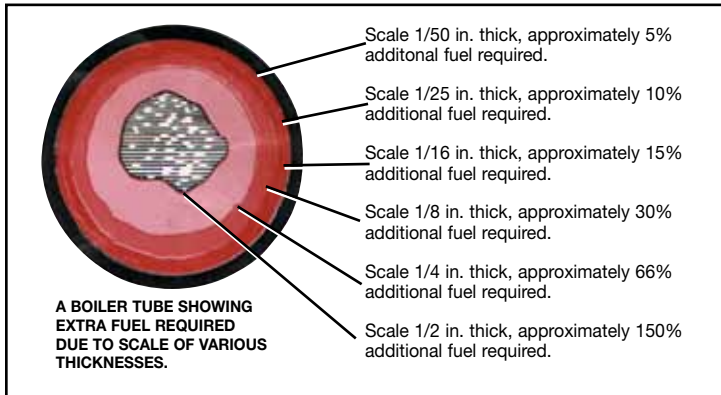


# Tube Cleaners Introduction

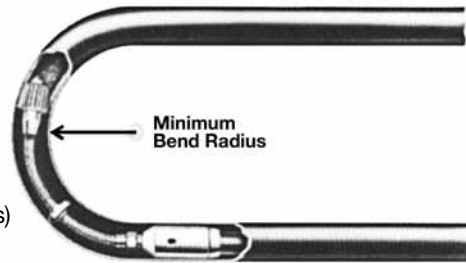
## Clean tubes mean lower fuel costs.

All piping, heat exchangers, condensers, chillers, and boiler tubes accumulate scale over various periods of use. This scale decreases flow and retards heat transfer. This consequently increases fuel consumption which lowers overall efficiency.



For selecting the proper Airetool tube cleaner components the following information is required:

- Tube ID
- Tube length
- Type of deposit
- Thickness of deposit
- Straight or curved tube
- If curved, the minimum bend radius (see charts)



Rigid shaft cleaning systems for straight tubes in heat exchangers and condensers are shown on pages 85-89.

Flexible shaft cleaning systems for straight and curves tubes in condensers, chillers, evaporators and other tubular heat transfer apparatus are shown on pages 90-91.

Refer to the overview of motors and cleaning heads based on tube scale thickness and composition on pages 92 (straight tubes) and 93 (curved tubes), then use the selection guide on pages 94-97 that match boiler tube cleaning motors and heads together.

Note: Operating hoses are not included with boiler tube cleaners. It is always recommended to use an in-line lubricator and foot valve when operating the Airetool boiler tube cleaners. See page 117 for more information on these accessories.

## Boiler tube cleaner applications include:

- Oil field drill pipe renewal
- Natural gas line renewal
- Aluminum smelter siphon tube cleaning
- Catalyst cleaners
- Process line cleaning
- Sugar Refinery Transfer line cleaning

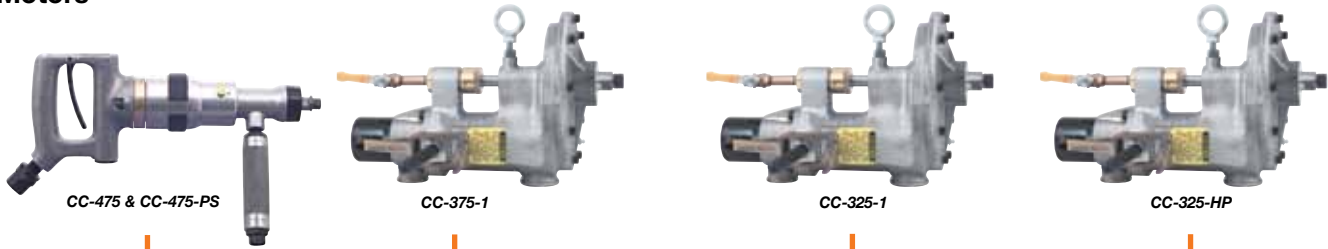
# Tube Cleaners

Heat Exchanger & Condenser Cleaning Systems

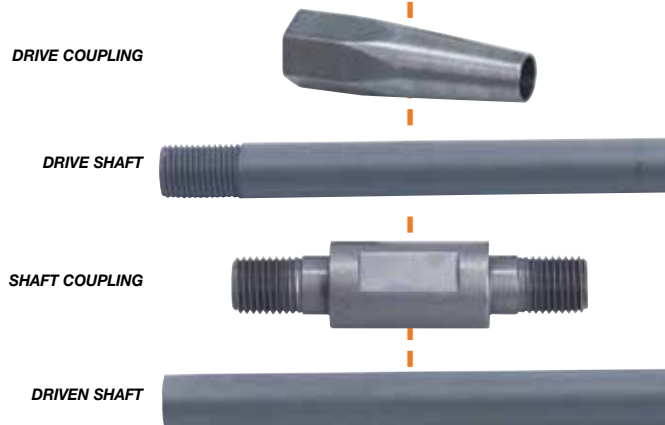


## System Components

### Motors



### Shafts



### Drills and Brushes



## Complete Cleaning Systems

- Complete cleaners consist of an air motor with integral water feed valve couplings; up to 22 ft. of shafting with necessary couplings (please specify shaft length required); motor shaft wrench and an extra set of motor blades.
- The CC 475 Cleaner Complete includes two drills of any type or size up to 1", three spiral brushes up to 1" and 15 feet of 3/8 inch water hose.
- The CC 475-PS Cleaner Complete includes two drills of any type or size up to 1-1/2", three spiral brushes up to 1-1/2" and 15 feet of 3/8 inch water hose.
- CC-375-1, 325-1 & 325-HP: Includes Ball bearing trolley and rope block.

| Model Number                                   | Order Number |
|--|--------------|
| <b>Lightweight Condenser Cleaners Complete</b> |              |
| CC-475   | 4105601      |
| CC-475-PS                                      | 4105602      |
| <b>Geared Drive Cleaners Complete</b>          |              |
| CC-375-1                                       |              |
| CC-325-1                                       | 4105603      |
| CC-325-HP                                      | 4105604PT    |
| <b>15 feet of 3/8 inch Water Hose</b>          |              |
| Water Hose                                     | 4105082      |
| <b>Water Feed Attachment</b>                   |              |
| WF-100   | 4098700      |

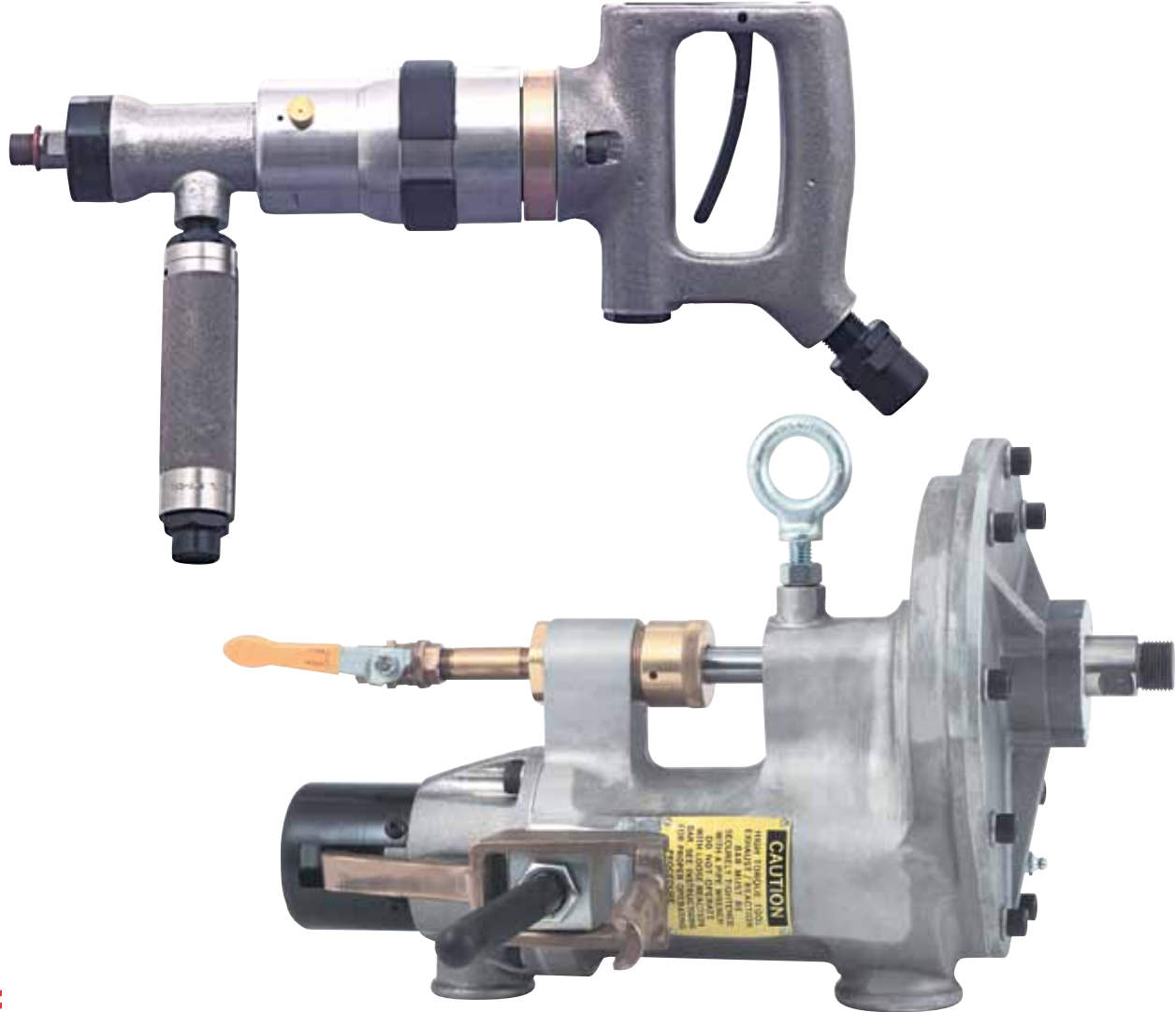
# Tube Cleaners

Heat Exchanger & Condenser Cleaning Systems

## Cleaning Motors

### Clean Tubes Equal Higher Operating Efficiencies

Airetool lightweight condenser & geared drive cleaners make it easy to maintain your industrial process at a high level of efficiency by providing cleaning motors that are both powerful and durable.



| Model Number                          | Order Number | Range.5                            | RPM  | Weight |       | Length |       | Air Inlet | Operating Air Pressure |        | Water Inlet | Max. Water Pressure |        |
|---------------------------------------|--------------|------------------------------------|------|--------|-------|--------|-------|-----------|------------------------|--------|-------------|---------------------|--------|
|                                       |              |                                    |      | lbs.   | Kg    | in.    | mm    | NPT       | PSI                    | kg/cm2 | NPT         | PSI                 | kg/cm2 |
| <b>Lightweight Condenser Cleaners</b> |              |                                    |      |        |       |        |       |           |                        |        |             |                     |        |
| CC-475                                | 4090900      | up to 1 in. (25.4 mm) ID Tubes     | 3800 | 10     | 4.53  | 15-3/4 | 400.0 | 1/2       | 90-100                 | 6-7    | 3/8         | 100                 | 7      |
| CC-475-PS                             | 4105343      | up to 1-1/2 in. (38.1 mm) ID Tubes | 2300 | 10     | 4.53  | 15-3/4 | 400.0 | 1/2       | 90-100                 | 6-7    | 3/8         | 100                 | 7      |
| <b>Geared Drive Cleaners*</b>         |              |                                    |      |        |       |        |       |           |                        |        |             |                     |        |
| CC-375-1                              | 4090700      | up to 1-3/4 in. (44.4 mm) ID Tubes | 1200 | 38     | 17.20 | 19     | 482.6 | 1         | 90-100                 | 6-7    | 3/8         | 100                 | 7      |
| CC-325-1                              | 4090600      | up to 2 in. (50.8 mm) ID Tubes     | 800  | 42     | 19.00 | 19     | 482.6 | 1         | 90-100                 | 6-7    | 3/8         | 100                 | 7      |
| CC-325-HP                             | 4104821      | up to 2 in. (50.8 mm) ID Tubes     | 800  | 44     | 19.90 | 19     | 482.6 | 1         | 90-100                 | 6-7    | 1/2         | 5000                | 350    |

\* Water hose not included.

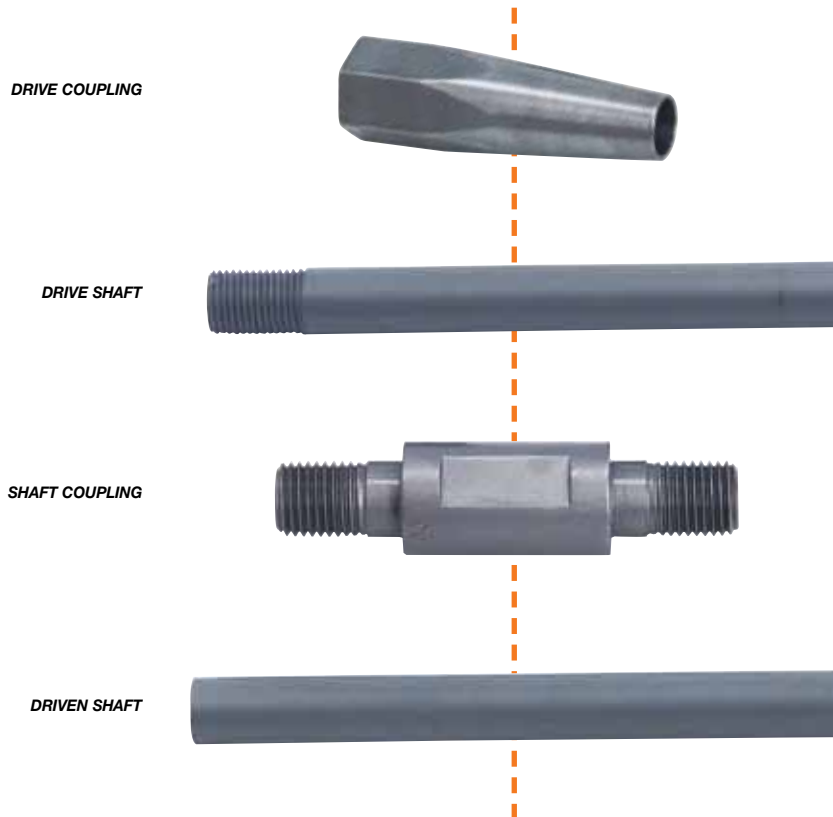
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email: practicaltools@bellnet.ca

## Shaft Components

Shafting components connect the motor to the drill head or brush.

- Drive Shafts & Driven Shafts come in standard lengths of five and ten foot
- Other lengths available on request



| Tube I.D.   |             | Shaft Diameter |       | Drive Coupling For<br>CC-475<br>CC-475-PS<br>& WF-100 | Drive Coupling<br>Thread | Drive Coupling For<br>CC-375-1<br>CC-325-1<br>& CC-325-HP | Drive Coupling<br>Thread | Drive Shaft Length*   |                        | Drive Shaft<br>Thread       | Shaft<br>Coupling   | Shaft<br>Coupling<br>Thread | Driven Shaft Length*  |                        | Driven<br>Shaft<br>Thread   |
|-------------|-------------|----------------|-------|---|--------------------------|---|--------------------------|-----------------------|------------------------|-----------------------------|---------------------|-----------------------------|-----------------------|------------------------|-----------------------------|
| in.         | mm          | in.            | mm    |   |                          |   |                          | 5 ft.                 | 10 ft.                 |                             |                     |                             | 5 ft.                 | 10 ft.                 |                             |
| .291-.358   | 7.39-9.09   | 1/4            | 6.35  | AT-337-A<br>(1201100)                                 | 5/8" NF<br>X<br>1/4" NF  | —   | —                        | CC-336-5<br>(1717133) | CC-336-10<br>(1717151) | 1/4" NFM<br>X<br>10-32 F    | CC-334<br>(1232800) | 10-32M                      | CC-335-5<br>(1717132) | CC-335-10<br>(1717150) | 10-32 F<br>X<br>10-32 F     |
| .359-.420   | 9.09-10.67  | 5/16           | 7.94  | AT-333-A<br>(1201000)                                 | 5/8" NF<br>X<br>5/16" NF | AT-333<br>(1200900)                                       | 1" NF<br>X<br>5/16" NF   | CC-332-5<br>(1717135) | CC-332-10<br>(1717153) | 5/16" NFM<br>X<br>1/4" NFF  | CC-330<br>(1232500) | 1/4" NFM                    | CC-331-5<br>(1717134) | CC-331-10<br>(1717152) | 1/4" NFF<br>X<br>1/4" NFF   |
| .421-.483   | 10.67-12.27 | 3/8            | 9.52  | AT-321-A<br>(1200700)                                 | 5/8" NF<br>X<br>3/8" NF  | AT-352<br>(1201300)                                       | 1" NF<br>X<br>3/8" NF    | CC-324-5<br>(1717137) | CC-324-10<br>(1717155) | 3/8" NFM<br>X<br>1/4" NFF   | CC-322<br>(1231900) | 1/4" NFM                    | CC-323-5<br>(1717136) | CC-323-10<br>(1717154) | 1/4" NFF<br>X<br>1/4" NFF   |
| .484-.608   | 12.27-15.44 | 7/16           | 11.11 | AT-313-A<br>(1200300)                                 | 5/8" NF<br>X<br>7/16" NF | AT-353<br>(1201400)                                       | 1" NF<br>X<br>7/16" NF   | CC-316-5<br>(1717139) | CC-316-10<br>(1717157) | 7/16" NFM<br>X<br>5/16" NFF | CC-314<br>(1230800) | 5/16" NFM                   | CC-315-5<br>(1717138) | CC-315-10<br>(1717156) | 5/16" NFF<br>X<br>5/16" NFF |
| .609-.831   | 15.44-21.11 | 1/2            | 12.7  | AT-309-A<br>(1200100PT)                               | 5/8" NF<br>X<br>1/2" NF  | AT-359<br>(1201900)                                       | 1" NF<br>X<br>1/2" NF    | CC-312-5<br>(1717141) | CC-312-10<br>(1717159) | 1/2" NFM<br>X<br>3/8" NFF   | CC-310<br>(1230400) | 3/8" NFM                    | CC-311-5<br>(1717140) | CC-311-10<br>(1717158) | 3/8" NFF<br>X<br>3/8" NFF   |
| .832-1.055  | 21.11-28.80 | 5/8            | 15.88 | AT-301-A<br>(1199100)                                 | 5/8" NF<br>X<br>5/8" NF  | AT-351<br>(1201200)                                       | 1" NF<br>X<br>5/8" NF    | CC-304-5<br>(1717144) | CC-304-10<br>(1717163) | 5/8" NFM<br>X<br>3/8" NFF   | CC-302<br>(1229500) | 3/8" NFM                    | CC-303-5<br>(1717143) | CC-303-10<br>(1717162) | 3/8" NFF<br>X<br>3/8" NFF   |
| 1.056-1.561 | 28.80-39.65 | 3/4            | 19.05 | AT-317-A<br>(1200500)                                 | 5/8" NF<br>X<br>3/4" NF  | AT-357<br>(1201800)                                       | 1" NF<br>X<br>3/4" NF    | CC-320-5<br>(1717146) | CC-320-10<br>(1717165) | 3/4" NFM<br>X<br>7/16" NFF  | CC-318<br>(1231400) | 7/16" NFM                   | CC-319-5<br>(1717145) | CC-319-10<br>(1717164) | 7/16" NFF<br>X<br>7/16" NFF |
| 1.562-2.374 | 39.65-60.30 | 1              | 25.4  | AT-325-A<br>(1200800)                                 | 5/8" NF<br>X<br>1" NF    | AT-354<br>(1201500)                                       | 1" NF<br>X<br>1" NF      | CC-328-5<br>(1717148) | CC-328-10<br>(1717167) | 1" NFM<br>X<br>7/16" NFF    | CC-326<br>(1232200) | 7/16" NFM                   | CC-327-5<br>(1717147) | CC-327-10<br>(1717166) | 7/16" NFF<br>X<br>7/16" NFF |

\* Standard lengths available upon request

# Tube Cleaners

Heat Exchanger & Condenser Cleaning Systems

## Drills and Brushes

Airetool drills are designed especially to prevent damage to the tube I.D., and are available in a variety of shapes to remove all types of scale deposits. Passages in the drill shaft enable flushing fluid to reach the drill cutting edge. Larger sizes available on request.

- Type "AT" - standard drill for medium deposits
- Type "CB" - standard drill ("AT" style) for medium deposits with carbide insert for better durability
- Type "CB-xxx-HP" - high pressure drills provide better flushing power when used with the CC-325-HP motor
- Type "TW" - standard twist drill for thick deposits
- Type "CT" - standard twist drill ("TW" style) for thick deposits with carbide insert for better durability
- Wire Brushes are for light deposits



Minimum order quantities may apply.

| Tube I.D. |             | Diameter of Drill or Brush |       | Stud Thread | AT (Standard) Drills | CB (Carbide) Drills | CB (Carbide) "HP" Drills* | CT (Carbide Twist) Drills | TW (Twist) Drills  | Wire Brush        |
|-----------|-------------|----------------------------|-------|-------------|----------------------|---------------------|---------------------------|---------------------------|--------------------|-------------------|
| in.       | mm          | in.                        | mm    |             | Model (Order No.)    | Model (Order No.)   | Model (Order No.)         | Model (Order No.)         | Model (Order No.)  | Model (Order No.) |
| .291-.306 | 7.39-7.77   | 0.281                      | 7.14  | 10-32 UNC   | AT-199 (1192200)     | CB-199 (1220400)    | -                         | -                         | -                  | 199-B (1020412)   |
| .306-.321 | 7.77-8.15   | 0.296                      | 7.52  | 10-32 UNC   | AT-199-5 (1192300)   | CB-199-5 (1220500)  | -                         | -                         | -                  | 199-5-B (1020415) |
| .322-.337 | 8.18-8.56   | 0.312                      | 7.92  | 10-32 UNC   | AT-200 (1192400)     | CB-200 (1715666)    | -                         | -                         | -                  | 200-B (1020460)   |
| .338-.353 | 8.51-8.97   | 0.328                      | 8.33  | 10-32 UNC   | AT-200-5 (1192500)   | CB-200-5 (1220600)  | -                         | -                         | -                  | 200-5-B (1020450) |
| .359-.389 | 9.12-9.88   | 0.343                      | 8.71  | 1/4" UNF    | AT-201 (1192600)     | CB-201 (1220700)    | -                         | -                         | TW-201 (1311400PT) | 201-B (1020500)   |
| .390-.420 | 9.91-10.67  | 0.375                      | 9.52  | 1/4" UNF    | AT-202 (1192700)     | CB-202 (1220800)    | -                         | -                         | TW-202 (1311500)   | 202-B (1020600)   |
| .421-.452 | 10.69-11.48 | 0.406                      | 10.31 | 1/4" UNF    | AT-203 (1192800)     | CB-203 (1220900)    | -                         | -                         | TW-203 (1311600)   | 203-B (1020700PT) |
| .452-.483 | 11.48-12.27 | 0.437                      | 11.10 | 1/4" UNF    | AT-204 (1192900)     | CB-204 (1221000)    | -                         | -                         | TW-204 (1311700)   | 204-B (1020800)   |
| .484-.514 | 12.29-13.06 | 0.468                      | 11.89 | 5/16" UNF   | AT-205 (1193000)     | CB-205 (1221100)    | CB-205-HP (1715190)       | CT-205 (1241600)          | TW-205 (1311800)   | 205-B (1020900)   |
| .515-.545 | 13.08-13.84 | 0.500                      | 12.7  | 5/16" UNF   | AT-206 (1193100)     | CB-206 (1221200)    | CB-206-HP (1715565)       | CT-206 (1241700)          | TW-206 (1311900)   | 206-B (1021000)   |
| .546-.577 | 13.87-14.66 | 0.531                      | 13.49 | 5/16" UNF   | AT-207 (1193200)     | CB-207 (1221300)    | CB-207-HP (1715561)       | CT-207 (1241800)          | TW-207 (1312000)   | 207-B (1021201)   |
| .578-.608 | 14.68-15.44 | 0.562                      | 14.27 | 5/16" UNF   | AT-208 (1193300)     | CB-208 (1221400)    | CB-208-HP (1715566)       | CT-208 (1241900)          | TW-208 (1312100)   | 208-B (1021400)   |
| .578-.608 | 14.68-15.44 | 0.562                      | 14.27 | 3/8" UNF    | AT-108 (1192000)     | CB-108 (1220300)    | CB-108-HP (1715567PT)     | CT-108 (1241100)          | TW-108 (1311300)   | 108-B (1021500)   |
| .609-.639 | 15.47-16.23 | 0.593                      | 15.06 | 3/8" UNF    | AT-209 (1193400)     | CB-209 (1221500)    | CB-209-HP (1715562)       | CT-209 (1242000)          | TW-209 (1312200)   | 209-B (1021600)   |
| .640-.675 | 16.26-17.15 | 0.625                      | 15.88 | 3/8" UNF    | AT-210 (1193500)     | CB-210 (1221600)    | CB-210-HP (1715568)       | CT-210 (1242100)          | TW-210 (1312300PT) | 210-B (1021810)   |
| .676-.706 | 17.17-17.93 | 0.656                      | 16.66 | 3/8" UNF    | AT-211 (1193600)     | CB-211 (1221700)    | CB-211-HP (1716249)       | CT-211 (1242200)          | TW-211 (1312400)   | 211-B (1022001)   |
| .707-.737 | 17.96-18.72 | 0.687                      | 17.45 | 3/8" UNF    | AT-212 (1193700)     | CB-212 (1221800)    | CB-212-HP (1715569PT)     | CT-212 (1242300)          | TW-212 (1312500)   | 212-B (1022100)   |

\* "HP" Style drills are used for more aggressive cleaning with CC-325-HP cleaning motor

## Drills and Brushes (continued)

| Tube I.D.   |             | Diameter of Drill or Brush |       | Stud Thread | AT (Standard) Drills | CB (Carbide) Drills | CB (Carbide) "HP" Drills* | CT (Carbide Twist) Drills | TW (Twist) Drills | Wire Brush        |
|-------------|-------------|----------------------------|-------|-------------|----------------------|---------------------|---------------------------|---------------------------|-------------------|-------------------|
| in.         | mm          | in.                        | mm    |             | Model (Order No.)    | Model (Order No.)   | Model (Order No.)         | Model (Order No.)         | Model (Order No.) | Model (Order No.) |
| .738-.769   | 18.75-19.53 | 0.718                      | 18.24 | 3/8" UNF    | AT-213 (1193800)     | CB-213 (1221900)    | CB-213-HP (1715570PT)     | CT-213 (1242400)          | TW-213 (1312600)  | 213-B (1022500)   |
| .770-.800   | 19.56-20.32 | 0.750                      | 19.05 | 3/8" UNF    | AT-214 (1193900)     | CB-214 (1222000)    | CB-214-HP (1715571)       | CT-214 (1242500)          | TW-214 (1312700)  | 214-B (1022700)   |
| .801-.831   | 20.35-21.11 | 0.781                      | 19.84 | 3/8" UNF    | AT-215 (1194000)     | CB-215 (1222100)    | CB-215-HP (1715859)       | CT-215 (1242600)          | TW-215 (1312800)  | 215-B (1022802)   |
| .832-.862   | 21.13-21.89 | 0.812                      | 20.62 | 3/8" UNF    | AT-216 (1194100)     | CB-216 (1222200)    | CB-216-HP (1715572)       | CT-216 (1242700)          | TW-216 (1312900)  | 216-B (1022900)   |
| .863-.894   | 21.92-22.71 | 0.843                      | 21.41 | 3/8" UNF    | AT-217 (1194200)     | CB-217 (1222300)    | CB-217-HP (1715573)       | CT-217 (1242800PT)        | TW-217 (1313000)  | 217-B (1023000)   |
| .895-.925   | 22.73-23.50 | 0.875                      | 22.23 | 3/8" UNF    | AT-218 (1194300)     | CB-218 (1222400)    | CB-218-HP (1715950)       | CT-218 (1242900)          | TW-218 (1313100)  | 218-B (1023100)   |
| .926-.956   | 23.52-24.28 | 0.906                      | 23.01 | 3/8" UNF    | AT-219 (1194400)     | CB-219 (1222500)    | CB-219-HP (1715730PT)     | CT-219 (1243000)          | TW-219 (1313200)  | 219-B (1023200)   |
| .957-.987   | 24.31-25.07 | 0.937                      | 23.80 | 3/8" UNF    | AT-220 (1194500)     | CB-220 (1222600)    | CB-220-HP (1716142PT)     | CT-220 (1243100)          | TW-220 (1313300)  | 220-B (1023304)   |
| .998-1.024  | 25.35-26.01 | 0.968                      | 24.59 | 3/8" UNF    | AT-221 (1194600)     | CB-221 (1222700)    | CB-221-HP (1716434)       | CT-221 (1243200PT)        | TW-221 (1313400)  | 221-B (1023400)   |
| 1.025-1.055 | 26.04-26.80 | 1.000                      | 25.40 | 3/8" UNF    | AT-222 (1194700)     | CB-222 (1222800)    | CB-222-HP (1716223)       | CT-222 (1243300PT)        | TW-222 (1313500)  | 222-B (1023600)   |
| 1.056-1.086 | 26.82-27.58 | 1.031                      | 26.19 | 7/16" UNF   | AT-223 (1194800)     | CB-223 (1223000PT)  | -                         | CT-223 (1243400)          | TW-223 (1313600)  | 223-B (1023700)   |
| 1.087-1.117 | 27.61-28.37 | 1.062                      | 26.97 | 7/16" UNF   | AT-224 (1194900)     | CB-224 (1223000PT)  | -                         | CT-224 (1243500)          | TW-224 (1313700)  | 224-B (1023800)   |
| 1.118-1.149 | 28.40-29.18 | 1.093                      | 27.76 | 7/16" UNF   | AT-225 (1195000)     | CB-225 (1223100)    | -                         | CT-225 (1243600)          | TW-225 (1313800)  | 225-B (1023900)   |
| 1.150-1.180 | 29.21-29.97 | 1.125                      | 28.58 | 7/16" UNF   | AT-226 (1195100)     | CB-226 (1223200)    | -                         | CT-226 (1243700)          | TW-226 (1313900)  | 226-B (1024001PT) |
| 1.181-1.211 | 30.00-30.76 | 1.156                      | 29.36 | 7/16" UNF   | AT-227 (1195200)     | CB-227 (1223300)    | -                         | CT-227 (1243800)          | TW-227 (1314000)  | 227-B (1024100)   |
| 1.212-1.242 | 30.78-31.55 | 1.187                      | 30.15 | 7/16" UNF   | AT-228 (1195300)     | CB-228 (1223400)    | -                         | CT-228 (1243900)          | TW-228 (1314100)  | 228-B (1024200)   |
| 1.243-1.280 | 31.57-32.51 | 1.218                      | 30.94 | 7/16" UNF   | AT-229 (1195400)     | CB-229 (1223500)    | -                         | CT-229 (1244000)          | TW-229 (1314200)  | 229-B (1024300)   |

\* "HP" Style drills are used for more aggressive cleaning with CC-325-HP cleaning motor

## Large Diameter Twist Brushes (LDTB)

Brush should be sized 1/8" -3/16" smaller than the nominal tube I.D. for best results.



| Diameter |      | Model Number | Order Number | Stud Thread |
|----------|------|--------------|--------------|-------------|
| in.      | mm   |              |              |             |
| 1.50     | 38.1 | LDTB 1500    | 1003700      | 5/8 NC      |
| 1.62     | 41.2 | LDTB 1625    | 1004500      | 5/8 NC      |
| 1.75     | 44.4 | LDTB 1750    | 1004300      | 5/8 NC      |
| 1.87     | 47.6 | LDTB 1875    | 1004600PT    | 5/8 NC      |
| 2.00     | 50.8 | LDTB 2000    | 1004900      | 5/8 NC      |
| 2.12     | 53.9 | LDTB 2125    | 1005800PT    | 5/8 NC      |
| 2.25     | 57.1 | LDTB 2250    | 1005700PT    | 5/8 NC      |

| Diameter |       | Model Number | Order Number | Stud Thread |
|----------|-------|--------------|--------------|-------------|
| in.      | mm    |              |              |             |
| 2.50     | 63.5  | LDTB 2500    | 1005401      | 5/8 NC      |
| 2.75     | 69.8  | LDTB 2750    | 1005900      | 5/8 NC      |
| 3.00     | 76.2  | LDTB 3000    | 1006500      | 5/8 NC      |
| 3.25     | 82.5  | LDTB 3250    | 1007100      | 5/8 NC      |
| 3.50     | 88.9  | LDTB 3500    | 1006900      | 5/8 NC      |
| 3.75     | 95.2  | LDTB 3750    | 1007200      | 5/8 NC      |
| 4.00     | 101.6 | LDTB 4000    | 1007300      | 5/8 NC      |



# Condenser Cleaners

Tube Cleaners

## Tube cleaners for condensers, chillers, evaporators and other tubular heat transfer apparatus

### Model ABM-1800

Variable speed feature allows the operator to operate the shaft at a safe, comfortable speed for the condition of the tubes being cleaned. The lack of o-rings and coupler nut eliminates the risk of the coupler nut loosening and leaking water, leading to possible shaft damage.

- Variable solid state speed control from 0 to 1750 RPM with constant torque
- Quick-release shaft coupling for an easy, fast, positive connection every time
- No o-rings or coupler nut

### Model ABM-1900

- Variable solid state speed control from 0 to 1750 RPM with constant torque
- Manifold for screw-on style shafting that is commonly used in competitive models

### Reversible Models ABM-1800-R & ABM-1900-R

Same features as ABM-1800 & ABM-1900 above plus

- Bi-directional shaft rotation for the cleaning of internally enhanced tubes
- Identified Forward and Reverse direction foot pedals are included



| Model Number     | Ordering Number | Horsepower | Volts | Amps | RPM    | Bi-directional Operation | Dimensions           | Weight (less shaft) | Shipping Dimensions   | Shipping Weight (less shaft) |
|------------------|-----------------|------------|-------|------|--------|--------------------------|----------------------|---------------------|-----------------------|------------------------------|
| ABM-1800         | 2900398         | 1/2        | 115   | 6    | 0-1800 | No                       | 11" W x 17" L x 9" H | 35 lbs.             | 12" W x 23" L x 11" H | 39 lbs.                      |
| ABM-1800-R       | 2900399         | 1/2        | 115   | 6    | 0-1800 | Yes                      | 11" W x 17" L x 9" H | 41 lbs.             | 12" W x 23" L x 11" H | 45 lbs.                      |
| ABM-1900         | 2900400         | 1/2        | 115   | 6    | 0-1800 | No                       | 11" W x 17" L x 9" H | 35 lbs.             | 12" W x 23" L x 11" H | 39 lbs.                      |
| ABM-1900-R       | 2900401         | 1/2        | 115   | 6    | 0-1800 | Yes                      | 11" W x 17" L x 9" H | 41 lbs.             | 12" W x 23" L x 11" H | 45 lbs.                      |
| ABM-1900-R-230V* | 2900530         | 1/2        | 230   | 3    | 0-1800 | Yes                      | 11" W x 17" L x 9" H | 41 lbs.             | 12" W x 23" L x 11" H | 45 lbs.                      |

\*CE Certified

### Flexible shafts (sold separately)

To order the correct size Flexible Shaft, measure the tube I.D. and the length of the tube to be cleaned. Then refer to the chart at the right to select the proper shaft.

| Tube I.D. Range  | Shaft O.D. | Shaft Lengths in Feet - Model No. (Ordering No.) |                       |                       |
|--|------------|--|-----------------------|-----------------------|
|  |            | 15   | 25                    | 35                    |
| <b>Flexible Shafts for ABM-1800, ABM-1800-R and ABM-1200</b> |            |  |                       |                       |
| .280" - .406   | 1/4"       | FS-1815-1/4 (2900402)                            | -                     | -                     |
| .407" - .532"  | 3/8"       | -  | FS-1825-3/8 (2900403) | FS-1835-3/8 (2900404) |
| .533" - .812"  | 1/2"       | -  | FS-1825-1/2 (2900405) | FS-1835-1/2 (2900406) |
| <b>Flexible Shafts for ABM-1900 and ABM-1900-R</b>           |            |  |                       |                       |
| .280" - .406   | 1/4"       | FS-1915-1/4 (2900407)                            | -                     | -                     |
| .407" - .532"  | 3/8"       | -  | FS-1925-3/8 (2900408) | FS-1935-3/8 (2900409) |
| .533" - .812"  | 1/2"       | -  | FS-1925-1/2 (2900410) | FS-1935-1/2 (2900411) |

See next page for brush selection.



## Brushmaster Brushes

### Super 2D Brushes

Airetool Super 2D Brushes are for cleaning internally enhanced tubing. The brush is constructed from material that out-cleans and out-wears other tube brushes. Super 2 D Brushes have two cleaning diameters to assure all surfaces are being cleaned. These brushes are recommended for removing soft and light scale deposits.

### Super Brushes

Super Brushes are for cleaning smooth bore tubing. They are made from the same long-lasting material as the Super 2D Brush. The longer brush cleaning surface reduces the tube cleaning time. They are recommended for removing soft and light scale deposits.

| Part Number            | Order Number | Tube Inside Diameter |           |
|------------------------|--------------|----------------------|-----------|
|                        |              | in.                  | mm        |
| <b>Super 2 D Brush</b> |              |                      |           |
| SCB-750                | 2996773      | .500-.700            | 12.7-17.8 |
| SCB-1000               | 2996774      | .700-.950            | 17.8-24.1 |
| <b>Super Brush</b>     |              |                      |           |
| SB-750                 | 2996555      | .437-.700            | 11.1-14.2 |
| SB-1000                | 2996556      | .625-1.000           | 15.8-17.5 |
| SB-1250                | 2996557      | 1.000-1.200          | 19.0-25.4 |

## Nylon, Brass and Stainless Steel Brushes

Nylon, brass and stainless steel brushes are available in brush diameters .250" - 1.000" (6.3-25.4mm) in 1/16" (1.6mm) increments. Select the brush size equal to or one size smaller than the I.D. of the tubes to be cleaned.

Minimum order quantity 12 pieces

| Brush Diameter |       | Brush Material   |                  |                   |
|----------------|-------|------------------|------------------|-------------------|
| in.            | mm    | Nylon            | Brass            | Stainless Steel   |
| 1/4            | 6.35  | N-250 (2996528)  | B-250 (2996515)  | SS-250 (2996541)  |
| 5/16           | 7.92  | N-312 (2996529)  | B-312 (2996516)  | SS-312 (2996542)  |
| 3/8            | 9.52  | N-375 (2996530)  | B-375 (2996517)  | SS-375 (2996543)  |
| 7/16           | 11.10 | N-437 (2996531)  | B-437 (2996518)  | SS-437 (2996544)  |
| 1/2            | 12.70 | N-500 (2996532)  | B-500 (2996519)  | SS-500 (2996545)  |
| 9/16           | 14.27 | N-562 (2996533)  | B-562 (2996520)  | SS-562 (2996546)  |
| 5/8            | 15.88 | N-625 (2996534)  | B-625 (2996521)  | SS-625 (2996547)  |
| 11/16          | 17.48 | N-687 (2996535)  | B-687 (2996522)  | SS-687 (2996548)  |
| 3/4            | 19.05 | N-750 (2996536)  | B-750 (2996523)  | SS-750 (2996549)  |
| 13/16          | 20.62 | N-812 (2996537)  | B-812 (2996524)  | SS-812 (2996550)  |
| 7/8            | 22.22 | N-875 (2996538)  | B-875 (2996525)  | SS-875 (2996551)  |
| 15/16          | 23.82 | N-937 (2996539)  | B-937 (2996526)  | SS-937 (2996552)  |
| 1              | 25.40 | N-1000 (2996540) | B-1000 (2996527) | SS-1000 (2996553) |



# Boiler Tube Cleaners

Tube Cleaners for Straight Tubes

## Complete series of motors and heads available for tube sizes 1/2" to 1-3/8" (12.7 to 34.9 mm) I.D.



**MIDGET MOTOR  
WITH OPTIONAL HEADS**

Complete cleaner consists of: air motor with extra set of blades; shaft wrench; metal box; choice of single unit cutter head with four extra cutters and two extra cutter pins. If a Type 2 head (30 series) is ordered, one extra flexible connection is furnished. If expanding blade head is ordered, one extra set of blades is furnished.

For operating hose (not included) refer to page 116.



**Drill Head with Universal Joint**  
Range: 1/2 in. (12.7 mm) - 1-3/8 in. (34.9 mm)  
Deposit: heavy-medium to soft



**Single Unit Head with Universal Joint**  
Range: 1/2 in. (12.7 mm) - 1-3/8 in. (34.9 mm)  
Deposit: light-hard to medium



**Expanding Blade Cutter Head**  
Range: 1/2 in. (12.7 mm) - 4-1/2 in. (114.3 mm)  
Deposit: light-hard to medium

## Complete series of motors and heads available for tube sizes 1-1/2" to 13-3/4" (12.7 to 336.5mm) I.D.



**3000 SERIES MOTOR  
WITH OPTIONAL HEADS**

Complete cleaner consists of: air motor with extra set of blades; shaft wrench; choice of cutter head with two extra sets of cutters and cutter pins; universal joint with two extra pins; two drills. If single unit head is ordered, four extra sets of cutters are furnished. If arm-type head is ordered, one extra set of arm pins is furnished.

For operating hose (not included) refer to page 116.



**TYPE-4 Forward Swing Head**  
Range: 1-3/4 in. (44.4 mm) - 4 1/4 in. (120.6 mm)  
Self feeding  
Deposit: 1/2 in. (12.7 mm) thick-soft to medium



**TYPE-5 Wing Arm Head**  
Range: 1-3/4 in. (44.4 mm) - 13 1/4 in. (336.5 mm)  
Self feeding  
Deposit: 1/2 in. (12.7 mm) thick-hard to medium



**TYPE-3 P-Type Head**  
Range: 2-1/4 in. (57.1 mm) - 7 in. (177.8 mm) Self feeding  
Deposit: 3/8 in. (9.5 mm) thick-hard to medium



**Drill Head with Universal Joint**  
Range: 1-1/2 in. (38.1 mm) - 11 in. (279.4 mm)  
Deposit: 3/4 in. (19.0 mm) thick-medium to hard and plugged tubes

# Boiler Tube Cleaners

Tube Cleaners for Curved Tubes

Airetool®

## Complete series of motors and heads available for tube sizes 13/16" to 2-1/8" (20.6 to 53.9 mm) I.D.



MIDGET MOTOR WITH  
OPTIONAL HEADS

Complete cleaner consists of: air motor with extra set of blades; shaft wrench; metal box; choice of single unit cutter head with four extra cutters and two extra cutter pins; universal joint with two extra pins; two drills. If single unit head is ordered, four extra cutters are furnished.

For operating hose (not included) refer to page 116.



Drill Head with Universal Joint  
Range: 1-1/2 in. (38.1 mm) - 2-1/8 in. (53.9 mm)  
Deposit: light-hard to medium



**TYPE-1 "40" SERIES**  
Single Unit Head with Universal Joint  
Range: 1/2 in. (12.7 mm) - 2-1/8 in. (53.9 mm)  
Deposit: light-medium to hard



**TYPE-2 "30" SERIES**  
Single Unit Head with Flexible Shaft  
Range: 1/2 in. (12.7 mm) - 2-1/8 in. (53.9 mm)  
Deposit: light-medium to hard

## Complete series of motors and heads available for tube sizes 1-1/2" to 13-1/4" (38.1 to 336.5 mm) I.D.



4000 SERIES MOTOR WITH  
OPTIONAL HEADS

Complete cleaner consists of: air motor with extra set of blades; shaft wrench; choice of cutter head with two extra sets of cutters and cutter pins; universal joint with two extra pins; two drills. If single unit head is ordered, four extra sets of cutters are furnished. If arm-type head is ordered, one extra set of arm pins is furnished.

For operating hose (not included) refer to page 116.



Drill Head with Universal Joint  
Range: 1-1/2 in. (38.1 mm) - 11 in. (279.4 mm)  
Deposit: 1/2 in. (12.7 mm) - thick-hard to medium



**TYPE-4**  
Forward Swing with Universal Joint  
Range: 1-3/4 in. (44.4 mm) - 4-3/4 in. (120.6 mm)  
Deposit: 1/2 in. (12.7 mm) - thick-soft to medium



**TYPE-5**  
Wing Arm Head with Universal Joint  
Range: 1-3/4 in. (44.4 mm) - 13-1/4 in. (336.5 mm)  
Self feeding  
Deposit: 1/2 in. (12.7 mm) - thick-hard to medium

# Boiler Tube Cleaners

## Selection Guide

### Midget Tube Cleaners – Curved and Straight

Range: 1/2 to 1-3/4 in.  
12.7 to 44.4 mm

Complete cleaner consists of: air motor with extra set of blades; shaft wrench; metal box; choice of single unit cutter head with four extra cutters and two extra cutter pins. If a Type 2 head (30 series) is ordered, one extra flexible connection is furnished. If expanding blade head is ordered, one extra set of blades is furnished. For operating hose (not included) refer to page 116.



MIDGET MOTOR



- Use for straight tubes.  
 Use for curved tubes.

| Tube I.D. |      | Minimum Tube Centerline Radius |       | Motor Number | Motor O.D. |      | Rotor Thread | Air Coupling Pipe Tap (in.) | Hose Size |      | Heads Available |                  |                 | Drill* | Universal | Flexible |
|-----------|------|--------------------------------|-------|--------------|------------|------|--------------|-----------------------------|-----------|------|-----------------|------------------|-----------------|--------|-----------|----------|
| in.       | mm   | in.                            | mm    |              | in.        | mm   |              |                             | in.       | in.  | mm              | Universal Type 1 | Flexible Type 2 |        |           |          |
| 1/2       | 12.7 | Straight                       |       | 24           | 15/32      | 11.9 | 10-32        | 18-20                       | 3/16      | 4.7  | 2440            | 2430             | 2480            | MD-1   | 2451      | 2461     |
| 5/8       | 15.8 | Straight                       |       | 30           | 37/64      | 14.6 | 1/4 NF       | 1/8                         | 1/4       | 6.3  | 3040            | 3030             | 3080            | MD-2   | PA-3051   | X-6461   |
| 3/4       | 19.0 | Straight                       |       | 27           | 11/16      | 17.4 | 1/4 NF       | 1/8                         | 1/4       | 6.3  | 2740            | 2730             | 2780            | MD-3   | PA-3051   | X-6461   |
| 13/16     | 20.6 | 5.0                            | 126.0 | X-64         | 11/16      | 17.4 | 1/4 NF       | 1/4                         | 1/4       | 6.3  | X-6440          | X-6430           | -               | MD-3   | 6451      | X-6461   |
| 7/8       | 22.2 | Straight                       |       | 29           | 25/32      | 19.8 | 3/8 NF       | 1/4                         | 3/8       | 9.5  | 2940            | 2930             | 2980            | MD-4   | 2651-A    | -        |
| 27/32     | 21.4 | Straight                       |       | 29           | 25/32      | 19.8 | 3/8 NF       | 1/4                         | 3/8       | 9.5  | 2940            | 2930             | 2980            | MD-4   | 2651-A    | -        |
| 1         | 25.4 | Straight                       |       | 26           | 29/32      | 23.0 | 3/8 NF       | 3/8                         | 3/8       | 9.5  | 2640            | 2630             | 6180            | MD-4   | 2651-A    | -        |
| 1-1/32    | 26.1 | 5.0                            | 127.0 | X-61         | 7/8        | 22.2 | 5/16 NF      | 1/4                         | 1/4       | 6.3  | X-6140          | X-6130           | -               | MD-3   | 6151-C    | X-6161   |
| 1-1/8     | 28.5 | Straight                       |       | 31           | 1-1/32     | 26.1 | 7/16 NF      | 3/8                         | 3/8       | 9.5  | 3140            | 3130             | 3180            | MD-5   | 3151      | X-6361   |
| 1-1/4     | 31.7 | Straight                       |       | X-63-A       | 1-1/16     | 26.9 | 3/8 NF       | 3/8                         | 3/8       | 9.5  | X-6340          | X-6330           | 6380            | MD-5   | 6651      | X-6361   |
| 1-1/4     | 31.7 | 6.0                            | 152.4 | X-63         | 1-1/16     | 26.9 | 3/8 NF       | 3/8                         | 3/8       | 9.5  | X-6340          | X-6330           | -               | MD-5   | 6651      | X-6361   |
| 1-3/8     | 34.9 | Straight                       |       | X-65-A       | 1-3/16     | 30.1 | 3/8 NF       | 3/8                         | 3/8       | 9.5  | X-6540          | X-6530           | 6580            | 0      | 6651      | X-6661   |
| 1-1/2     | 38.1 | 6.0                            | 152.4 | X-65         | 1-3/16     | 30.1 | 3/8 NF       | 3/8                         | 3/8       | 9.5  | X-6540          | X-6530           | -               | MD-5   | 6651      | X-6661   |
| 1-5/8     | 41.2 | 24.0                           | 609.6 | 4200         | 1-1/2      | 38.1 | 5/8 NC       | 1/2                         | 1/2       | 12.7 | 4140            | 4130             | -               | 1      | 4151      | 4161     |
| 1-3/4     | 44.4 | 6.0                            | 152.4 | X-66         | 1-5/16     | 33.3 | 3/8 NF       | 3/8                         | 3/8       | 9.5  | X-6640          | X-6630           | -               | 0      | 6651      | X-6661   |
| 1-3/4     | 44.4 | 15.0                           | 381.0 | 4200         | 1-1/2      | 38.1 | 5/8 NC       | 1/2                         | 1/2       | 12.7 | 4140            | 4130             | -               | 1      | 4151      | 4161     |

Some items are available on a quotation basis only.

\* Drill must be used with Universal Joint or flexible connection.

## 3000 and 4000 Series Tube Cleaners – Curved and Straight

Range: 1-1/2 to 13-1/4 in.  
38.1 to 336.5 mm

Complete cleaner consists of: air motor with extra set of blades; shaft wrench; choice of cutter head with two extra sets of cutters and cutter pins; universal joint with two extra pins; two drills. If single unit head is ordered, four extra sets of cutters are furnished. If arm-type head is ordered, an extra set of arm pins is furnished.

For operating hose (not included) refer to page 116 .



- Use for straight tubes.
- Use for curved tubes.

| Tube I.D. |      | Minimum Tube Centerline Radius |       | Motor Number | Motor O.D. |      | Rotor Thread | Air Coupling Pipe Tap (in.) | Hose Size |      | Heads Available |                         |                      |             | Universal Joint | Drill* |
|-----------|------|--------------------------------|-------|--------------|------------|------|--------------|-----------------------------|-----------|------|-----------------|-------------------------|----------------------|-------------|-----------------|--------|
| in.       | mm   | in.                            | mm    |              | in.        | mm   |              |                             | in.       | in.  | mm              | Single Expansion Type 3 | Forward Swing Type 4 | Single Unit |                 |        |
|           |      |                                |       |              |            |      |              |                             |           |      |                 | Type 2                  | Type 1               |             |                 |        |
| 1-1/2     | 38.1 | Straight                       |       | 3150         | 1-3/8      | 34.9 | 9/16 NC      | 1/2                         | 1/2       | 12.7 | TC-14           | -                       | -                    | 1740        | 31551           | 0      |
| 1-5/8     | 41.2 | Straight                       |       | 3162         | 1-1/2      | 38.1 | 5/8 NC       | 3/4                         | 1/2       | 12.7 | TC-11           | -                       | 1840                 | 1940        | 4151            | 1      |
| 1-3/4     | 44.4 | Straight                       |       | 3175         | 1-5/8      | 41.2 | 5/8 NC       | 3/4                         | 1/2       | 12.7 | TC-11           | -                       | 1840                 | 1940        | 4151            | 1      |
| 1-7/8     | 47.6 | Straight                       |       | 3187         | 1-3/4      | 44.4 | 5/8 NC       | 3/4                         | 3/4       | 19.0 | TC-17-PY        | -                       | 2340                 | 4140        | 4151            | 1      |
| 2         | 50.8 | Straight                       |       | 3200         | 1-7/8      | 47.6 | 5/8 NC       | 3/4                         | 3/4       | 19.0 | TC-16           | -                       | 2340                 | 4140        | 4151            | 1      |
| 2         | 50.8 | 15.0                           | 381.0 | 4225         | 1-3/4      | 44.4 | 5/8 NC       | 1/2                         | 1/2       | 12.7 | -               | -                       | 4130                 | 4140        | 4151            | 1      |
| 2-1/8     | 53.9 | Straight                       |       | 3212         | 2          | 50.8 | 5/8 NC       | 3/4                         | 3/4       | 19.0 | TC-13-PY        | 2340                    | -                    | 4140        | 4151            | 4      |
| 2-1/8     | 53.9 | 15.0                           | 381.0 | 4225         | 1-3/4      | 44.4 | 5/8 NC       | 1/2                         | 1/2       | 12.7 | -               | -                       | 4130                 | 4140        | 4151            | 1      |
| 2-1/4     | 57.1 | Straight                       |       | 3225         | 2-1/8      | 53.9 | 3/4 NC       | 3/4                         | 3/4       | 19.0 | P-15-PY         | 4470-A                  | -                    | -           | 2151            | 4      |
| 2-1/4     | 57.1 | 15.0                           | 381.0 | 4250         | 1-7/8      | 47.6 | 5/8 NC       | 1/2                         | 1/2       | 12.7 | -               | 4470                    | -                    | -           | 4151            | 4      |
| 2-5/16    | 58.7 | 12.0                           | 304.8 | 4250         | 1-7/8      | 47.6 | 5/8 NC       | 1/2                         | 1/2       | 12.7 | -               | 4470                    | -                    | -           | 4151            | 4      |
| 2-3/8     | 60.3 | Straight                       |       | 3225         | 2-1/8      | 53.9 | 3/4 NC       | 1                           | 1         | 25.4 | P-9-S           | 4470-A                  | -                    | -           | 2151            | 4      |
| 2-1/2     | 63.5 | Straight                       |       | 3250         | 2-5/16     | 58.7 | 7/8 NC       | 1                           | 1         | 25.4 | P-9             | 4470-B                  | -                    | -           | 21451           | 4      |
| 2-1/2     | 63.5 | 15.0                           | 381.0 | 4250         | 1-7/8      | 47.6 | 5/8 NC       | 1/2                         | 1/2       | 12.7 | -               | -                       | 4470                 | -           | 4151            | 4      |

Some items are available on a quotation basis only.

\* Drill must be used with Universal Joint or flexible connection.

# Boiler Tube Cleaners

## Selection Guide

| Tube I.D. |       | Minimum Tube Centerline Radius |       | Motor Number | Motor O.D. |       | Rotor Thread | Air Coupling Pipe Tap (in.) | Hose Size |      | Heads Available |                         |                 | Universal Joint | Drill* |
|-----------|-------|--------------------------------|-------|--------------|------------|-------|--------------|-----------------------------|-----------|------|-----------------|-------------------------|-----------------|-----------------|--------|
| in.       | mm    | in.                            | mm    |              | in.        | mm    |              |                             | in.       | in.  | mm              | Single Expansion Type 3 | Wing Arm Type 5 |                 |        |
| 2-5/8     | 66.6  | Straight                       |       | 3262         | 2-1/2      | 63.5  | 7/8 NC       | 1                           | 1         | 25.4 | P-7             | 2060                    | 4470-A          | 21451           | 4      |
| 2-5/8     | 66.6  | 24                             | 609.6 | 4300         | 2-1/4      | 57.1  | 3/4 NC       | 1                           | 3/4       | 19.0 | -               | 3360                    | 3370            | 3551            | 5      |
| 2-3/4     | 69.8  | Straight                       |       | 3275         | 2-5/8      | 66.6  | 7/8 NC       | 1                           | 1         | 25.4 | P-7             | 2060                    | 3370-A          | 651             | 5      |
| 2-3/4     | 69.8  | 12                             | 304.8 | 4300         | -1/4       | 57.1  | 3/4 NC       | 1                           | 3/4       | 19.0 | -               | 3360                    | 3370            | 3551            | 5      |
| 2-7/8     | 73.0  | Straight                       |       | 3275         | 2-5/8      | 66.6  | 7/8 NC       | 1                           | 1         | 25.4 | P-6-A           | 1060                    | -               | 651             | 5      |
| 2-7/8     | 7.03  | 28                             | 711.2 | 4325         | 2-1/2      | 63.5  | 3/4 NC       | 1                           | 3/4       | 19.0 | -               | 3560                    | 3270            | 3551            | 5      |
| 3         | 76.2  | Straight                       |       | 3300         | 2-13/16    | 71.4  | 1 NF         | 1                           | 1         | 25.4 | P-6             | 1060                    | -               | 21051           | 5      |
| 3         | 76.2  | 16                             | 406.4 | 4300         | 2-1/2      | 63.5  | 3/4 NC       | 1                           | 3/4       | 19.0 | -               | 3560                    | 3270            | 3551            | 5      |
| 3         | 76.2  | 12                             | 304.8 | 4300         | 2-1/4      | 57.1  | 3/4 NC       | 1                           | 3/4       | 19.0 | -               | 3560                    | 3270            | 3551            | 5      |
| 3-1/16    | 77.7  | Straight                       |       | 3300         | 2-13/16    | 71.4  | 1 NF         | 1                           | 1         | 25.4 | P-6             | 1060                    | -               | 21051           | 5      |
| 3-1/8     | 79.3  | Straight                       |       | 3312         | 2-15/16    | 74.6  | 1 NF         | 1                           | 1         | 25.4 | P-5             | 1060                    | -               | 1151            | 6      |
| 3-3/16    | 80.9  | Straight                       |       | 3318         | 3          | 76.2  | 1 NF         | 1                           | 1         | 25.4 | P-5             | 1060                    | -               | 1151            | 6      |
| 3-1/4     | 82.5  | Straight                       |       | 3318         | 3          | 76.2  | 1 NF         | 1                           | 1         | 25.4 | P-5             | 1060                    | -               | 1151            | 6      |
| 3-1/4     | 82.5  | 16                             | 406.4 | 4350         | 2-3/4      | 69.8  | 7/8 NC       | 1                           | 1         | 25.4 | -               | 3560                    | 970-B           | 651             | 5      |
| 3-3/8     | 85.7  | Straight                       |       | 3318         | 3          | 76.2  | 1 NF         | 1                           | 1         | 25.4 | P-5             | 960                     | -               | 1151            | 6      |
| 3-12      | 88.9  | Straight                       |       | 3350         | 3-5/16     | 84.1  | 1-1/8 NF     | 1                           | 1         | 25.4 | P-4             | 760                     | -               | 20751           | 6      |
| 3-1/2     | 88.9  | 20                             | 508   | 4350         | 2-3/4      | 69.8  | 7/8 NC       | 1                           | 1         | 25.4 | -               | 4760                    | 770-B           | 551             | 6      |
| 3-5/8     | 92.0  | Straight                       |       | 3350         | 3-5/16     | 84.1  | 1-1/8 NF     | 1                           | 1         | 25.4 | P-3             | 760                     | -               | 20751           | 6      |
| 3-3/4     | 95.2  | Straight                       |       | 3350         | 3-5/16     | 84.1  | 1-1/8 NF     | 1                           | 1         | 25.4 | P-3             | 760                     | -               | 20751           | 6      |
| 3-7/8     | 98.4  | Straight                       |       | 3350         | 3-5/16     | 84.1  | 1-1/8 NF     | 1                           | 1         | 25.4 | P-3             | 760                     | -               | 20751           | 6      |
| 4         | 101.6 | Straight                       |       | 3400         | 3-3/4      | 95.2  | 1-1/8 NF     | 1                           | 1         | 25.4 | P-2             | 760                     | -               | 20751           | 6      |
| 4         | 101.6 | 15                             | 381   | 4450         | 3-1/8      | 79.3  | 7/8 NC       | 1                           | 1         | 25.4 | -               | 4760                    | 770-B           | 551             | 6      |
| 4-1/8     | 104.7 | Straight                       |       | 3400         | 3-3/4      | 95.2  | 1-1/8 NF     | 1                           | 1         | 25.4 | P-2             | 760                     | -               | 20751           | 6      |
| 4-1/4     | 107.9 | Straight                       |       | 3400         | 3-3/4      | 95.2  | 1-1/8 NF     | 1                           | 1         | 25.4 | P-1             | 5060-AS                 | -               | 20751           | 6      |
| 4-1/4     | 107.9 | 36                             | 91.4  | 4450         | 3-1/8      | 79.3  | 7/8 NC       | 1                           | 1         | 25.4 | -               | 4760                    | 870-B           | 551             | 6      |
| 4-3/8     | 111.1 | Straight                       |       | 3400         | 3-3/4      | 95.2  | 1-1/8 NF     | 1                           | 1         | 25.4 | P-1             | 5060-AS                 | -               | 20751           | 6      |
| 4-1/2     | 114.3 | Straight                       |       | 3400         | 3-3/4      | 95.2  | 1-1/8 NF     | 1                           | 1         | 25.4 | P-0             | 5060-AS                 | -               | 20751           | 6      |
| 4-1/2     | 114.3 | 15                             | 381   | 4450         | 3-1/8      | 79.3  | 7/8 NC       | 1                           | 1         | 25.4 | -               | 4760                    | 870-B           | 551             | 6      |
| 4-1/2     | 114.3 | 24                             | 609.6 | 4450         | 3-1/8      | 79.3  | 7/8 NC       | 1                           | 1         | 25.4 | -               | 4760                    | 870-B           | 551             | 6      |
| 4-3/4     | 120.6 | Straight                       |       | 3400         | 3-3/4      | 95.2  | 1-1/8 NF     | 1                           | 1         | 25.4 | P-10            | 5060-AS                 | -               | 20751           | 6      |
| 4-13/16   | 122.2 | 18                             | 457.2 | 4481         | 3-3/4      | 95.2  | 1-1/8 NF     | 1                           | 1         | 25.4 | -               | 5060-A                  | -               | 5051            | 6      |
| 5         | 127.0 | Straight                       |       | 3500         | 4-3/4      | 120.6 | 1-3/8 NF     | 1-1/4                       | 1-1/4     | 31.8 | TC-19-H-S       | 35260                   | -               | 21251-E         | 6      |
| 5         | 127.0 | 24                             | 609.6 | 4481         | 3-3/4      | 95.2  | 1-1/8 NF     | 1                           | 1-1/4     | 31.8 | TC-19-H-S       | 35260                   | -               | 5051            | 6      |

Some items are available on a quotation basis only.

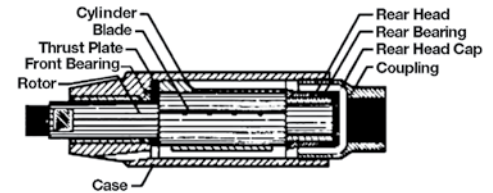
\* Drill must be used with Universal Joint or flexible connection.

## 3000 Series Motors

3000 series straight motors, components and (ordering numbers)



**All Motors include Shaft Wrench**



| Motor Number      | Motor O.D. | Tube I.D. | Case                 | Cylinder             | Rear Head            | Machine Coupling   | Rotor                | Blades (Qty.)           | Thrust Plate         | Front Bearing         | Rear Bearing       | Rear Head Cap      | Front Dowel        | Rear Dowel         | Shaft Wrench        | Rotor Thread   | Hose Size |
|-------------------|------------|-----------|----------------------|----------------------|----------------------|--------------------|----------------------|-------------------------|----------------------|-----------------------|--------------------|--------------------|--------------------|--------------------|---------------------|----------------|-----------|
| 3150<br>(4075700) | 1-3/8"     | 1-1/2"    | 31501<br>(1138900)   | 31502<br>(1139000)   | 31503<br>(1139100)   | 31504<br>(1139200) | 31505<br>(1139300)   | 1806 (4)<br>(1049100PT) | 1707<br>(1047500)    | X 1708<br>(1330400)   | 31509<br>(1139400) | -                  | 31511<br>(1139500) | 31512<br>(1139600) | 9/16"<br>(14-0809)  | 9/16"<br>N.C.  | 1/2"      |
| 3162<br>(4075800) | 1-1/2"     | 1-5/8"    | 31621<br>(1139900)   | 31622<br>(1140000)   | 31623<br>(1140100)   | 31624<br>(1140200) | 31625<br>(1140300)   | 1806 (4)<br>(1049100PT) | 1807<br>(1049200)    | X 1808<br>(1330500PT) | 31629<br>(1140500) | -                  | 31511<br>(1139500) | 31512<br>(1139600) | 5/8"<br>(14-0810)   | 5/8"<br>N.C.   | 1/2"      |
| 3175<br>(4075900) | 1-5/8"     | 1-3/4"    | 31751<br>(1140600)   | 31622<br>(1140000)   | 31623<br>(1140100)   | 31624<br>(1140200) | 31625<br>(1140300)   | 1806 (4)<br>(1049100PT) | 1807<br>(1049200)    | X 1808<br>(1330500PT) | 31629<br>(1140500) | -                  | 31511<br>(1139500) | 31512<br>(1139600) | 5/8"<br>(14-0810)   | 5/8"<br>N.C.   | 1/2"      |
| 3187<br>(4076000) | 1-3/4"     | 1-7/8"    | 31871<br>(1140900)   | 31872<br>(1141000)   | 31873<br>(1141100)   | 31874<br>(1141200) | 31875<br>(1141300PT) | 2306 (4)<br>(1053700)   | 22307 C<br>(1138800) | 2208<br>(1053100)     | 32129<br>(1142900) | -                  | 31811<br>(1140700) | 31812<br>(1140800) | 5/8"<br>(14-0810)   | 5/8"<br>N.C.   | 3/4"      |
| 3200<br>(4076100) | 1-7/8"     | 2"        | 32001<br>(1141400PT) | 32002<br>(1141500)   | 32003<br>(1141600)   | 32004<br>(1141700) | 32005<br>(1141800)   | 2306 (4)<br>(1053700)   | 2307<br>(1053800)    | 2208<br>(1053100)     | 32009<br>(1141900) | 3213<br>(1071300)  | 31811<br>(1140700) | 32012<br>(1715981) | 5/8"<br>(14-0810)   | 5/8"<br>N.C.   | 3/4"      |
| 3212<br>(4076200) | 2"         | 2-1/8"    | 32121<br>(1142200)   | 32122<br>(1142400)   | 32123<br>(1142500)   | 32124<br>(1142600) | 32125<br>(1142700)   | 21606 (4)<br>(1135800)  | 21607<br>(1135900)   | 2208<br>(1053100)     | 32129<br>(1142900) | 4413<br>(1081500)  | 32011<br>(1142000) | 32112<br>(1142100) | 5/8"<br>(14-0810)   | 5/8"<br>N.C.   | 3/4"      |
| 3225<br>(4076300) | 2-1/8"     | 2-1/4"    | 32251<br>(1143000)   | 32252<br>(1143200)   | 32253<br>(1143300)   | 32254<br>(1143400) | 32255<br>(1143700)   | 21506 (5)<br>(1134300)  | 1507<br>(1045800)    | 1408<br>(1045500)     | 32009<br>(1141900) | 3213<br>(1071300)  | 32011<br>(1142000) | 32112<br>(1142100) | 3/4"<br>(14-0812)   | 3/4"<br>N.C.   | 3/4"      |
| 3250<br>(4076500) | 2-5/16"    | 2-1/2"    | 32501<br>(1144600)   | 32502<br>(1144800)   | 32503<br>(1144900)   | 32504<br>(1145000) | 32505<br>(1145100)   | 21406 (5)<br>(1133000)  | 21407<br>(1133100)   | 21408<br>(1133200)    | 32009<br>(1141900) | 3213<br>(1071300)  | 32511<br>(1145200) | 32512<br>(1145300) | 7/8"<br>(14-0814)   | 7/8"<br>N.C.   | 1"        |
| 3262<br>(4076600) | 2-1/2"     | 2-5/8"    | 32621<br>(1145600)   | 32622<br>(1145800)   | 32623<br>(1145900)   | 32624<br>(1146000) | 32755<br>(1146600)   | 21306 (5)<br>(1131700)  | 21907<br>(1137700)   | 1008<br>(1040700)     | 32759<br>(1146700) | 213<br>(1022300PT) | 32611<br>(1145400) | 32612<br>(1145500) | 7/8"<br>(14-0814)   | 7/8"<br>N.C.   | 1"        |
| 3275<br>(4076700) | 2-5/8"     | 2-3/4"    | 32751<br>(1146100)   | 32752<br>(1146300)   | 32753<br>(1146400)   | 32754<br>(1146500) | 32755<br>(1146600)   | 21306 (5)<br>(1131700)  | 21307<br>(1131800)   | 1008<br>(1040700)     | 32759<br>(1146700) | 213<br>(1022300PT) | 32611<br>(1145400) | 32612<br>(1145500) | 7/8"<br>(14-0814)   | 7/8"<br>N.C.   | 1"        |
| 3300<br>(4076900) | 2-13/16"   | 3"        | 33001<br>(1146900)   | 33002<br>(1147000)   | 33003<br>(1147100)   | 33004<br>(1147200) | 33005<br>(1147400)   | 21006 (5)<br>(1121500)  | 21007<br>(1121600)   | 1108<br>(1043400)     | 33009<br>(1147500) | 713<br>(1030700)   | 32611<br>(1145400) | 32612<br>(1145500) | 1"<br>(3241600)     | 1"<br>N.F.     | 1"        |
| 3318<br>(4077200) | 3"         | 3-3/16"   | 33181<br>(1148100)   | 33252<br>(1148600)   | 33253<br>(1148700)   | 33254<br>(1148800) | 33255<br>(1149000)   | 20706 (5)<br>(1116200)  | 20907<br>(1119300)   | 1108<br>(1043400)     | 33009<br>(1147500) | 713<br>(1030700)   | 33211<br>(1148200) | 33212<br>(1148300) | 1"<br>(3241600)     | 1"<br>N.F.     | 1"        |
| 3350<br>(4077500) | 3-5/16"    | 3-5/8"    | 33501<br>(1149200)   | 33502<br>(1149500PT) | 33503<br>(1149600PT) | 33504<br>(1149700) | 33505<br>(1149900)   | 20706 (5)<br>(1116200)  | 20707<br>(1116300)   | 20708<br>(1116400)    | 33009<br>(1147500) | 713<br>(1030700)   | 33211<br>(1148200) | 33212<br>(1148300) | 1-1/8"<br>(3241800) | 1-1/8"<br>N.F. | 1"        |
| 3400<br>(4077900) | 3-3/4"     | 4"        | 34001<br>(1150800)   | 34002<br>(1151100)   | 34003<br>(1151200)   | 34004<br>(1151300) | 34005<br>(1151600)   | 20706 (5)<br>(1116200)  | 34007<br>(1151800)   | 20708<br>(1116400)    | 33009<br>(1147500) | 713<br>(1030700)   | 33211<br>(1148200) | 33212<br>(1148300) | 1-1/8"<br>(3241800) | 1-1/8"<br>N.F. | 1"        |
| 3500<br>(4078500) | 4-3/4"     | 5"        | 35001<br>(1153100)   | 35502<br>(1155300)   | 35503<br>(1155400)   | 35504<br>(1155500) | 35505<br>(1155800)   | 21206 (5)<br>(1125300)  | 35507<br>(1155900)   | 21208<br>(1125400)    | 33009<br>(1147500) | 713<br>(1030700)   | 33211<br>(1148200) | 33212<br>(1148300) | 1-3/8"<br>(3241900) | 1-3/8"<br>N.F. | 1"        |
| 3600<br>(4078900) | 5-3/4"     | 6"        | 36001<br>(1156100)   | 35502<br>(1155300)   | 35503<br>(1155400)   | 35504<br>(1155500) | 35505<br>(1155800)   | 21206 (5)<br>(1125300)  | 35507<br>(1155900)   | 21208<br>(1125400)    | 33009<br>(1147500) | 713<br>(1030700)   | 33211<br>(1148200) | 33212<br>(1148300) | 1-3/8"<br>(3241900) | 1-3/8"<br>N.F. | 1"        |

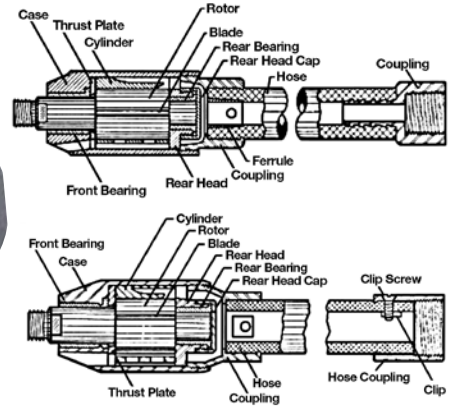
Motors for tube/pipe sizes larger than 5" ID are supplied with ribs or rib cage to center the motor in tube or pipe being cleaned.



# 4000 Series Motors

## 4000 Series Motors

4000 series motors, components and (ordering numbers)

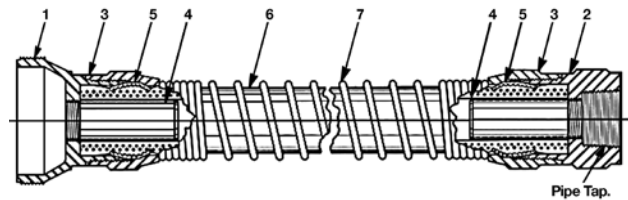


| Motor Number      | Motor O.D. | Tube I.D.                                   | Case               | Cylinder           | Rear Head          | Machine Coupling   | Rotor              | Blades (Qty.)         | Thrust Plate       | Front Bearing       | Rear Bearing       | Rear Head Cap      | Front Dowel        | Rear Dowel         | Tail Hose Assembly* | Shaft Wrench        | Rotor Thread   | Hose Size |
|-------------------|------------|---|--------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|--------------------|---------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|----------------|-----------|
| 4250<br>(4080300) | 1-7/8"     | 2-1/4 X 15R<br>2-15/16 X 12R<br>2-1/2 X 15R | 42501<br>(1162700) | 42502<br>(1162900) | 42503<br>(1163000) | 42504<br>(1163100) | 42505<br>(1163700) | 4406 (4)<br>(1081300) | 2307<br>(1053800)  | 4408<br>(1081400)   | 42509<br>(1163800) | 4413<br>(1081500)  | 32011<br>(1142000) | 42512<br>(1163900) | Line A<br>Below     | 5/8"<br>(14-0810)   | 5/8"<br>N.C.   | 1/2"      |
| 4300<br>(4080500) | 2-1/4"     | 2-5/8 X 24R<br>2-3/4 X 12R                  | 43001<br>(1164400) | 43002<br>(1164800) | 43003<br>(1164900) | 43004<br>(1165000) | 43005<br>(1165500) | 3306 (5)<br>(1072600) | 3307<br>(1072700)  | 3308<br>(1072800)   | 32009<br>(1141900) | 3213<br>(1071300)  | 43011<br>(1165700) | 43012<br>(1165800) | Line B<br>Below     | 3/4"<br>(14-0812)   | 3/4"<br>N.C.   | 3/4"      |
| 4325<br>(4080700) | 2-1/2"     | 2-7/8 X 28R<br>3 X 16R                      | 43251<br>(1166800) | 43252<br>(1167000) | 43253<br>(1167100) | 43254<br>(1167200) | 43255<br>(1167900) | 3206 (5)<br>(1071100) | 3207<br>(1071200)  | 3308<br>(1072800)   | 32009<br>(1141900) | 3213<br>(1071300)  | 43211<br>(1166600) | 43212<br>(1166700) | Line B<br>Below     | 3/4"<br>(14-0812)   | 3/4"<br>N.C.   | 3/4"      |
| 4350<br>(4080800) | 2-3/4"     | 3-1/4 X 16R<br>3-1/2 X 20R                  | 43501<br>(1168100) | 43502<br>(1168200) | 43503<br>(1168300) | 43504<br>(1168400) | 43505<br>(1168800) | 3706 (5)<br>(1077900) | 3307<br>(1078000)  | 3708<br>(1078100)   | 32759<br>(1146700) | 213<br>(1022300PT) | 32311<br>(1143900) | 43512<br>(1168900) | Line B<br>Below     | 7/8"<br>(14-0814)   | 7/8"<br>N.C.   | 1"        |
| 4450<br>(4081100) | 3-1/8"     | 4 X 15R                                     | 44501<br>(1169800) | 44502<br>(1170200) | 44503<br>(1170300) | 44504<br>(1170400) | 44505<br>(1170600) | 4706 (5)<br>(1082900) | 507<br>(1026400)   | 4708<br>(1083000PT) | 33009<br>(1147500) | 713<br>(1030700)   | 33212<br>(1148300) | 44512<br>(1170700) | Line B<br>Below     | 7/8"<br>(14-0814)   | 7/8"<br>N.C.   | 1"        |
| 4481<br>(4081400) | 3-3/4"     | 4-13/16 X 18R                               | 44811<br>(1170800) | 44812<br>(1170900) | 34003<br>(1151200) | 34004<br>(1151300) | 44815<br>(1171100) | 5006 (5)<br>(1083700) | 34007<br>(1151800) | 5008<br>(1083800)   | 33009<br>(1147500) | 713<br>(1030700)   | 33212<br>(1148300) | 44512<br>(1170700) | Not<br>Req'd        | 1-1/8"<br>(3241800) | 1-1/8"<br>N.C. | 1"        |
| 4600<br>(4081800) | 5"         | 5-3/4 X 72R<br>6 X 26R                      | 46001<br>(1171900) | 44812<br>(1170900) | 34003<br>(1151200) | 34004<br>(1151300) | 44815<br>(1171100) | 5006 (5)<br>(1083700) | 34007<br>(1151800) | 5008<br>(1083800)   | 33009<br>(1147500) | 713<br>(1030700)   | 33212<br>(1148300) | 44512<br>(1170700) | Not<br>Req'd        | 1-1/8"<br>(3241800) | 1-1/8"<br>N.C. | 1"        |

\*Includes Machine Coupling

Motors are supplied with ribs or rib cage for tube/pipe sizes larger than 6" ID.

| Line Number | Tap Size | Tail Hose         | Hose Coupling       | Clip              | Screw             | Ferrule           |
|-------------|----------|-------------------|---------------------|-------------------|-------------------|-------------------|
| A           | 1/2"     | 4415<br>(1081600) | 4116<br>(1079000)   | -                 | -                 | 4418<br>(1081700) |
| B           | 1"       | 3315<br>(1072900) | 3316<br>(1073100PT) | 3317<br>(1073200) | 3318<br>(8010065) | -                 |

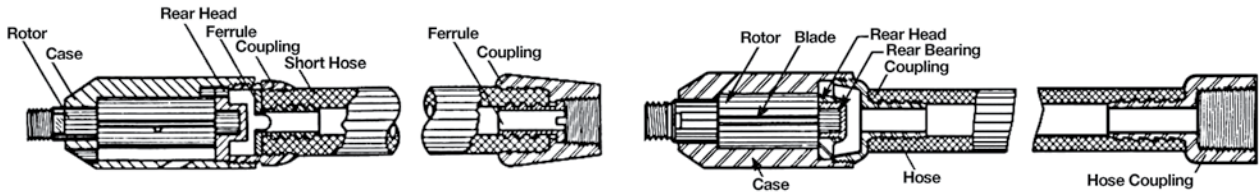


### Accessory Heavy Duty Screw Type Tail Hose Assemblies with Wire Inserted Hose and Spring Protector for 4000 Series Motors

| Tail Hose Assembly     | Used With Motor Assembly |                       |                       |               |                      |                      |                      |                       |                      |   |
|------------------------|--------------------------|-----------------------|-----------------------|---------------|----------------------|----------------------|----------------------|-----------------------|----------------------|---|
|                        |                          | Machine Coupling      | Hose Coupling         | Hose Pipe Tap | Compression Nut      | Compression Ferrule  | Compression Sleeve   | Hose                  | Spring               |   |
|                        |                          | Detail #              | 1                     | 2             | -                    | 3                    | 4                    | 5                     | 6                    | 7 |
| 425019 HD<br>(4092100) | 4250                     | 42504 KB<br>(1716866) | 425016<br>(1186900)   | 1/2"          | 42504 C<br>(1163300) | 42504 D<br>(1163400) | 42504 E<br>(1163500) | 425015<br>(1186800)   | 425017<br>(1186950)  |   |
| 430019 HD<br>(4092200) | 4300                     | 43004 B<br>(1165000)  | 432516<br>(1187300)   | 3/4"          | 43254 C<br>(1167400) | 43254 D<br>(1167500) | 43254 E<br>(1167600) | 432515 K<br>(1187250) | 43254 K<br>(1167700) |   |
| 432519 HD<br>(4092350) | 4325                     | 43254 KB<br>(1167800) | 432516<br>(1187300)   | 3/4"          | 43254 C<br>(1167400) | 43254 D<br>(1167500) | 43254 E<br>(1167600) | 432515 K<br>(1187250) | 43254 K<br>(1167700) |   |
| 435019 HD<br>(4092400) | 4350                     | 43504 B<br>(1168500)  | 435016<br>(1187600PT) | 1"            | 43504 C<br>(1168600) | 43254 D<br>(1167500) | 43254 E<br>(1167600) | 432515 K<br>(1187250) | 43254 K<br>(1167700) |   |
| 445019 HD<br>(4092500) | 4450                     | 44504 B<br>(1170500)  | 435016<br>(1187600PT) | 1"            | 43504 C<br>(1168600) | 43254 D<br>(1167500) | 43254 E<br>(1167600) | 432515 K<br>(1187250) | 43254 K<br>(1167700) |   |
| 460019 HD<br>(4092501) | 4600                     | 46004 B<br>(1171950)  | 460016<br>(1188010)   | 1"            | 46004 C<br>(1171960) | 46004 D<br>(1171970) | 46004 E<br>(1171980) | 460015 K<br>(1188020) | 46004 K<br>(1717471) |   |

## 60 & 4000 Series Motors

60 & 4000 series motors, components and (ordering numbers)



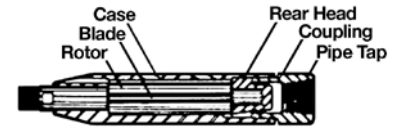
| Motor Number      | Motor O.D. | Tube I.D. (Radius)           | Case                  | Rear Head w/ Bearing | Machine Coupling    | Rotor               | Blades (4 req.)     | Rear Bearing       | Rear Dowel (Qty.)       | Tail Hose           | Tail Hose Coupling  | Tail hose Assembly | Front Ferrule         | Rear Ferrule         | Shaft Wrench       | Rotor Thread  | Hose Size |
|-------------------|------------|------------------------------|-----------------------|----------------------|---------------------|---------------------|---------------------|--------------------|-------------------------|---------------------|---------------------|--------------------|-----------------------|----------------------|--------------------|---------------|-----------|
| X 64<br>(4090200) | 1 1/16"    | 13/16"<br>(5")               | X 6401<br>(1334800)   | X 6403<br>(1334900)  | X 6404<br>(1335000) | X 6405<br>(1335200) | X 6406<br>(1335300) | -                  | X 6412 (2)<br>(1335400) | X 6415<br>(1335500) | X 6416<br>(1335600) | X 6419             | X 6417<br>(1335700)   | X 6418<br>(1335800)  | 3/16"<br>(3240200) | 1/4"<br>N.F.  | 1/4"      |
| X 61<br>(4089900) | 7/8"       | 1-1/32"<br>(5")              | X 6101<br>(1331200)   | X 6103<br>(1331300)  | X 6104<br>(1331400) | X 6105<br>(1331600) | X 6106<br>(1331700) | -                  | X 6112 (2)<br>(1331800) | X 6115<br>(1331900) | X 6116<br>(1332000) | X 6119             | X 6117<br>(1332100PT) | X 6118<br>(1332200)  | 1/4"<br>(14-0804)  | 5/16"<br>N.F. | 1/4"      |
| X 63<br>(4090000) | 1-1/16"    | 1-1/4"<br>(6")               | X 6301<br>(1333300)   | X 6303<br>(1333400)  | X 6304<br>(1333500) | X 6305<br>(1333700) | X 6306<br>(1333800) | -                  | X 6312 (2)<br>(1334000) | X 6315<br>(1334100) | X 6316<br>(1334200) | X 6319             | X 6317<br>(1334300)   | X 6318<br>(1334400)  | 5/16"<br>(14-0805) | 3/8"<br>N.F.  | 3/8"      |
| X 65<br>(4090300) | 1-3/16"    | 1-1/2"<br>(6")               | X 6501<br>(1336300PT) | X 6503<br>(1336400)  | X 6504<br>(1336500) | X 6505<br>(1336700) | X 6506<br>(1336800) | -                  | X 6312 (2)<br>(1334000) | X 6315<br>(1334100) | X 6316<br>(1334200) | X 6519             | X 6317<br>(1334300)   | X 6318<br>(1334400)  | 5/16"<br>(14-0805) | 3/8"<br>N.F.  | 3/8"      |
| X 66<br>(4090500) | 1-5/16"    | 1-3/4"<br>(6")               | X 6601<br>(1337300)   | X 6603<br>(1337400)  | X 6604<br>(1337500) | X 6605<br>(1337700) | X 6606<br>(1337800) | -                  | X 6312 (2)<br>(1334000) | X 6315<br>(1334100) | X 6316<br>(1334200) | X 6619             | X 6617<br>(1337900)   | X 6318<br>(1334400)  | 3/8"<br>(2902629)  | 3/8"<br>N.F.  | 3/8"      |
| 4200<br>(4080000) | 1-1/2"     | 1-5/8" (24")<br>1-3/4" (15") | 42001 G<br>(1161300)  | 42003<br>(1161500)   | 42004<br>(1161600)  | 42005<br>(1161800)  | 4106<br>(1078800)   | 42009<br>(1162100) | 42012<br>(1162200)      | 4115<br>(1078900)   | 4116<br>(1079000)   | 42019<br>(4091500) | 1 AJ243<br>(1716170)  | 1 AJ243<br>(1716170) | 5/8"<br>(14-0810)  | 5/8"<br>N.C.  | 1/2"      |
| 4225<br>(4080100) | 1-3/4"     | 2"<br>(15")                  | 42251 G<br>(1162500)  | 42003<br>(1161500)   | 42004<br>(1161600)  | 42005<br>(1161800)  | 4106<br>(1078800)   | 42009<br>(1162100) | 42012<br>(1162200)      | 4115<br>(1078900)   | 4116<br>(1079000)   | 42019<br>(4091500) | 1 AJ243<br>(1716170)  | 1 AJ243<br>(1716170) | 5/8"<br>(14-0810)  | 5/8"<br>N.C.  | 1/2"      |

# Midget Motors

## Midget Motors

For 1/2" - 1-3/8" I.D. tubes

Straight tube midget motors, components and (ordering numbers)

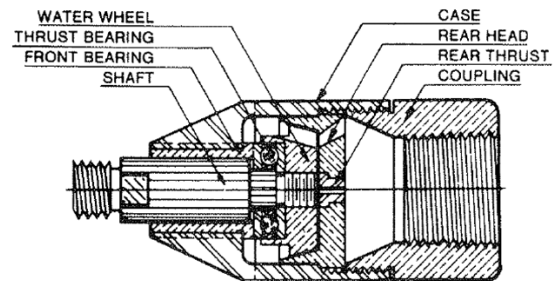


| Motor Number        | Motor O.D. | Tube I.D. | Case                  | Rear Head           | Machine Coupling      | Rotor               | Rotor Blade (Qty.)      | Dowel pin (Qty.)        | Shaft Wrench       | Rotor Thread | Air Hose |
|---------------------|------------|-----------|-----------------------|---------------------|-----------------------|---------------------|-------------------------|-------------------------|--------------------|--------------|----------|
| 24<br>(4074900)     | 15/32"     | 1/2"      | X 2401<br>(1056400)   | 2403<br>(1056500)   | 2404<br>(1056600)     | 2405<br>(1056700)   | 2406 (4)<br>(1056800)   | 2412<br>(1056900)       | 5/32"<br>(3240100) | 10-32        | 3/16"    |
| 30<br>(4075400)     | 37/64"     | 5/8"      | X 3001<br>(1067100)   | X 3003<br>(1067300) | X 3004<br>(1067400)   | X 2705<br>(1063000) | 2706 (4)<br>(1063100)   | 3012<br>(1067500)       | 3/16"<br>(3240200) | 1/4"<br>N.F. | 1/4"     |
| 27<br>(4075100)     | 11/16"     | 3/4"      | X 2701<br>(1062600)   | X 2703<br>(1062800) | 2704<br>(1062900PT)   | X 2705<br>(1063000) | 2706 (4)<br>(1063100)   | 3012<br>(1067500)       | 3/16"<br>(3240200) | 1/4"<br>N.F. | 1/4"     |
| 29 A<br>(4075310)   | 25/32"     | 7/8"      | 2901 A<br>(1064901)   | 2903 A<br>(1065001) | 2904<br>(1065100)     | 2605<br>(1060800PT) | 2606 (4)<br>(1060900)   | X 6112<br>(1331800)     | 5/16"<br>(14-0805) | 3/8"<br>N.F. | 3/8"     |
| 26<br>(4075000)     | 29/32"     | 1"        | 2601 G<br>(1060500)   | 2603<br>(1060600)   | 2604<br>(1060700)     | 2605<br>(1060800PT) | 2606 (4)<br>(1060900)   | X 6312<br>(1334000)     | 5/16"<br>(14-0805) | 3/8"<br>N.F. | 3/8"     |
| 31<br>(4075600)     | 1-1/32"    | 1-1/8"    | 3101<br>(1069800)     | 3103<br>(1069900)   | 3104<br>(1070000)     | 3105<br>(1070100)   | 3106 (4)<br>(1070200PT) | 3111<br>(1070300)       | 5/16"<br>(2902629) | 3/8"<br>N.F. | 3/8"     |
| X 63 A<br>(4090100) | 1-1/16"    | 1-1/4"    | X 6301<br>(1333300)   | X 6303<br>(1333400) | X 6304 A<br>(1333600) | X 6305<br>(1333700) | X 6306 (4)<br>(1333800) | X 6312 (2)<br>(1334000) | 5/16"<br>(14-0805) | 3/8"<br>N.F. | 3/8"     |
| X 65 A<br>(4060400) | 1-3/16"    | 1-3/8"    | X 6501<br>(1336300PT) | X 6503<br>(1336400) | X 6504 A<br>(1336600) | X 6505<br>(1336700) | X 6506 (4)<br>(1336800) | X 6312 (2)<br>(1334000) | 5/16"<br>(14-0805) | 3/8"<br>N.F. | 3/8"     |

## Water Driven Motors

For 2" and 3-3/4" I.D. tubes

Water driven motors are used only in the overhead cleaning of vertical catalyst tubes.



| Model Number        | Motor O.D. | Tube I.D. | Case                  | Water Wheel          | Rear Head             | Machine Coupling      | Pipe Tap | Shaft               | Thrust Bearing      | Front Bearing       | Rear Thrust         | Shaft Wrench      | Shaft Thread | Hose   |
|---------------------|------------|-----------|-----------------------|----------------------|-----------------------|-----------------------|----------|---------------------|---------------------|---------------------|---------------------|-------------------|--------------|--------|
| W-7<br>(4088200)    | 3-1/2"     | 3-3/4"    | W 701<br>(1319300)    | W 702<br>(1319400PT) | W 703<br>(1319500)    | W 10704<br>(1326000)  | 1-1/2"   | W 905<br>(1319900)  | W 907<br>(1320000)  | W 908<br>(1320100)  | W 910<br>(1320200)  | 7/8"<br>(14-0814) | 7/8" N.C.    | 1-1/2" |
| W-16-A<br>(4089200) | 1-11/16"   | 2"        | W 1601 A<br>(1323300) | W 1602<br>(1323400)  | W 1603 A<br>(1323600) | W 1604 A<br>(1323800) | 3/4"     | W 1605<br>(1323900) | W 1607<br>(1324000) | W 1608<br>(1324100) | W 1610<br>(1324200) | 5/8"<br>(14-0810) | 5/8" N.C.    | 3/4"   |

\* Other sizes available. Contact customer service for details

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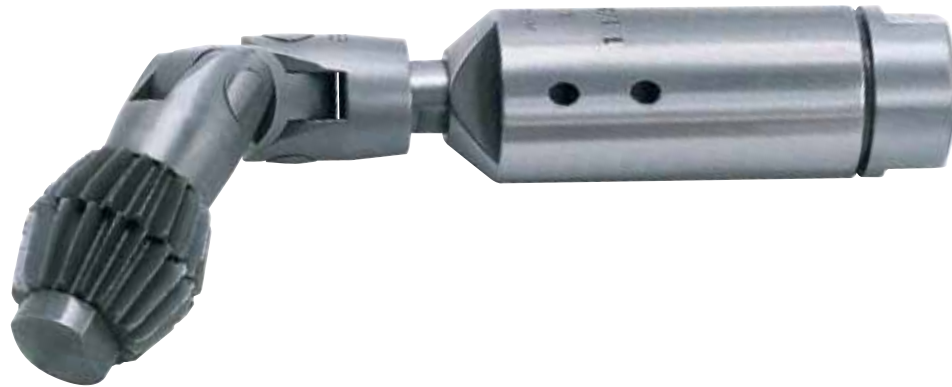
email: practicaltools@bellnet.ca

## Gas Line Cleaners

**Range: 3/4 to 1-1/2 in.  
19.05 to 38.10 mm**

Used successfully by gas utilities for cleaning old service lines before inserting new plastic and copper tubing. The thorough cleaning action of the barrel-shaped cutter head assures the removal of material that could cut or rupture the renewal tubing.

- Renews gas service lines instead of replacing them
- Complete kit consists of: motor, with an extra set of blades; head; lubricator; wire wound hose; spare cutters and a metal carrying case
- Other sizes available on request



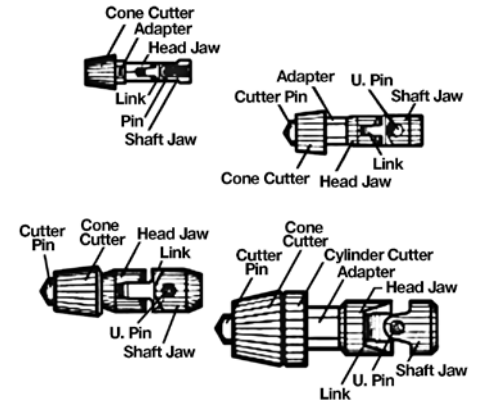
| Cleaner Complete | Order Number | Pipe I.D. |       | Motor Assembly |           | Motor Diameter |       | Head Assembly |           | Air Inlet |      | Hose Size |      | Hose Length |       |
|------------------|--------------|-----------|-------|----------------|-----------|----------------|-------|---------------|-----------|-----------|------|-----------|------|-------------|-------|
|                  |              | in.       | mm    | Model          | Order No. | in.            | mm    | Model         | Order No. | in.       | mm   | in.       | mm   | ft          | M     |
| 27 GLC 50        | 4105416      | 3/4       | 19.05 | 27             | 4075100   | 11/16          | 17.46 | 2740 S        | 4104802   | 1/4       | 6.35 | 1/4       | 6.35 | 50          | 15.24 |
| X 64 GLC 50      |              | 1         | 25.4  | X 64           | 4090200   | 11/16          | 17.46 | 2640 S        |           | 1/4       | 6.35 | 1/4       | 6.35 | 50          | 15.24 |
| X 61 GLC 50      |              | 1-1/8     | 28.58 | X 61           | 4089900   | 7/8            | 22.23 | 3140 S        |           | 1/4       | 6.35 | 1/4       | 6.35 | 50          | 15.24 |
| X 63 A GLC 25    | 4105354      | 1-1/4     | 31.7  | X 63 A         | 4090100   | 1-1/16         | 26.9  | 6340 S        | 4104903   | 3/8       | 9.5  | 3/8       | 9.5  | 25          | 7.62  |
| X 63 A GLC 50    | 4105355      | 1-1/4     | 31.7  | X 63 A         | 4090100   | 1-1/16         | 26.9  | 6340 S        | 4104903   | 3/8       | 9.5  | 3/8       | 9.5  | 50          | 15.24 |
| X 65 GLC 25      | 4105573      | 1-1/2     | 38.1  | X 65           | 4090300   | 1-3/16         | 30.16 | 6340 S        | 4104903   | 3/8       | 9.5  | 3/8       | 9.5  | 25          | 7.62  |
| X 65 A GLC 25    | 4104724      | 1-1/2     | 38.1  | X 65 A         | 4090400   | 1-3/16         | 30.1  | 1740 S        |           | 3/8       | 9.5  | 3/8       | 9.5  | 25          | 7.62  |
| X 65 A GLC 50    | 4105359      | 1-1/2     | 38.1  | X 65 A         | 4090400   | 1-3/16         | 30.1  | 1740 S        |           | 3/8       | 9.5  | 3/8       | 9.5  | 50          | 15.24 |

\* Other sizes may be available. Contact customer service for details

# Type 1 - Single Unit Heads

## 1/2" - 2-1/4" I.D. "Series 40"

Single unit heads, components and (ordering numbers)



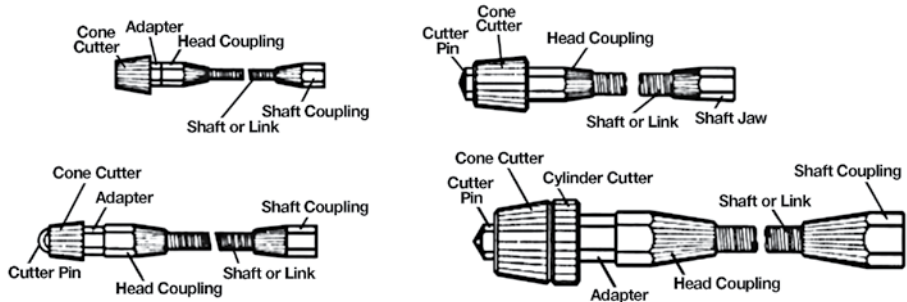
| Head Number           | Tube I.D.        | Universal Joint      | Shaft Jaw Tap | Adapter           | Cutter Pin          | Cone Cutter (qty.)        | Cylinder Cutter    |
|-----------------------|------------------|----------------------|---------------|-------------------|---------------------|---------------------------|--------------------|
| 2440<br>(4051800)     | 1/2"             | 2451<br>(4094800)    | 10-32         | 2443<br>(1057000) | -                   | 2487 S<br>(1058400)       | -                  |
| 3040<br>(4053200)     | 5/8"<br>11/16"   | PA 3051<br>(4098200) | 1/4"<br>N.F.  | 2734<br>(1063300) | -                   | 3037<br>(10681000)        | -                  |
| 2740<br>(4052400)     | 3/4"<br>13/16"   | PA 3051<br>(4098200) | 1/4"<br>N.F.  | 2734<br>(1063300) | -                   | C 3<br>(1212500)          | -                  |
| 2740 S<br>(4104802PT) | 3/4"<br>13/16"   | 6451<br>(4096500)    | 1/4"<br>N.F.  | -                 | 2944<br>(1065900)   | 2947 S (2)<br>(1066100PT) | -                  |
| X 6440<br>(4074400)   | 13/16"           | 6451<br>(4096500)    | 1/4"<br>N.F.  | -                 | 2944<br>(1065900)   | 2947<br>(1066000)         | -                  |
| 2940<br>(4052800)     | 27/32"<br>7/8"   | 2651<br>(4094900)    | 3/8"<br>N.F.  | 2943<br>(1065800) | 2944<br>(1065900)   | 2947<br>(1066000)         | -                  |
| 2640<br>(4052100)     | 1"               | 2651<br>(4094900)    | 3/8"<br>N.F.  | 2643<br>(1061200) | 2644<br>(1061400)   | 337<br>(1025700)          | -                  |
| X 6140<br>(4074000PT) | 1-1/32"          | 6151<br>(4096100PT)  | 5/16"<br>N.F. | -                 | 2644<br>(1061400)   | 337<br>(1025700)          | -                  |
| 3140<br>(4053800)     | 1-1/8"           | 6651<br>(4096700)    | 7/16"<br>N.F. | -                 | 3144 A<br>(1070500) | 2837<br>(1064600)         | -                  |
| X 6340<br>(4074200)   | 1-1/4"           | 6651<br>(4096700)    | 3/8"<br>N.F.  | -                 | 2544 S<br>(1059400) | 947<br>(1038700)          | -                  |
| 12240<br>(4059200)    | 1-1/4"<br>1-1/2" | 3151<br>(4095000)    | 7/16"<br>N.F. | -                 | 2544 S<br>(1059400) | 947<br>(1038700)          | -                  |
| X 6540<br>(4074600)   | 1-3/8"           | 6651<br>(4096700)    | 3/8"<br>N.F.  | -                 | 2544 S<br>(1059400) | 6547<br>(1097600)         | -                  |
| 1740<br>(4050500)     | 1-1/2"           | 31551<br>(4097500)   | 9/16"<br>N.F. | 1743<br>(1047801) | 2844<br>(1064800)   | 1097<br>(1043100)         | 1088<br>(1042800)  |
| 1940<br>(4051000)     | 1-5/8"           | 4151<br>(4095600)    | 5/8"<br>N.C.  | 1943<br>(1051400) | 1944<br>(1051500)   | 797<br>(1034500)          | 788<br>(1034300)   |
| X 6640<br>(4074800)   | 1-3/4"           | 6651<br>(4096700)    | 3/8" N.F.     | -                 | 2544 S<br>(1059400) | 897 B<br>(1038300)        | -                  |
| 4140<br>(4054900)     | 1-5/8"<br>2"     | 4151<br>(4095600)    | 5/8"<br>N.C.  | 1943<br>(1051400) | 1944<br>(1051500)   | 897 B<br>(1038300)        | 888 B<br>(1037700) |
| 4440 C<br>(4055300)   | 2-1/4"           | 4151<br>(4095600)    | 5/8"<br>N.C.  | 1943<br>(1051400) | 1944<br>(1051500)   | 897<br>(1038100)          | 888<br>(1037600)   |

# Type 2 Single Unit Heads

*Airetool*

## 1/2" - 2-1/8" I.D. "Series 30"

Single unit heads, components and (ordering numbers)



| Head Number         | Tube I.D.        | Flex Connection       | Shaft Cpl. Tap | Head Cpl. Tap | Adapter           | Cutter Pin          | Cone Cutter         | Cylinder Cutter    | Length | Diameter |
|---------------------|------------------|-----------------------|----------------|---------------|-------------------|---------------------|---------------------|--------------------|--------|----------|
| 2430<br>(4051700)   | 1/2"             | 2461 A<br>(4035500)   | 10-32          | 10-32         | 2443<br>(1057000) | -                   | 2487 S<br>(1058400) | -                  | 4"     | 3/16"    |
| 3030<br>(4053100)   | 5/8"             | X 6461 A<br>(4046200) | 1/4"<br>N.F.   | 1/4"<br>N.F.  | 2734<br>(1063300) | -                   | 3037<br>(1068100)   | -                  | 4"     | 3/16"    |
| 2730<br>(4052300)   | 3/4"             | X 6461 A<br>(4046200) | 1/4"<br>N.F.   | 1/4"<br>N.F.  | 2734<br>(1063300) | -                   | C 3<br>(1212500)    | -                  | 4"     | 3/16"    |
| X 6430<br>(4074300) | 13/16"           | X 6461 A<br>(4046200) | 1/4"<br>N.F.   | 1/4"<br>N.F.  | -                 | 2944<br>(1065900)   | 2947<br>(1066000)   | -                  | 4"     | 3/16"    |
| 2930<br>(4052700)   | 7/8"             | 2961 A<br>(4036500)   | 3/8"<br>N.F.   | 3/8"<br>N.F.  | 2943<br>(1065800) | 2944<br>(1065900)   | 2947<br>(1066000)   | -                  | 4-1/2" | 1/4"     |
| 12130               | 1"               | 12161 A<br>(4038300)  | 5/16"<br>N.F.  | 5/16"<br>N.F. | -                 | 2644<br>(1061400)   | 337<br>(1025700)    | -                  | 4-1/2" | 1/4"     |
| 2630<br>(4052000)   | 1"               | 2661 A<br>(4036200)   | 3/8"<br>N.F.   | 5/16"<br>N.F. | -                 | 2644<br>(1061400)   | 337<br>(1025700)    | -                  | 4-1/2" | 1/4"     |
| X 6130<br>(4073900) | 1-1/32"          | X 6161 A<br>(4045000) | 5/16"<br>N.F.  | 5/16"<br>N.F. | -                 | 2644<br>(1061400)   | 337<br>(1025700)    | -                  | 4"     | 3-16     |
| 3130<br>(4053700)   | 1-1/8"           | X 6361 A<br>(4045600) | 7/16"<br>N.F.  | 3/8"<br>N.F.  | -                 | 3144 A<br>(1070500) | 2837<br>(1064600)   | -                  | 4-1/2" | 1/4"     |
| X 6330<br>(4074100) | 1-1/4"           | X 6361 A<br>(4045600) | 3/8"<br>N.F.   | 7/16"<br>N.F. | -                 | 2544 S<br>(1059400) | 947<br>(1038700)    | -                  | 4-1/2" | 1/4"     |
| X 6530<br>(4074500) | 1-1/2"           | X 6661 A<br>(4046800) | 3/8"<br>N.F.   | 7/16"<br>N.F. | -                 | 2544 S<br>(1059400) | 6547<br>(1097600)   | -                  | 6-1/2" | 3/8"     |
| X 6630<br>(4074700) | 1-3/4"           | X 6661 A<br>(4046800) | 3/8"<br>N.F.   | 7/16"<br>N.F. | -                 | 2544 S<br>(1059400) | 797<br>(1034500)    | -                  | 6-1/2" | 3/8"     |
| 4130<br>(4054800)   | 1-5/8"<br>2-1/8" | 4161 A<br>(4037100)   | 5/8"<br>N.C.   | 5/8"<br>N.C.  | 1943<br>(1051400) | 1944<br>(1051500)   | 897 B<br>(1038300)  | 888 B<br>(1037700) | 7"     | 1/2"     |

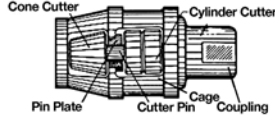


# Type 3 - Single Expansion "P" & "TC" Heads

## 1-1/2" - 7" I.D. for Straight Tubes and Drill Pipe

Single expansion heads, components and (order numbers)

- "PY" heads developed specifically for the rigorous conditions found in Pipe Yard applications
- "PY" heads have larger diameter front ends and stronger coupling studs that increase durability

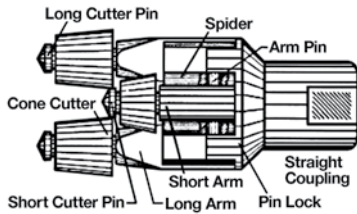


| Head Number        | Tube I.D. | Closed   | Expands To | Cage                     | Pin Plate         | Head Coupling   | Tap Coupling | Cutter Pin (qty.)                        | Cone Cutter (qty.)   | Cylinder Cutter (qty.) |
|--------------------|-----------|----------|------------|--------------------------|-------------------|-----------------|--------------|--|----------------------|------------------------|
| TC 14 (4072000)    | 1-1/2"    | 1-3/8"   | 1-23/32"   | 1781 (1048300)           | -                 | 1783 (1048500)  | 9/16"        | 1584 (1), 1884 (1) (1046600) (1051100PT) | 1787 (1) (1048600)   | 1788 (2) (1048800)     |
| TC 11 (4071500)    | 1-3/4"    | 1-5/8"   | 2"         | 1881 (1050700)           | -                 | 1883 (1051000)  | 5/8"         | 1584 (1), 1884 (1) (1046600) (1051100PT) | 1587 (1) (1046700)   | 1588 (2) (1047000)     |
| TC 17 PY (4105583) | 1-7/8"    | 1-11/16" | 2"         | 2281 T C 17 PY (1717018) | -                 | 2383 (1055400)  | 5/8"         | 1584 PY (3) (1716989)                    | 2287 (3) (1053400)   | 2288 (6) (1053500)     |
| TC 16 PY (4105566) | 2"        | 1-13/16" | 2-3/16"    | 2381 PY (1716988)        | -                 | 2383 (1055400)  | 5/8"         | 1584 PY (3) (1716989)                    | 1787 (3) (1048600)   | 1788 (6) (1048800)     |
| TC 13 PY (4105569) | 2-1/8"    | 1-5/16"  | 2-5/16"    | 2381 A PY (1716995)      | -                 | 2383 (1055400)  | 5/8"         | 1584 PY (3) (1716989)                    | 1787 (3) (1048600)   | 1788 (6) (1048800)     |
| P 15 PY (4105570)  | 2-1/4"    | 2-1/16"  | 2-7/16"    | P 1591 PY (1716997)      | P 1592 (1294400)  | 183 (1019900)   | 3/4"         | 2484 PY (3) (1716998)                    | 2487 (3) (1058200)   | 2488 (6) (1717384)     |
| P 9 S (4070300)    | 2-3/8"    | 2-3/16"  | 2-11/16"   | P 991 S (1292700)        | P 992 S (1293400) | 183 (1019900)   | 3/4"         | 2484 (3) (1057900)                       | C 52 (3) (1217500PT) | C 76 (6) (1218400)     |
| P 9 PY (4105567)   | 2-1/2"    | 2-1/4"   | 2-13/16"   | P 991 PY (1716990)       | P 992 (1293300)   | 183 (1019900)   | 3/4"         | 1584 PY (3) (1716989)                    | 1587 (3) (1046700)   | 1588 (6) (1047000)     |
| P 8 (4069400)      | 2-5/8"    | 2-9/16"  | 2-7/8"     | P 891 (1291800)          | P 892 (1292300)   | 21483 (1133700) | 7/8"         | 184 (3) (1020300)                        | 1087 (3) (1042700)   | 1088 (6) (1042800)     |
| P 7 (4068900)      | 2-3/4"    | 2-9/16"  | 2-15/16"   | P 791                    | P 792             | 983 S (1039800) | 7/8"         | 184 (3) (1020300)                        | 1087 (3) (1042700)   | 1088 (6) (1042800)     |
| P 6 A PY (4105591) | 3"        | 2-11/16" | 3-1/8"     | P 691 A PY (1717032)     | P 692 A (1290700) | 983 S (1039800) | 7/8"         | 184 PY (3) (1717033)                     | 1087 (3) (1042700)   | 1088 (6) (1042800)     |
| P 6 (4068900)      | 3-1/8"    | 2-13/16" | 3-1/4"     | P 691 AY                 | P 692 (1290600)   | 983 S (1039800) | 7/8"         | 184 (3) (1020300)                        | 1087 (3) (1042700)   | 1088 (6) (1042800)     |
| P 5 (4067400)      | 3-1/4"    | 3-1/16"  | 3-9/16"    | P 591 (1289100)          | P 592 (1289600)   | 983 S (1039800) | 7/8"         | 184 (3) (1020300)                        | 987 (3) (1040000)    | 988 (6) (1040100PT)    |
| P 4 (4066900PT)    | 3-1/2"    | 3-3/16"  | 3-13/16"   | P 491 (1288500PT)        | P 492 (1289000)   | 883 D (1036100) | 7/8"         | 884 (3) (1036700)                        | 787 (3) (1034200)    | 788 (6) (1034300)      |
| P 3 (4066400)      | 3-3/4"    | 3-9/16"  | 4-3/16"    | P 391 (1287900)          | P 392 (1288300)   | 883 F (1036400) | 7/8"         | 884 (3) (1036700)                        | 887 B (3) (1037300)  | 888 B (6) (1037700)    |
| P 2 (4065900)      | 4"        | 3-3/4"   | 4-1/2"     | P 291 (1287100)          | P 292 (1287700)   | 883 F (1036400) | 7/8"         | 884 (3) (1036700)                        | 887 (3) (1037100)    | 888 (6) (1037600)      |
| P 1 (4065900)      | 4-1/4"    | 3-13/16" | 4-3/4"     | P 191                    | P 192             | 883 F (1036400) | 1 1/8"       | 884 P (3) (1036800)                      | 887 (3) (1037100)    | 888 (6) (1037600)      |
| P 0 (4070800)      | 4-1/2"    | 4-1/8"   | 4-15/16"   | P 091 (1286300)          | P 092 (1286600)   | 883 F (1036400) | 1 1/8"       | 884 P (3) (1036800)                      | 887 B (3) (1037300)  | 888 B (6) (1037700)    |
| P 10 (4070800)     | 4-3/4"    | 4-3/8"   | 4-15/16"   | P 1091 (1293500)         | P 1092 (1293800)  | 883 F (1036400) | 1 1/8"       | 884 P (3) (1036800)                      | 887 (3) (1037100)    | 888 (6) (1037600)      |
| TC 19 H S          | 5"        | 4-1/2"   | 5-9/16"    | 1991 H S                 | -                 | 21283           | 1 3/8"       | 884 P (3) (1036800)                      | 1287 (3) (1044300)   | 1288 (9) (1044400)     |
| TC 19 S            | 5-1/4"    | 4-7/8"   | 5-15/16"   | 1991 S                   | -                 | 8293 (1111010)  | 1 3/8"       | 884 P (4) (1036800)                      | 1287 (4) (1044300)   | 1288 (12) (1044400)    |
| TC 20 S (4073200)  | 6"        | 5-1/2"   | 6-1/2"     | 2091 S (1052800)         | -                 | 8293 (1111010)  | 1 3/8"       | 884 P (4) (1036800)                      | 1287 (4) (1044300)   | 1288 (12) (1044400)    |
| TC 21 S            | 6-1/4"    | 5-3/4"   | 6-3/4"     | 2191 S                   | -                 | 8293 (1111010)  | 1 3/8"       | 884 P (4) (1036800)                      | 11887 (4)            | 11888 (12)             |
| TC 22 S            | 6-1/2"    | 6"       | 7-1/16"    | 2291 S                   | -                 | 8293 (1111010)  | 1 3/8"       | 884 P (4) (1036800)                      | 11887 (4)            | 11888 (12)             |
| TC 23 S            | 6-3/4"    | 6-1/4"   | 7-5/16"    | 2391 S                   | -                 | 8293 (1111010)  | 1 3/8"       | 2484 S (4) (1058100)                     | 8287 (4)             | 8288 (12)              |
| TC 24 S            | 7"        | 6-1/2"   | 7-9/16"    | 2491 S                   | -                 | 8293 (1111010)  | 1 3/8"       | 2484 S (4) (1058100)                     | 8287 (4)             | 8288 (12)              |

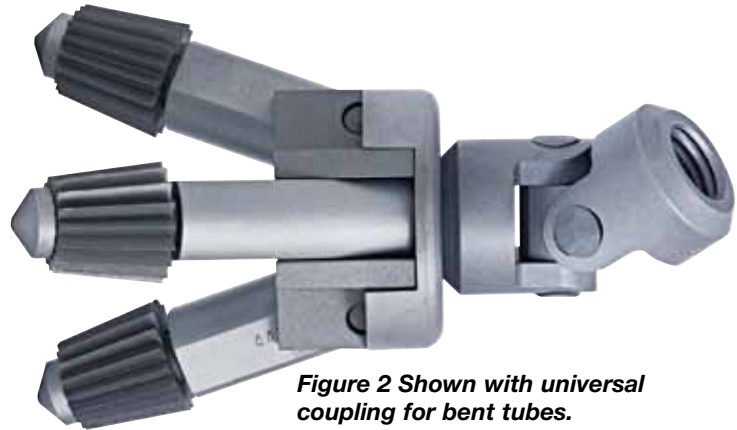
## 1-3/4" - 4-3/4" I.D. for Straight Tubes, Bent Tubes and Drill Pipe

Forward swing arm heads, components and (ordering numbers)

Recommended spare parts: cone cutters and cutter pins, cutter arms and arm pins.



**Figure 1 Shown with head coupling for straight tubes.**



**Figure 2 Shown with universal coupling for bent tubes.**



| Head Number          | Tube I.D.  | Closed | Expands To | Spider          | Figure | Long Arm (qty.)      | Short Arm (qty.)       | Head Cpl.          | Cpl. Tap  | Long Cutter Pin (qty.) | Short Cutter Pin (qty.) | Arm Pin (qty.)       | Pin Lock (qty.)     | Cone Cutter (qty.) | Star Cutter (qty.) | No. of Arms |
|----------------------|------------|--------|------------|-----------------|--------|----------------------|------------------------|--------------------|-----------|------------------------|-------------------------|----------------------|---------------------|--------------------|--------------------|-------------|
| 1840 (4050700)       | 1-3/4"     | 1-1/2" | 2-1/8"     | 1841 (1049800)  | 1      | 1842 (1) (1049900)   | 1842 A (1) (1050000)   | -                  | 5/8" N.C. | 1834 (1) (1049600)     | 1834 A (1) (1049700)    | 1845 (2) (1050100PT) | 1846 (1050202)      | 337 (2) (1025700)  | 338 (3) (1025905)  | 2           |
| 1840 B (4050800)     | 2-1/4"     | 1-1/2" | 2-1/8"     | 1841 (1049800)  | 2      | 1842 (1) (1049900)   | 1842 A (1) (1050000)   | MM 66 (1279200)    | 5/8" N.C. | 1834 (1) (1049600)     | 1834 A (1) (1049700)    | 1845 (2) (1050100PT) | 1846 (1050202)      | 337 (2) (1025700)  | 338 (3) (1025905)  | 2           |
| 2340 (4051400)       | 2"         | 1-7/8" | 3"         | 2341 (1054000)  | 1      | 1832 (1) (1049400PT) | 1832 A (1) (1049500PT) | -                  | 5/8" N.C. | 1834 (1) (1049600)     | 1834 A (1) (1049700)    | 2345 (2) (1054300)   | 2346 (1054400)      | 337 (2) (1025700)  | 338 (3) (1025905)  | 2           |
| 4440 (4052000)       | 2"         | 1-7/8" | 3"         | 2341 (1054000)  | 2      | 1832 (1) (1049400PT) | 1832 A (1) (1049500PT) | MM 66 (1279200)    | 5/8" N.C. | 1834 (1) (1049600)     | 1834 A (1) (1049700)    | 2345 (2) (1054300)   | 2346 (1054400)      | 337 (2) (1025700)  | 338 (3) (1025905)  | 2           |
| 4470 (4055400)       | 2-5/16"    | 2"     | 3-7/8"     | 4471 (1082200)  | 2      | 4472 (3) (1082300)   | -                      | MM 66 (1279200)    | 5/8" N.C. | 4474 (3) (1082400)     | -                       | 4475 (3) (1082500)   | 4476 (1082600)      | C 19 (3) (1214100) | -                  | 3           |
| 4470 A (4055500)     | 2-5/16"    | 2"     | 3-7/8"     | 4471 (1082200)  | 1      | 4472 (3) (1082300)   | -                      | 2383 B (1055600)   | 3/4" N.C. | 4474 (3) (1082400)     | -                       | 4475 (3) (1082500)   | 4476 (1082600)      | C 19 (3) (1214100) | -                  | 3           |
| 3370 (4054400)       | 2-1/4"     | 2-1/4" | 3-5/8"     | 3371 (1075500)  | 2      | 3372 (3) (1075600)   | -                      | 3551 (4095400)     | 3/4" N.C. | 3374 (3) (1075700)     | -                       | 3375 (3) (1075800)   | 3376 (1075900)      | 637 (3) (1028800)  | -                  | 3           |
| 3370 A (4054500)     | 2-3/4"     | 2-1/4" | 3-5/8"     | 3371 (1075500)  | 1      | 3372 (3) (1075600)   | -                      | 2043 7/8 (1052600) | 7/8" N.C. | 3374 (3) (1075700)     | -                       | 3375 (3) (1075800)   | 3376 (1075900)      | 637 (3) (1028800)  | -                  | 3           |
| 3270 (4054000)       | 3"         | 2-1/2" | 4"         | 3271 (1071700)  | 2      | 3472 (2) (1076100)   | 3272 (2) (1071800)     | 3551 (4095400)     | 7/8" N.C. | 3474 (2) (1076200)     | 3274 (2) (1071900)      | 3275 (2) (1072000)   | 3276 (1072200)      | 1047 (2) (1041700) | 2837 (2) (1064600) | 4           |
| 3270 A 7/8 (4054100) | 3"         | 2-1/2" | 4"         | 3271 (1071700)  | 1      | 3472 (2) (1076100)   | 3272 (2) (1071800)     | 2043 7/8 (1052600) | 7/8" N.C. | 3474 (2) (1076200)     | 3274 (2) (1071900)      | 3275 (2) (1072000)   | 3276 (1072200)      | 1047 (2) (1041700) | 2837 (2) (1064600) | 4           |
| 970 (4049900)        | 3-1/4"     | 2-3/4" | 4-7/8"     | 971 (1039000)   | 1      | 972 (2) (1039100)    | 972 A (2) (1039200)    | 543 7/8 (1027300)  | 7/8" N.C. | 974 (2) (1039300)      | 974 A (2) (1039400)     | 975 (4) (1039500)    | 976 (4) (1039600)   | 637 (4) (1028800)  | -                  | 4           |
| 970 B (4050000)      | 3-1/4"     | 2-3/4" | 4-7/8"     | 971 (1039000)   | 2      | 972 (2) (1039100)    | 972 A (2) (1039200)    | 551 (4094000)      | 7/8" N.C. | 974 (2) (1039300)      | 974 A (2) (1039400)     | 975 (4) (1039500)    | 976 (4) (1039600)   | 637 (4) (1028800)  | -                  | 4           |
| 770 (4048700)        | 3-1/2"     | 3"     | 4-3/4"     | 771 (1033000)   | 1      | 772 (2) (1033200)    | 772 A (2) (1033300)    | 873 A (1035400)    | 7/8" N.C. | 774 (2) (1033500PT)    | 774 A (2) (1033600)     | 775 (4) (1033800)    | 776 (1033900)       | 747 (4) (1031700)  | -                  | 4           |
| 770 B (4048800)      | 3-1/2"     | 3"     | 4-3/4"     | 771 (1033000)   | 2      | 772 (2) (1033200)    | 772 A (2) (1033300)    | 1151 (4094400)     | 7/8" N.C. | 774 (2) (1033500PT)    | 774 A (2) (1033600)     | 775 (4) (1033800)    | 776 (1033900)       | 747 (4) (1031700)  | -                  | 4           |
| 870 (4049300)        | 3-1/4 - 4" | 3-3/8" | 5-1/8"     | 871             | 1      | 772 (2) (1033200)    | 772 A (2) (1033300)    | 873 A (1035400)    | 7/8" N.C. | 774 (2) (1033500PT)    | 774 A (2) (1033600)     | 875 (4)              | 876                 | 747 (4) (1031700)  | -                  | 4           |
| 870 B (4049400)      | 3-1/4 - 4" | 3-3/8" | 5-1/8"     | 871             | 2      | 772 (2) (1033200)    | 772 A (2) (1033300)    | 1151 (4094400)     | 7/8" N.C. | 774 (2) (1033500PT)    | 774 A (2) (1033600)     | 875 (4)              | 876                 | 747 (4) (1031700)  | -                  | 4           |
| 770 SA (4049000)     | 4-3/4"     | 2-3/4" | 5-1/2"     | 771 S (1033100) | 1      | 772 S (4) (1033400)  | -                      | 543 7/8 (1027300)  | 7/8" N.C. | 774 S (4) (1033700)    | -                       | 775 (4) (1033800)    | 776 S (4) (1034000) | 747 (4) (1031700)  | -                  | 4           |
| 770 S                | 4-3/4"     | 2-1/4" | 5-1/2"     | 771 S (1033100) | 2      | 772 S (4) (1033400)  | -                      | 551 (4094000)      | 7/8" N.C. | 774 S (4) (1033700)    | -                       | 775 (4) (1033800)    | 776 S (4) (1034000) | 747 (4) (1031700)  | -                  | 4           |

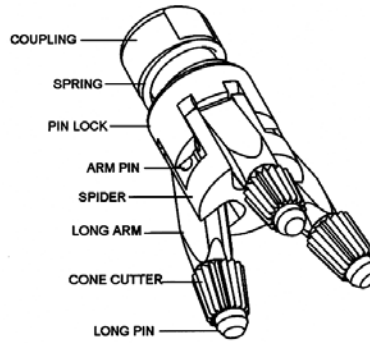
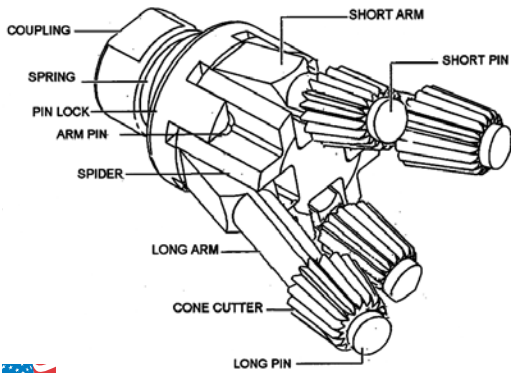
# Type 4 - SRA Spring Retracting Arm Heads

## 1-1/2" - 4-3/4" I.D. for Straight Tubes, Bent Tubes, and Drill Pipe

Forward swing arm heads, components and (ordering numbers)

Recommended spare parts: cone cutters and cutter pins, cutter arms and arm pins.

- Developed specifically for Drill Pipe applications to protect box end threads
- The "SRA" arms are held closed until air is applied which allows for easy insertion into the box end of drill pipe, especially when used with automated cleaning equipment

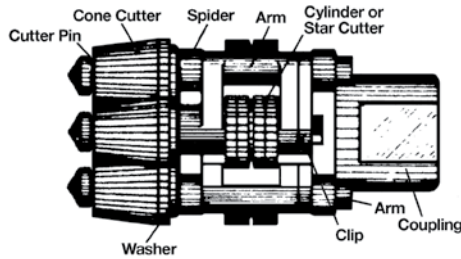


| Head Number                  | Tube I.D. | Closed | Expands To | Spider              | Fig. | Long Arm (qty.)         | Short Arm (qty.)       | Head Coupling                | Coupling Tap | Long Cutter Pin (qty.)  | Short Cutter Pin (qty.) | Arm Pin (qty.)          | Pin Lock (qty.)         | Cone Cutter (qty.)    | Star Cutter (qty.)    | Spring                  | Universal Joint        | No. of Arms |
|------------------------------|-----------|--------|------------|---------------------|------|-------------------------|------------------------|------------------------------|--------------|-------------------------|-------------------------|-------------------------|-------------------------|-----------------------|-----------------------|-------------------------|------------------------|-------------|
| SRA 1470 9/16<br>(4105691PT) | 1-1/2"    | 1-3/8" | 2-3/8"     | 1471<br>(1717450PT) | 1    | 1472 (3)<br>(1717451PT) | -                      | SRA 1473 9/16<br>(1717452PT) | 9/16"        | 1474 (3)<br>(1717453PT) | -                       | 1475 (3)<br>(1717454PT) | SRA 1476<br>(1717455PT) | 2947 (3)<br>(1066000) | -                     | SRA 1479<br>(1717449PT) | -                      | 3           |
| SRA 1870 5/8<br>(4105684PT)  | 2"        | 1-7/8" | 2-7/8"     | 1871<br>(1050300PT) | 1    | 4472 (3)<br>(1082300)   | -                      | SRA 1873<br>(1717447PT)      | 5/8"         | 4474 (3)<br>(1082400)   | -                       | 4475 (3)<br>(1082500)   | SRA 1876<br>(1717448PT) | C 19 (3)<br>(1214100) | -                     | SRA 1879<br>(1717448PT) | -                      | 3           |
| SRA 4470 3/4<br>(4105679)    | 2-5/16"   | 2"     | 3-1/2"     | 4471<br>(1082200)   | 1    | 4472 (3)<br>(1082300)   | -                      | SRA 4473 3/4<br>(1717435)    | 3/4"         | 4474 (3)<br>(1082400)   | -                       | 4475 (3)<br>(1082500)   | SRA 4476<br>(1717434)   | C 19 (3)<br>(1214100) | -                     | SRA 4479<br>(1717436)   | -                      | 3           |
| SRA 3370 7/8<br>(4105678)    | 2-3/4"    | 2-1/4" | 3-7/8"     | 3371<br>(1075500)   | 1    | 3372 (3)<br>(1075600)   | -                      | SRA 3373 7/8<br>(1717432)    | 7/8"         | 3374 (3)<br>(1075700)   | -                       | 3375 (3)<br>(1075800)   | SRA 3376<br>(1717431)   | 637 (3)<br>(1028800)  | -                     | SRA 3379<br>(171433)    | -                      | 3           |
| SRA 3270 7/8<br>(4105681)    | 3"        | 2-1/2" | 4"         | 3271<br>(1071700)   | 1    | 3472 (2)<br>(1076100)   | 3272 (2)<br>(1071800)  | SRA 3373 7/8<br>(1717432)    | 7/8"         | 3474 (2)<br>(1076200)   | 3274 (2)<br>(1071900)   | 3275 (4)<br>(1072000)   | SRA 3276<br>(1717444)   | 1047 (2)<br>(1041700) | 2837 (2)<br>(1064600) | SRA 3379<br>(171433)    | -                      | 4           |
| SRA 3270 UJK<br>(4105694PT)  | 3"        | 2-1/2" | 4"         | 3271<br>(1071700)   | 2    | 3472 (2)<br>(1076100)   | 3272 (2)<br>(1071800)  | SRA 3273U<br>(1717456PT)     | 7/8"         | 3474 (2)<br>(1076200)   | 3274 (2)<br>(1071900)   | 3275 (4)<br>(1072000)   | SRA 3276<br>(1717444)   | 1047 (2)<br>(1041700) | 2837 (2)<br>(1064600) | SRA 3379<br>(171433)    | 651 KNF<br>(4094150PT) | 4           |
| SRA 970 7/8<br>(4105680)     | 3-1/4"    | 2-3/4" | 4-1/4"     | 971<br>(1039000)    | 1    | 972 (2)<br>(1039100)    | 972 A (2)<br>(1039200) | SRA 973 7/8<br>(1717442)     | 7/8"         | 974 (2)<br>(1039300)    | 974 A (2)<br>(1039400)  | 975 (4)<br>(1039500)    | SRA 976<br>(1717441)    | 637 (4)<br>(1028800)  | -                     | SRA 3379<br>(1717433)   | -                      | 4           |
| SRA 770 7/8<br>(4105677PT)   | 3-1/2"    | 3"     | 4-7/8"     | 771<br>(1033000)    | 1    | 772 (2)<br>(1033200)    | 772 A (2)<br>(1033300) | SRA 773 7/8<br>(1717429)     | 7/8"         | 774 (2)<br>(1033500)    | 774 A (2)<br>(1033600)  | 775 (4)<br>(1033800)    | SRA 776<br>(1717428)    | 747 (4)<br>(1031700)  | -                     | SRA 779<br>(1717430)    | -                      | 4           |
| SRA 5770 7/8<br>(4105683PT)  | 4-3/4"    | 2-3/4" | 5-1/2"     | 771<br>(1033000)    | 1    | 772 S (4)<br>(1033400)  | -                      | SRA 773 7/8<br>(1717429)     | 7/8"         | 774 S (4)<br>(1033700)  | -                       | 775 (4)<br>(1033800)    | SRA 776<br>(1717428)    | 747 (4)<br>(1031700)  | -                     | SRA 779<br>(1717430)    | -                      | 4           |

# Type 5 - "Self Feed" Clip Type Wing Arm Heads



**1-3/4" - 8-3/4" I.D. for Straight Tubes and Pipe**  
Wing arm heads, components and (ordering numbers)

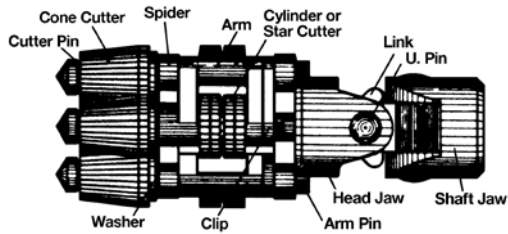


| Head Number              | Tube I.D. | Closed   | Expands To | Spider               | Arm (Qty.)               | Coupling               | Coupling Plate        | Coupling Tap   | Cutter Pin (qty.)      | Arm Pin (qty.)         | Clip (qty.)            | Cone Cutter (qty.)     | Cylinder Cutter (qty.)  | Washer (qty.)          |
|--------------------------|-----------|----------|------------|----------------------|--------------------------|------------------------|-----------------------|----------------|------------------------|------------------------|------------------------|------------------------|-------------------------|------------------------|
| 11740<br>(4058900)       | 1-3/4"    | 1-1/2"   | 2-1/8"     | 11741<br>(1113900)   | 11742 (2)<br>(1114000)   | 11743 B<br>(1114400)   | -                     | 5/8"<br>N.C.   | 11744 (2)<br>(1114700) | 11745 (2)<br>(1114800) | -                      | 11747 (2)<br>(1114900) | 11748 (8)<br>(1115000)  | -                      |
| 3060 5/8<br>(4053400)    | 2-3/8"    | 1-15/16" | 2-5/8"     | 3061<br>(1069100)    | 3062 S (3)<br>(1069300)  | 3043<br>(1068500)      | -                     | 5/8"<br>N.C.   | 3364 (3)<br>(1075200)  | 3365 (3)<br>(1075300)  | 3068 (3)<br>(1069400)  | 3047 (3)<br>(1068900)  | 3048 (3)<br>(1069000)   | -                      |
| 3060 3/4<br>(4053401)    | 2-3/8"    | 1-15/16" | 2-5/8"     | 3061<br>(1069100)    | 3062 S (3)<br>(1069300)  | 3043 3/4<br>(1068700)  | -                     | 3/4"<br>N.C.   | 3364 (3)<br>(1075200)  | 3365 (3)<br>(1075300)  | 3068 (3)<br>(1069400)  | 3047 (3)<br>(1068900)  | 3048 (3)<br>(1069000)   | -                      |
| 2060 3/4<br>(4051300)    | 2-1/2"    | 2-1/4"   | 3"         | 3361<br>(1074900)    | 3362 S (3)<br>(1075100)  | 2043 3/4<br>(1052400)  | -                     | 3/4"<br>N.C.   | 3364 (3)<br>(1075200)  | 3365 (3)<br>(1075300)  | 3368 (3)<br>(1075400)  | 337 (3)<br>(1025700)   | 338 (15)<br>(1025905)   | 339 (3)<br>(1026000)   |
| 2060 7/8<br>(4051301)    | 2-1/2"    | 2-1/4"   | 3"         | 3361<br>(1074900)    | 3362 S (3)<br>(1075100)  | 2043 7/8<br>(1052600)  | -                     | 7/8"<br>N.C.   | 3364 (3)<br>(1075200)  | 3365 (3)<br>(1075300)  | 3368 (3)<br>(1075400)  | 337 (3)<br>(1025700)   | 338 (15)<br>(1025905)   | 339 (3)<br>(1026000)   |
| 1060 3/4NC<br>(4010201)  | 3"        | 2-5/8"   | 3-3/4"     | 1061<br>(1042000)    | 1062 S (3)<br>(1042200)  | 1033 3/4<br>(1041000)  | -                     | 3/4"<br>N.C.   | 1064 (3)<br>(1042300)  | 1065 (3)<br>(1042400)  | 1068 (3)<br>(1042500)  | 1047 (3)<br>(1041700)  | 1048 (15)<br>(1041800)  | -                      |
| 1060 7/8THD<br>(4105640) | 3"        | 2-5/8"   | 3-3/4"     | 1061<br>(1042000)    | 1062 S (3)<br>(1042200)  | 1033 7/8<br>(1041100)  | -                     | 7/8"<br>N.C.   | 1064 (3)<br>(1042300)  | 1065 (3)<br>(1042400)  | 1068 (3)<br>(1042500)  | 1047 (3)<br>(1041700)  | 1048 (15)<br>(1041800)  | -                      |
| 1060 1NF<br>(4050202)    | 3"        | 2-5/8"   | 3-3/4"     | 1061<br>(1042000)    | 1062 S (3)<br>(1042200)  | 1033 1<br>(1040900PT)  | -                     | 1"<br>N.C.     | 1064 (3)<br>(1042300)  | 1065 (3)<br>(1042400)  | 1068 (3)<br>(1042500)  | 1047 (3)<br>(1041700)  | 1048 (15)<br>(1041800)  | -                      |
| 960<br>(4049700)         | 3-1/4"    | 3-1/8"   | 4-1/8"     | 961<br>(1038900)     | 762 S (3)<br>(1032800)   | 543 7/8<br>(1027300)   | -                     | 7/8"<br>N.C.   | 35264 (3)<br>(1154900) | 765 (3)<br>(1032900)   | 35268 (3)<br>(1155100) | 947 (3)<br>(1038700)   | 948 (27)<br>(1038800)   | 749 (3)<br>(1031900PT) |
| 760 1<br>(4048500)       | 3-1/2"    | 3-1/4"   | 4-1/2"     | 761<br>(1032600)     | 762 S (3)<br>(1032800)   | 743 1<br>(1031200)     | -                     | 1"<br>N.F.     | 35264 (3)<br>(1154900) | 765 (3)<br>(1032900)   | 35268 (3)<br>(1155100) | 747 (3)<br>(1031700)   | 748 (24)<br>(1031802)   | 749 (3)<br>(1031900PT) |
| 760 1 1/8<br>(4048501)   | 3-1/2"    | 3-1/4"   | 4-1/2"     | 761<br>(1032600)     | 762 S (3)<br>(1032800)   | 743 1 1/8<br>(1716210) | -                     | 1-1/8"<br>N.F. | 35264 (3)<br>(1154900) | 765 (3)<br>(1032900)   | 35268 (3)<br>(1155100) | 747 (3)<br>(1031700)   | 748 (24)<br>(1031802)   | 749 (3)<br>(1031900PT) |
| 5060 AS<br>(4056400)     | 4-1/2"    | 3-7/8"   | 5-5/8"     | 5061 A<br>(1086900)  | 562 S (3)<br>(1027900)   | 843<br>(1034900)       | 5043 A                | 1-1/8"<br>N.F. | 564 (3)<br>(1028000)   | 565 (3)<br>(1028100)   | 568 (3)<br>(1028200)   | 747 (3)<br>(1031700)   | 748 (24)<br>(1031802)   | 749 (3)<br>(1031900PT) |
| 35260                    | 5-1/4"    | 4-1/2"   | 6"         | 35261                | 35262 S (4)<br>(1158200) | 35243                  | 35243 A               | 1-3/8"<br>N.F. | 35264 (4)<br>(1154900) | 35265 (4)<br>(1155000) | 35268 (4)<br>(1155100) | 271 (4)<br>(1025400)   | C 79 (12)<br>(1218700)  | 749 (4)<br>(1031900PT) |
| 36060 1-1/8              | 6"        | 5-3/8"   | 7-1/8"     | 36041<br>(1156200)   | 36562 S (4)<br>(1158200) | 36043                  | -                     | 1-1/8"<br>N.F. | 36564 (4)<br>(1158300) | 36545 (4)<br>(1157900) | 36546 (4)<br>(1158000) | 37297 (4)<br>(1159200) | 37688 (12)<br>(1160100) | 36549 (4)<br>(1158100) |
| 36060 1-3/8              | 6"        | 5-3/8"   | 7-1/8"     | 36041<br>(1156200)   | 36562 S (4)<br>(1158200) | 36043                  | -                     | 1-3/8"<br>N.F. | 36564 (4)<br>(1158300) | 36545 (4)<br>(1157900) | 36546 (4)<br>(1158000) | 37297 (4)<br>(1159200) | 37688 (12)<br>(1160100) | 36549 (4)<br>(1158100) |
| 36560 1 1/8<br>(4061701) | 6-1/2"    | 5-7/8"   | 7-5/8"     | 36541 C<br>(1157200) | 36562 S (4)<br>(1158200) | 35243 B<br>(1154200)   | 36543 AC<br>(1157500) | 1-1/8"<br>N.F. | 36564 (4)<br>(1158300) | 36545 (4)<br>(1157900) | 36546 (4)<br>(1158000) | 37297 (4)<br>(1159200) | 37288 (12)<br>(1159100) | 36549 (4)<br>(1158100) |
| 37260                    | 7-1/4"    | 6-1/4"   | 8"         | 37241                | 36562 S (4)<br>(1158200) | 8293<br>(1111010)      | 37243 A               | 1-3/8"<br>N.F. | 36564 (4)<br>(1158300) | 36545 (4)<br>(1157900) | 36546 (4)<br>(1158000) | 37297 (4)<br>(1159200) | 37288 (12)<br>(1159100) | 36549 (4)<br>(1158100) |
| 37660                    | 7-5/8"    | 6-1/2"   | 8-1/2"     | 37641                | 36562 S (4)<br>(1158200) | 8293<br>(1111010)      | 37643 A               | 1-3/8"<br>N.F. | 36564 (5)<br>(1158300) | 36545 (5)<br>(1157900) | 36546 (5)<br>(1158000) | 37697 (5)<br>(1160200) | 37288 (15)<br>(1159100) | 36549 (5)<br>(1158100) |
| 38760<br>(4062500)       | 8-3/4"    | 7-1/2"   | 9-1/2"     | 38741<br>(1160500)   | 36562 S (4)<br>(1158200) | 8293<br>(1111010)      | 38743 A<br>(1160600)  | 1-3/8"<br>N.F. | 36564 (5)<br>(1158300) | 36545 (5)<br>(1157900) | 36546 (5)<br>(1158000) | 37697 (5)<br>(1160200) | 37688 (15)<br>(1160100) | 36549 (5)<br>(1158100) |

# Type 5 - "Self Feed" Clip Type Wing Arm Heads

## 1-3/4" - 9" I.D. for Curved Tubes and Pipe

Wing arm heads, components and (ordering numbers)



| Head Number                | Tube I.D. | Closed   | Expand To | Spider               | Arm (qty.)               | Universal Coupling    | Coupling Plate        | Coupling Tap   | Cutter Pin (qty.)      | Arm Pin (qty.)         | Clip (qty.)            | Cone Cutter            | Cylinder Cutter (qty.)  | Washer (qty.)          |
|----------------------------|-----------|----------|-----------|----------------------|--------------------------|-----------------------|-----------------------|----------------|------------------------|------------------------|------------------------|------------------------|-------------------------|------------------------|
| 11740 C<br>(4058910)       | 2"        | 1-1/2"   | 2-1/8"    | 11741<br>(1113900)   | 11742 (2)<br>(1114000)   | 4151 W<br>(4095700)   | -                     | 5/8"<br>N.C.   | 11744 (2)<br>(114700)  | 11745 (2)<br>(114800)  | -                      | 11747 (2)<br>(114900)  | 11748 (8)<br>(115000)   | -                      |
| 3060 C                     | 2-1/4"    | 1-15/16" | 2-5/8"    | 3061                 | 3062 S (3)               | 4151<br>(4095600)     | -                     | 5/8"<br>N.C.   | 3364 (3)<br>(1075200)  | 3365 (3)<br>(1075300)  | 3068 (3)               | 3047 (3)               | 3048 (3)                | -                      |
| 3360<br>(4054300)          | 2-5/8"    | 2-1/4"   | 3"        | 3361<br>(1074900)    | 3362 S (3)<br>(1075100)  | 3333<br>(4095100PT)   | -                     | 3/4"<br>N.C.   | 3364 (3)<br>(1075200)  | 3365 (3)<br>(1075300)  | 3368 (3)<br>(1075400)  | 337 (3)<br>(1025700)   | 338 (15)<br>(1025905)   | 339 (3)<br>(1026000)   |
| 3560 3/4<br>(4105128)      | 2-7/8"    | 2-5/8"   | 3-3/4"    | 1061<br>(1042000)    | 1062 S (3)<br>(1042200)  | 3532 3/4<br>(4095300) | -                     | 3/4"<br>N.C.   | 1064 (3)<br>(1042300)  | 1065 (3)<br>(1042400)  | 1068 (3)<br>(1042500)  | 1047 (3)<br>(1041700)  | 1048 (15)<br>(1041800)  | -                      |
| 3560 7/8<br>(4054700)      | 3-3/8"    | 2-5/8"   | 3-3/4"    | 1061<br>(1042000)    | 1062 S (3)<br>(1042200)  | 3531 7/8<br>(4095200) | -                     | 7/8"<br>N.C.   | 1064 (3)<br>(1042300)  | 1065 (3)<br>(1042400)  | 1068 (3)<br>(1042500)  | 1047 (3)<br>(1041700)  | 1048 (15)<br>(1041800)  | -                      |
| 960 C<br>(4049800)         | 3-1/2"    | 3-1/8"   | 4-1/4"    | 961<br>(1038900)     | 762 S (3)<br>(1032800PT) | 551<br>(4094000)      | -                     | 7/8"<br>N.C.   | 35264 (3)<br>(1154900) | 765 (3)<br>(1032900)   | 35268 (3)<br>(1155100) | 947 (3)<br>(1038700)   | 948 (27)<br>(1038800)   | 749 (3)<br>(1031900PT) |
| 760 C<br>(4048600)         | 3-3/4"    | 3-1/4"   | 4-1/2"    | 761<br>(1032600)     | 762 S (3)<br>(1032800PT) | 1151<br>(4094400)     | -                     | 7/8"<br>N.C.   | 35264 (3)<br>(1154900) | 765 (3)<br>(1032900)   | 35268 (3)<br>(1155100) | 747 (3)<br>(1031700)   | 748 (24)<br>(1031802)   | 749 (3)<br>(1031900PT) |
| 760 C 1-1/8<br>(4048620PT) | 3-3/4"    | 3-1/4"   | 4-1/2"    | 761<br>(1032600)     | 762 S (3)<br>(1032800PT) | 5051 E<br>(4104884)   | -                     | 1-1/8"<br>N.F. | 35264 (3)<br>(1154900) | 765 (3)<br>(1032900)   | 35268 (3)<br>(1155100) | 747 (3)<br>(1031700)   | 748 (24)<br>(1031802)   | 749 (3)<br>(1031900PT) |
| 5060 A<br>(4056300)        | 4-13/16"  | 3-7/8"   | 5-5/8"    | 5061 A<br>(1086900)  | 562 S (3)<br>(1027900)   | 5051 E<br>(4104884)   | 5043 A<br>(1085400)   | 1-1/8"<br>N.F. | 564 (3)<br>(1028000)   | 565 (3)<br>(1028100)   | 568 (3)<br>(1028200)   | 747 (3)<br>(1031700)   | 748 (24)<br>(1031802)   | 749 (3)<br>(1031900PT) |
| 35260 C                    | 5-1/4"    | 4-1/2"   | 6"        | 35261                | 35262 S (4)<br>(1154800) | 5051 H<br>(4096000)   | 35243 A               | 1-1/8"<br>N.F. | 35264 (4)<br>(1154900) | 35265 (4)<br>(1155000) | 35268 (4)<br>(1155100) | 271 (4)<br>(1025400)   | C 79 (12)<br>(1218700)  | 749 (4)<br>(1031900PT) |
| 36060 C<br>(4061600)       | 6"        | 5-3/8"   | 7-1/8"    | 36041<br>(1156200)   | 36562 S (4)<br>(1158200) | 5051 H<br>(4096000)   | 36043 A<br>(1156400)  | 1-1/8"<br>N.F. | 36564 (4)<br>(1158300) | 36545 (4)<br>(1157900) | 36546 (4)<br>(1158000) | 37697 (4)<br>(1160200) | 37688 (12)<br>(1160100) | 36549 (4)<br>(1158100) |
| 36560 C<br>(4061800)       | 6-1/2"    | 5-7/8"   | 7-5/8"    | 36541 C<br>(1157200) | 36562 S (4)<br>(1158200) | 5051 H<br>(4096000)   | 36543 AC<br>(1157500) | 1-1/8"<br>N.F. | 36564 (4)<br>(1158300) | 36545 (4)<br>(1157900) | 36546 (4)<br>(1158000) | 37697 (4)<br>(1160200) | 37288 (12)<br>(1160100) | 36549 (4)<br>(1158100) |
| 37260 C                    | 7-1/4"    | 6-1/4"   | 8"        | 37241                | 36562 S (4)<br>(1158200) | 21251 A<br>(4097200)  | 37243 A               | 1-3/8"<br>N.F. | 36564 (4)<br>(1158300) | 36545 (4)<br>(1157900) | 36546 (4)<br>(1158000) | 37697 (4)<br>(1160200) | 37288 (12)<br>(1160100) | 36549 (4)<br>(1158100) |
| 37660 C                    | 7-5/8"    | 6-1/2"   | 8-1/2"    | 37641                | 36562 S (5)<br>(1158200) | 21251 A<br>(4097200)  | 37643 A               | 1-3/8"<br>N.F. | 36564 (5)<br>(1158300) | 36545 (5)<br>(1157900) | 36546 (5)<br>(1158000) | 37697 (5)<br>(1160200) | 37288 (15)<br>(1160100) | 36549 (5)<br>(1158100) |
| 38760 C                    | 8-1/4"    | 7-1/2"   | 9-1/2"    | 38741                | 36562 S (5)<br>(1158200) | 21251 A<br>(4097200)  | 38743 A               | 1-3/8"<br>N.F. | 36564 (5)<br>(1158300) | 36545 (5)<br>(1157900) | 36546 (5)<br>(1158000) | 37697 (5)<br>(1160200) | 37288 (15)<br>(1160100) | 36549 (5)<br>(1158100) |



## Drill Heads

Tube I.D. range 1/2" thru 3-1/4"

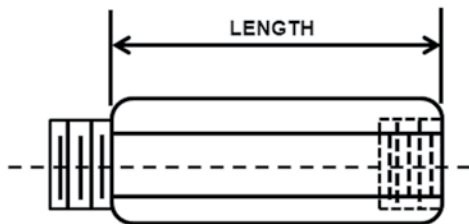
- Airetool drill heads are made from alloy steel For strength and durability
- Drills can be used with extensions (below) for larger tube I.D.'s as required



Universal coupling ordered separately

| Tube I.D.       | Drill Number | Order Number | Hard Surfaced | Hard Surfaced Order Number | Drill O.D. | Stud Thread Size | Number of Flutes | Weight (Lbs.) |
|-----------------|--------------|--------------|---------------|----------------------------|------------|------------------|------------------|---------------|
| 1/2"            | MD-1         | 1267500      | -NA           | -                          | 7/16"      | 10-32            | 3                | 0.01          |
| 5/8"            | MD-2         | 1267600      | -NA           | -                          | 1/2"       | 1/4" N.F.        | 3                | 0.02          |
| 11/16" - 13/16" | MD-3         | 1267700      | -NA           | -                          | 5/8"       | 1/4" N.F.        | 3                | 0.03          |
| 7/8" - 1 1/8"   | MD-4         | 1267800      | -NA           | -                          | 5/8"       | 5/16" N.F.       | 3                | 0.05          |
| 1 1/8" - 1 1/4" | MD-5         | 1267900      | -NA           | -                          | 13/16"     | 7/16" N.F.       | 3                | 0.06          |
| 1 3/8" - 1 3/4" | 00           | 1000500      | 00-S          |                            | 1 1/16"    | 7/16" N.F.       | 4                | 0.20          |
| 1 1/2"          | 0            | 1000300      | 0-S           |                            | 1 5/16"    | 1/2" N.C.        | 4                | 0.25          |
| 1 5/8" - 2 1/4" | 1            | 1003100      | 1-S           | 1004800                    | 1 3/8"     | 5/8" N.C.        | 4                | 0.30          |
| 2 1/4" - 2 3/4" | 4            | 1007400      | 4-S           | 1007900                    | 1 3/4"     | 5/8" N.C.        | 4                | 0.50          |
| 2 1/4" - 2 3/4" | 16           |              | 16-S          | 1011702                    | 1 11/16"   | 5/8" N.C.        | 5                | 0.60          |
| 2 1/4" - 3 1/4" | 5            | 1008000      | 5-S           | 1008500                    | 2 3/8"     | 3/4" N.C.        | 5                | 1.06          |
| 3 1/4" - 4"     | 6-3/4        | 1716299      | 6-3/4-S       |                            | 2 5/8"     | 3/4" N.C.        | 5                | 1.60          |
| 3 1/4" - 4"     | 6            | 1008700      | 6-S           | 1009100                    | 2 5/8"     | 7/8" N.C.        | 5                | 1.60          |
| 4" - 4 1/2"     | 7            | 1009500      | 7-S           | 1009500                    | 2 3/4"     | 7/8" N.C.        | 5                | 2.00          |
| 4 1/2" - 9"     | 8            | 1009600      | 8-S           | 1009901                    | 3 5/16"    | 1" N.F.          | 6                | 2.60          |
| *9" - 11"       | 21           | 1012900      | 21-S          | 1013100                    | 4 5/8"     | 1 1/8" N.F.      | 6                | 5.50          |
| 11" - 12"       | 13           | 1010902      | 13-S          | 1011013                    | 5 3/4"     | 1 1/8" N.F.      | 6                | 7.00          |

## Drill Extensions - Male to Female



| Thread Description | 7/8" N.C. Male<br>x<br>7/8" N.C. Female |           | 1" N.C. Male<br>x<br>1" N.C. Female |           | 1-1/8" N.C. Male<br>x<br>1-1/8" N.C. Female |           |
|--------------------|---|-----------|-------------------------------------|-----------|---|-----------|
|                    | Model No.                               | Order No. | Model No.                           | Order No. | Model No.                                   | Order No. |
| 1.50               | 756                                     |           |                                     |           |   |           |
| 2.00               | 756 A                                   | 1032100PT | 5056                                | 1086100   | 21256                                       | 1129300   |
| 2.50               | 756 B                                   | 1032201PT |                                     |           |   |           |
| 3.00               | 756 C                                   | 1032300PT | 5056 A                              | 1086200   | 21256 A                                     | 1129400   |
| 4.00               | 756 D                                   | 1032400PT | 5056 B                              | 1086300   | 21256 B                                     | 1129500   |
| 5.00               |   |           | 5056 C                              | 1086400   | 21256 C                                     | 1129600   |
| 6.00               |   |           | 5056 D                              | 1086500   | 21256 D                                     | 1129700   |
| 7.00               |   |           | 5056 E                              | 1086600   | 21256 E                                     | 1129800   |
| 8.00               | 756 H                                   | 1032500PT | 5056 F                              | 1086700   | 21256 F                                     | 1129900   |



# Expanding Blade Type Head

## Expanding Blade Type Head

Tube I.D. range 1/2" thru 4-1/2"

When ordering specify the motor number and the motors shaft thread size.



| Head Number                 | Tube I.D. | Minimum Diameter | Maximum Diameter | Stud Size     | Blade Body             | Rear Retainer          | Blade Set             | Blade (qty.)              | Coupling               | Coupling Tap   |
|-----------------------------|-----------|------------------|------------------|---------------|------------------------|------------------------|-----------------------|---------------------------|------------------------|----------------|
| 2840                        | 1/2"      | 29/64"           | 37/64"           | 10-32         | 2481<br>(1057700)      | 2483<br>(1057800)      | 2487<br>(4000250)     | 2487 (4)<br>(1058300)     | FF 1010<br>(1249800)   | 10-32          |
| 3080<br>(4053600)           | 5/8"      | 9/16"            | 11/16"           | 1/4"<br>N.F.  | 3081<br>(1069500)      | 3083<br>(1069600)      | 3087<br>(4000290PT)   | 3087 (3)<br>(1069700)     | FF 22<br>(1245700)     | 1/4"<br>N.F.   |
| 2780<br>(4052500)           | 3/4"      | 11/16"           | 13/16"           | 1/4"<br>N.F.  | 2781<br>(1063800)      | 2783<br>(1063900)      | 2787<br>(4000270)     | 27878 (3)<br>(1064000)    | FF 22<br>(1245700)     | 1/4"<br>N.F.   |
| 6480<br>(4057200)           | 13/16"    | 3/4"             | 7/8"             | 5/16"<br>N.C. | 2981<br>(1066400)      | 2983<br>(1066500)      | 6487<br>(4000330)     | 6487 (3)<br>(1095800)     | FF 312<br>(1248600)    | 1/4"<br>N.F.   |
| 2980<br>(4052900)           | 7/8"      | 25/32"           | 29/32"           | 5/16"<br>N.C. | 2981<br>(1066400)      | 2983<br>(1066500)      | 2987<br>(4000280)     | 2987 (3)<br>(1066600)     | FF 3137<br>(1250500)   | 3/8"<br>N.F.   |
| 6180<br>(4056700)           | 1"        | 7/8"             | 1-3/32"          | 5/16"<br>N.C. | 6181<br>(1089900)      | 6183<br>(1090000)      | 6187<br>(4000310PT)   | 6187 (4)<br>(1090100)     | FF3137<br>(1250500)    | 3/8"<br>N.F.   |
| 2680<br>(4052200)           | 1"        | 15/16"           | 1-5/32"          | 5/16"<br>N.C. | 6181<br>(1089900)      | 6183<br>(1090000)      | 2687<br>(4000260PT)   | 2687 (4)<br>(1062500)     | FF3137<br>(1250500)    | 3/8"<br>N.F.   |
| 3180 7/16 NF<br>(4053900PT) | 1-1/8"    | 1-1/32"          | 1-1/4"           | 5/16"<br>N.C. | 3181<br>(1070700)      | 3183<br>(1070800)      | 3187<br>(4000300)     | 3187 (4)<br>(1070900)     | FF 314<br>(1248700PT)  | 7/16"<br>N.F.  |
| 6380 3/8<br>(4057000)       | 1-1/4"    | 1-5/32"          | 1-3/8"           | 5/16"<br>N.C. | 3181<br>(1070700)      | 3183<br>(1070800)      | 6387<br>(4000320PT)   | 6387 (4)<br>(1092400)     | FF3137<br>(1250500)    | 3/8"<br>N.F.   |
| 6580 3/8 NF<br>(4057400PT)  | 1-3/8"    | 1-9/32"          | 1-1/2"           | 5/16"<br>N.C. | 3181<br>(1070700)      | 3183<br>(1070800)      | 6587<br>(4000340)     | 6587 (4)<br>(1098100PT)   | FF3137<br>(1250500)    | 3/8"<br>N.F.   |
| 6580 7/16 NF<br>(4057401PT) | 1-3/8"    | 1-9/32"          | 1-1/2"           | 5/16"<br>N.C. | 3181<br>(1070700)      | 3183<br>(1070800)      | 6587<br>(4000340)     | 6587 (4)<br>(1098100PT)   | FF314<br>(1250500)     | 7/16"<br>N.F.  |
| 1780<br>(4050600PT)         | 1-1/2"    | 1-3/8"           | 1-11/16"         | 9/16"<br>N.C. | 1781<br>(1048200PT)    | 1783<br>(1048400PT)    | 1787<br>(4000200)     | 1787 (4)<br>(1048700)     | FF 5656<br>(1250900PT) | 9/16"<br>N.C.  |
| 1880<br>(4050900PT)         | 1-5/8"    | 1-1/2"           | 1-13/16"         | 5/8"<br>N.C.  | 1881<br>(1050600PT)    | 1883<br>(1050900PT)    | 1887<br>(4000210PT)   | 1887 (4)<br>(1051200PT)   | FF 66<br>(1247000)     | 5/8"<br>N.C.   |
| 1980<br>(4051100PT)         | 1-3/4"    | 1-5/8"           | 1-15/16"         | 5/8"<br>N.C.  | 1881<br>(1050600PT)    | 1883<br>(1050900PT)    | 1987<br>(4000250PT)   | 1987 (4)<br>(1051700PT)   | FF 66<br>(1247000)     | 5/8"<br>N.C.   |
| 2380 C<br>(4051600PT)       | 1-7/8"    | 1-3/4"           | 2-1/16"          | 5/8"<br>N.C.  | 1881<br>(1050600PT)    | 1883<br>(1050900PT)    | 2387 C<br>(4000240PT) | 2387 C (4)<br>(1055900PT) | FF 66<br>(1247000)     | 5/8"<br>N.C.   |
| 2380<br>(4051500PT)         | 2"        | 1-7/8"           | 2-3/16"          | 5/8"<br>N.C.  | 2381<br>(1054700PT)    | 2383<br>(1055750PT)    | 2387<br>(4000230)     | 2387 (4)<br>(1055800PT)   | FF 66<br>(1247000)     | 5/8"<br>N.C.   |
| 21680 S<br>(4061000PT)      | 2-1/8"    | 1-3/4"           | 2-1/4"           | 5/8"<br>N.C.  | 21681 S<br>(1136100PT) | 21683 S<br>(1136200PT) | 21587<br>(4000400)    | 21587 (4)<br>(1135100PT)  | FF 66<br>(1247000)     | 5/8"<br>N.C.   |
| 21580                       | 2-1/4"    | 1-7/8"           | 2-3/8"           | 3/4"<br>N.C.  | 21581                  | 21583                  | 21587<br>(4000400)    | 21587 (4)<br>(1135100PT)  | FF 77<br>(1247500)     | 3/4"<br>N.C.   |
| 21480<br>(4060800)          | 2-1/2"    | 2-1/8"           | 2-5/8"           | 3/4"<br>N.C.  | 21481<br>(1133500)     | 21483<br>(1133600)     | 21587<br>(4000400)    | 21587 (4)<br>(1135100PT)  | FF 78<br>(1247700)     | 7/8"<br>N.C.   |
| 21380                       | 2-3/4"    | 2-3/8"           | 2-15/16"         | 7/8"<br>N.C.  | 21381                  | 21383                  | 21087<br>(4000390)    | 21087 (6)<br>(1123300PT)  | FF 88                  | 7/8"<br>N.C.   |
| 21080<br>(4059700PT)        | 3"        | 2-5/8"           | 3-5/16"          | 1"<br>N.F.    | 21081<br>(1122000PT)   | 21083<br>(1122900PT)   | 21087<br>(4000390)    | 21087 (6)<br>(1123300PT)  | FF 11<br>(1245300PT)   | 1"<br>N.F.     |
| 20980                       | 3-1/4"    | 2-7/8"           | 3-3/8"           | 1"<br>N.F.    | 20781<br>(1116600)     | 20783<br>(1116700)     | 20987                 | 20987 (6)                 | FF 11<br>(1245300PT)   | 1"<br>N.F.     |
| 20780                       | 3-1/2"    | 3-1/8"           | 3-5/8"           | 1"<br>N.F.    | 20781<br>(1116600)     | 20783<br>(1116700)     | 20787<br>(4000350)    | 20787 (6)<br>(1116800)    | FF 111<br>(1248200)    | 1-1/8"<br>N.F. |
| 20880                       | 4"        | 3-5/8"           | 4-1/8"           | 1"<br>N.F.    | 20781<br>(1116600)     | 20783<br>(1116700)     | 20887<br>(4000360)    | 20887 (6)<br>(1118100)    | FF 111<br>(1248200)    | 1-1/8"<br>N.F. |
| 20880 H                     | 4-1/2"    | 4-1/8"           | 4-5/8"           | 1"<br>N.F.    | 20781<br>(1116600)     | 20783<br>(1116700)     | 20887 H               | 20887 H (6)               | FF 111<br>(1248200)    | 1-1/8"<br>N.F. |



## 10-32 thru 7/8" N.C. thread combinations

- For adapting cleaning heads to cleaning motors
- U-joints, components and ordering numbers



| Universal Joint No.  | Shaft Jaw            | Head Jaw             | Link                 | Pin (2 req.)         | U-Joint O.D. (in.) | Overall Length (in.) | Thread Size                | Cleaner Kits Used On   |
|----------------------|----------------------|----------------------|----------------------|----------------------|--------------------|----------------------|----------------------------|--|
| 2451<br>(4094800)    | 2452<br>(1057100)    | 2452<br>(1057100)    | 2454<br>(1057200)    | 2455<br>(1057300)    | 0.312              | 1.25                 | 10-32 x 10-32              | 24   |
| PA 3051<br>(4098200) | PA 3052<br>(1294500) | PA 3052<br>(1294500) | PA 3054<br>(1294600) | PA 3055<br>(1294700) | .437<br>(.375 Hex) | 1.375                | 1/4" x 1/4"<br>N.F. N.F.   | 27, 27 A, 30, 30 A   |
| 6451<br>(4096500)    | 6453 V<br>(1094800)  | 6453 V<br>(1094800)  | 6454 V<br>(1095100)  | 6455 V<br>(1095200)  | 0.500              | 1.687                | 1/4" x 1/4"<br>N.F. N.F.   | X 64   |
| 6451 B               | 6453 V<br>(1094800)  | 6457 V<br>(1095300)  | 6454 V<br>(1095100)  | 6455 V<br>(1095200)  |                    |                      | 1/4" x 5/16"<br>N.F. N.C.  | X 64   |
| 6151 C<br>(4096300)  | 6452 V<br>(1094600)  | 6453 V<br>(1094800)  | 6454 V<br>(1095100)  | 6455 V<br>(1095200)  |                    |                      | 5/16" x 1/4"<br>N.F. N.F.  | X 60, X 61   |
| 6151<br>(4096100PT)  | 6452 V<br>(1094600)  | 6452 V<br>(1094600)  | 6454 V<br>(1095100)  | 6455 V<br>(1095200)  |                    |                      | 5/16" x 5/16"<br>N.F. N.F. | X 61   |
| 6151 B<br>(4096200)  | 6452 V<br>(1094600)  | 6457 V<br>(1095300)  | 6454 V<br>(1095100)  | 6455 V<br>(1095200)  |                    |                      | 5/16" x 5/16"<br>N.F. N.C. | X 61   |
| 2651<br>(4094900)    | 2652<br>(1061700PT)  | 2652<br>(1061700PT)  | 2654<br>(1061900)    | 2655<br>(1062000)    |                    |                      | 0.625                      | 1.593  |
| 6351 B<br>(4096400)  | 6652<br>(1100100)    | 6657                 | 6654<br>(1100300)    | 6655<br>(1100400)    | 0.750              | 2.125                | 3/8" x 5/16"<br>N.F. N.C.  | X 63   |
| 6651 B<br>(4096800)  | 6652<br>(1100100)    | 6658<br>(1100700)    | 6654<br>(1100300)    | 6655<br>(1100400)    |                    |                      | 3/8" x 7/16"<br>N.F. N.C.  | X 65, X 66   |
| 6651<br>(4096700)    | 6652<br>(1100100)    | 6653<br>(1100200)    | 6654<br>(1100300)    | 6655<br>(1100400)    |                    |                      | 3/8" x 7/16"<br>N.F. N.F.  | 31, X 63, X 65, X 66   |
| 3151<br>(4095000)    | 6653<br>(1100200)    | 6653<br>(1100200)    | 6654<br>(1100300)    | 6655<br>(1100400)    |                    |                      | 7/16" x 7/16"<br>N.F. N.F. | 31   |
| 31551<br>(4097500)   | 4153<br>(1079700)    | 4157<br>(1080200)    | 4154<br>(1079900)    | 4155<br>(1080100)    | 1.125              | 2.062                | 9/16" x 1/2"<br>N.C. N.C.  | 3150   |
| 4151 W<br>(4095700)  | 4152<br>(1079600)    | 4153<br>(1079700)    | 4154<br>(1079900)    | 4155<br>(1080100)    |                    |                      | 5/8" x 1/2"<br>N.C. N.C.   | 11740 C  |
| 4151<br>(4095600)    | 4152<br>(1079600)    | 4152<br>(1079600)    | 4154<br>(1079900)    | 4155<br>(1080100)    |                    |                      | 5/8" x 5/8"<br>N.C. N.C.   | 3162, 3175, 3187, 3200, 3212<br>4200, 4225, 4237, 4250, 4275 |
| 3333<br>(4095100PT)  | 3552<br>(1076800)    | 3332<br>(1074000)    | 3554<br>(1077500)    | 3555<br>(1077700)    | 1.500              | 2.75                 | 3/4" x 3/4"<br>N.C. N.C.   | 3360 Head  |
| 3532<br>(4095300)    | 3552<br>(1076800)    | 3533<br>(1076500)    | 3554<br>(1077500)    | 3555<br>(1077700)    | 1.593              |                      | 3/4" x 3/4"<br>N.C. N.C.   | 3540, 3560 Head<br>3/4 N.C. Rotor Thread                     |
| 3531<br>(4095200)    | 3557<br>(1077800)    | 3533<br>(1076500)    | 3554<br>(1077500)    | 3555<br>(1077700)    |                    |                      | 7/8" x 3/4"<br>N.C. N.C.   | 3540, 3560 Head<br>7/8 N.C. Rotor Thread                     |

# U-Joints

## 5/8" N.C. thru 1-38" N.F. thread combinations

■ For adapting cleaning heads to cleaning motors

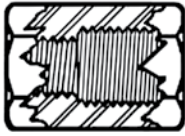
U-joints, components and ordering numbers



| Universal Joint No. | Shaft Jaw        | Head Jaw         | Link             | Pin (2 req.)                  | U-Joint O.D. (in.)    | Overall Length (in.) | Thread Size               | Cleaner Kits Used On         |
|---------------------|------------------|------------------|------------------|-------------------------------|-----------------------|----------------------|---------------------------|------------------------------|
| 2251 (4094700)      | 3553 (1077400)   | 3553 (1077400)   | 3554 (1077500)   | 3555 (1077700)                | 1.500                 | 2.750                | 5/8" x 5/8" N.C. N.C.     |                              |
| 2151 (4094600)      | 3552 (1076800)   | 3553 (1077400)   | 3554 (1077500)   | 3555 (1077700)                |                       |                      | 3/4" x 5/8" N.C. N.C.     | 3225, 3237                   |
| 3551 (4095400)      | 3552 (1076800)   | 3552 (1076800)   | 3554 (1077500)   | 3555 (1077700)                |                       |                      | 3/4" x 3/4" N.C. N.C.     | 4300, 4300 A, 4325           |
| 3551 A (1076800)    | 3552 (1076800)   | 3552 (1076800)   | 3554 A (1077500) | 3555 (1077700)                |                       | 2.625                | 3/4" x 3/4" N.C. N.C.     | 15 Deg. Restricterd          |
| 1551 (1029900)      | 253 (1029900)    | 1553 (1046500)   | 654 (1029900)    | 255 (1025310PT)               | 1.625                 | 3.437                | 3/4 x 5/8" N.C. N.C.      |                              |
| 251 (1029900)       | 253 (1029900)    | 253 (1029900)    | 654 (1029900)    | 255 (1025310PT)               |                       |                      | 3/4" x 3/4" N.C. N.C.     |                              |
| 21451 (4097400)     | 21452 (1133400)  | 1553 (1046500)   | 654 (1029900)    | 255 (1025310PT)               |                       |                      | 7/8" x 5/8" N.C. N.C.     | 3250, 3262                   |
| 651 H (4094300)     | 653 (1029600PT)  | 653 (1029600PT)  | 654 (1029900)    | 655 (1030200)                 |                       | 1.750                | 3.218                     | 3/4" x 3/4" N.C. N.C.        |
| 651 (4094100)       | 652 (1029400)    | 653 (1029600PT)  | 654 (1029900)    | 655 (1030200)                 | 7/8" x 3/4" N.C. N.C. |                      |                           | 3275, 3287, 4350             |
| 651 A (1029400)     | 652 (1029400)    | 653 (1029600PT)  | 654 A (1029900)  | 655 (1030200)                 | 3.437                 |                      | 7/8" x 3/4" N.C. N.C.     | 15 Deg. Restricterd          |
| 551 (4094000)       | 652 (1029400)    | 652 (1029400)    | 654 (1029900)    | 655 (1030200)                 | 3.437                 |                      | 7/8" x 7/8" N.C. N.C.     | 4400, 4425, 4450, 4450 A     |
| 21051 (4097000)     | 1152 (1043600)   | 21053 (1121900)  | 1154 (1044100)   | 1155 (1044200)                | 1.937                 | 3.687                | 1" x 3/4" N.F. N.C.       | 3300, 3306                   |
| 1151 (4094400)      | 1152 (1043600)   | 1153 (1044000)   | 1154 (1044100)   | 1155 (1044200)                |                       |                      | 1" x 7/8" N.F. N.C.       | 3312, 3318, 3325, 3337       |
| 20751 (4096900)     | 5052 (1085600PT) | 1153 (1044000)   | 1154 (1044100)   | 5055 (1086000) 1155 (1044200) | 2.250                 | 4.062                | 1-1/8" x 7/8" N.F. N.C.   | 3350 through 3475            |
| 5051 (4095800)      | 5052 (1085600PT) | 5057 (1086800)   | 1154 (1044100)   | 5055 (1086000)                |                       |                      | 1-1/8" x 7/8" N.F. N.C.   | 4481, 4500, 4537             |
| 5051 E (1085600PT)  | 5052 (1085600PT) | 5053 (1086000)   | 1154 (1044100)   | 5055 (1086000)                |                       |                      | 1-1/8" x 1" N.F. N.F.     | 4575, 4600, 4650, 4712, 4762 |
| 5051 H (4096000)    | 5052 (1085600PT) | 5052 (1085600PT) | 1154 (1044100)   | 5055 (1086000)                |                       |                      | 1-1/8" x 1-1/8" N.F. N.F. |                              |
| 21251 H (4097300)   | 21252 (1128500)  | 21257 (1130100)  | 21254 (1128800)  | 21255 (1129000)               | 2.437                 | 5.312                | 1-3/8" x 1" N.F. N.F.     | 3500 through 3900            |
| 21251 (4097100)     | 21252 (1128500)  | 21253 (1128700)  | 21254 (1128800)  | 21255 (1129000)               |                       |                      | 1-3/8" x 1-1/8" N.F. N.F. | 3975 through 31325           |
| 21251 A (4097200)   | 21252 (1128500)  | 21252 (1128500)  | 21254 (1128800)  | 21255 (1129000)               |                       |                      | 1-3/8" x 1-3/8" N.F. N.F. |                              |

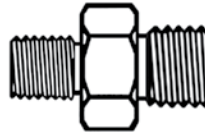
These adapters are used to configure motors and heads in special applications where the standard Airetool offering does not match up on thread sizes.

### Female X Female



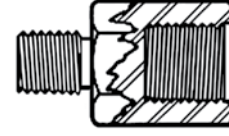
| Part Number | Female X Female         |
|-------------|-------------------------|
| FF 1 0      | 10-32 X 10-32           |
| FF 1031     | 10-32 X 5/16 N.C.       |
| FF 22       | 1/4 N.F. X 1/4 N.F.     |
| FF 231      | 1/4 N.F. X 5/16 N.F.    |
| FF 237      | 1/4 N.F. X 3/8 N.F.     |
| FF 312      | 5/16 N.C. X 1/4 N.F.    |
| FF 3131     | 5/16 N.C. X 5/16 N.F.   |
| FF3137      | 5/16 N.C. X 3/8 N.F.    |
| FF314       | 5/16 N.C. X 7/16 N.F.   |
| FF 374      | 3/8 N.F. X 7/16 N.C.    |
| FF 374 F    | 3/8 N.F. X 7/16 N.F.    |
| FF 376      | 3/8 N.C. X 5/8 N.C.     |
| FF 437      | 7/16 N.C. X 3/8 N.C.    |
| FF 45       | 7/16 N.F. X 1/2 N.C.    |
| FF 456      | 7/16 N.F. X 9/16 N.C.   |
| FF 46       | 7/16 N.F. X 5/8 N.C.    |
| FF 47       | 7/16 N.C. X 3/4 N.C.    |
| FF 54       | 1/2 N.F. X 7/16 N.C.    |
| FF 56       | 1/2 N.F. X 5/8 N.C.     |
| FF 56 F     | 1/2 N.F. X 5/8 N.F.     |
| FF 564      | 9/16 N.C. X 7/16 N.C.   |
| FF 5656     | 9/16 N.C. X 9/16 N.C.   |
| FF 566      | 9/16 N.C. X 5/8 N.C.    |
| FF 567      | 9/16 N.C. X 3/4 N.C.    |
| FF 637      | 5/8 N.C. X 3/8 N.F.     |
| FF 64       | 5/8 N.C. X 7/16 N.C.    |
| FF 65       | 5/8 N.C. X 1/2 N.C.     |
| FF 66       | 5/8 N.C. X 5/8 N.C.     |
| FF 66 F     | 5/8 N.C. X 5/8 N.F.     |
| FF 67       | 5/8 N.C. X 3/4 N.C.     |
| FF 68       | 5/8 N.C. X 7/8 N.C.     |
| FF 77       | 3/4 N.C. X 3/4 N.C.     |
| FF 78       | 3/4 N.C. X 7/8 N.C.     |
| FF 856      | 7/8 N.C. X 9/16 N.C.    |
| FF 86       | 7/8 N.C. X 5/8 N.F.     |
| FF 88       | 7/8 N.C. X 7/8 N.C.     |
| FF 81       | 7/8 N.C. X 1 N.F.       |
| FF 16       | 1 N.F. X 5/8 N.C.       |
| FF 17       | 1 N.F. X 3/4 N.C.       |
| FF 11       | 1 N.F. X 1 N.F.         |
| FF 111      | 1 N.F. X 1-1/8 N.F.     |
| FF 118      | 1-1/8 N.F. X 7/8 N.C.   |
| FF 1111     | 1-1/8 N.F. X 1-1/8 N.F. |

### Male X Male



| Part Number | Male X Male             |
|-------------|-------------------------|
| 2443        | 10-32 X 10-32           |
| MM 1031     | 10-32 X 5/16 N.F.       |
| MM 250      | 1/4 N.F. X 1/4 N.F.     |
| 2734        | 1/4 N.F. X 5/16 N.C.    |
| MM 24       | 1/4 N.F. X 7/16 N.F.    |
| MM 3034     | 5/16 N.F. X 1/4 N.F.    |
| MM 3131     | 5/16 N.C. X 5/16 N.C.   |
| MM 3131 F   | 5/16 N.C. X 5/16 N.F.   |
| MM 3137     | 5/16 N.F. X 3/8 N.F.    |
| MM 3737     | 3/8 N.C. X 3/8 N.C.     |
| MM 3737 F   | 3/8 N.F. X 3/8 N.F.     |
| MM 374      | 3/8 N.C. X 7/16 N.C.    |
| MM 374 F    | 3/8 N.F. X 7/16 N.F.    |
| MM 437      | 7/16 N.C. X 3/8 N.F.    |
| MM 44       | 7/16 N.F. X 7/16 N.F.   |
| MM 456      | 7/16 N.F. X 9/16 N.C.   |
| MM 46       | 7/16 N.F. X 5/8 N.C.    |
| MM 5056     | 1/2 N.C. X 9/16 N.C.    |
| MM 56       | 1/2 N.C. X 5/8 N.C.     |
| MM 564      | 9/16 N.C. X 7/16 N.C.   |
| MM 5650     | 9/16 N.C. X 1/2 N.F.    |
| MM 5656     | 9/16 N.C. X 9/16 N.C.   |
| MM 566      | 9/16 N.C. X 5/8 N.C.    |
| MM 567      | 9/16 N.C. X 3/4 N.C.    |
| MM 568      | 9/16 N.C. X 7/8 N.C.    |
| MM 561      | 9/16 N.C. X 1 N.F.      |
| MM 66       | 5/8 N.C. X 5/8 N.C.     |
| MM 67       | 5/8 N.C. X 3/4 N.C.     |
| MM 68       | 5/8 N.C. X 7/8 N.C.     |
| MM 77       | 3/4 N.C. X 3/4 N.C.     |
| MM 78       | 3/4 N.C. X 7/8 N.C.     |
| MM 88       | 7/8 N.C. X 7/8 N.C.     |
| MM 81       | 7/8 N.C. X 1 N.C.       |
| MM 11       | 1 N.F. X 1 N.F.         |
| MM 112      | 1 N.F. X 1-1/8 N.F.     |
| MM 1111     | 1-1/8 N.F. X 1-1/8 N.F. |
| MM 1313     | 1-3/8 N.F. X 1-3/8 N.F. |

### Male X Female



| Part Number | Male X Female           |
|-------------|-------------------------|
| MF 22       | 1/4 N.C. X 1/4 N.F.     |
| MF 231      | 1/4 N.F. X 5/16 N.C.    |
| MF 231      | F 1/4 N.F. X 5/16 N.F.  |
| MF 312      | 5/16 N.C. X 1/4 N.F.    |
| MF 312 F    | 5/16 N.F. X 1/4 N.F.    |
| MF 3131     | 5/16 N.C. X 5/16 N.F.   |
| MF 3131 F   | 5/16 N.F. X 5/16 N.C.   |
| MF 314      | 5/16 N.C. X 7/16 N.F.   |
| MF 314 F    | 5/16 N.F. X 7/16 N.F.   |
| 2943        | 3/8 N.F. X 1/4 N.F.     |
| MF 3731     | 3/8 N.F. X 5/16 N.C.    |
| MF 3731 F   | 3/8 N.F. X 5/16 N.F.    |
| 2643        | 3/8 N.F. X 5/16 N.F.    |
| MF 3737     | 3/8 N.C. X 3/8 N.F.     |
| MF 374      | 3/8 N.C. X 7/16 N.C.    |
| MF 374 F    | 3/8 N.F. X 7/16 N.F.    |
| MF 431      | 7/16 N.C. X 5/16 N.C.   |
| MF 431 F    | 7/16 N.F. X 5/16 N.F.   |
| MF 433      | 7/16 N.C. X 3/8 N.C.    |
| MF 4343     | 7/16 N.C. X 7/16 N.F.   |
| MF 435      | 7/16 N.C. X 1/2 N.C.    |
| MF 435 F    | 7/16 N.F. X 1/2 N.C.    |
| MF 436      | 7/16 N.C. X 5/8 N.C.    |
| MF 436 F    | 7/16 N.F. X 5/8 N.C.    |
| MF 531      | 1/2 N.F. X 5/16 N.F.    |
| 1743        | 1/2 N.C. X 3/8 N.C.     |
| MF 543      | 1/2 N.C. X 7/16 N.C.    |
| MF 543 F    | 1/2 N.F. X 7/16 N.C.    |
| MF 56       | 1/2 N.C. X 5/8 N.C.     |
| MF 56 F     | 1/2 N.F. X 5/8 N.C.     |
| MF 57       | 1/2 N.C. X 3/4 N.C.     |
| MF 563      | 9/16 N.C. X 3/8 N.C.    |
| MF 565      | 9/16 N.C. X 1/2 N.C.    |
| MF 566      | 9/16 N.C. X 5/8 N.C.    |
| MF 567      | 9/16 N.C. X 3/4 N.C.    |
| MF 568      | 9/16 N.C. X 7/8 N.C.    |
| MF 561      | 9/16 N.C. X 1 N.F.      |
| MF 631      | 5/8 N.C. X 5/16 N.C.    |
| MF 637      | 5/8 N.C. X 3/8 N.C.     |
| 1943        | 5/8 N.C. X 7/16 N.F.    |
| MF 65       | 5/8 N.C. X 1/2 N.F.     |
| MF 656      | 5/8 N.C. X 9/16 N.C.    |
| MF 68       | 5/8 N.C. X 7/8 N.C.     |
| MF 743      | 3/4 N.C. X 7/16 N.F.    |
| MF 743 F    | 3/4 N.F. X 7/16 N.C.    |
| MF 76       | 3/4 N.C. X 5/8 N.C.     |
| MF 71       | 3/4 N.C. X 1 N.C.       |
| MF 711      | 3/4 N.C. X 1-1/8 N.F.   |
| MF 86       | 7/8 N.C. X 5/8 N.C.     |
| MF 86       | F 7/8 N.C. X 5/8 N.F.   |
| MF 87       | 7/8 N.C. X 3/4 N.C.     |
| MF 81       | 7/8 N.C. X 1 N.F.       |
| MF 811      | 7/8 N.C. X 1-1/8 N.F.   |
| MF 813      | 7/8 N.C. X 1-3/8 N.F.   |
| MF 16       | 1 N.F. X 5/8 N.F.       |
| MF 18       | 1 N.F. X 7/8 N.C.       |
| MF 1111     | 1 N.F. X 1-1/8 N.F.     |
| MF 1113     | 1-1/8 N.F. X 1-3/8 N.F. |
| MF 138      | 1-3/8 N.F. X 7/8 N.C.   |
| MF 1311     | 1-3/8 N.F. X 1-3/8 N.F. |

# Flexible Connections

## Flexible Connections

Use for connecting cleaning head to motor when cleaning tubes with short radius bends. Flexible connectors come complete with female/Female couplings in lengths from 4 - 14 inches (102 - 356mm)



"A" length



"C" length

| Part Number | Order Number | Thread Size                  | Core Diameter | Cleaner Motor Options | Type "A"             |      | Type "C"             |      |
|-------------|--------------|------------------------------|---------------|-----------------------|----------------------|------|----------------------|------|
|             |              |                              |               |                       | Approx. Length (in.) | Wt.  | Approx. Length (in.) | Wt.  |
| 2461 A      | 4035500      | 10-32 X 10-32                | 3/16"         | 24                    | 4.00                 | .06# | 13.00                | .20# |
| 2461 C      | 4035700      | 10-32 X 10-32                |               | 24                    |                      |      |                      |      |
| X 6461 C    | 4046400      | 1/4 N.F. X 1/4 N.F.          |               | 30,27, X64            |                      |      |                      |      |
| X 6462      |              | 1/4 N.F. X 5/16 N.C.         |               | 27, X64               |                      |      |                      |      |
| X 6161 A    | 4045000      | 5/16 N.F. X 5/16 N.F.        |               | X61                   |                      |      |                      |      |
| X 6161 C    | 4045200      | 5/16 N.F. X 5/16 N.F.        |               | X61                   |                      |      |                      |      |
| 2661 A      | 4036200      | 3/8 N.F. X 5/16 N.F.         | 1/4"          | 26                    | 4.50                 | .18# | .40#                 |      |
| 2961 A      | 4036500      | 3/8 N.F. X 3/8 N.F.          |               | 29                    |                      |      |                      |      |
| X 6361 A    | 4045600      | 3/8 N.F. X 7/16 N.F.         |               | X63,31                |                      |      |                      |      |
| 3161 C      | 4037000      | 7/16 N.F. X 5/16 N.C.        |               | 31                    |                      |      |                      |      |
| X 6661 A    | 4046800      | 3/8 N.F. X 7/16 N.F.         | 3/8"          | X65, X66              | 6.50                 | .25# | .45#                 |      |
| X 6662 A    | 4047200      | 3/8 N.F. X 7/16 N.C.         |               | X65, X66              |                      |      |                      |      |
| 2561 A      | 4035800      | 7/16 N.F. X 7/16 N.F.        |               |                       |                      |      |                      |      |
| 4161 A      | 4037100      | 5/8 N.C. X 5/8 N.C.          | 1/2"          | 3175, 4225            | 6.50                 | .5#  | 1.0#                 |      |
| 4162 A      | 4037500      | 5/8 N.C. X 9/16 N.C. Male    |               | 4200, 4225, 4250      |                      |      |                      |      |
| 4163 C      | 4038200      | 5/8 N.C. X 7/16 N.C.         |               | 4200                  |                      |      |                      |      |
| 31561       |              | 9/16 N.C. X 1/2 N.C.         |               | 3150                  |                      |      |                      |      |
| 43061 C     | 4042800      | 3/4 N.C. X 3/4 N.C.          | 5/8"          | 4300, 4325            | 14.00                | 1.5# |                      |      |
| 43062 C     | 4043100      | 3/4 N.C. X 9/16 N.C. Male    |               | 3225, 4300, 4325      |                      |      |                      |      |
| 32261 C     | 4039500      | 3/4 N.C. X 5/8 N.C.          |               | 3225                  |                      |      |                      |      |
| 42562       |              | 5/8 N.C. X 9/16 N.C. Male    |               | 3200, 4250            |                      |      |                      |      |
| 43561 C     | 4043400      | 7/8 N.C. X 3/4 N.C.          | 3/4"          | 4350, 3250            | Not Available        | 2.6# |                      |      |
| 44061       |              | 7/8 N.C. X 7/8 N.C.          |               | 4350, 4450            |                      |      |                      |      |
| 44062 C     | 4044300      | 7/8 N.C. X 7/8 N.C. Male     |               | 4450                  |                      |      |                      |      |
| 43562       |              | 7/8 N.C. X 9/16 N.C. Male    |               | 3250, 4350            |                      |      |                      |      |
| 33063 C     | 4040400      | 1 N.F. X 7/8 N.C.            | 1"            | 3300                  | 3.1#                 |      |                      |      |
| 33561 C     | 4040700      | 1-1/8 N.F. X 1-1/8 N.F.      |               | 3350, 3400, 4600      |                      |      |                      |      |
| 33562       |              | 1-1/8 N.F. X 1 N.F.          |               | 3350, 3400, 4600      |                      |      |                      |      |
| 44861 C     | 4044600      | 1-1/8 N.F. X 7/8 N.C.        |               | 3350, 3400, 4600      |                      |      |                      |      |
| 44862       |              | 1-1/8 N.F. X 7/8 N.C. Male   |               | 3350, 3400, 4600      |                      |      |                      |      |
| 35061       |              | 1-3/8 N.F. X 1 N.F.          |               | 3500 and up           |                      |      |                      |      |
| 35062       | 4041400      | 1-3/8 N.F. X 1- 1/8 N.F.     |               | 3500 and up           |                      |      |                      |      |
| 35063       |              | 1-3/8 N.F. X 1-3/8 N.F. Male |               | 3500 and up           |                      |      |                      |      |