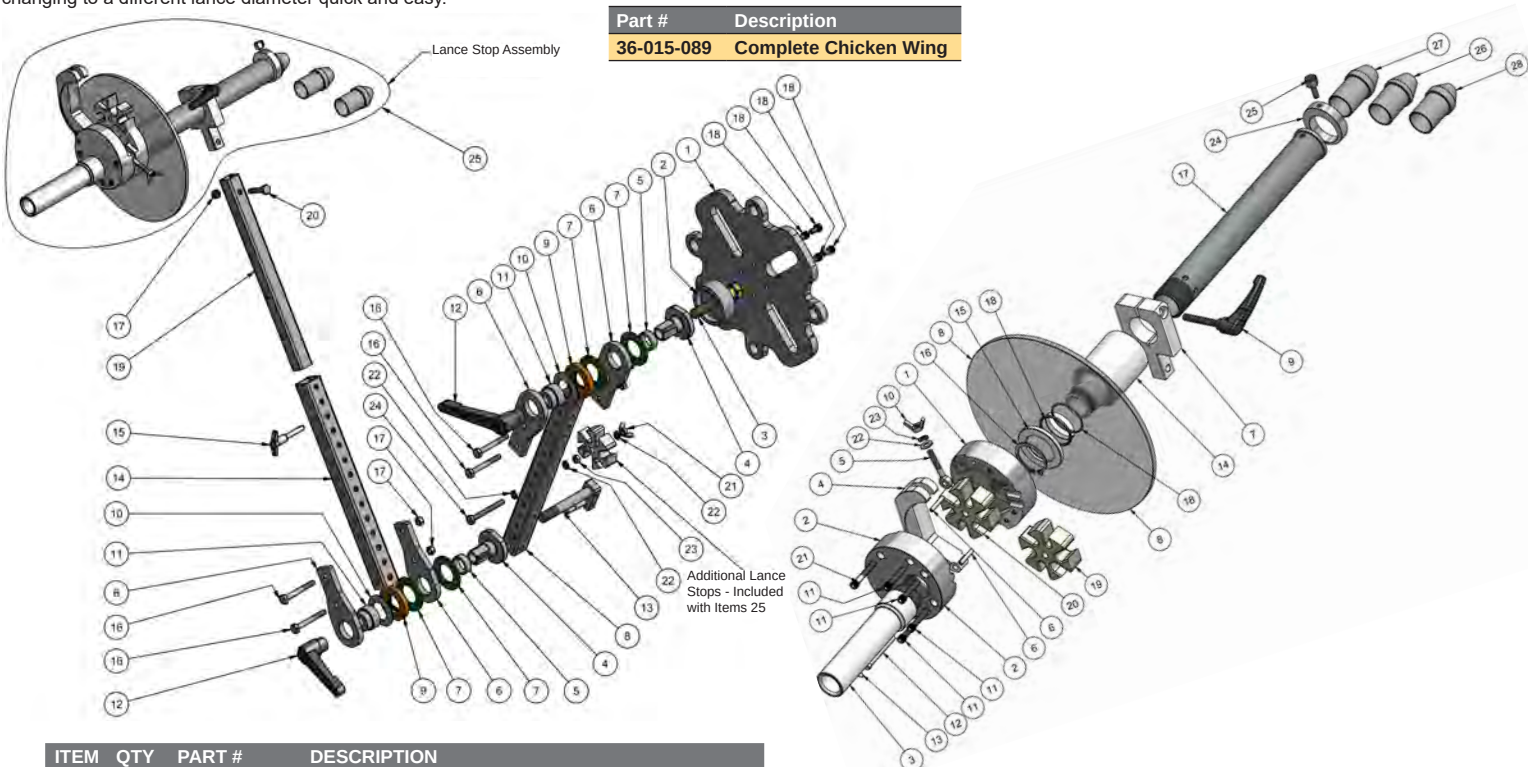
| Part #     | Lance Stop Description                                                      |
|------------|-----------------------------------------------------------------------------|
| 35-009-002 | Stop .323 Flex Lance Safety Guard Lance                                     |
| 35-009-003 | Stop .390 Flex Lance Safety Guard Lance                                     |
| 35-009-004 | Stop .442 Flex Lance Safety Guard Lance (2005 Lance)                        |
| 35-009-005 | Stop .510 Flex Lance Safety Guard Lance (2006 Lance)                        |
| 35-009-006 | Stop .725 Flex Lance Safety Guard Lance (2108 Lance)                        |
| 35-009-010 | Stop .290 Flex Lance Safety Guard Lance (3/2 & 3004 Lance)                  |
| 35-009-011 | Stop .530 Flex Lance Safety Guard Lance (6005 Lance)                        |
| 35-009-012 | Stop .570 Flex Lance Safety Guard Lance (1/4" NPT & 9/16" Rigid Lance Size) |
| 35-009-013 | Stop .470 Flex Lance Safety Guard Lance (4005 Lance)                        |
| 35-009-014 | Stop .870 Flex Lance Safety Guard Lance                                     |



Articulated Flex Lance Safety Stop for Tube Sheet Mounting

This takes the Hand Held "Flex Lance Safety Grip" to the next level. This versatile lance stop/anti-withdrawal device attaches easily to the tube sheet for safer pipe cleaning operations. It features ready adaptability to vertical or horizontal applications and its wide range of expansion accommodates any size of tube sheet. Construction is galvanized steel with aluminum handles and includes a Lexan® splash guard.

The stops for six sizes of lances are provided by a quick-change insert, which is built into the design. This eliminates the problem of lost lance stops and makes changing to a different lance diameter quick and easy.



| ITEM | QTY | PART #       | DESCRIPTION                                             |
|------|-----|--------------|---------------------------------------------------------|
| 1    | 1   | 36-015-026   | Chicken Wing Mounting Plate                             |
| 2    | 1   | 36-015-025   | Clutch Mounting Plate                                   |
| 3    | 1   | 10-121-325   | Hex. Head Bolt 5/8"-11 x 3-1/4" Long                    |
| 4    | 2   | 36-015-046   | Limiter - AWD Modified Torque                           |
| 5    | 2   | 36-015-034   | Bearing - Torque Limiter                                |
| 6    | 4   | 36-015-016   | Pivot Mounting Plate                                    |
| 7    | 4   | 36-015-033   | Torque Limiter Fiber Washer                             |
| 8    | 1   | 36-015-018.1 | Telespar Arm                                            |
| 9    | 2   | 36-015-035   | Torque Limiter Spacer (Orange)                          |
| 10   | 2   | 36-015-032   | Spring Washer                                           |
| 11   | 2   | 36-015-023   | Spacer for Torque Limiter                               |
| 12   | 2   | 36-015-028   | Handle                                                  |
| 13   | 1   | 36-015-068   | Pivot Pin & Locking Plate Assembly                      |
| 14   | 1   | 36-015-019   | Telespar Arm                                            |
| 15   | 1   | 36-015-027   | Extension Locking Pin                                   |
| 16   | 4   | 10-015-250   | Hex. Head Bolt 5/1"-18 x 2-1/2" Long                    |
| 17   | 5   | 10-100-003   | Nylon Lock Nut 5/16"-18 SS                              |
| 18   | 4   | 10-002-050   | SHCS 5/16"-18 x 1/2" Long SS                            |
| 19   | 1   | 36-015-088   | Telespar Extension Arm                                  |
| 20   | 1   | 10-015-150   | Hex. Head Bolt 5/16"-18 x 3" Long                       |
| 21   | 1   | 36-015-076   | Wing Nut 5/16"-18 SS                                    |
| 22   | 3   | 10-020-002   | Lock Washer 5/16" SS                                    |
| 23   | 1   | 10-100-006   | Jam Hex. Nut 5/16"-18 SS                                |
| 24   | 1   | 10-060-275   | Hex. Head Bolt (full thread) 5/16"-18 x 2-3/4" Long SS. |
| 25   | 1   | 36-015-082-3 | Multi Lance Stop Assembly                               |

| ITEM | QTY | PART #       | DESCRIPTION                           |
|------|-----|--------------|---------------------------------------|
| 1    | 1   | 36-015-070   | Lance Stop Body - Part 1              |
| 2    | 1   | 36-015-072   | Lance Stop Body - Part 2              |
| 3    | 1   | 36-015-073   | Lance Guide Tube                      |
| 4    | 1   | 36-015-071   | Latch - Lance Stop Holder             |
| 5    | 1   | 36-015-074   | Latch Bolt                            |
| 6    | 2   | 36-015-080   | Dowel Pin                             |
| 7    | 1   | 36-015-069   | Clamp                                 |
| 8    | 1   | 36-015-044   | Splash Shield (1.5" Size)             |
| 9    | 1   | 36-015-031   | Handle                                |
| 10   | 1   | 36-015-075   | Wing Nut                              |
| 11   | 4   | 10-001-125   | SHCS 1-1/4" Long                      |
| 12   | 1   | 36-015-077   | Latch Pivot Pin                       |
| 13   | 1   | 10-022-031   | Retaining Clip                        |
| 14   | 1   | 36-015-081   | Extension Tube Holder                 |
| 15   | 1   | 36-015-084   | Splash Shield Retaining Ring          |
| 16   | 1   | 10-024-150   | Retaining Clip (5100-150) SS          |
| 17   | 1   | 36-015-087   | Extension Tube                        |
| 18   | 2   | 30-002-126   | O-Ring Dur. 70                        |
| 19   | 1   | 36-015-007.1 | Lance Stop - Parker                   |
| 20   | 1   | 36-015-007.2 | Lance Stop - Spir Star                |
| 21   | 1   | 10-001-150   | SHCS 1-1/2" Long                      |
| 22   | 1   | 10-010-003   | Flat Washer                           |
| 23   | 1   | 10-020-001   | Lock Washer                           |
| 24   | 1   | 36-015-159   | Retaining Ring - Guide Bushing        |
| 25   | 1   | 36-015-160   | Hex. Head Thumb Screw                 |
| 26   | 1   | 36-015-161   | Flex Lance - Guide Bushing 0.625 I.D. |
| 27   | 1   | 36-015-162   | Flex Lance - Guide Bushing 0.750 I.D. |
| 28   | 1   | 36-015-163   | Flex Lance - Guide Bushing 0.437 I.D. |

Change of Lance Stop Size:

- Unscrew Cover.
- Open Lance Stop Retainer Latch.
- Pull out Lance Stop Insert.
- Feed lance into Support Tube.
- Select Stop size and install Insert.
- Close Latch and replace Cover.

Spir-Star  
 Part # 36-015-007.2

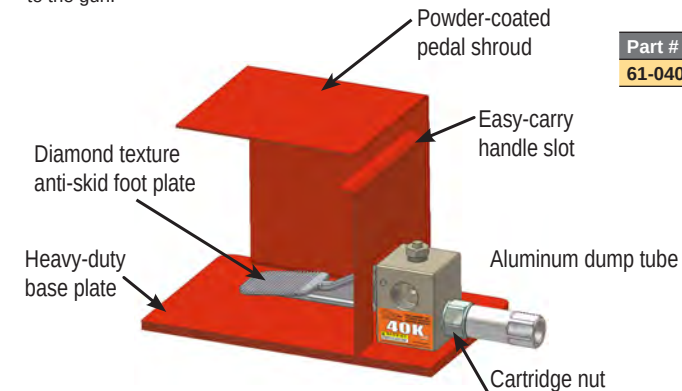


Parker  
 Part # 36-015-007.1



## 40K Foot Operated Dump Style Control Guns

**Typical Foot Gun Hookup** These foot operated control valves (foot guns) are designed for smooth reliable operation. They are easily rebuilt in the field in 30 seconds by unscrewing the dump tube, which removes the used valve assembly. The operator then snaps a new cartridge style valve into the dump tube adapter and returns the whole assembly to the gun.



| Part #     | Description                     |
|------------|---------------------------------|
| 61-040-003 | Complete Foot Style Control Gun |

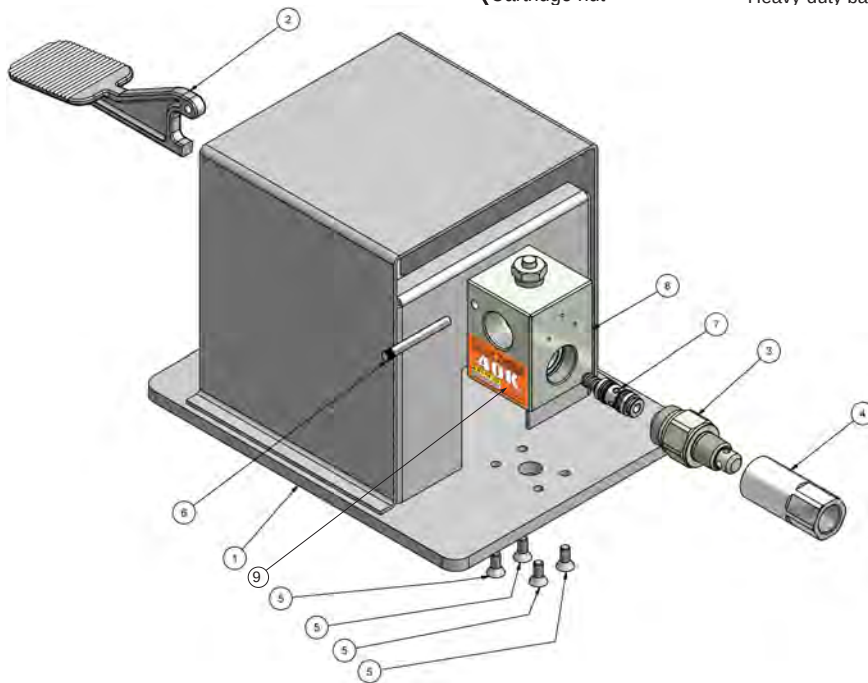
### Features:

- Fully enclosed safety shrouds.
- Easy-carry handles.
- Quick-change cartridge overhaul.
- Non-slip diamond texture foot pedals.
- Powder-coated pedal shroud.
- Cartridge nut / dump adapter.
- 9/16" HP connection.
- Aluminum dump tube.
- Heavy-duty base plate.



### Easy-Change Cartridge Assembly

The cartridge assembly enables rebuilding of the gun in the field in 30 seconds or less with common tools.



| Item | Part #      | Description                      |
|------|-------------|----------------------------------|
| 1    | 61-010-004  | Foot Gun Base Complete Assembly  |
| 2    | 61-010-007  | Foot Pedal                       |
| 3    | 61-040-002  | Dump Adapter 40K Foot Gun        |
| 4    | 61-010-002  | Dump Tube                        |
| 5    | 10-201-063  | C'sink Screw 1/2"-20 x 5/8" Long |
| 6    | 61-020-005  | Foot Pedal Pivot Pin             |
| 7    | 60-040-005  | 40K Gun Cartridge Assembly       |
| 8    | 61-040-001  | Foot Gun Block 40K Assembly      |
| 9    | 61-040-001D | 40K psi Safety Decal - Gun Block |

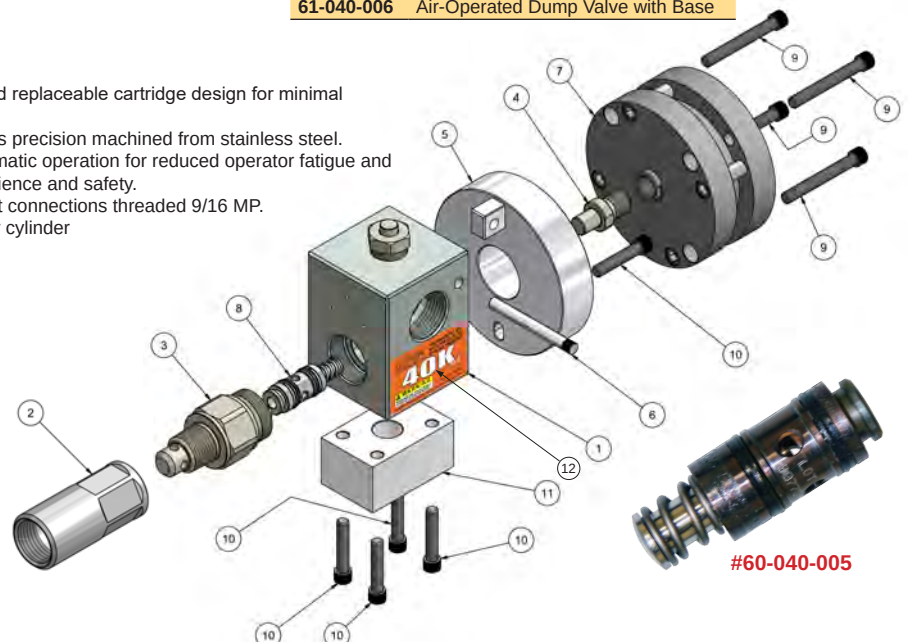
**40K Air-Operated Dump Valves** The Air-Operated Dump Valve allows an operator to remotely control pressure in cleaning applications of 40,000 psi. When air is sent to the cylinder, the valve closes and allows the system to build pressure. The valve opens when the air is exhausted, reducing system pressure to near atmospheric.

| Part #     | Description                       |
|------------|-----------------------------------|
| 61-040-007 | Complete Air-Operated Dump Valve  |
| 61-040-006 | Air-Operated Dump Valve with Base |



- 30-second field replaceable cartridge design for minimal downtime.
- All components precision machined from stainless steel.
- Remote pneumatic operation for reduced operator fatigue and added convenience and safety.
- Inlet and outlet connections threaded 9/16 MP.
- Heavy-duty air cylinder

| ITEM | QTY | PART #      | DESCRIPTION                       |
|------|-----|-------------|-----------------------------------|
| 1    | 1   | 61-040-001  | 40K Foot Gun Block (Assembly)     |
| 2    | 1   | 61-010-002  | Dump Tube                         |
| 3    | 1   | 61-040-002  | Dump Adapter - 40K Foot Gun       |
| 4    | 1   | 61-040-008  | Plunger - 40K Air Actuator Valve  |
| 5    | 1   | 61-040-011  | Mounting Plate - 40K Air Actuator |
| 6    | 1   | 61-020-005  | Pivot Pin - Foot Gun              |
| 7    | 1   | 61-001-004  | Parker Air Actuator Cylinder      |
| 8    | 1   | 60-040-005  | 40K Cartridge Assembly            |
| 9    | 4   | 10-001-200  | SHCS - 2" Long SS                 |
| 10   | 5   | 10-001-1125 | SHCS - 1-1/8" Long                |
| 11   | 1   | 61-001-002  | SPACER BLOCK                      |
| 12   | 2   | 61-040-001D | 40K psi Safety Decal - Gun Block  |



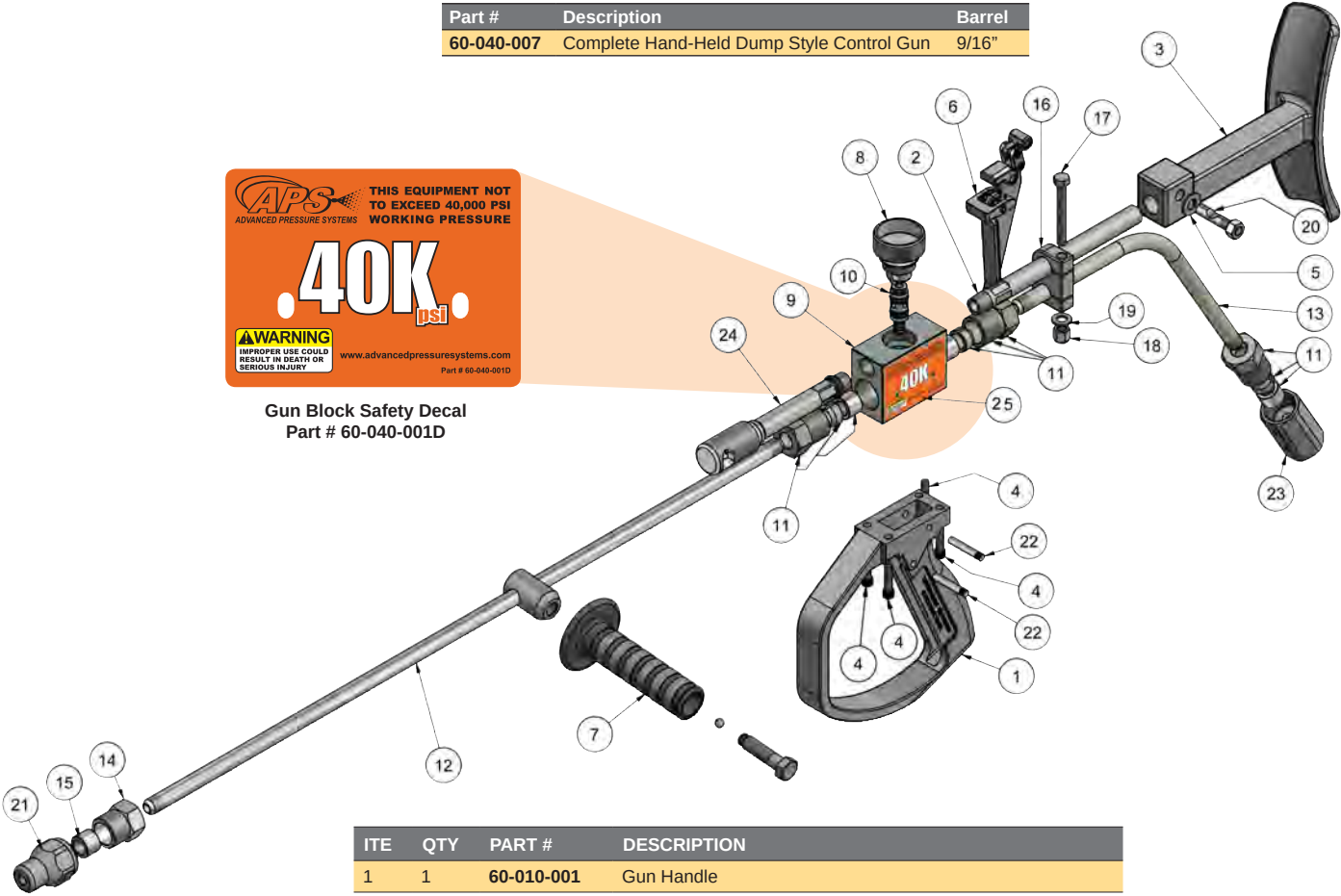
40K Hand-Held Dump Style Control Guns

- These guns are the new standard and are built tough for the demands of today's contracting environment.
- These control guns incorporate many **superior features**.
- They are **lightweight** and are easy to overhaul in the field using a cartridge which is interchangeable with Jetstream guns of the same pressure rating.
- The shoulder stock and handgrip are both adjustable and the trigger has a safety lock to prevent accidental discharge.
- Front barrels are 48" long with standard 9/16" MP size.

| Part #     | Description                               | Barrel |
|------------|-------------------------------------------|--------|
| 60-040-007 | Complete Hand-Held Dump Style Control Gun | 9/16"  |



Gun Block Safety Decal  
Part # 60-040-001D



| ITE | QTY | PART #      | DESCRIPTION                                    |
|-----|-----|-------------|------------------------------------------------|
| 1   | 1   | 60-010-001  | Gun Handle                                     |
| 2   | 1   | 60-010-009  | Shoulder Stock Tube                            |
| 3   | 1   | 60-010-003  | Shoulder Stock                                 |
| 4   | 4   | 10-001-100  | SHCS 1/4"-20 x 1" Long SS                      |
| 5   | 1   | 10-010-001  | 3/8" SS Plain Washer                           |
| 6   | 1   | 60-010-061  | Trigger & Cam Assy. w/Safety Latch             |
| 7   | 1   | 60-020-008  | 9/16" MP/HP QUICK ADJUST FRONT HANDLE ASSEMBLY |
| 8   | 1   | 60-040-006  | Cartridge Nut                                  |
| 9   | 1   | 60-040-001  | Hand Gun Block 40K                             |
| 10  | 1   | 60-040-005  | Cartridge Assembly 40K                         |
| 11  | 3   | 22-008-003  | 9/16" HP Anti-Vibe Collet Assembly             |
| 12  | 1   | 22-016-048  | 9/16" HP Nipple 48" Long                       |
| 13  | 1   | 60-040-008  | Gun Inlet Tube 40K                             |
| 14  | 1   | 22-003-003  | Gland Nut 9/16" HP                             |
| 15  | 1   | 22-002-003  | Collar 9/16" HP                                |
| 16  | 1   | 60-020-012  | Inlet Tube Clamp                               |
| 17  | 1   | 10-017-250  | Clamp Bolt 5/16-18 x 2-1/2" Long               |
| 18  | 1   | 10-100-003  | 5/16" Nylon Lock Nut                           |
| 19  | 1   | 10-010-002  | Flat Washer 5/16" SS                           |
| 20  | 1   | 60-010-017  | Shoulder Stock Cam Stud (incl. Nylon Lock Nut) |
| 21  | 1   | 17-027-000  | Nozzle Holder 40K                              |
| 22  | 2   | 60-010-021  | Trigger Pivot Pin                              |
| 23  | 1   | 22-011-113  | 9/16" HP Coupling                              |
| 24  | 1   | 60-010-057  | Dump Tube Assembly                             |
| 25  | 2   | 60-040-001D | 40K psi Safety Decal - Gun Block               |

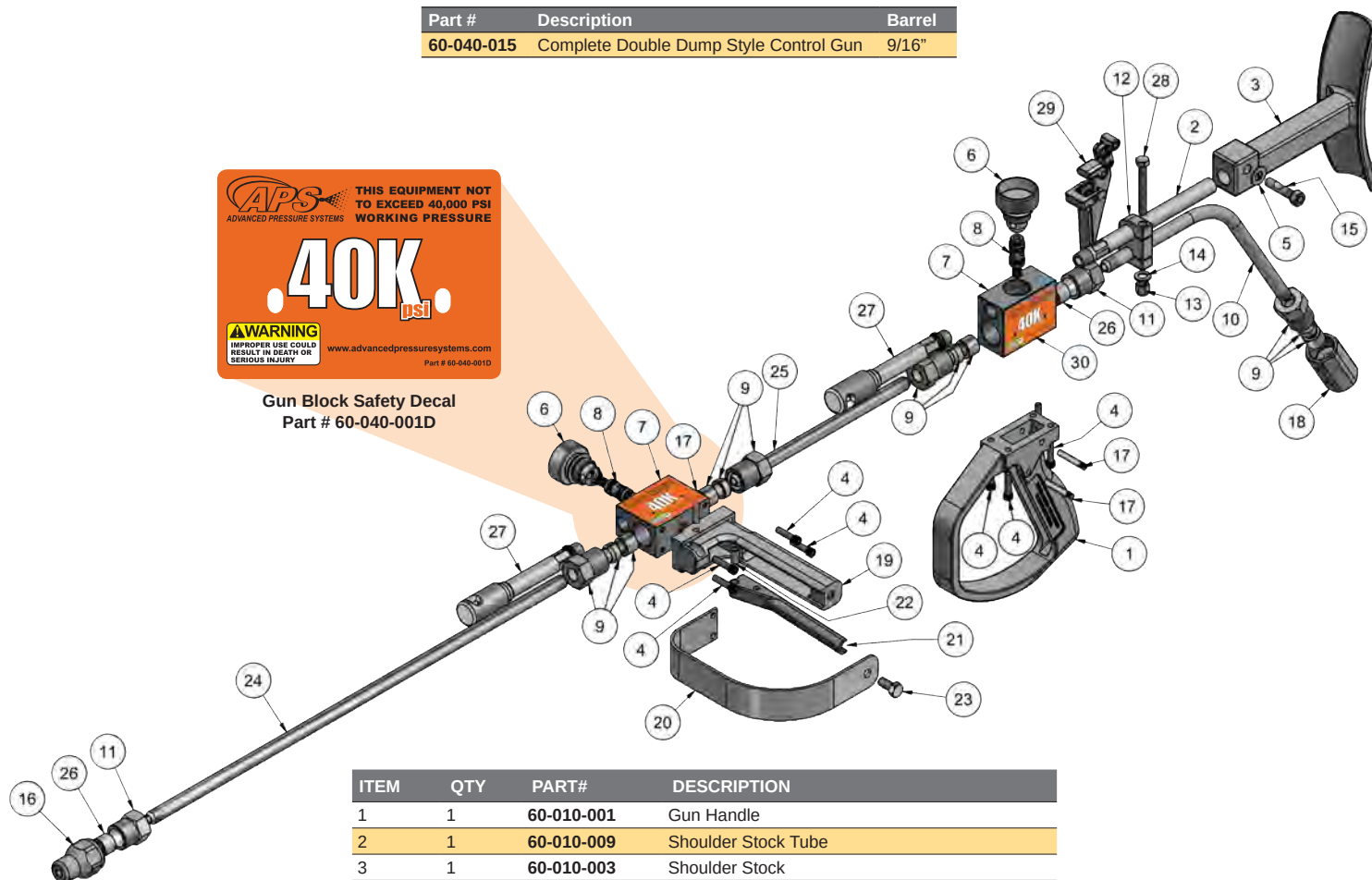
## 40K Double Dump Gun

There is an increasing demand for the **extra safety** of control guns which incorporate dual dump ports. The Advanced Pressure Systems **40K Double Dump Control Guns** feature this added security together with the ergonomic advantages and operator comfort of a specially designed front handle.

| Part #     | Description                            | Barrel |
|------------|----------------------------------------|--------|
| 60-040-015 | Complete Double Dump Style Control Gun | 9/16"  |



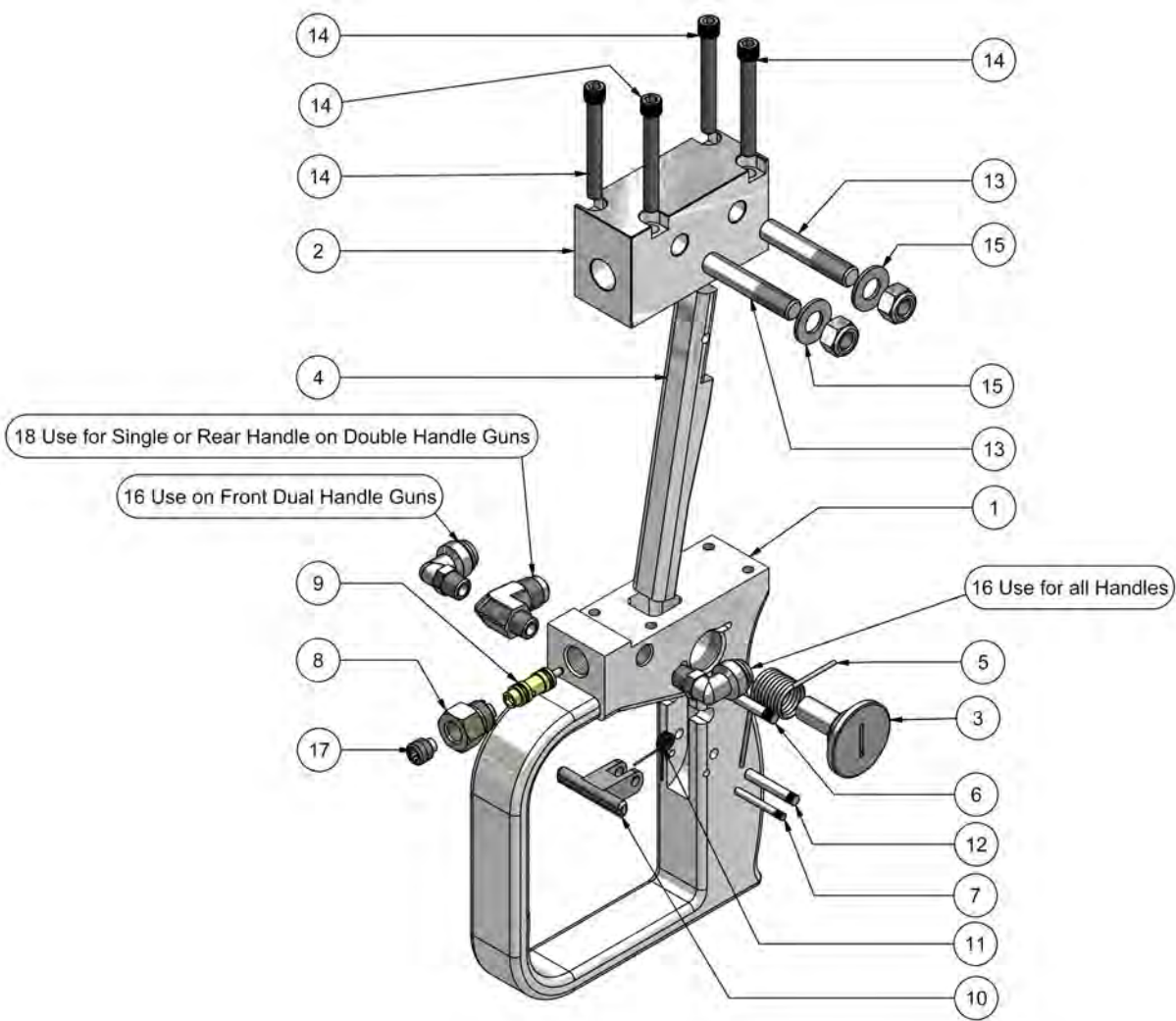
Gun Block Safety Decal  
Part # 60-040-001D



| ITEM | QTY | PART#       | DESCRIPTION                                  |
|------|-----|-------------|----------------------------------------------|
| 1    | 1   | 60-010-001  | Gun Handle                                   |
| 2    | 1   | 60-010-009  | Shoulder Stock Tube                          |
| 3    | 1   | 60-010-003  | Shoulder Stock                               |
| 4    | 8   | 10-001-100  | SHCS 1/4"-20 x 1" Long                       |
| 5    | 1   | 10-010-001  | 3/8" SS Washer                               |
| 6    | 2   | 60-040-006  | "Handi Change" Cartridge Nut - 40k           |
| 7    | 2   | 60-040-001  | 40K Gun Block                                |
| 8    | 2   | 60-040-005  | 40K Cartridge Assembly                       |
| 9    | 4   | 22-008-003  | 9/16" Anti-Vibe Gland Nut and Collar Assy.   |
| 10   | 1   | 60-040-008  | Inlet Tube 40K                               |
| 11   | 2   | 22-003-003  | Gland Nut                                    |
| 12   | 1   | 60-020-012  | Inlet Tube Clamp                             |
| 13   | 1   | 10-100-003  | Nylon Locknut 5/16"-18 SS                    |
| 14   | 1   | 10-010-002  | Flat Washer 5/16" SS                         |
| 15   | 1   | 60-010-017  | Shoulder Stock Cam Stud                      |
| 16   | 1   | 17-027-000  | Nozzle Holder, 9/16" HP x 3/8"-24 UNF        |
| 17   | 3   | 60-010-021  | Trigger Pivot Pin                            |
| 18   | 1   | 22-011-113  | Coupler 9/16"HP 40K (w/o Gland Nut & Collar) |
| 19   | 1   | 60-050-002  | Double Dump Gun Front Handle                 |
| 20   | 1   | 60-050-005  | Double Dump Trigger Guard                    |
| 21   | 1   | 60-050-003  | Double Dump Trigger                          |
| 22   | 1   | 60-010-022  | Pivot Pin Bushing                            |
| 23   | 1   | 10-016-075  | Bolt, Hex. Head 3/8"-16 X 3/4" SS            |
| 24   | 1   | 22-016-036  | Nipple 9/16" HP/LH x 36"                     |
| 25   | 1   | 22-016-010  | Nipple 9/16" HP/LH x 10"                     |
| 26   | 2   | 22-002-003  | 9/16" HP Collar                              |
| 27   | 2   | 60-010-057  | Dump Tube Assembly                           |
| 28   | 1   | 10-017-250  | 5/16"-18 SS Bolt 2-1/2" Long                 |
| 29   | 1   | 60-010-061  | Trigger & Cam Assy. w/Safety Latch           |
| 30   | 4   | 60-040-001D | 40K psi Safety Decal - Gun Block             |



#60-073-010 and 60-073-015 Air Controlled 40K Control Gun Exploded View



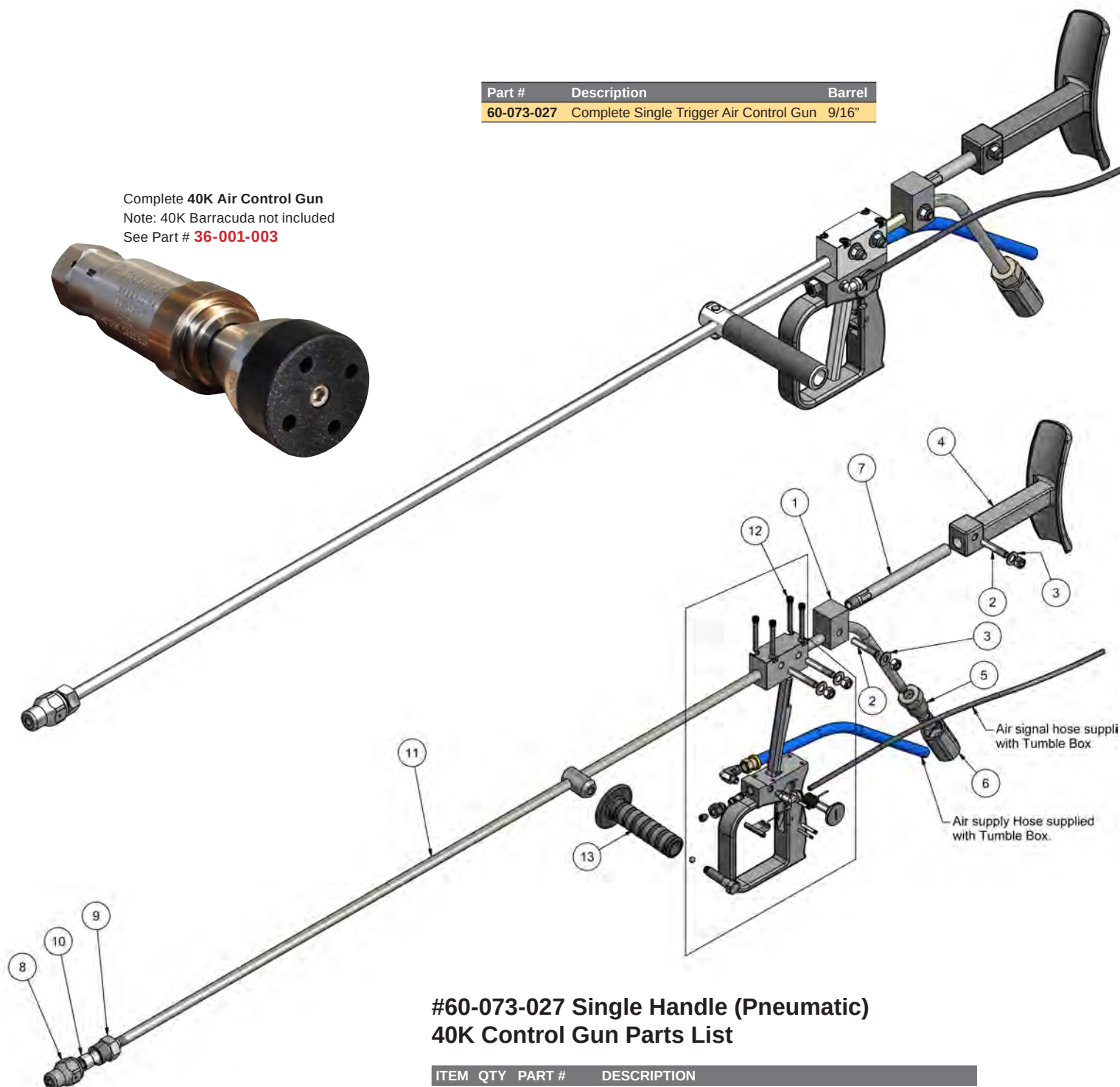
#60-073-010 Air Controlled 40K  
Control Gun Parts List

| ITEM | QTY | PART #     | DESCRIPTION                                    |
|------|-----|------------|------------------------------------------------|
| 1    | 1   | 60-073-001 | Air Control Gun Handle                         |
| 2    | 1   | 60-073-002 | Air Control Gun - Barrel Block                 |
| 3    | 1   | 60-073-003 | Trigger Spring Mandrel                         |
| 4    | 1   | 60-073-004 | Trigger                                        |
| 5    | 1   | 60-073-005 | Trigger Spring                                 |
| 6    | 1   | 60-073-006 | Trigger Pivot Pin                              |
| 7    | 1   | 60-073-007 | Safety Latch Stop                              |
| 8    | 1   | 60-073-008 | Cartridge Valve Retainer Nut                   |
| 9    | 1   | 60-073-009 | Poppet Cartridge Valve                         |
| 10   | 1   | 60-030-003 | Safety Latch                                   |
| 11   | 1   | 60-030-006 | Safety Latch Spring                            |
| 12   | 1   | 60-073-011 | Safety Latch Pivot Pin                         |
| 13   | 2   | 60-073-012 | Cam Stud - 9/16" Barrel (incl. Nylon Lock Nut) |
| 14   | 4   | 10-001-200 | 1/4"-20 SHCS x 2" Long                         |
| 15   | 2   | 10-010-001 | 3/8" Plain Washer SS                           |
| 16   | 2   | 60-073-013 | Prestolok Compact Elbow                        |
| 17   | 2   | 15-118-000 | 1/8"NPT x Socket Head Plug                     |
| 18   | 1   | 60-073-018 | 1/8"NPT x 3/8" JIC Prestolok Compact Elbow     |

## 40K Pneumatic Dual & Single Handle Control Guns

These guns, combined with the StoneAge Barracuda rotating nozzle, can be used in place of the more costly rotary barrel guns (e.g. COBRA) for most applications including surface preparation. These guns are used to send the air signal to a tumble box, which controls the flow of high pressure water. The gun does not have any high pressure seals, valves or cartridges to maintain or replace. Single or dual trigger configurations are available. Working pressures to 40K. Uses the same air hoses as the rotary gun.

Complete 40K Air Control Gun  
Note: 40K Barracuda not included  
See Part # **36-001-003**



### #60-073-027 Single Handle (Pneumatic) 40K Control Gun Parts List

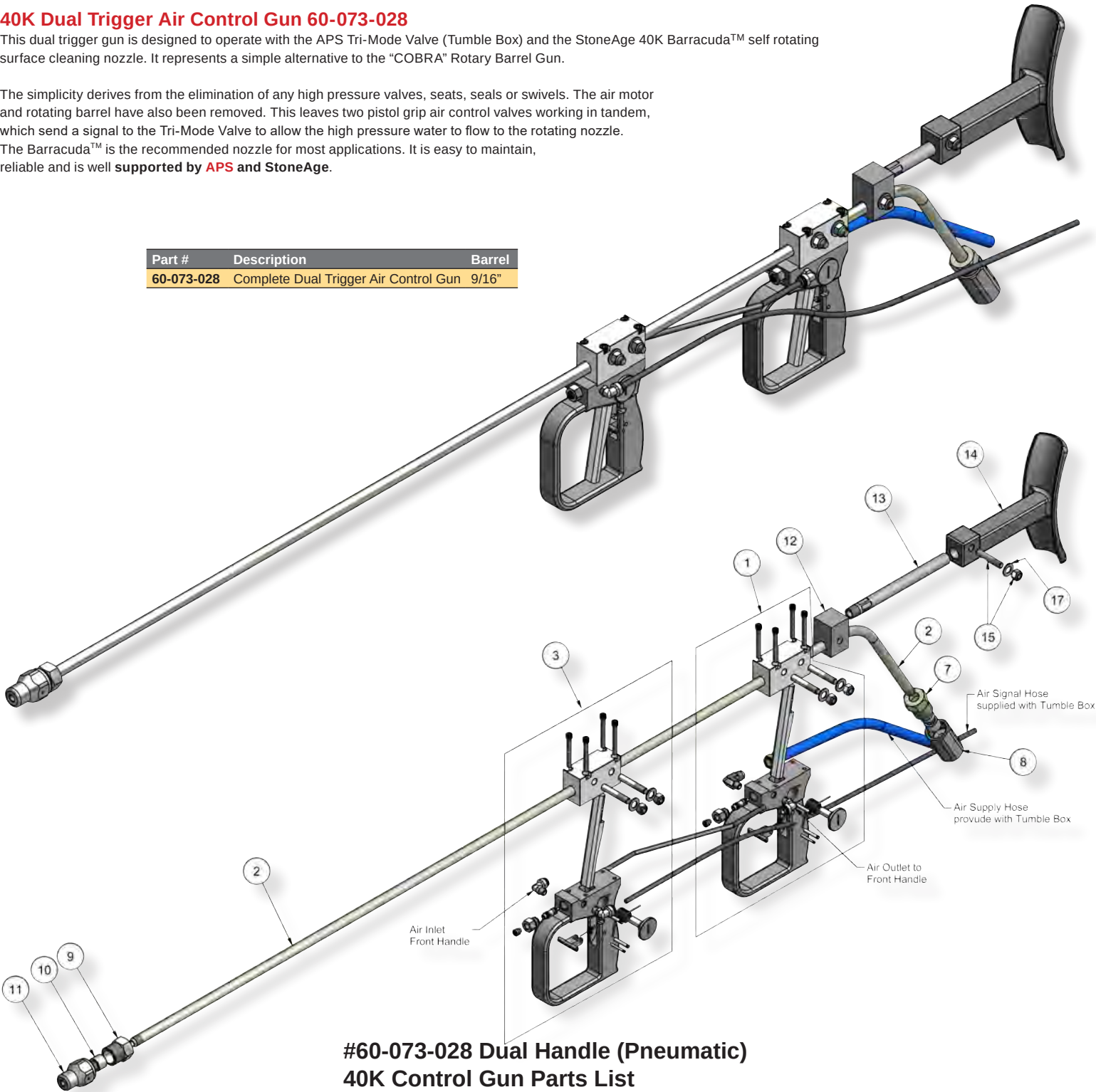
| ITEM | QTY | PART #     | DESCRIPTION                                     |
|------|-----|------------|-------------------------------------------------|
| 1    | 1   | 60-073-014 | Shoulder Stock Mounting Block                   |
| 2    | 2   | 60-010-017 | Shoulder Stock Cam Stud (incl. Nylon Lock nut)  |
| 3    | 2   | 10-010-001 | 3/8" Plain Washer SS.                           |
| 4    | 1   | 60-010-003 | Shoulder Stock                                  |
| 5    | 1   | 22-008-003 | 9/16" Anti Vibration Collet Assembly            |
| 6    | 1   | 22-011-113 | 9/16" HP 40K Coupler Without Gland Nut & Collar |
| 7    | 1   | 60-010-009 | Shoulder Stock Tube                             |
| 8    | 1   | 17-027-000 | Nozzle Holder 9/16"HP x 3/8"-24 UNF             |
| 9    | 1   | 22-003-003 | 9/16" HP Gland Nut                              |
| 10   | 1   | 22-002-003 | 9/16" HP Collar                                 |
| 11   | 1   | 60-073-016 | 9/16" HP Air Gun Barrel 40K                     |
| 12   | 1   | 60-073-015 | Pneumatic Control Gun - Single/Rear Assembly    |
| 13   | 1   | 60-020-008 | 9/16" MP/HP QUICK ADJUST FRONT HANDLE ASSEMBLY  |

40K Dual Trigger Air Control Gun 60-073-028

This dual trigger gun is designed to operate with the APS Tri-Mode Valve (Tumble Box) and the StoneAge 40K Barracuda™ self rotating surface cleaning nozzle. It represents a simple alternative to the “COBRA” Rotary Barrel Gun.

The simplicity derives from the elimination of any high pressure valves, seats, seals or swivels. The air motor and rotating barrel have also been removed. This leaves two pistol grip air control valves working in tandem, which send a signal to the Tri-Mode Valve to allow the high pressure water to flow to the rotating nozzle.

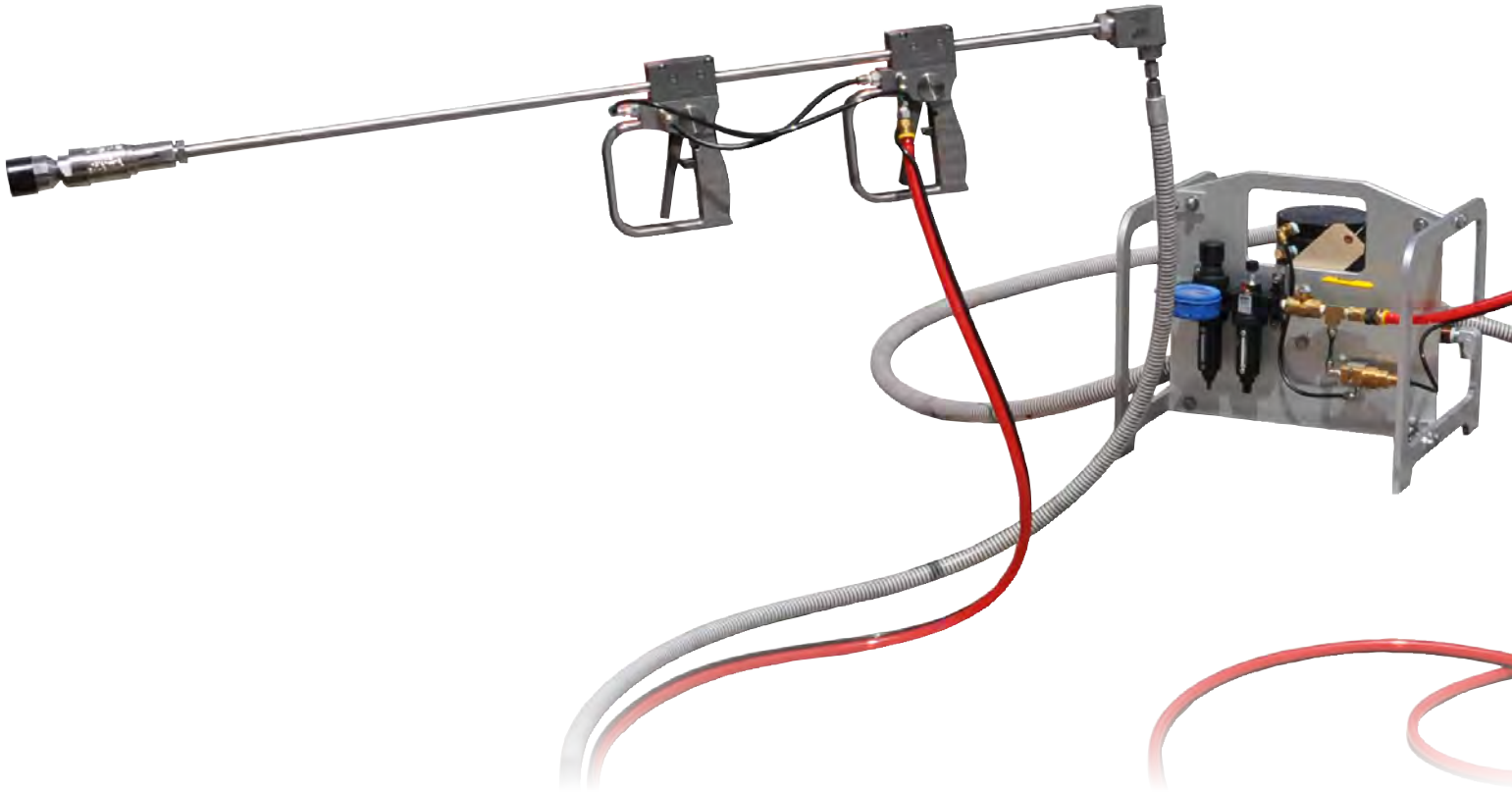
The Barracuda™ is the recommended nozzle for most applications. It is easy to maintain, reliable and is well supported by **APS** and **StoneAge**.



#60-073-028 Dual Handle (Pneumatic)  
40K Control Gun Parts List

| ITEM | QTY | PART #     | DESCRIPTION                                         |
|------|-----|------------|-----------------------------------------------------|
| 1    | 1   | 60-073-015 | Pneumatic Gun Handle (Rear)                         |
| 2    | 1   | 60-073-016 | 9/16" Barrel for 40K Dual Handle pneumatic Gun      |
| 3    | 1   | 60-073-010 | Pneumatic Gun Handle (Front)                        |
| 7    | 1   | 22-008-003 | 9/16" Anti Vibration Collet Assembly                |
| 8    | 1   | 22-011-113 | 9/16" HP Coupler without Gland Nut & Collar         |
| 9    | 1   | 22-003-003 | 9/16" HP Gland Nut                                  |
| 10   | 1   | 22-002-003 | 9/16" HP Collar                                     |
| 11   | 1   | 17-027-000 | Nozzle Holder 9/16" HP x 3/8"-24 UNF (40K Dump Gun) |
| 12   | 1   | 60-073-014 | Shoulder Stock Mounting Block                       |
| 13   | 1   | 60-010-009 | Shoulder Stock Tube                                 |
| 14   | 1   | 60-010-003 | Shoulder Stock                                      |
| 15   | 1   | 60-010-017 | Cam Stud (Incl. Nylon Lock Nut)                     |
| 16   | 1   | 10-100-002 | 3/8"-16 Nylon Lock Nut                              |
| 17   | 1   | 10-010-001 | 3/8" Plain Washer                                   |





**The 40K “TRI-MODE VALVE”** (commonly called a Tumble Box) has been developed after extensive research aimed at identifying the features that contractors and end users needed most. The air side incorporates a robust easy to operate shut off valve, a large easy to read horizontally mounted gauge, which is protected by a heavy rubber buffer. The shuttle valve is a **simple cartridge type design**, which is easy to service and replace.

#### Air Side



#### Cartridge Overhaul

In less than a minute!



#60-070-111

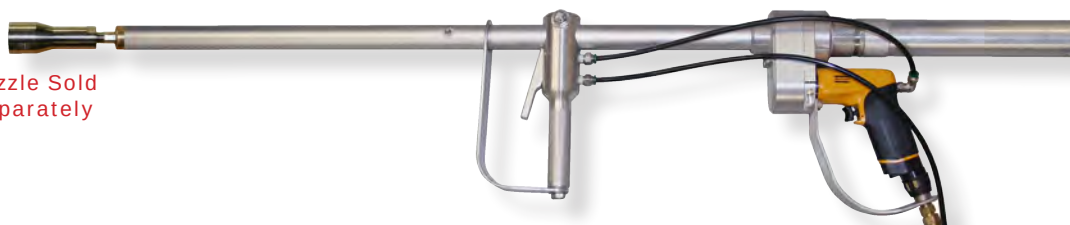


Water Side

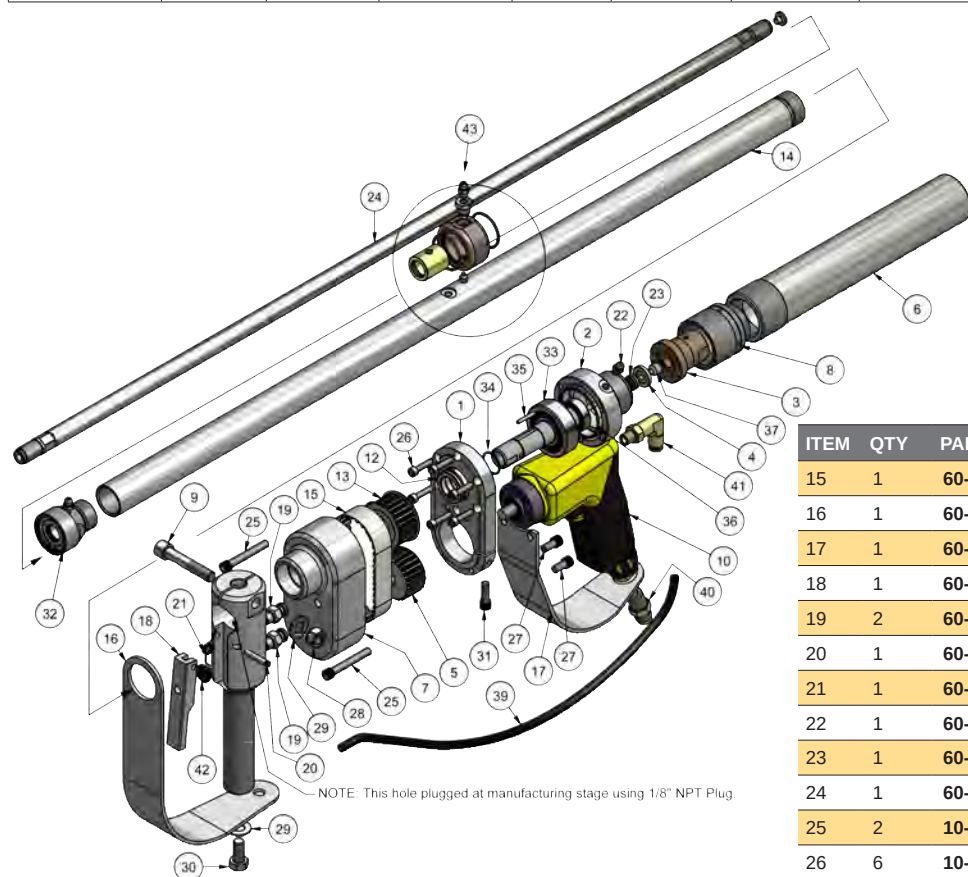
# CONTROL GUNS

The **APS COBRA** is an **air-operated control gun** with a rotating barrel. The simple, **robust design** combined with the high quality of manufacture, makes this the perfect tool for **Ultra High Pressure Jetting** applications. When used together with our **Tri-Mode Control Valve**, the combination is the most cost effective and easy to use and maintain system on the market. It is ideal for the removal of paint and corrosion leaving a white metal finish, which is ready for coating.

Nozzle Sold Separately



| Part #     | Barrel Length | Overall Length | Rotation Speed | Weight | Air Demand   |            | Operating Pressure | Max. Flow | Required Inlet Connection | Nozzle Connection |
|------------|---------------|----------------|----------------|--------|--------------|------------|--------------------|-----------|---------------------------|-------------------|
|            | In.           | In.            | RPM            | Lbs.   | Pressure PSI | Volume CFM | PSI                | GPM       |                           |                   |
| 60-072-001 | 36"           | 46"            | 1700-3000      | 10.75  | 90           | 22         | 40,000             | 7         | 3/8" HP Female            | 9/16" HP Button   |
| 60-072-062 | 48"           | 58"            | 1700-3000      | 12.3   | 90           | 22         | 40,000             | 7         | 3/8" HP Female            | 9/16" HP Button   |



| ITEM | QTY | PART #     | DESCRIPTION                                           |
|------|-----|------------|-------------------------------------------------------|
| 1    | 1   | 60-072-002 | 40 K COBRA - Back Plate                               |
| 2    | 1   | 60-072-004 | 40K COBRA - Swivel Bearing Housing                    |
| 3    | 1   | 60-072-005 | 40K COBRA - Swivel Inlet Adapter                      |
| 4    | 1   | 60-072-006 | 40K COBRA - Swivel Seal Back Up Ring                  |
| 5    | 1   | 60-072-007 | 40K COBRA - Pulley, Drill Motor. Alum. 26 Pitch Drive |
| 6    | 1   | 60-072-008 | 40K COBRA - Hose Protector                            |
| 7    | 1   | 60-072-009 | 40K COBRA - Belt Drive Cover                          |
| 8    | 1   | 60-072-010 | 40K COBRA - Bearing Retaining Cap                     |
| 9    | 1   | 60-072-012 | 40K COBRA - Cam Stud/Barrel Shroud                    |
| 10   | 1   | 60-072-013 | 40K COBRA - Barrel Shroud                             |
| 11   | 1   | 60-072-015 | 40K COBRA - Front Handle                              |
| 12   | 1   | 60-072-016 | Grease Seal                                           |
| 13   | 1   | 60-072-020 | 40K COBRA - Timing/Drive Sprocket                     |
| 14   | 1   | 60-072-019 | 40K COBRA - Barrel Shroud                             |

| ITEM | QTY | PART #     | DESCRIPTION                                         |
|------|-----|------------|-----------------------------------------------------|
| 15   | 1   | 60-072-022 | Timing/Drive Belt                                   |
| 16   | 1   | 60-072-027 | 40K COBRA - Air Motor Trigger Guard                 |
| 17   | 1   | 60-072-028 | 40K COBRA - Front Handle Trigger Guard              |
| 18   | 1   | 60-072-025 | 40K COBRA - Trigger, Front handle                   |
| 19   | 2   | 60-072-031 | Connector - 1/8" NPT Prestolok                      |
| 20   | 1   | 60-072-032 | 40K COBRA - Front Handle Trigger Pin                |
| 21   | 1   | 60-072-033 | 40K COBRA - Front Handle Trigger Pin                |
| 22   | 1   | 60-072-023 | Grease Zerk                                         |
| 23   | 1   | 60-072-026 | Oil/Grease Seal                                     |
| 24   | 1   | 60-072-035 | 40K COBRA - Barrel 9/16"-18 UHM B/E x 34-3/16" Long |
| 25   | 2   | 10-001-175 | SHCS 1/4"-20 x 1-3/4" Long                          |
| 26   | 6   | 10-008-075 | SHCS 10-32 x 3/4" Long                              |
| 27   | 2   | 10-001-050 | SHCS 1/4"-20 x 1/2" Long                            |
| 28   | 1   | 10-100-002 | 3/8"-16 Nylon Lock Nut                              |
| 29   | 2   | 10-010-001 | Flat washer 3/8" SS                                 |
| 30   | 1   | 10-016-075 | Hex. bolt, 3/8"-16 x 3/4" Long SS                   |
| 31   | 1   | 10-003-075 | SHCS 1/4"-28 x 3/4" Long                            |
| 32   | 1   | 60-072-070 | Front Bearing Assembly                              |
| 33   | 1   | 60-072-141 | 40K COBRA - Shaft/Bearing Assembly                  |
| 34   | 1   | 60-072-037 | Spiral Retaining Clip                               |
| 35   | 1   | 60-072-038 | Keyway Pin                                          |
| 36   | 1   | 30-002-031 | O-Ring, 2-013 Buna 70 Dur.                          |
| 37   | 1   | 60-072-049 | 40K COBRA - Swivel Shaft Seal                       |
| 38   | 1   | 60-072-041 | 40K Brass Button Seal J/S                           |
| 39   | 1   | 60-072-040 | 1/4" Air Tubing                                     |
| 40   | 1   | 60-072-042 | Fitting 3/8" JIC x 1/4" NPT                         |
| 41   | 1   | 60-072-039 | Swivel elbow - 1/4" x 1/8" NPT Prestolok            |
| 42   | 1   | 60-072-034 | Ribber Insert for Front Trigger                     |
| 43   | 1   | 60-072-024 | Center Barrel Bearing Assembly                      |

# Cartridges

## 40K psi.

### High Pressure Replacements



**Part#: 65-040-001**  
CARTRIDGE ASSEMBLY, 40K PRV (J/S  
TYPE: 53725)



**Part#: 60-300-001**  
CARTRIDGE ASSEMBLY, 40K GDWJ  
STYLE GUN (GDWJ TYPE: 77700315)



**Part#: 60-070-111**  
CARTRIDGE ASSEMBLY, APS 40K TRI-  
MODE TUMBLE BOX (NEW STYLE-X15TN)



**Part#: 60-040-005**  
CARTRIDGE ASSEMBLY, APS 40K HAND-  
GUN/FOOT GUN (J/S TYPE: 53475)



**Part#: 99-003-019**  
CARTRIDGE 40K MULTI-MODE REPAIR  
(GDWJ TYPE: 77408803 ASSY.)



**Part#: 60-500-006**  
CARTRIDGE ASSY., TRI-MODE TUMBLE  
BOX (J/S TYPE: 54014)



**40K Pressure Regulating Valve (By-Pass Valve)** A Pressure Regulating Valve (PRV) is used on both diesel and electric pumping units to divert a portion of the flow to a low pressure outlet. It is really a hand adjusted needle valve, and it can be used to control pressure when the application requires a flow at the low end of the pumping unit operating range. For electric units a PRV is required equipment because the speed of the drive is not adjustable.

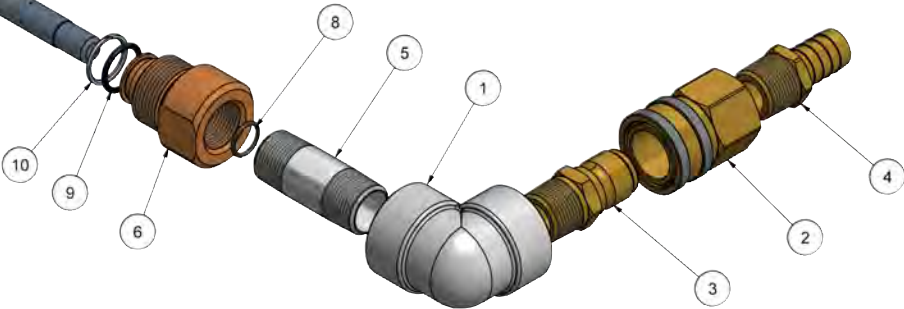
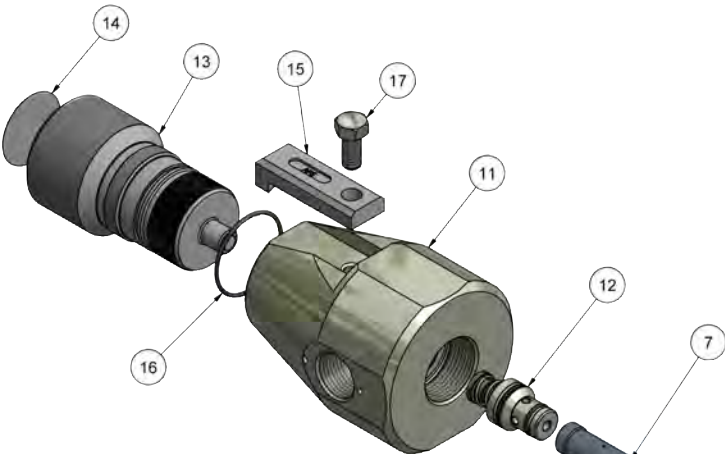
The design provides:

- Simple field rebuild using a cartridge unit. Down time is two minutes or less.
- Easy hand adjustment without the need for wrenches. This includes the locking of the adjuster handle, after the pressure is set.
- All components machined from stainless steel.
- Direct mounting to fluid end discharge manifold.

PRV-40K  
#65-040-010



40K PRV (Pressure  
Regulating Valve)  
Exploded View &  
Parts List



40K  
Easy-Change  
Cartridge  
Assembly  
#65-040-001



| ITEM | QTY | PART #     | DESCRIPTION                                                      |
|------|-----|------------|------------------------------------------------------------------|
| 1    | 1   | 65-040-006 | 3/4"NPT x 3/4"NPT Cast SS Elbow                                  |
| 2    | 1   | 65-040-007 | 3/4"NPTF Parker Quick Disconnect                                 |
| 3    | 1   | 65-040-008 | 3/4"NPTM Quick Disconnect Male Half                              |
| 4    | 1   | 65-040-005 | 3/4"NPTM x 3/4" Barb                                             |
| 5    | 1   | 65-040-004 | 3/4"Sch 40 SS Nipple                                             |
| 6    | 1   | 65-040-003 | Discharge Adapter - 40K Pressure Regulating Valve                |
| 7    | 1   | 65-040-002 | Diffuser - 40K Pressure Regulating Valve                         |
| 8    | 1   | 30-001-015 | O-Ring 2-015 Dur.90                                              |
| 9    | 1   | 30-001-117 | O-Ring, 2-120 Dur.90                                             |
| 10   | 1   | 30-017-117 | Delrin (White) Backup Ring                                       |
| 11   | 1   | 65-040-009 | Body - 40K J/S Style Pressure Regulating Valve                   |
| 12   | 1   | 65-040-001 | 40K Cartridge Assembly - Pressure Regulating Valve               |
| 13   | 1   | 65-110-003 | Adjuster Handle, 15K/20K/40K J/S Style Pressure Regulating Valve |
| 14   | 1   | 70-010-019 | Decal, FDV/PRV Adjuster Handle                                   |
| 15   | 1   | 70-110-008 | Clamp, J/S Type FDV/ PRV Adjuster Handle                         |
| 16   | 1   | 30-001-029 | O-Ring 2-029 Dur.90                                              |
| 17   | 1   | 10-016-075 | Bolt, Hex. Head - 3/8"-16 X 3/4" SS                              |

APS offers a complete line of coning and threading tool kits for manually coning and threading 1/4" O.D. to 9/16" O.D. tubing.

There are three different tool kit versions, "High" pressure, "Medium" pressure and the "Combination Kit" that contains both the medium and the high pressure tools. All items are conveniently packaged in a sturdy hand carry tool case with removable top tray. The unique coning and threading tool designs allows for interchange ability between components, eliminating multiple tool inventories.



**Coning Tool**  
#24-017-010 - 1/4"  
#24-017-011 - 3/8"  
#24-017-012 - 9/16"

**Threading Tool**  
#24-119-007 - 1/4"  
#24-119-008 - 3/8"  
#24-119-009 - 9/16"



| Part #     | Description                                    |
|------------|------------------------------------------------|
| 24-018-043 | DIE, 1/4"-28 LH X 1 1/2" O.D. PREMIUM THREAD   |
| 24-018-044 | DIE, 3/8"-24 LH X 1 1/2" O. D. PREMIUM THREAD  |
| 24-018-045 | DIE, 9/16"-18 LH X 1 1/2" O. D. PREMIUM THREAD |
| 24-018-048 | DIE, 1/4"-28 RH X 1 1/2" O.D. PREMIUM THREAD   |
| 24-018-049 | DIE, 3/8"-24 RH X 1 1/2" O.D. PREMIUM THREAD   |
| 24-018-050 | DIE, 9/16"-18 RH X 1 1/2" O.D. PREMIUM THREAD  |

**Coning and Threading Tool Kit**



**5-Piece Micro Pick Set**  
#15-099-126



**Pin Vise used to Clean Nozzles**  
# 15-099-002 (0-.055") Range  
# 15-099-003 (.025-.075") Range



**Pin Gage Set**  
# 15-099-000 (.011"-.060") Range  
# 15-099-001 (.0115"-.0605") Range



**Nozzle Cleaners**  
#15-099-125  
Standard Set - No.6 Thru 26

**40K Waterblast Pressure Gauges** APS offers a complete range of pressure gauges designed specifically for water blasting applications. Features include stainless steel construction, glycerine filled, clear laminated safety glass, precision movement, easy-to-read, color-coded gauge faces.

- Easy set-up.
- Easy operation.
- Easy to set and lock pressure.
- Easy-carry handle.
- Maintains pressure and flow to two guns at once during all phases of operation.
- Rugged construction.
- Quick-change cartridge overhaul.
- Optional pressure gauge.
- Hose adapters for different connections available.



#35-001-027

#35-001-007



| Part #     | Description                                                                                              |
|------------|----------------------------------------------------------------------------------------------------------|
| 35-001-007 | PRESSURE GAUGE, 6" 0-60K RANGE, 40K MAWP SS GF 1/4" HPF {9/16"-18 RHF} BOTTOM MOUNT PSI/BAR (NOUVA FIMA) |
| 35-001-012 | PRESSURE GAUGE, 4" 0-60K RANGE 40K MAWP SS GF 1/4" HPF TTOM MOUNT (NUOVA FIMA)                           |
| 35-001-027 | PRESSURE GAUGE, 4" 0-60K RANGE, 40K MAWP SS GF 9/16" M TUBE NIPPLE BOTTOM MOUNT (NUOVA FIMA)             |
| 35-001-028 | PRESSURE GAUGE, 6" 0-60K RANGE, 40K MAWP SS GF 9/16" HPM TUBE NIPPLE BOTTOM MOUNT (NOUVA FIMA)           |

**Lubricants, Sealants and Tapes** It is essential to keep the correct lubricants, sealants and Teflon® tapes on hand to guard against leaks and pressure loss, and to protect the threads on all water jetting components. **APS** keeps these items in stock as an added convenience for our customers. Our goal is to always be the first source you call.

| Part #     | Description                             | Size              |
|------------|-----------------------------------------|-------------------|
| 24-001-001 | Blue Goop® Thread Lubricant             | 2 Fl. Oz. Tube    |
| 24-001-002 | Loctite® Nickel-Based Anti-Seize        | 1 Lb. Jar         |
| 24-001-003 | Loctite® 567™ Thread Sealant            | 1.69 Fl. Oz.      |
| 24-001-004 | 1/2" White Teflon® Tape                 | 520 Ft. Roll      |
| 24-001-005 | 3/4" White Teflon® Tape                 | 520 Ft. Roll      |
| 24-001-006 | 1/2" Blue Monster® Premium Teflon®      | 1,429 Ft. Roll    |
| 24-001-007 | 3/4" Blue Monster® Premium Teflon® Tape | 1,429 Ft. Roll    |
| 24-001-009 | Jet-Lube 550                            | 1/2 Lb. Jar       |
| 24-001-010 | Jet-Lube 550                            | 1 Lb. Jar         |
| 24-001-011 | Yellow Lube®                            | 6-6 Oz. sq tube   |
| 24-001-013 | Loctite® Clover Compound, Grease Mix    | 16 Oz. Net WT     |
| 24-001-014 | Loctite® Clover Compound, Water Mix     | 6-6 oz sq tube    |
| 24-001-020 | Lubritech® Air Lube Airline Lubricants  | 16 Fl. Oz. Bottel |
| 24-001-015 | Lubemaster® Permalube 4099              | 14.8 Oz. Tube     |
| 24-001-020 | LubriMatic® White Lithium Grease        | 16 Oz. Can        |

**Blue Goop® Thread Lubricant** (Excellent anti-seize lubricant, especially for 40K applications.) **Part# 24-001-001** Oil-based thread lubricant for use on stainless steel, steel, titanium, aluminum, and nickel-based alloys.



**Loctite® Nickel-Based Anti-Seize Part# 24-001-002** A heavy duty, high temperature lubricant; it resists galling and corrosion, reduces wear in heavy pressure applications, contains oils and graphite which cannot be burned away or be removed by slow moving parts.



**Loctite® Clover Compound, Grease Mix Part# 24-001-013** Silicon carbide particles in a grease mix. Perfect for smoothing and finishing of metal surfaces. Retains its texture and lubrication properties during extended use. Uses include cleaning corroded threads, valve rebuilding, smoothing gears, removing tool marks, lapping for flatness.



**1/2" Blue Monster® Premium Teflon® Part# 24-001-006** Blue Monster is rugged, not flimsy like most thread seal tapes on the market. Blue Monster has not been stretched during the manufacturing process, so it is thicker and creates a more effective seal with less tape. Blue Monster could be used in conjunction with # 24-001-003 Loctite® Thread Sealant for all NPT Threads.



**Jet-Lube 550 1 LB. Net WT. Part# 24-001-010 1/2 LB. Net WT. Part# 24-001-009** 550 contains carefully balanced proportions of molybdenum disulphide (MoS2), graphite, and low friction fillers in an aluminum complex base grease that is fortified with effective rust and corrosion inhibitors. 550 assures protection against rust, oxidation and corrosion. It will not harden, evaporate, or settle out; and it requires no thinning. 550 is the ideal product for petrochemical plants' maintenance needs. **Applications:** Threads, Flange Faces, Keyways, Gaskets. Slides, Guides and Fittings



**LubriMatic® White Lithium Grease Part# 24-001-016** Includes zinc additive for a clean, white color. Ideal for general home, shop, automotive, agricultural and industrial applications. NLGI #2, drop point 393 Deg. F.



**Loctite® 567™ Thread Sealant** (Designed for the locking and sealing of tapered metal threads & fittings NPT.) **Part# 24-001-003** Designed for the locking and sealing of metal tapered threads and fittings. The product cures when confined in the absence of air between close fitting metal surfaces and prevents loosening and leakage from shock and vibration. The high lubricating properties of this compound prevent galling on stainless steel, aluminum and all other metal pipe threads and fittings.



**Yellow Lube**  
**6 oz. tube/cs Part# 24-001-011**  
**3 oz. tube/cs Part# 24-001-023** (Very good general purpose anti-seize lubricant which also helps to seal tapered threads.) Yellow Lube is a thread compound employing a heavy duty sulfur/phosphorus extreme pressure additive package for a variety of types and combinations of metals. Galling of threads is virtually impossible.



**Loctite® Clover Compound, Water Mix Part# 24-001-014** Paste formulation for fast metal removal. Biodegradable, recommended for applications where cleanup with water is required.



**White 1/2 Teflon® Tape 520 Ft. Roll Part# 24-001-004**  
**White 3/4 Teflon® Tape 520 Ft. Roll Part# 24-001-005**  
 The use of Teflon Tape on MPT fittings will help to prevent leaks.



**Lubritech® Air Lube Airline Lubricants Part# 24-001-020** Air Lube Airline Lubricants are formulated specifically to absorb the moisture present in compressed air used in pneumatic tools, air motors and cylinders. They contain a unique emulsifier system designed to encapsulate up to 10% of its weight in water, while corrosion inhibitors form a protective film on metal surfaces, preventing oxidation and rust formation. Made from highly thermally stable base stocks, these hard-working lubricants help eliminate varnish formation and associated valve sticking. Air Lube Airline Lubricants will not leave hard carbon deposits or effect rubber or plastic valves and seals.



**Lubemaster® Permalube 4099 (Tube) Part# 24-001-015** This grease is for the Cobra Gun.





# Yellow Lube

## WATERJET THREAD PROTECTION

### Benefits

Yellow Lube Water Blasting Thread Protection eliminates wear and galling. Yellow Lube adheres to heavily loaded rotating, reciprocating or sliding parts. It may be used on any heavily loaded equipment that would normally be lubricated with an extreme pressure grease. Yellow Lube is a film forming lubricant having a strong polar attraction to metal. During use, a chemical reaction occurs on areas subjected to heavy loading and frictional heat. This reaction creates a resilient, self-lubricating layer in the metal surface that helps prevent further abrasive contact.

### Applications

Yellow Lube Water Blasting Thread Protection is a thread lubricant designed to protect and seal stainless NPT fittings. In high pressure applications such as water blasting, steps to creating a seal are as follows:

1. Be sure the fitting is clean and dry.
2. Apply Yellow Lube to all mating surfaces.
3. Make fitting up hand tight.
4. Using a wrench or other device, tighten the connection one to one and a quarter full turns.
5. Solid metal to metal seal will have been established: the crest of the threads will be buried in the root, but without galling.

**3 oz. Tube - Part # 24-001-023**

**6 oz. Tube - Part # 24-001-011**

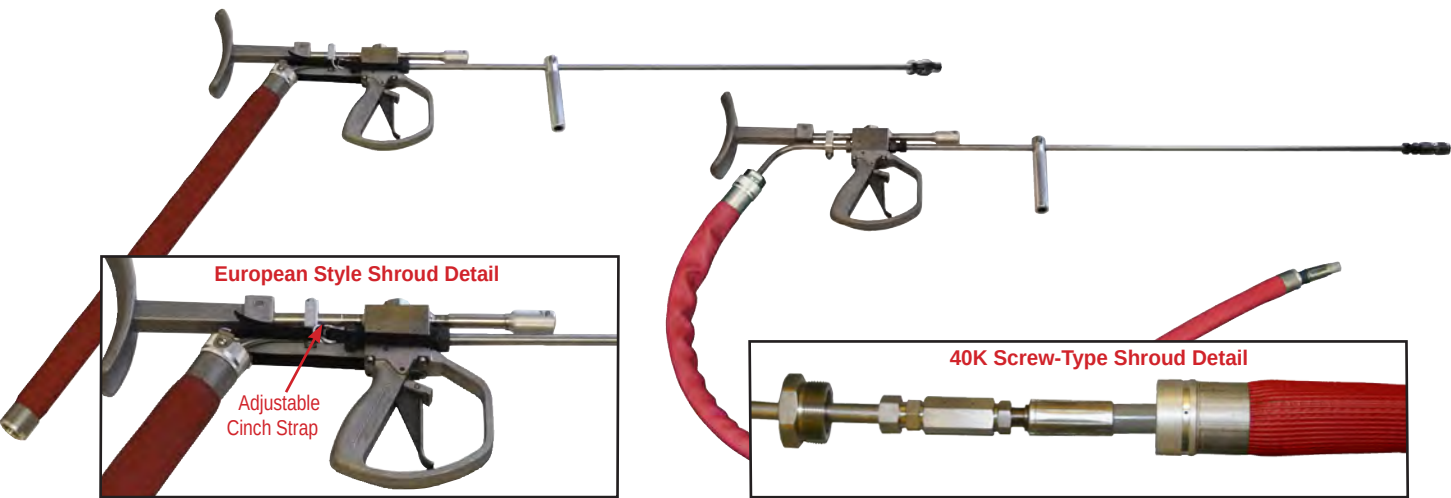


### Specifications

|                                                              |                                   |
|--------------------------------------------------------------|-----------------------------------|
| NLGI Grade .....                                             | 2 1/2                             |
| Appearance.....                                              | Yellow, smooth                    |
| Solids Content.....                                          | 45%                               |
| Temperature Range.....                                       | 0°F. to 300°F.                    |
| Oil description .....                                        | Synthetic                         |
| Viscosity, SUS @ 1 00°F. ....                                | 730                               |
| Water spray off (with 5% salt spray)ASTM D-4049 .....        | 0%                                |
| Evaporation Rate .....                                       | Nil                               |
| Thickener .....                                              | Inorganic (non-melt)              |
| U.S. Environmental Protection Agency static sheen test ..... | Pass                              |
| Active Toxicity* .....                                       | None                              |
| K-Factor .....                                               | (316 Stainless Steel Bolts) 0.174 |

**Whip Hose With Safety Shrouds** Safe operation of hand held control guns requires the use of a safety shroud to guard the operator from failure of the hose fitting at the point where it is connected to the gun. Both of these shrouds have a nitrile outer cover, which resists oil, water and many solvents, and an inner layer of braided stainless steel. Safety Shrouds are essential equipment, and should be used in conjunction with a whip hose, which allows for connection to different high pressure sources, without the need to make frequent connections to the gun.

NEVER USE A CONTROL GUN WITHOUT A SAFETY SHROUD.



The European Type Shroud fits virtually any gun and is held in place by an adjustable strap. It is lightweight, and with universal application, it is a popular alternative to the standard screw type shroud.

The Screw Type Shroud is held in place by a shroud adapter. This style is customized to fit specific guns and is very reliable and durable.

| Part #     | Whip Hose Shroud Assemblies                                                                                  |
|------------|--------------------------------------------------------------------------------------------------------------|
| 44-021-050 | 15-40K European Style Safety Shroud Assy. 3 Ft. Hose Whip Restraint                                          |
| 44-021-055 | 15-40K European Style Safety Shroud Assy. 6 Ft. Hose Whip Restraint                                          |
| 44-021-054 | 15-40K European Style Safety Shroud Assy. 10 Ft. Hose Whip Restraint                                         |
| 44-021-031 | 15-40K Screw Type Safety Shroud With 6 FT. Hose Whip Restraint (6105ST x 5mm SS Type M x 9/16" MP LH SS Tube |

**Hose Whip Restraints** APS strongly recommends the use of hose whip restrainers in any water jetting operation. These are perhaps the simplest and least expensive safety measure to implement. A hose whip restraint can be attached at any point where two hoses are joined, or to a pump's fluid end at the discharge side, or where a hose attaches to any piece of water blasting equipment such as a water blast lancing or cutting system.

When a high pressure hose is joined to a piece of equipment, the hose whip restraint should be used to restrain the movement of the pressurized hose should it become uncoupled, thereby allowing operators to get away and perform a safe, orderly system shut-down.



Pictured here are two typical hose whip restraint types, one is the stainless steel tension model, and the other is high-strength, brightly-colored nylon with rubber cinch bands.

| Part #     | Description                                                       |
|------------|-------------------------------------------------------------------|
| 43-010-001 | 21" GALVANIZED WIRE (1/8") & SS SPRINGS (1/2" - 1/1/4" HOSE)      |
| 43-010-002 | NYLON W/RUBBER GROMMET STOPS (APP. 31-1/2" LONG)                  |
| 43-010-003 | STAINLESS, 38" CS PLATED WIRE (1/4") & SPRINGS (1-1/2" - 3" HOSE) |
| 43-010-004 | NYLON 2-PLY W/RUBBER GROMMET STOPS (APP. 64" LONG)                |
| 43-010-005 | NYLON 2-PLY W/RUBBER GROMMET STOPS (APP. 44" LONG)                |

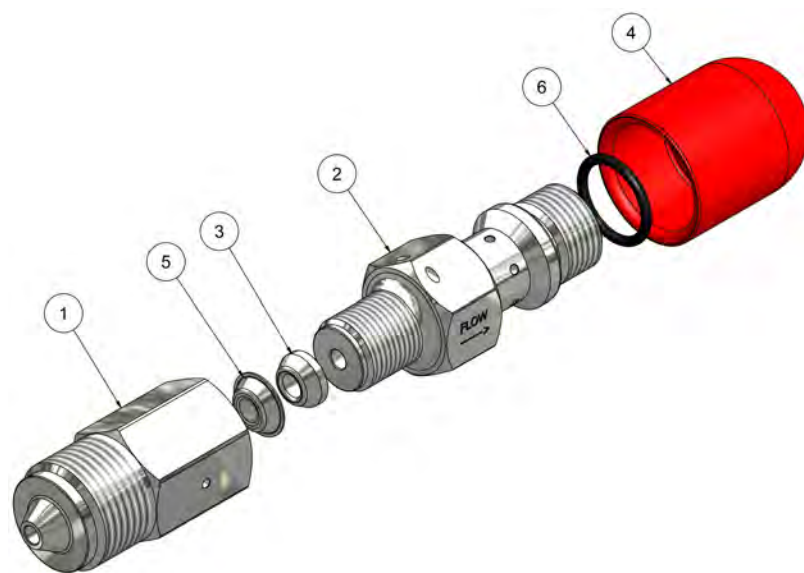
### 40K Rupture Disc Holder with Safety Shroud

A **Rupture Disc** is an essential component in any system which contains a positive displacement pump. It provides protection against excessive pressure building up in the water blasting equipment connected to a pump. **Advanced Pressure Systems** has designed a rugged, compact rupture disc holder, which offers safety features to prevent the use of coins or other disc substitutes, that may prove dangerous to operators or cause damage to the blasting equipment. The domed deflector minimizes spray in the event of a disc rupturing and the disc holder body is simple to remove for replacing a disc.



| Part #     | Description                    | PSI           |
|------------|--------------------------------|---------------|
| 35-008-020 | 9/16" HP RH Rupture Disc Assy. | 20K-40K Range |

**40K Rupture Discs** **Advanced Pressure Systems** offers a complete range of rupture discs for use in the rupture disc holder. These discs will protect your personnel, pumps and associated equipment from over pressuring. The standard range of disc bursting pressures are carefully selected to provide the ideal safety relief for all of your equipment. Special ratings can be provided upon request. Rupture discs for NLB & Jetstream equipment are available to order.



| ITEM | PART NUMBER | DESCRIPTION                             |
|------|-------------|-----------------------------------------|
| 1    | 35-008-021  | 9/16" HP Rupture Disc Holder Body       |
| 2    | 35-008-013  | 20/40K Rupture Disc Hold Down Nut       |
| 3    | 35-008-011  | 20/40K Rupture Disc Hold Down Ring      |
| 4    | 35-008-027  | Rupture Disc Holder Shroud              |
| 5    | 35-006-xxx  | Select Rupture Disc to Suit Application |
| 6    | 30-001-910  | O-Ring 90 Dur.                          |

### Rupture Disc Table

| Part #     | Description                                              |
|------------|----------------------------------------------------------|
| 35-006-300 | 30K Burst Rupture Disc                                   |
| 35-006-320 | 32K Burst 1/4 A/S Rupture Disc                           |
| 35-006-350 | 35K Burst Rupture Disc                                   |
| 35-006-385 | 38.5K Burst 1/4 A/S Rupture Disc                         |
| 35-006-400 | 40K Burst 1/4 A/S (GDWJ TYPR: 3133023400) Rupture Disc   |
| 35-006-435 | 43.5K Burst 1/4 A/S (GDWJ TYPR: 3133023435) Rupture Disc |
| 35-006-450 | 45K Burst Rupture Disc                                   |
| 35-006-470 | 47K Burst 1/4 A/S Rupture Disc                           |
| 35-006-500 | 50K Burst 1/4 A/S W/TAG Rupture Disc                     |
| 35-006-509 | 50.9K Burst 1/4 A/S Rupture Disc                         |



## WaterArmor Suits for Safety

At **APS** we understand the need for safety in any environment. The water blasting equipment produced at **APS** is designed with safety features. To protect the safety of the water blast technician during operation, we advise that extra safety precautions should be taken. *This is why we offer TurtleSkin® WaterArmor.*



### Full Body Waterjet Suits

Part # 55-001-003 (Chaps & Torso Only)

#### Rugged and Lightweight Full Body Protection

Water jet operators appreciate the comfortable and easy-to-replace, hinged-panel design of lightweight TurtleSkin® WaterArmor. The modular design allows any of the 19 individual components to be easily removed and replaced using common tools. The replacement of one or two individual parts is far less costly than the expense of purchasing a whole new suit.

### TurtleSkin® WaterArmor Torso

Part # 55-001-004

#### Upper Body Protection for Water Blasting Operators

Flexible, lightweight upper body protection that keeps the water jet operator's torso safe from potentially fatal water jet swipes.

### TurtleSkin® WaterArmor Chaps

Part # 55-001-005

#### Upper Leg Protection for Water Blasting Operators

Protective chaps for the upper legs that feature adjustable straps and thigh panels that can be lengthened or shortened to fit any size operator.

### Water Blast Protective Gaiters

Part # 55-001-002

#### Flexible, Lightweight Water Blasting Foot Protection

Designed to protect the feet, shins, toes, and insteps, TurtleSkin® WaterArmor Gaiters are constructed of hinged protective panels that flex with every step. These gaiters give water blasting operators the mobility to do their work and keep lower extremities safe from dangerous blasts.

### Arm Protection Gauntlets

Part # 55-001-001 (Gloves Not Included)

#### Arm and Wrist Protection for Water Blasting Operators

TurtleSkin® WaterArmor water jet protective gear is known for its flexibility, comfort, and toughness. The gauntlet covers the wrist, forearm, and back of the hand. Patented TurtleSkin® features flexible layers constructed with the tightest weave of high-strength aramid.





| ITEM | Description       |       |
|------|-------------------|-------|
| 1    | Vest Panel        | Torso |
| 2    | Right Waist Panel | Torso |
| 3    | Belt              | Chaps |
| 4    | Right Hip Panel   | Chaps |
| 5    | Right Thigh Panel | Chaps |
| 6    | Right Knee        | Chaps |
| 7    | Right Shin        | Chaps |
| 8    | Left Waist Panel  | Torso |
| 9    | Groin Guard       | Torso |
| 10   | Left Hip Panel    | Chaps |

| ITEM | Description         |          |
|------|---------------------|----------|
| 11   | Left Thigh Panel    | Chaps    |
| 12   | Left Knee           | Chaps    |
| 13   | Left Shin           | Chaps    |
| 14   | Right Gaiter Shin   | Gaiters  |
| 15   | Right Metatarsal    | Gaiters  |
| 16   | Toe                 | Gaiters  |
| 17   | Left Gaiter Shin    | Gaiters  |
| 18   | Left Metatarsal     | Gaiters  |
| 19   | Ankle               | Gaiters  |
| 20   | Right Arm Gauntlets | Gauntlet |
| 21   | Left Arm Gauntlets  | Gauntlet |

### High-Pressure Water Jet Testing Results:

The following conditions did not elicit penetration of the protective system with high-pressure water traveling at 8 feet/second (2.4 meters/second) at no closer than 3 inches (7.62 cm):

| Pressure PSI (bar) | Flow Rate GPM (lpm) | Orifice ID Inches (mm) | 0° Nozzle, Single Orifice: Material | Efficiency Factor * |
|--------------------|---------------------|------------------------|-------------------------------------|---------------------|
| 40,000 (2,800)     | 5.5 (21)            | 0.035 (0.889)          | Sapphire                            | 22.4                |
| 36,000 (2,500)     | 5 (19)              | 0.035 (0.889)          | Sapphire                            | 21.5                |
| 20,000 (1,400)     | 11 (42)             | 0.051 (1.295)          | Tungsten Carbide                    | 29.9                |
| 10,000 (700)       | 16 (61)             | 0.073 (1.854)          | Tungsten Carbide                    | 30                  |

Efficiency Factor is equal to

### Ultra High-Pressure Water Jet Safety and Performance

TurtleSkin® WaterArmor uses an innovative, patented fabric to provide protection from high-pressure water jet injuries. Created by Warwick Mills, TurtleSkin® is made from the tightest weave ever achieved in aramid, a fiber two times stronger and five times lighter than steel. TurtleSkin® WaterArmor can protect ultra high-pressure water jet operators from pressures as high as 2800 bar (40,000 psi).

### Protection up to 2800 bar or 40,000 psi

TurtleSkin® WaterArmor personal protective waterjet equipment offers increased protection to ultra-high pressure water jet operators at all pressures at specified flow rates.

### One Size Fits All Protection

TurtleSkin® WaterArmor hydrodemolition protective suits are specifically designed for ultra-high pressure water jet safety. Every patented garment features adjustable straps, and the thigh panels on the chaps can be lengthened or shortened to fit any size operator.



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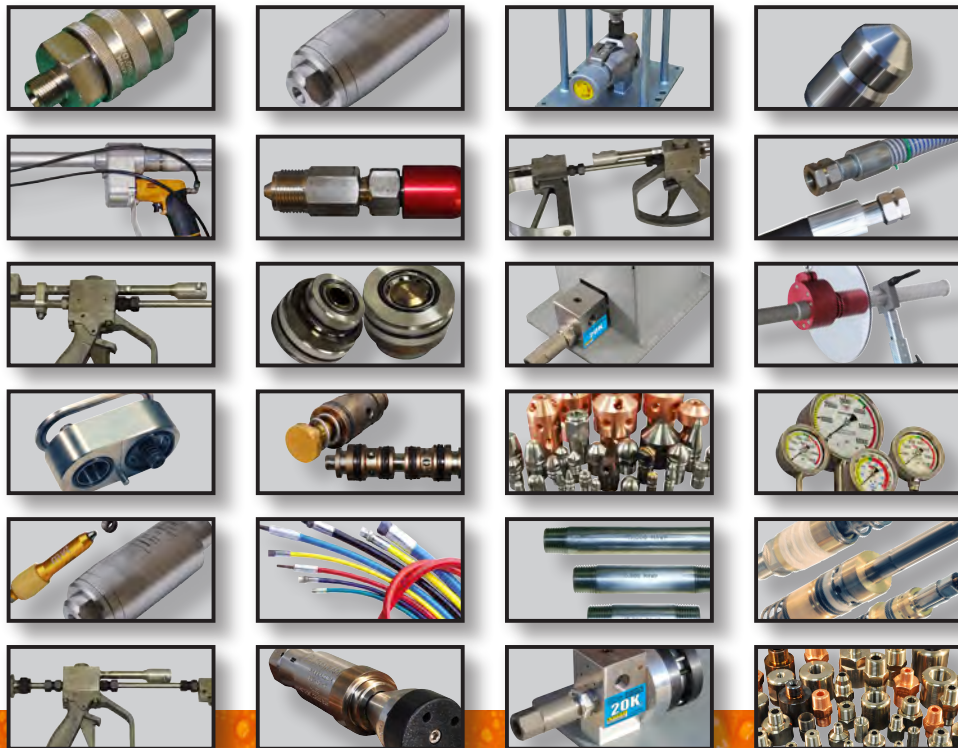
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