

EGI

**PIPE & TUBE
CLEANERS**



Airetool[®]

About Us

Since 1993 the scope of our services is to provide you and your team with the most complete product lines of tube tools for heat transfer equipment. This includes tube expanders, removal tools, and cleaners designed to execute your toughest industrial jobs fast. We've made it a focal point to make sure every tool goes through strict quality tests so you can avoid delays and get the maximum value from your equipment. Instead of settling for tools that slow you down we offer reputable brands that are aligned with the highest standards of industry quality.

Now you can have the best of both worlds, get your projects done fast with excellent performance results. Industrial projects require durable products that you can trust and will perform under pressure. We provide exactly that so you can meet your tightest deadlines on time. If you're looking for insights and knowledgeable guidance for the best equipment solutions we also have dedicated technicians on standby ready to assist.

You deserve to get the most out of your projects. We've helped thousands of customers all over the country find solutions to their most demanding industrial projects. So if you're looking to work smarter and meet deadlines faster let one of our experienced technicians do the detective work for you. We find what you need whenever you need it.

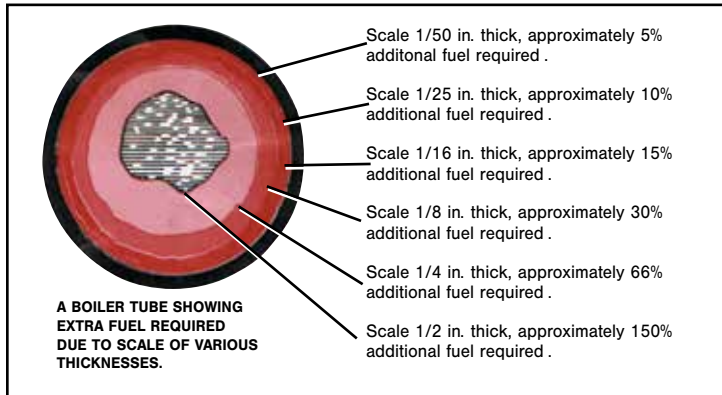


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Tube Cleaners Introduction

Clean tubes mean lower fuel costs.

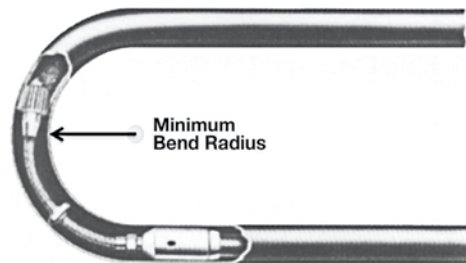
All piping, heat exchangers, condensers, chillers, and boiler tubes accumulate scale over various periods of use. This scale decreases flow and retards heat transfer. This consequently increases fuel consumption which lowers overall efficiency.



1/2 inch scale in 6 inch pipe, 1000 feet long, has a transfer capacity loss of 150 gallons per minute.

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

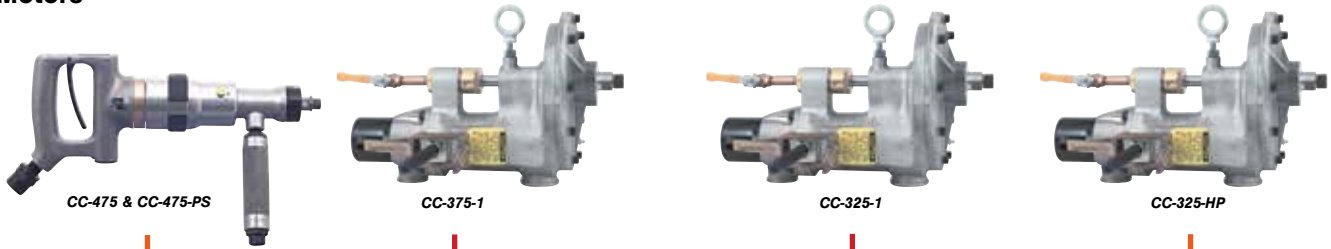
Tube Cleaners

Heat Exchanger & Condenser Cleaning Systems

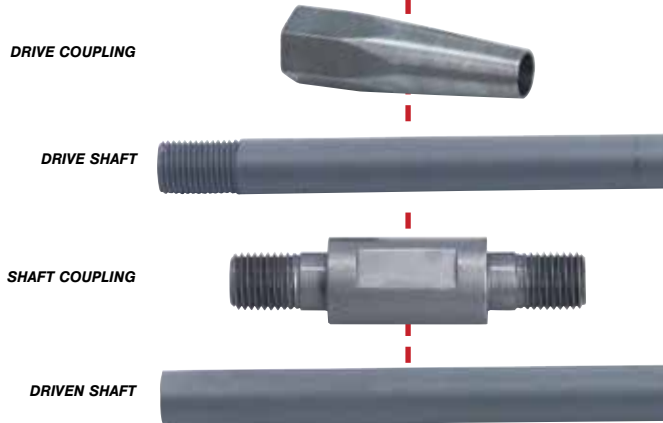


System Components

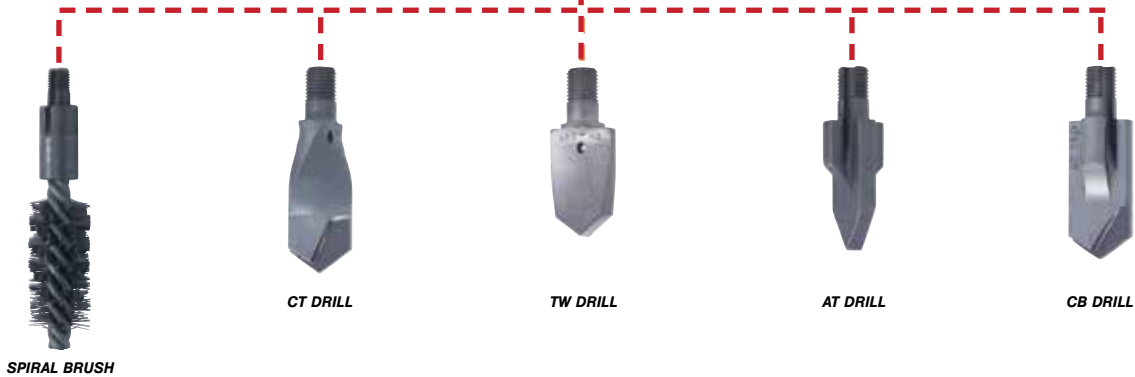
Motors



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
Lightweight Condenser Cleaners Complete	
CC-475	4105601
CC-475-PS	4105602
Geared Drive Cleaners Complete	
CC-375-1	
CC-325-1	4105603
CC-325-HP	4105604PT
15 feet of 3/8 inch Water Hose	
Water Hose	4105082
Water Feed Attachment	
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.



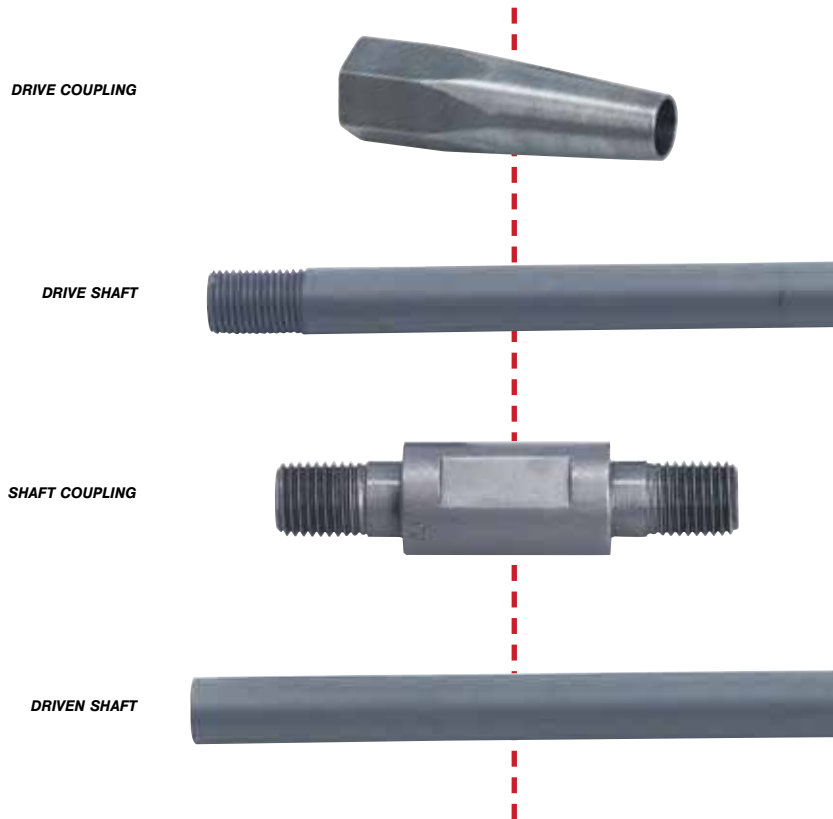
Model Number	Order Number	Range.5	RPM	Weight		Length		Air Inlet	Operating Air Pressure		Water Inlet	Max. Water Pressure	
				lbs.	Kg	in.	mm	NPT	PSI	kg/cm2	NPT	PSI	kg/cm2
Lightweight Condenser Cleaners													
CC-475	4090900	up to 1 in. (25.4 mm) ID Tubes	3800	10	4.53	15-3/4	400.0	1/2	90-100	6-7	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
Geared Drive Cleaners*													
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.

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 CC-475 CC-475-PS & WF-100	Drive Coupling Thread	Drive Coupling For CC-375-1 CC-325-1 & CC-325-HP	Drive Coupling Thread	Drive Shaft Length*		Drive Shaft Thread	Shaft Coupling	Shaft Coupling Thread	Driven Shaft Length*		Driven Shaft 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 (1201100)	5/8" NF x 1/4" NF	—	—	CC-336-5 (1717133)	CC-336-10 (1717151)	1/4" NFM x 10-32 F	CC-334 (1232800)	10-32M	CC-335-5 (1717132)	CC-335-10 (1717150)	10-32 F x 10-32 F
.359-.420	9.09-10.67	5/16	7.94	AT-333-A (1201000)	5/8" NF x 5/16" NF	AT-333 (1200900)	1" NF x 5/16" NF	CC-332-5 (1717135)	CC-332-10 (1717153)	5/16" NFM x 1/4" NFF	CC-330 (1232500)	1/4" NFM	CC-331-5 (1717134)	CC-331-10 (1717152)	1/4" NFF x 1/4" NFF
.421-.483	10.67-12.27	3/8	9.52	AT-321-A (1200700)	5/8" NF x 3/8" NF	AT-352 (1201300)	1" NF x 3/8" NF	CC-324-5 (1717137)	CC-324-10 (1717155)	3/8" NFM x 1/4" NFF	CC-322 (1231900)	1/4" NFM	CC-323-5 (1717136)	CC-323-10 (17171540)	1/4" NFF x 1/4" NFF
.484-.608	12.27-15.44	7/16	11.11	AT-313-A (1200300)	5/8" NF x 7/16" NF	AT-353 (1201400)	1" NF x 7/16" NF	CC-316-5 (1717139)	CC-316-10 (1717157)	7/16" NFM x 5/16" NFF	CC-314 (1230800)	5/16" NFM	CC-315-5 (1717138)	CC-315-10 (1717156)	5/16" NFF x 5/16" NFF
.609-.831	15.44-21.11	1/2	12.7	AT-309-A (1200100PT)	5/8" NF x 1/2" NF	AT-359 (1201900)	1" NF x 1/2" NF	CC-312-5 (1717141)	CC-312-10 (1717159)	1/2" NFM x 3/8" NFF	CC-310 (1230400)	3/8" NFM	CC-311-5 (1717140)	CC-311-10 (1717158)	3/8" NFF x 3/8" NFF
.832-1.055	21.11-28.80	5/8	15.88	AT-301-A (1199100)	5/8" NF x 5/8" NF	AT-351 (1201200)	1" NF x 5/8" NF	CC-304-5 (1717144)	CC-304-10 (1717163)	5/8" NFM x 3/8" NFF	CC-302 (1229500)	3/8" NFM	CC-303-5 (1717143)	CC-303-10 (1717162)	3/8" NFF x 3/8" NFF
1.056-1.561	28.80-39.65	3/4	19.05	AT-317-A (1200500)	5/8" NF x 3/4" NF	AT-357 (1201800)	1" NF x 3/4" NF	CC-320-5 (1717146)	CC-320-10 (1717165)	3/4" NFM x 7/16" NFF	CC-318 (1231400)	7/16" NFM	CC-319-5 (1717145)	CC-319-10 (1717164)	7/16" NFF x 7/16" NFF
1.562-2.374	39.65-60.30	1	25.4	AT-325-A (1200800)	5/8" NF x 1" NF	AT-354 (1201500)	1" NF x 1" NF	CC-328-5 (1717148)	CC-328-10 (1717167)	1" NFM x 7/16" NFF	CC-326 (1232200)	7/16" NFM	CC-327-5 (1717147)	CC-327-10 (1717166)	7/16" NFF x 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



ABM-1800-R

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



ABM-1900

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

Flexible Shafts for ABM-1800, ABM-1800-R and ABM-1200

.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)

Flexible Shafts for ABM-1900 and ABM-1900-R

.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.

Condenser Cleaners

Brush-Master Tube Cleaners



SCB-750



SB-1000



N625



B-625

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 2D 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
Super 2 D Brush			
SCB-750	2996773	.500-.700	12.7-17.8
SCB-1000	2996774	.700-.950	17.8-24.1
Super Brush			
SB-750	2996555	.437-.700	11.1-14.2
SB-1000	2996556	.625-.1000	15.8-17.5
SB-1250	2996557	.1000-1.200	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



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.

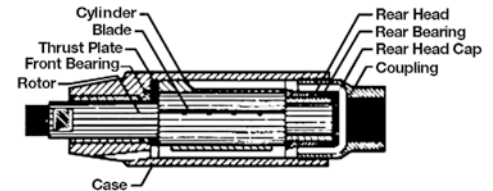
* Drill must be used with Universal Joint or flexible connection.

3000 Series Motors

3000 series straight motors, components and (ordering numbers)



All Motors include Shaft Wrench



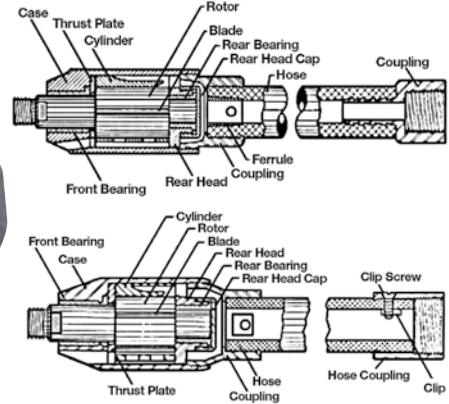
Motor Number	Motor O.D.	Tube I.D.	Case	Cylinder	Rear Head	Machine Coupling	Rotor	Blades (Qty.)	Thrust Plate	Front Bearing	Rear Bearing	Rear Head Cap	Front Dowel	Rear Dowel	Shaft Wrench	Rotor Thread	Hose Size
3150 (4075700)	1-3/8"	1-1/2"	31501 (1138900)	31502 (1139000)	31503 (1139100)	31504 (1139200)	31505 (1139300)	1806 (4) (1049100PT)	1707 (1047500)	X 1708 (1330400)	31509 (1139400)	-	31511 (1139500)	31512 (1139600)	9/16" (14-0809)	9/16" N.C.	1/2"
3162 (4075800)	1-1/2"	1-5/8"	31621 (1139900)	31622 (1140000)	31623 (1140100)	31624 (1140200)	31625 (1140300)	1806 (4) (1049100PT)	1807 (1049200)	X 1808 (1330500PT)	31629 (1140500)	-	31511 (1139500)	31512 (1139600)	5/8" (14-0810)	5/8" N.C.	1/2"
3175 (4075900)	1-5/8"	1-3/4"	31751 (1140600)	31622 (1140000)	31623 (1140100)	31624 (1140200)	31625 (1140300)	1806 (4) (1049100PT)	1807 (1049200)	X 1808 (1330500PT)	31629 (1140500)	-	31511 (1139500)	31512 (1139600)	5/8" (14-0810)	5/8" N.C.	1/2"
3187 (4076000)	1-3/4"	1-7/8"	31871 (1140900)	31872 (1141000)	31873 (1141100)	31874 (1141200)	31875 (1141300PT)	2306 (4) (1053700)	22307 C (1138800)	2208 (1053100)	32129 (1142900)	-	31811 (1140700)	31812 (1140800)	5/8" (14-0810)	5/8" N.C.	3/4"
3200 (4076100)	1-7/8"	2"	32001 (1141400PT)	32002 (1141500)	32003 (1141600)	32004 (1141700)	32005 (1141800)	2306 (4) (1053700)	2307 (1053800)	2208 (1053100)	32009 (1141900)	3213 (1071300)	31811 (1140700)	32012 (11715981)	5/8" (14-0810)	5/8" N.C.	3/4"
3212 (4076200)	2"	2-1/8"	32121 (1142200)	32122 (1142400)	32123 (1142500)	32124 (1142600)	32125 (1142700)	21606 (4) (1135800)	21607 (1135900)	2208 (1053100)	32129 (1142900)	4413 (1081500)	32011 (1142000)	32112 (1142100)	5/8" (14-0810)	5/8" N.C.	3/4"
3225 (4076300)	2-1/8"	2-1/4"	32251 (1143000)	32252 (1143200)	32253 (1143300)	32254 (1143400)	32255 (1143700)	21506 (5) (1134300)	1507 (1045800)	1408 (1045500)	32009 (1141900)	3213 (1071300)	32011 (1142000)	32112 (1142100)	3/4" (14-0812)	3/4" N.C.	3/4"
3250 (4076500)	2-5/16"	2-1/2"	32501 (1144600)	32502 (1144800)	32503 (1144900)	32504 (1145000)	32505 (1145100)	21406 (5) (1133000)	21407 (1133100)	21408 (1133200)	32009 (1141900)	3213 (1071300)	32511 (1145200)	32512 (1145300)	7/8" (14-0814)	7/8" N.C.	1"
3262 (4076600)	2-1/2"	2-5/8"	32621 (1145600)	32622 (1145800)	32623 (1145900)	32624 (1146000)	32755 (1146600)	21306 (5) (1131700)	21907 (1137700)	1008 (1040700)	32759 (1146700)	213 (1022300PT)	32611 (1145400)	32612 (1145500)	7/8" (14-0814)	7/8" N.C.	1"
3275 (4076700)	2-5/8"	2-3/4"	32751 (1146100)	32752 (1146300)	32753 (1146400)	32754 (1146500)	32755 (1146600)	21306 (5) (1131700)	21307 (1131800)	1008 (1040700)	32759 (1146700)	213 (1022300PT)	32611 (1145400)	32612 (1145500)	7/8" (14-0814)	7/8" N.C.	1"
3300 (4076900)	2-13/16"	3"	33001 (1146900)	33002 (1147000)	33003 (1147100)	33004 (1147200)	33005 (1147400)	21006 (5) (1121500)	21007 (1121600)	1108 (1043400)	33009 (1147500)	713 (1030700)	32611 (1145400)	32612 (1145500)	1" (3241600)	1" N.F.	1"
3318 (4077200)	3"	3-3/16"	33181 (1148100)	33252 (1148600)	33253 (1148700)	33254 (1148800)	33255 (1149000)	20706 (5) (1116200)	20907 (1119300)	1108 (1043400)	33009 (1147500)	713 (1030700)	33211 (1148200)	33212 (1148300)	1" (3241600)	1" N.F.	1"
3350 (4077500)	3-5/16"	3-5/8"	33501 (1149200)	33502 (1149500PT)	33503 (1149600PT)	33504 (1149700)	33505 (1149900)	20706 (5) (1116200)	20707 (1116300)	20708 (1116400)	33009 (1147500)	713 (1030700)	33211 (1148200)	33212 (1148300)	1-1/8" (3241800)	1-1/8" N.F.	1"
3400 (4077900)	3-3/4"	4"	34001 (1150800)	34002 (1151100)	34003 (1151200)	34004 (1151300)	34005 (1151600)	20706 (5) (1116200)	34007 (1151800)	20708 (1116400)	33009 (1147500)	713 (1030700)	33211 (1148200)	33212 (1148300)	1-1/8" (3241800)	1-1/8" N.F.	1"
3500 (4078500)	4-3/4"	5"	35001 (1153100)	35502 (1155300)	35503 (1155400)	35504 (1155500)	35505 (1155800)	21206 (5) (1125300)	35507 (1155900)	21208 (1125400)	33009 (1147500)	713 (1030700)	33211 (1148200)	33212 (1148300)	1-3/8" (3241900)	1-3/8" N.F.	1"
3600 (4078900)	5-3/4"	6"	36001 (1156100)	35502 (1155300)	35503 (1155400)	35504 (1155500)	35505 (1155800)	21206 (5) (1125300)	35507 (1155900)	21208 (1125400)	33009 (1147500)	713 (1030700)	33211 (1148200)	33212 (1148300)	1-3/8" (3241900)	1-3/8" 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)

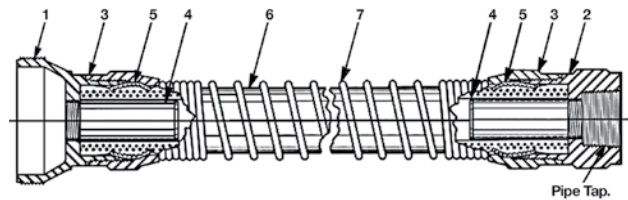


Motor Number	Motor O.D.	Tube I.D.	Case	Cylinder	Rear Head	Machine Coupling	Rotor	Blades (Qty.)	Thrust Plate	Front Bearing	Rear Bearing	Rear Head Cap	Front Dowel	Rear Dowel	Tail Hose Assembly*	Shaft Wrench	Rotor Thread	Hose Size
4250 (4080300)	1-7/8"	2-1/4 X 15R 2-15/16 X 12R 2-1/2 X 15R	42501 (1162700)	42502 (1162900)	42503 (1163000)	42504 (1163100)	42505 (1163700)	4406 (4) (1081300)	2307 (1053800)	4408 (1081400)	42509 (1163800)	4413 (1081500)	32011 (1142000)	42512 (1163900)	Line A Below	5/8" (14-0810)	5/8" N.C.	1/2"
4300 (4080500)	2-1/4"	2-5/8 X 24R 2-3/4 X 12R	43001 (1164400)	43002 (1164800)	43003 (1164900)	43004 (1165000)	43005 (1165500)	3306 (5) (1072600)	3307 (1072700)	3308 (1072800)	32009 (1141900)	3213 (1071300)	43011 (1165700)	43012 (1165800)	Line B Below	3/4" (14-0812)	3/4" N.C.	3/4"
4325 (4080700)	2-1/2"	2-7/8 X 28R 3 X 16R	43251 (1166800)	43252 (1167000)	43253 (1167100)	43254 (1167200)	43255 (1167900)	3206 (5) (1071100)	3207 (1071200)	3308 (1072800)	32009 (1141900)	3213 (1071300)	43211 (1166600)	43212 (1166700)	Line B Below	3/4" (14-0812)	3/4" N.C.	3/4"
4350 (4080800)	2-3/4"	3-1/4 X 16R 3-1/2 X 20R	43501 (1168100)	43502 (1168200)	43503 (1168300)	43504 (1168400)	43505 (1168800)	3706 (5) (1077900)	3307 (1078000)	3708 (1078100)	32759 (1146700)	213 (1022300PT)	32311 (1143900)	43512 (1168900)	Line B Below	7/8" (14-0814)	7/8" N.C.	1"
4450 (4081100)	3-1/8"	4 X 15R	44501 (1169800)	44502 (1170200)	44503 (1170300)	44504 (1170400)	44505 (1170600)	4706 (5) (1082900)	507 (1026400)	4708 (1083000PT)	33009 (1147500)	713 (1030700)	33212 (1148300)	44512 (1170700)	Line B Below	7/8" (14-0814)	7/8" N.C.	1"
4481 (4081400)	3-3/4"	4-13/16 X 18R	44811 (1170800)	44812 (1170900)	34003 (1151200)	34004 (1151300)	44815 (1171100)	5006 (5) (1083700)	34007 (1151800)	5008 (1083800)	33009 (1147500)	713 (1030700)	33212 (1148300)	44512 (1170700)	Not Req'd	1-1/8" (3241800)	1-1/8" N.C.	1"
4600 (4081800)	5"	5-3/4 X 72R 6 X 28R	46001 (1171900)	44812 (1170900)	34003 (1151200)	34004 (1151300)	44815 (1171100)	5006 (5) (1083700)	34007 (1151800)	5008 (1083800)	33009 (1147500)	713 (1030700)	33212 (1148300)	44512 (1170700)	Not Req'd	1-1/8" (3241800)	1-1/8" 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 (1081600)	4116 (1079000)	-	-	4418 (1081700)
B	1"	3315 (1072900)	3316 (1073100PT)	3317 (1073200)	3318 (8010065)	-

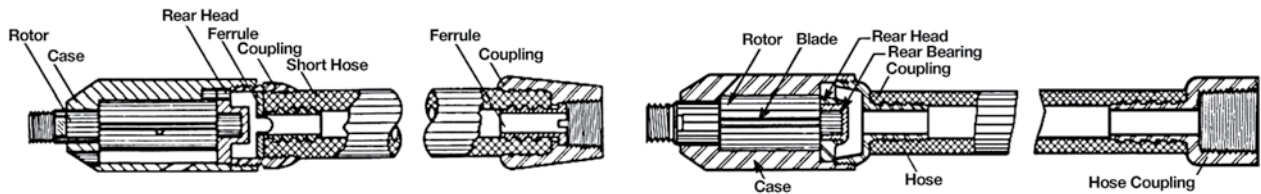


Accessory Heavy Duty Screw Type Tail Hose Assemblies with Wire Inserted Hose and Spring Protector for 4000 Series Motors

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 (4092100)	4250	42504 KB (1716866)	425016 (1186900)	1/2"	42504 C (1163300)	42504 D (1163400)	42504 E (1163500)	425015 (1186800)	425017 (1186950)	
430019 HD (4092200)	4300	43004 B (1165000)	432516 (1187300)	3/4"	43254 C (1167400)	43254 D (1167500)	43254 E (1167600)	432515 K (1187250)	43254 K (1167700)	
432519 HD (4092350)	4325	43254 KB (1167800)	432516 (1187300)	3/4"	43254 C (1167400)	43254 D (1167500)	43254 E (1167600)	432515 K (1187250)	43254 K (1167700)	
435019 HD (4092400)	4350	43504 B (1168500)	435016 (1187600PT)	1"	43504 C (1168600)	43254 D (1167500)	43254 E (1167600)	432515 K (1187250)	43254 K (1167700)	
445019 HD (4092500)	4450	44504 B (1170500)	435016 (1187600PT)	1"	43504 C (1168600)	43254 D (1167500)	43254 E (1167600)	432515 K (1187250)	43254 K (1167700)	
460019 HD (4092501)	4600	46004 B (1171950)	460016 (1188010)	1"	46004 C (1171960)	46004 D (1171970)	46004 E (1171980)	460015 K (1188020)	46004 K (1717471)	

60 & 4000 Series Motors

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



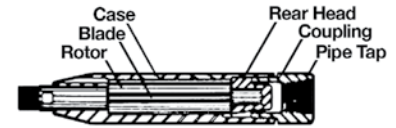
Motor Number	Motor O.D.	Tube I.D. (Radius)	Case	Rear Head w/ Bearing	Machine Coupling	Rotor	Blades (4 req.)	Rear Bearing	Rear Dowel (Qty.)	Tail Hose	Tail Hose Coupling	Tail hose Assembly	Front Ferrule	Rear Ferrule	Shaft Wrench	Rotor Thread	Hose Size
X 64 (4090200)	1 1/16"	13/16" (5")	X 6401 (1334800)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

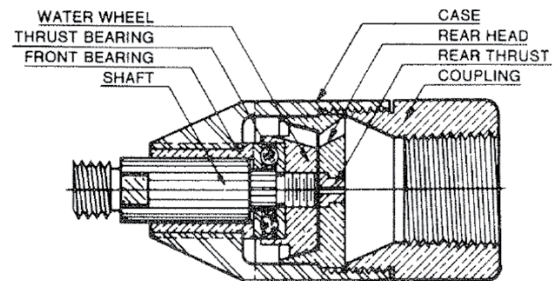


Motor Number	Motor O.D.	Tube I.D.	Case	Rear Head	Machine Coupling	Rotor	Rotor Blade (Qty.)	Dowel pin (Qty.)	Shaft Wrench	Rotor Thread	Air Hose
24 (4074900)	15/32"	1/2"	X 2401 (1056400)	2403 (1056500)	2404 (1056600)	2405 (1056700)	2406 (4) (1056800)	2412 (1056900)	5/32" (3240100)	10-32	3/16"
30 (4075400)	37/64"	5/8"	X 3001 (1067100)	X 3003 (1067300)	X 3004 (1067400)	X 2705 (1063000)	2706 (4) (1063100)	3012 (1067500)	3/16" (3240200)	1/4" N.F.	1/4"
27 (4075100)	11/16"	3/4"	X 2701 (1062600)	X 2703 (1062800)	2704 (1062900PT)	X 2705 (1063000)	2706 (4) (1063100)	3012 (1067500)	3/16" (3240200)	1/4" N.F.	1/4"
29 A (4075310)	25/32"	7/8"	2901 A (1064901)	2903 A (1065001)	2904 (1065100)	2605 (1060800PT)	2606 (4) (1060900)	X 6112 (1331800)	5/16" (14-0805)	3/8" N.F.	3/8"
26 (4075000)	29/32"	1"	2601 G (1060500)	2603 (1060600)	2604 (1060700)	2605 (1060800PT)	2606 (4) (1060900)	X 6312 (1334000)	5/16" (14-0805)	3/8" N.F.	3/8"
31 (4075600)	1-1/32"	1-1/8"	3101 (1069800)	3103 (1069900)	3104 (1070000)	3105 (1070100)	3106 (4) (1070200PT)	3111 (1070300)	5/16" (2902629)	3/8" N.F.	3/8"
X 63 A (4090100)	1-1/16"	1-1/4"	X 6301 (1333300)	X 6303 (1333400)	X 6304 A (1333600)	X 6305 (1333700)	X 6306 (4) (1333800)	X 6312 (2) (1334000)	5/16" (14-0805)	3/8" N.F.	3/8"
X 65 A (4060400)	1-3/16"	1-3/8"	X 6501 (1336300PT)	X 6503 (1336400)	X 6504 A (1336600)	X 6505 (1336700)	X 6506 (4) (1336800)	X 6312 (2) (1334000)	5/16" (14-0805)	3/8" 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 (4088200)	3-1/2"	3-3/4"	W 701 (1319300)	W 702 (1319400PT)	W 703 (1319500)	W 10704 (1326000)	1-1/2"	W 905 (1319900)	W 907 (1320000)	W 908 (1320100)	W 910 (1320200)	7/8" (14-0814)	7/8" N.C.	1-1/2"
W-16-A (4089200)	1-11/16"	2"	W 1601 A (1323300)	W 1602 (1323400)	W 1603 A (1323600)	W 1604 A (1323800)	3/4"	W 1605 (1323900)	W 1607 (1324000)	W 1608 (1324100)	W 1610 (1324200)	5/8" (14-0810)	5/8" N.C.	3/4"

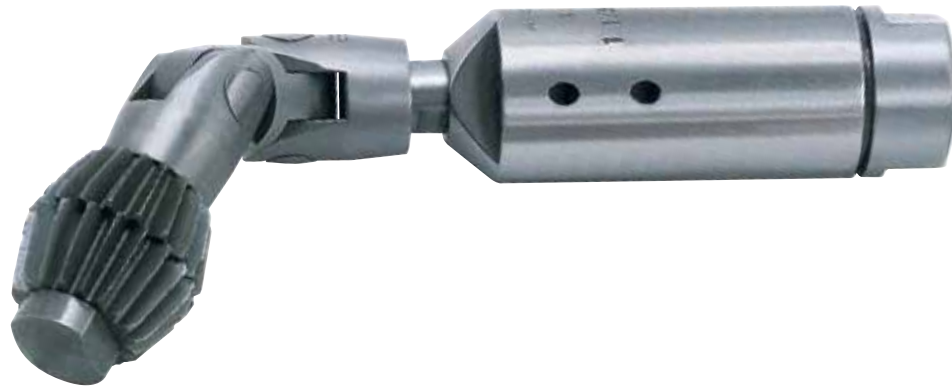
* Other sizes available. Contact customer service for details

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



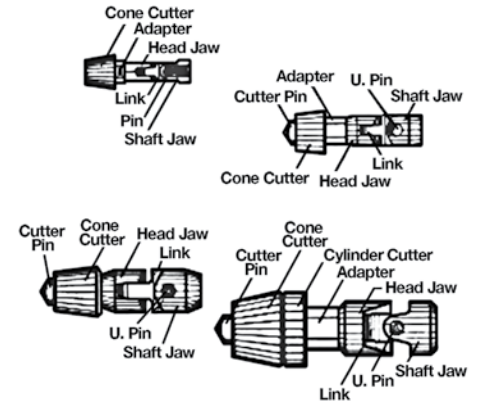
Cleaner Complete	Order Number	Pipe I.D.		Motor Assembly		Motor Diameter		Head Assembly		Air Inlet		Hose Size		Hose Length	
		in.	mm	Model	Order No.	in.	mm	Model	Order No.	in.	mm	in.	mm	ft	M
27 GLC 50	4105416	3/4	19.05	27	4075100	11/16	17.46	2740 S	4104802	1/4	6.35	1/4	6.35	50	15.24
X 64 GLC 50		1	25.4	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)



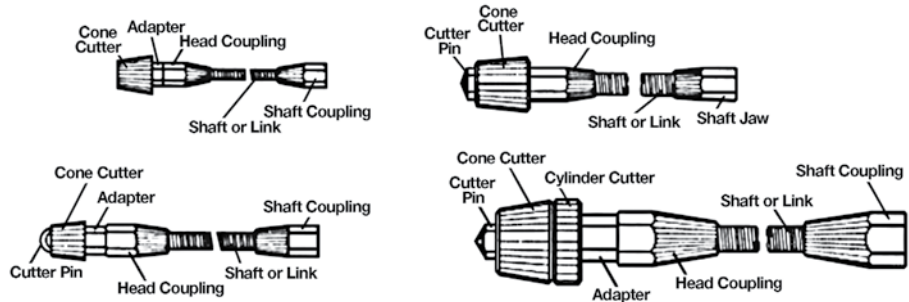
Head Number	Tube I.D.	Universal Joint	Shaft Jaw Tap	Adapter	Cutter Pin	Cone Cutter (qty.)	Cylinder Cutter
2440 (4051800)	1/2"	2451 (4094800)	10-32	2443 (1057000)	-	2487 S (1058400)	-
3040 (4053200)	5/8" 11/16"	PA 3051 (4098200)	1/4" N.F.	2734 (1063300)	-	3037 (10681000)	-
2740 (4052400)	3/4" 13/16"	PA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

Type 2 Single Unit Heads



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

Single unit heads, components and (ordering numbers)



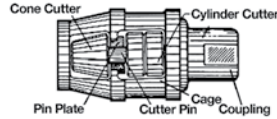
Head Number	Tube I.D.	Flex Connection	Shaft Cpl. Tap	Head Cpl. Tap	Adapter	Cutter Pin	Cone Cutter	Cylinder Cutter	Length	Diameter
2430 (4051700)	1/2"	2461 A (4035500)	10-32	10-32	2443 (1057000)	-	2487 S (1058400)	-	4"	3/16"
3030 (4053100)	5/8"	X 6461 A (4046200)	1/4" N.F.	1/4" N.F.	2734 (1063300)	-	3037 (1068100)	-	4"	3/16"
2730 (4052300)	3/4"	X 6461 A (4046200)	1/4" N.F.	1/4" N.F.	2734 (1063300)	-	C 3 (1212500)	-	4"	3/16"
X 6430 (4074300)	13/16"	X 6461 A (4046200)	1/4" N.F.	1/4" N.F.	-	2944 (1065900)	2947 (1066000)	-	4"	3/16"
2930 (4052700)	7/8"	2961 A (4036500)	3/8" N.F.	3/8" N.F.	2943 (1065800)	2944 (1065900)	2947 (1066000)	-	4-1/2"	1/4"
12130	1"	12161 A (4038300)	5/16" N.F.	5/16" N.F.	-	2644 (1061400)	337 (1025700)	-	4-1/2"	1/4"
2630 (4052000)	1"	2661 A (4036200)	3/8" N.F.	5/16" N.F.	-	2644 (1061400)	337 (1025700)	-	4-1/2"	1/4"
X 6130 (4073900)	1-1/32"	X 6161 A (4045000)	5/16" N.F.	5/16" N.F.	-	2644 (1061400)	337 (1025700)	-	4"	3-16
3130 (4053700)	1-1/8"	X 6361 A (4045600)	7/16" N.F.	3/8" N.F.	-	3144 A (1070500)	2837 (1064600)	-	4-1/2"	1/4"
X 6330 (4074100)	1-1/4"	X 6361 A (4045600)	3/8" N.F.	7/16" N.F.	-	2544 S (1059400)	947 (1038700)	-	4-1/2"	1/4"
X 6530 (4074500)	1-1/2"	X 6661 A (4046800)	3/8" N.F.	7/16" N.F.	-	2544 S (1059400)	6547 (1097600)	-	6-1/2"	3/8"
X 6630 (4074700)	1-3/4"	X 6661 A (4046800)	3/8" N.F.	7/16" N.F.	-	2544 S (1059400)	797 (1034500)	-	6-1/2"	3/8"
4130 (4054800)	1-5/8" 2-1/8"	4161 A (4037100)	5/8" N.C.	5/8" N.C.	1943 (1051400)	1944 (1051500)	897 B (1038300)	888 B (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 (4068400)	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 (4065400)	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 (4064900)	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 (4073200)	5"	4-1/2"	5-9/16"	1991 H S	-	21283 (1111010)	1 3/8"	884 P (3) (1036800)	1287 (3) (1044300)	1288 (9) (1044400)
TC 19 S (4073200)	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 (4073200)	6-1/4"	5-3/4"	6-3/4"	2191 S	-	8293 (1111010)	1 3/8"	884 P (4) (1036800)	11887 (4) (1036800)	11888 (12) (1036800)
TC 22 S (4073200)	6-1/2"	6"	7-1/16"	2291 S	-	8293 (1111010)	1 3/8"	884 P (4) (1036800)	11887 (4) (1036800)	11888 (12) (1036800)
TC 23 S (4073200)	6-3/4"	6-1/4"	7-5/16"	2391 S	-	8293 (1111010)	1 3/8"	2484 S (4) (1058100)	8287 (4) (1058100)	8288 (12) (1058100)
TC 24 S (4073200)	7"	6-1/2"	7-9/16"	2491 S	-	8293 (1111010)	1 3/8"	2484 S (4) (1058100)	8287 (4) (1058100)	8288 (12) (1058100)

Type 4 - Forward Swing Arm Heads



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.

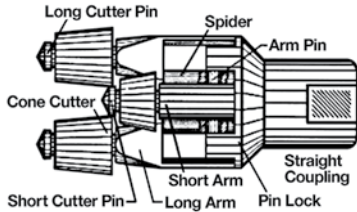


Figure 1 Shown with head coupling for straight tubes.

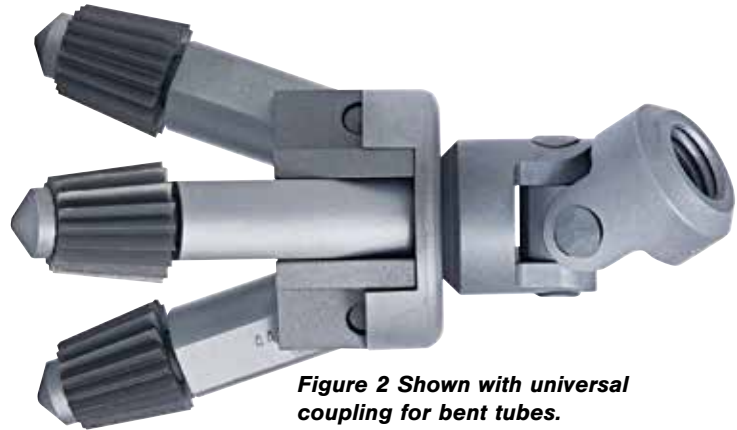


Figure 2 Shown with universal coupling for bent tubes.



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 (4055200)	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	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 S A (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

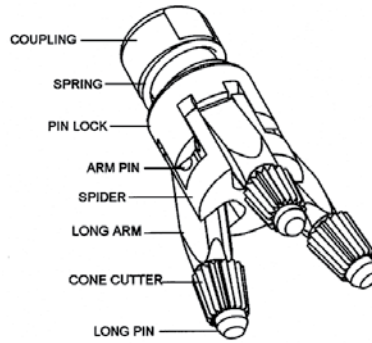
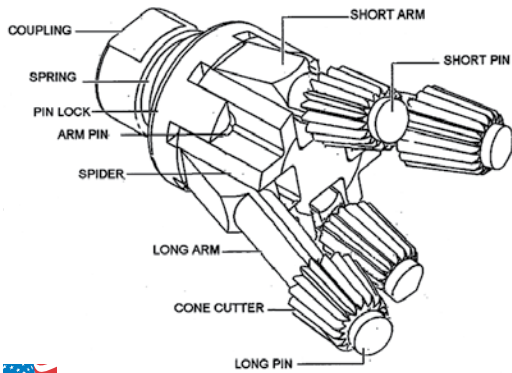
Type 4 - SRA Spring Retracting Arm Heads

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



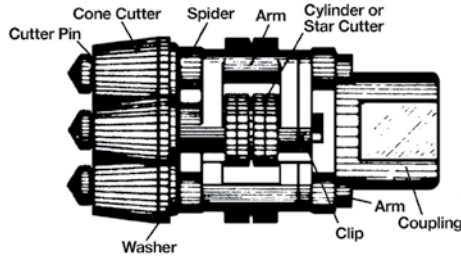
Head Number	Tube I.D.	Closed	Expands To	Spider	Fig.	Long Arm (qty.)	Short Arm (qty.)	Head Coupling	Coupling Tap	Long Cutter Pin (qty.)	Short Cutter Pin (qty.)	Arm Pin (qty.)	Pin Lock (qty.)	Cone Cutter (qty.)	Star Cutter (qty.)	Spring	Universal Joint	No. of Arms
SRA 1470 9/16 (4105691PT)	1-1/2"	1-3/8"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

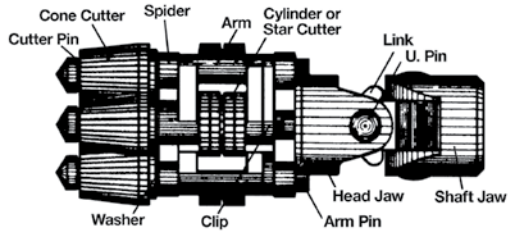


Head Number	Tube I.D.	Closed	Expands To	Spider	Arm (Qty.)	Coupling	Coupling Plate	Coupling Tap	Cutter Pin (qty.)	Arm Pin (qty.)	Clip (qty.)	Cone Cutter (qty.)	Cylinder Cutter (qty.)	Washer (qty.)
11740 (4058900)	1-3/4"	1-1/2"	2-1/8"	11741 (1113900)	11742 (2) (1114000)	11743 B (1114400)	-	5/8" N.C.	11744 (2) (1114700)	11745 (2) (1114800)	-	11747 (2) (1114900)	11748 (8) (1115000)	-
3060 5/8 (4053400)	2-3/8"	1-15/16"	2-5/8"	3061 (1069100)	3062 S (3) (1069300)	3043 (1068500)	-	5/8" N.C.	3364 (3) (1075200)	3365 (3) (1075300)	3068 (3) (1069400)	3047 (3) (1068900)	3048 (3) (1069000)	-
3060 3/4 (4053401)	2-3/8"	1-15/16"	2-5/8"	3061 (1069100)	3062 S (3) (1069300)	3043 3/4 (1068700)	-	3/4" N.C.	3364 (3) (1075200)	3365 (3) (1075300)	3068 (3) (1069400)	3047 (3) (1068900)	3048 (3) (1069000)	-
2060 3/4 (4051300)	2-1/2"	2-1/4"	3"	3361 (1074900)	3362 S (3) (1075100)	2043 3/4 (1052400)	-	3/4" N.C.	3364 (3) (1075200)	3365 (3) (1075300)	3368 (3) (1075400)	337 (3) (1025700)	338 (15) (1025905)	339 (3) (1026000)
2060 7/8 (4051301)	2-1/2"	2-1/4"	3"	3361 (1074900)	3362 S (3) (1075100)	2043 7/8 (1052600)	-	7/8" N.C.	3364 (3) (1075200)	3365 (3) (1075300)	3368 (3) (1075400)	337 (3) (1025700)	338 (15) (1025905)	339 (3) (1026000)
1060 3/4NC (4010201)	3"	2-5/8"	3-3/4"	1061 (1042000)	1062 S (3) (1042200)	1033 3/4 (1041000)	-	3/4" N.C.	1064 (3) (1042300)	1065 (3) (1042400)	1068 (3) (1042500)	1047 (3) (1041700)	1048 (15) (1041800)	-
1060 7/8THD (4105640)	3"	2-5/8"	3-3/4"	1061 (1042000)	1062 S (3) (1042200)	1033 7/8 (1041100)	-	7/8" N.C.	1064 (3) (1042300)	1065 (3) (1042400)	1068 (3) (1042500)	1047 (3) (1041700)	1048 (15) (1041800)	-
1060 1NF (4050202)	3"	2-5/8"	3-3/4"	1061 (1042000)	1062 S (3) (1042200)	1033 1 (1040900PT)	-	1" N.C.	1064 (3) (1042300)	1065 (3) (1042400)	1068 (3) (1042500)	1047 (3) (1041700)	1048 (15) (1041800)	-
960 (4049700)	3-1/4"	3-1/8"	4-1/8"	961 (1038900)	762 S (3) (1032800)	543 7/8 (1027300)	-	7/8" N.C.	35264 (3) (1154900)	765 (3) (1032900)	35268 (3) (1155100)	947 (3) (1038700)	948 (27) (1038800)	749 (3) (1031900PT)
760 1 (4048500)	3-1/2"	3-1/4"	4-1/2"	761 (1032600)	762 S (3) (1032800)	743 1 (1031200)	-	1" N.F.	35264 (3) (1154900)	765 (3) (1032900)	35268 (3) (1155100)	747 (3) (1031700)	748 (24) (1031802)	749 (3) (1031900PT)
760 1 1/8 (4048501)	3-1/2"	3-1/4"	4-1/2"	761 (1032600)	762 S (3) (1032800)	743 1 1/8 (1716210)	-	1-1/8" N.F.	35264 (3) (1154900)	765 (3) (1032900)	35268 (3) (1155100)	747 (3) (1031700)	748 (24) (1031802)	749 (3) (1031900PT)
5060 AS (4056400)	4-1/2"	3-7/8"	5-5/8"	5061 A (1086900)	562 S (3) (1027900)	843 (1034900)	5043 A	1-1/8" N.F.	564 (3) (1028000)	565 (3) (1028100)	568 (3) (1028200)	747 (3) (1031700)	748 (24) (1031802)	749 (3) (1031900PT)
35260	5-1/4"	4-1/2"	6"	35261	35262 S (4) (1158200)	35243	35243 A	1-3/8" N.F.	35264 (4) (1154900)	35265 (4) (1155000)	35268 (4) (1155100)	271 (4) (1025400)	C 79 (12) (1218700)	749 (4) (1031900PT)
36060 1-1/8	6"	5-3/8"	7-1/8"	36041 (1156200)	36562 S (4) (1158200)	36043	-	1-1/8" N.F.	36564 (4) (1158300)	36545 (4) (1157900)	36546 (4) (1158000)	37297 (4) (1159200)	37688 (12) (1160100)	36549 (4) (1158100)
36060 1-3/8	6"	5-3/8"	7-1/8"	36041 (1156200)	36562 S (4) (1158200)	36043	-	1-3/8" N.F.	36564 (4) (1158300)	36545 (4) (1157900)	36546 (4) (1158000)	37297 (4) (1159200)	37688 (12) (1160100)	36549 (4) (1158100)
36560 1 1/8 (4061701)	6-1/2"	5-7/8"	7-5/8"	36541 C (1157200)	36562 S (4) (1158200)	35243 B (1154200)	36543 AC (1157500)	1-1/8" N.F.	36564 (4) (1158300)	36545 (4) (1157900)	36546 (4) (1158000)	37297 (4) (1159200)	37288 (12) (1159100)	36549 (4) (1158100)
37260	7-1/4"	6-1/4"	8"	37241	36562 S (4) (1158200)	8293 (1111010)	37243 A	1-3/8" N.F.	36564 (4) (1158300)	36545 (4) (1157900)	36546 (4) (1158000)	37297 (4) (1159200)	37288 (12) (1159100)	36549 (4) (1158100)
37660	7-5/8"	6-1/2"	8-1/2"	37641	36562 S (4) (1158200)	8293 (1111010)	37643 A	1-3/8" N.F.	36564 (5) (1158300)	36545 (5) (1157900)	36546 (5) (1158000)	37697 (5) (1160200)	37288 (15) (1159100)	36549 (5) (1158100)
38760 (4062500)	8-3/4"	7-1/2"	9-1/2"	38741 (1160500)	36562 S (4) (1158200)	8293 (1111010)	38743 A (1160600)	1-3/8" N.F.	36564 (5) (1158300)	36545 (5) (1157900)	36546 (5) (1158000)	37697 (5) (1160200)	37688 (15) (1160100)	36549 (5) (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 (qty.)	Cylinder Cutter (qty.)	Washer (qty.)
11740 C (4058910)	2"	1-1/2"	2-1/8"	11741 (1113900)	11742 (2) (1114000)	4151 W (4095700)	-	5/8" N.C.	11744 (2) (1114700)	11745 (2) (1114800)	-	11747 (2) (1114900)	11748 (8) (1115000)	-
3060 C	2-1/4"	1-15/16"	2-5/8"	3061	3062 S (3) (1075100)	4151 (4095600)	-	5/8" N.C.	3364 (3) (1075200)	3365 (3) (1075300)	3068 (3)	3047 (3)	3048 (3)	-
3360 (4054300)	2-5/8"	2-1/4"	3"	3361 (1074900)	3362 S (3) (1075100)	3333 (4095100PT)	-	3/4" N.C.	3364 (3) (1075200)	3365 (3) (1075300)	3368 (3) (1075400)	337 (3) (1025700)	338 (15) (1025905)	339 (3) (1026000)
3560 3/4 (4105128)	2-7/8"	2-5/8"	3-3/4"	1061 (1042000)	1062 S (3) (1042200)	3532 3/4 (4095300)	-	3/4" N.C.	1064 (3) (1042300)	1065 (3) (1042400)	1068 (3) (1042500)	1047 (3) (1041700)	1048 (15) (1041800)	-
3560 7/8 (4054700)	3-3/8"	2-5/8"	3-3/4"	1061 (1042000)	1062 S (3) (1042200)	3531 7/8 (4095200)	-	7/8" N.C.	1064 (3) (1042300)	1065 (3) (1042400)	1068 (3) (1042500)	1047 (3) (1041700)	1048 (15) (1041800)	-
960 C (4049800)	3-1/2"	3-1/8"	4-1/4"	961 (1038900)	762 S (3) (1032800PT)	551 (4094000)	-	7/8" N.C.	35264 (3) (1154900)	765 (3) (1032900)	35268 (3) (1155100)	947 (3) (1038700)	948 (27) (1038800)	749 (3) (1031900PT)
760 C (4048600)	3-3/4"	3-1/4"	4-1/2"	761 (1032600)	762 S (3) (1032800PT)	1151 (4094400)	-	7/8" N.C.	35264 (3) (1154900)	765 (3) (1032900)	35268 (3) (1155100)	747 (3) (1031700)	748 (24) (1031802)	749 (3) (1031900PT)
760 C 1-1/8 (4048620PT)	3-3/4"	3-1/4"	4-1/2"	761 (1032600)	762 S (3) (1032800PT)	5051 E (4104884)	-	1-1/8" N.F.	35264 (3) (1154900)	765 (3) (1032900)	35268 (3) (1155100)	747 (3) (1031700)	748 (24) (1031802)	749 (3) (1031900PT)
5060 A (4056300)	4-13/16"	3-7/8"	5-5/8"	5061 A (1086900)	562 S (3) (1027900)	5051 E (4104884)	5043 A (1085400)	1-1/8" N.F.	564 (3) (1028000)	565 (3) (1028100)	568 (3) (1028200)	747 (3) (1031700)	748 (24) (1031802)	749 (3) (1031900PT)
35260 C	5-1/4"	4-1/2"	6"	35261	35262 S (4) (1154800)	5051 H (4096000)	35243 A	1-1/8" N.F.	35264 (4) (1154900)	35265 (4) (1155000)	35268 (4) (1155100)	271 (4) (1025400)	C 79 (12) (1218700)	749 (4) (1031900PT)
36060 C (4061600)	6"	5-3/8"	7-1/8"	36041 (1156200)	36562 S (4) (1158200)	5051 H (4096000)	36043 A (1156400)	1-1/8" N.F.	36564 (4) (1158300)	36545 (4) (1157900)	36546 (4) (1158000)	37697 (4) (1160200)	37688 (12) (1160100)	36549 (4) (1158100)
36560 C (4061800)	6-1/2"	5-7/8"	7-5/8"	36541 C (1157200)	36562 S (4) (1158200)	5051 H (4096000)	36543 AC (1157500)	1-1/8" N.F.	36564 (4) (1158300)	36545 (4) (1157900)	36546 (4) (1158000)	37697 (4) (1160200)	37288 (12) (1160100)	36549 (4) (1158100)
37260 C	7-1/4"	6-1/4"	8"	37241	36562 S (4) (1158200)	21251 A (4097200)	37243 A	1-3/8" N.F.	36564 (4) (1158300)	36545 (4) (1157900)	36546 (4) (1158000)	37697 (4) (1160200)	37288 (12) (1160100)	36549 (4) (1158100)
37660 C	7-5/8"	6-1/2"	8-1/2"	37641	36562 S (5) (1158200)	21251 A (4097200)	37643 A	1-3/8" N.F.	36564 (5) (1158300)	36545 (5) (1157900)	36546 (5) (1158000)	37697 (5) (1160200)	37288 (15) (1160100)	36549 (5) (1158100)
38760 C	8-1/4"	7-1/2"	9-1/2"	38741	36562 S (5) (1158200)	21251 A (4097200)	38743 A	1-3/8" N.F.	36564 (5) (1158300)	36545 (5) (1157900)	36546 (5) (1158000)	37697 (5) (1160200)	37288 (15) (1160100)	36549 (5) (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

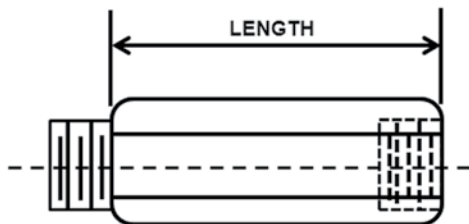


Universal coupling ordered separately



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
1 1/16" - 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 x 7/8" N.C. Female		1" N.C. Male x 1" N.C. Female		1-1/8" N.C. Male x 1-1/8" N.C. Female	
	Model No.	Order No.	Model No.	Order No.	Model No.	Order No.
Length (in.)						
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 (1057700)	2483 (1057800)	2487 (4000250)	2487 (4) (1058300)	FF 1010 (1249800)	10-32
3080 (4053600)	5/8"	9/16"	11/16"	1/4" N.F.	3081 (1069500)	3083 (1069600)	3087 (4000290PT)	3087 (3) (1069700)	FF 22 (1245700)	1/4" N.F.
2780 (4052500)	3/4"	11/16"	13/16"	1/4" N.F.	2781 (1063800)	2783 (1063900)	2787 (4000270)	27878 (3) (1064000)	FF 22 (1245700)	1/4" N.F.
6480 (4057200)	13/16"	3/4"	7/8"	5/16" N.C.	2981 (1066400)	2983 (1066500)	6487 (4000330)	6487 (3) (1095800)	FF 312 (1248600)	1/4" N.F.
2980 (4052900)	7/8"	25/32"	29/32"	5/16" N.C.	2981 (1066400)	2983 (1066500)	2987 (4000280)	2987 (3) (1066600)	FF 3137 (1250500)	3/8" N.F.
6180 (4056700)	1"	7/8"	1-3/32"	5/16" N.C.	6181 (1089900)	6183 (1090000)	6187 (4000310PT)	6187 (4) (1090100)	FF3137 (1250500)	3/8" N.F.
2680 (4052200)	1"	15/16"	1-5/32"	5/16" N.C.	6181 (1089900)	6183 (1090000)	2687 (4000260PT)	2687 (4) (1062500)	FF3137 (1250500)	3/8" N.F.
3180 7/16 NF (4053900PT)	1-1/8"	1-1/32"	1-1/4"	5/16" N.C.	3181 (1070700)	3183 (1070800)	3187 (4000300)	3187 (4) (1070900)	FF 314 (1248700PT)	7/16" N.F.
6380 3/8 (4057000)	1-1/4"	1-5/32"	1-3/8"	5/16" N.C.	3181 (1070700)	3183 (1070800)	6387 (4000320PT)	6387 (4) (1092400)	FF3137 (1250500)	3/8" N.F.
6580 3/8 NF (4057400PT)	1-3/8"	1-9/32"	1-1/2"	5/16" N.C.	3181 (1070700)	3183 (1070800)	6587 (4000340)	6587 (4) (1098100PT)	FF3137 (1250500)	3/8" N.F.
6580 7/16 NF (4057401PT)	1-3/8"	1-9/32"	1-1/2"	5/16" N.C.	3181 (1070700)	3183 (1070800)	6587 (4000340)	6587 (4) (1098100PT)	FF314 (1250500)	7/16" N.F.
1780 (4050600PT)	1-1/2"	1-3/8"	1-11/16"	9/16" N.C.	1781 (1048200PT)	1783 (1048400PT)	1787 (4000200)	1787 (4) (1048700)	FF 5656 (1250900PT)	9/16" N.C.
1880 (4050900PT)	1-5/8"	1-1/2"	1-13/16"	5/8" N.C.	1881 (1050600PT)	1883 (1050900PT)	1887 (4000210PT)	1887 (4) (1051200PT)	FF 66 (1247000)	5/8" N.C.
1980 (4051100PT)	1-3/4"	1-5/8"	1-15/16"	5/8" N.C.	1881 (1050600PT)	1883 (1050900PT)	1987 (4000250PT)	1987 (4) (1051700PT)	FF 66 (1247000)	5/8" N.C.
2380 C (4051600PT)	1-7/8"	1-3/4"	2-1/16"	5/8" N.C.	1881 (1050600PT)	1883 (1050900PT)	2387 C (4000240PT)	2387 C (4) (1055900PT)	FF 66 (1247000)	5/8" N.C.
2380 (4051500PT)	2"	1-7/8"	2-3/16"	5/8" N.C.	2381 (1054700PT)	2383 (1055750PT)	2387 (4000230)	2387 (4) (1055800PT)	FF 66 (1247000)	5/8" N.C.
21680 S (4061000PT)	2-1/8"	1-3/4"	2-1/4"	5/8" N.C.	21681 S (1136100PT)	21683 S (1136200PT)	21587 (4000400)	21587 (4) (1135100PT)	FF 66 (1247000)	5/8" N.C.
21580	2-1/4"	1-7/8"	2-3/8"	3/4" N.C.	21581	21583	21587 (4000400)	21587 (4) (1135100PT)	FF 77 (1247500)	3/4" N.C.
21480 (4060800)	2-1/2"	2-1/8"	2-5/8"	3/4" N.C.	21481 (1133500)	21483 (1133600)	21587 (4000400)	21587 (4) (1135100PT)	FF 78 (1247700)	7/8" N.C.
21380	2-3/4"	2-3/8"	2-15/16"	7/8" N.C.	21381	21383	21087 (4000390)	21087 (6) (1123300PT)	FF 88	7/8" N.C.
21080 (4059700PT)	3"	2-5/8"	3-5/16"	1" N.F.	21081 (1122000PT)	21083 (1122900PT)	21087 (4000390)	21087 (6) (1123300PT)	FF 11 (1245300PT)	1" N.F.
20980	3-1/4"	2-7/8"	3-3/8"	1" N.F.	20781 (1116600)	20783 (1116700)	20987	20987 (6)	FF 11 (1245300PT)	1" N.F.
20780	3-1/2"	3-1/8"	3-5/8"	1" N.F.	20781 (1116600)	20783 (1116700)	20787 (4000350)	20787 (6) (1116800)	FF 111 (1248200)	1-1/8" N.F.
20880	4"	3-5/8"	4-1/8"	1" N.F.	20781 (1116600)	20783 (1116700)	20887 (4000360)	20887 (6) (1118100)	FF 111 (1248200)	1-1/8" N.F.
20880 H	4-1/2"	4-1/8"	4-5/8"	1" N.F.	20781 (1116600)	20783 (1116700)	20887 H	20887 H (6)	FF 111 (1248200)	1-1/8" 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 Jont No.	Shaft Jaw	Head Jaw	Link	Pin (2 req.)	U-Joint O.D. (in.)	Overall Length (in.)	Thread Size	Cleaner Kits Used On
2451 (4094800)	2452 (1057100)	2452 (1057100)	2454 (1057200)	2455 (1057300)	0.312	1.25	10-32 x 10-32	24
PA 3051 (4098200)	PA 3052 (1294500)	PA 3052 (1294500)	PA 3054 (1294600)	PA 3055 (1294700)	.437 (.375 Hex)	1.375	1/4" x 1/4" N.F. N.F.	27, 27 A, 30, 30 A
6451 (4096500)	6453 V (1094800)	6453 V (1094800)	6454 V (1095100)	6455 V (1095200)	0.500	1.687	1/4" x 1/4" N.F. N.F.	X 64
6451 B	6453 V (1094800)	6457 V (1095300)	6454 V (1095100)	6455 V (1095200)			1/4" x 5/16" N.F. N.C.	X 64
6151 C (4096300)	6452 V (1094600)	6453 V (1094800)	6454 V (1095100)	6455 V (1095200)			5/16" x 1/4" N.F. N.F.	X 60, X 61
6151 (4096100PT)	6452 V (1094600)	6452 V (1094600)	6454 V (1095100)	6455 V (1095200)			5/16" x 5/16" N.F. N.F.	X 61
6151 B (4096200)	6452 V (1094600)	6457 V (1095300)	6454 V (1095100)	6455 V (1095200)			5/16" x 5/16" N.F. N.C.	X 61
2651 (4094900)	2652 (1061700PT)	2652 (1061700PT)	2654 (1061900)	2655 (1062000)			0.625	1.593
6351 B (4096400)	6652 (1100100)	6657	6654 (1100300)	6655 (1100400)	0.750	2.125	3/8" x 5/16" N.F. N.C.	X 63
6651 B (4096800)	6652 (1100100)	6658 (1100700)	6654 (1100300)	6655 (1100400)			3/8" x 7/16" N.F. N.C.	X 65, X 66
6651 (4096700)	6652 (1100100)	6653 (1100200)	6654 (1100300)	6655 (1100400)			3/8" x 7/16" N.F. N.F.	31, X 63, X 65, X 66
3151 (4095000)	6653 (1100200)	6653 (1100200)	6654 (1100300)	6655 (1100400)			7/16" x 7/16" N.F. N.F.	31
31551 (4097500)	4153 (1079700)	4157 (1080200)	4154 (1079900)	4155 (1080100)	1.125	2.062	9/16" x 1/2" N.C. N.C.	3150
4151 W (4095700)	4152 (1079600)	4153 (1079700)	4154 (1079900)	4155 (1080100)			5/8" x 1/2" N.C. N.C.	11740 C
4151 (4095600)	4152 (1079600)	4152 (1079600)	4154 (1079900)	4155 (1080100)			5/8" x 5/8" N.C. N.C.	3162, 3175, 3187, 3200, 3212 4200, 4225, 4237, 4250, 4275
3333 (4095100PT)	3552 (1076800)	3332 (1074000)	3554 (1077500)	3555 (1077700)	1.500	2.75	3/4" x 3/4" N.C. N.C.	3360 Head
3532 (4095300)	3552 (1076800)	3533 (1076500)	3554 (1077500)	3555 (1077700)	1.593		3/4" x 3/4" N.C. N.C.	3540, 3560 Head 3/4 N.C. Rotor Thread
3531 (4095200)	3557 (1077800)	3533 (1076500)	3554 (1077500)	3555 (1077700)			7/8" x 3/4" N.C. N.C.	3540, 3560 Head 7/8 N.C. Rotor Thread

U-Joints

5/8" N.C. thru 1-3/8" N.F. thread combinations

■ For adapting cleaning heads to cleaning motors

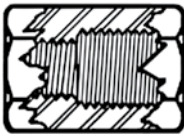
U-joints, components and ordering numbers



Universal Jont 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	3552 (1076800)	3552 (1076800)	3554 A	3555 (1077700)		2.625	3/4" x 3/4" N.C. N.C.	15 Deg. Restricterd
1551	253	1553 (1046500)	654 (1029900)	255 (1025310PT)	1.625	3.437	3/4 x 5/8" N.C. N.C.	
251	253	253	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	652 (1029400)	653 (1029600PT)	654 A	655 (1030200)			7/8" x 3/4" N.C. N.C.	15 Deg. Restricterd
551 (4094000)	652 (1029400)	652 (1029400)	654 (1029900)	655 (1030200)			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	5052 (1085600PT)	5053	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.	

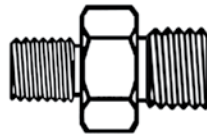
These adapters are used to configure motors and heads in special applications where the standard Airetool offering does not match up on thread sizes.

Female X Female



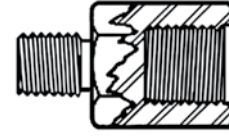
Part Number	Female X Female
FF 1 0	10-32 X 10-32
FF 1031	10-32 X 5/16 N.C.
FF 22	1/4 N.F. X 1/4 N.F.
FF 231	1/4 N.F. X 5/16 N.F.
FF 237	1/4 N.F. X 3/8 N.F.
FF 312	5/16 N.C. X 1/4 N.F.
FF 3131	5/16 N.C. X 5/16 N.F.
FF3137	5/16 N.C. X 3/8 N.F.
FF314	5/16 N.C. X 7/16 N.F.
FF 374	3/8 N.F. X 7/16 N.C.
FF 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	3/4"	3200, 4250	Not Available	2.6#		
43561 C	4043400	7/8 N.C. X 3/4 N.C.		4350, 3250				
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	Not Available	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				

Overhead Catalyst Cleaners

Overhead catalyst cleaner systems are specifically designed for the safe removal of spent catalyst from the top of the reactor tower. The system collects the catalyst carried by the exhaust air and discharges the spent catalyst into any suitable container.

- Helps eliminate the danger of catalyst contacting the operator
- Uses high-powered, high-performance air motor to remove catalyst quickly and efficiently
- Cleaner systems are available for tubes from 1-3/16" up to 5" diameter (I.D.)
- Specify tube size and gauge when ordering



Cleaner Complete example (See picture at right)

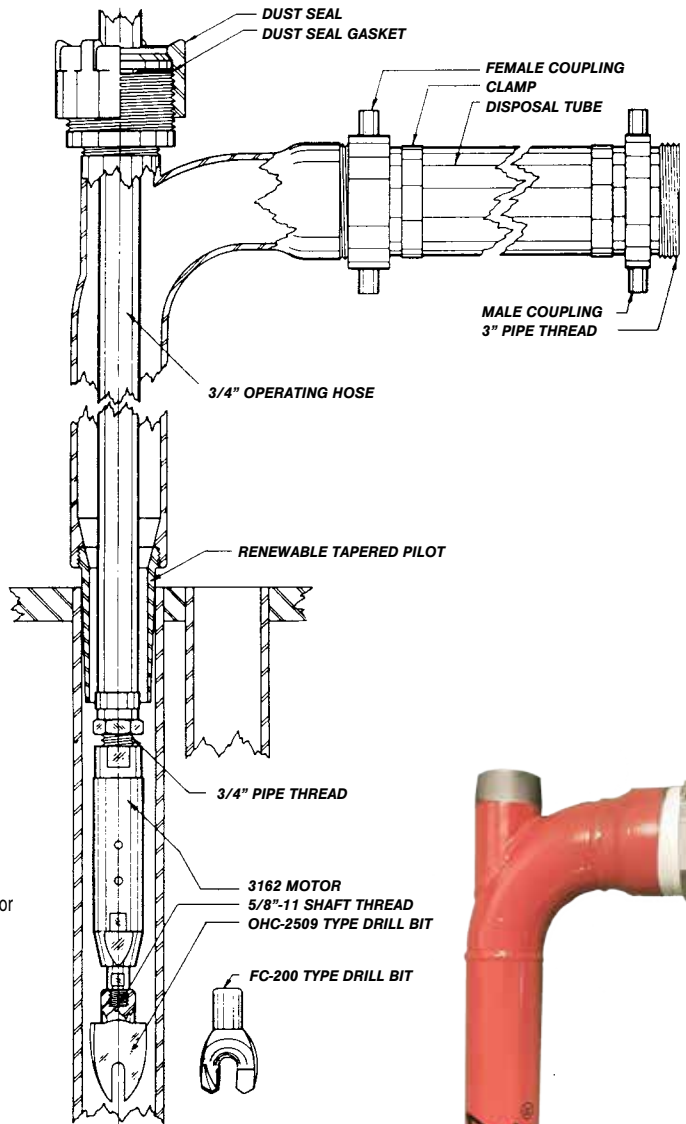
Model Number	Ordering Number	Description	Quantity
OHC-250 2000 3162	4104981	Cleaner Complete* (~85 lbs.)	1
1806	1049100	SPARE MOTOR BLADES	4
OHC 2501	1284700	MAIN CLEANER BODY	1
FC 200 1 7/8	1245180	FC TYPE DRILL BIT - 1-7/8" DIA.	1
OHC 2507	1285300	DUST SEAL ASSEMBLY	1
OHC 2509 1 3/4	1285800	OHC TYPE DRILL BIT - 1-3/4" DIA.	2
OHC 2510	1286100	DUST SEAL GASKET	3
OHC 2511	1286200	RENEWABLE PILOT	1
WRENCH 5/8	14-0810	SHAFT WRENCH - 5/8"	1
3162	4075800	AIR MOTOR	1
OHC 2508 3/4	4105113	OPERATING HOSE & COUPLINGS - 50FT	1
OHC 2502	4105368	DISPOSAL TUBE ASSEMBLY	1

* Cleaner Complete includes three drill bits, three extra dust seal gaskets, a spare set of motor blades, and motor shaft wrench(s)



FC-2000-3162

Shown below (1 5/8-2)



Catalyst Cleaner Bits

Model Number	Order Number	Description
FC-200-1 1/4 5/8NC	1716980PT	Drill Bit - 1-1/4" Diameter
FC-200-1 3/8	1245160	Drill Bit - 1-3/8" Diameter
FC-200-1 1/2 9/16NC	1245153	Drill Bit - 1-1/2" Diameter
FC-200-1 5/8 9/16NC	1245175	Drill Bit - 1-5/8" Diameter
FC-200-1 5/8 5/8NC	1716622	Drill Bit - 1-5/8" Diameter
FC-200-1 3/4 5/8NC	1245155	Drill Bit - 1-3/4" Diameter
FC-200-1 7/8 5/8NC	1245180	Drill Bit - 1-7/8" Diameter
FC 200 1 15/16 5/8NC	1716521	Drill Bit - 1-15/16" Diameter
FC 200 1 23/32 5/8NC	1716542	Drill Bit - 1-23/32" Diameter
FC 200 2 1/2 7/8NC	1715100	Drill Bit - 2-1/2" Diameter
OHC-2509-1 5/8	1285900	Drill Bit - 1-5/8" Diameter
OHC-2509-1 3/4	1285800	Drill Bit - 1-3/4" Diameter
OHC-2509-1 7/8	1286000	Drill Bit - 1-7/8" Diameter

Vertical Shaft Cleaning Machine

The Eagle Automatic Tube Cleaner

The EAGLE Tube Cleaner is a new design, unique in the international marketplace, which is capable of drilling or brushing tubes of all lengths up to 2" diameter. The EAGLE is safety engineered and operates on air and water power. The simplicity of the EAGLE allows for a one person operation and even casual labor can be quickly trained.

The EAGLE Tube Cleaner is more than a drill, it is a complete tube cleaning system. With a single machine, tube diameters up to 2" OD and lengths of up to 31' can be cleaned in either vertical or horizontal positions with channel heads in place. Simple conversions ensure that the machine is optimally configured for every type of bundle. The EAGLE requires less manpower and results in faster maintenance than other methods. It is considerably faster and more effective than hand-drilling or hydro-blasting.

Heat transfer efficiency up to 95% is typical and one customer has reported the restoration of 100% heat transfer efficiency. There is no type of fouling which the EAGLE cannot handle.

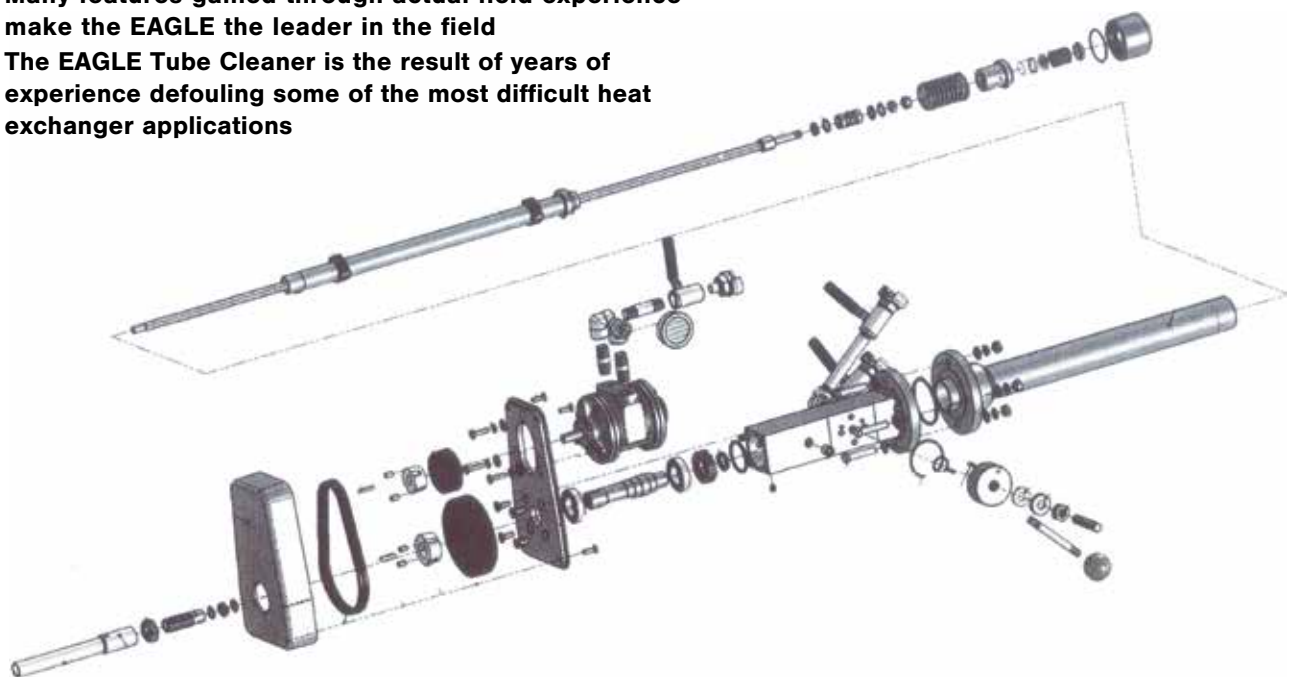
The EAGLE has many features never before available on tube cleaners. A unique water pressure control allows the operator to slow the forward speed of the drill while maintaining maximum water pressure for flushing action through the drill bit; a very important feature for certain types of fouling. For safety, a special torque absorption mount protects the machine, the bundle, and the operator from damage or injury, should the drill bit bind up in drilling on unusually difficult jobs.

- Many features gained through actual field experience make the EAGLE the leader in the field
- The EAGLE Tube Cleaner is the result of years of experience defouling some of the most difficult heat exchanger applications



Stock Number	Description
000014-___-3	EAGLE Tube Cleaner with 3/8" drill rod for Horizontal or Vertical application
000015-___-3	EAGLE Tube Cleaner with 1/2" drill rod for Horizontal or Vertical application
000021-___-3	EAGLE Tube Cleaner with 3/8" drill rod for Vertical only application
000022-___-3	EAGLE Tube Cleaner with 1/2" drill rod for Vertical only application

Middle Value for tube length in feet to be cleaned



Model FV-100 Foot Valve

For quick control of air when cleaning tubes. Has LOCK ON-EASY OFF feature. Easily secured to working platform or most convenient location.



Model Number	Order Number	Length		Width		Height		NPT	Weight	
		in.	mm	in.	mm	in.	mm	in.	Lbs.	kg
FV-100	4035310	10	254	6.5	165.1	4	101.6	1	12	5.45

In-Line Lubricator

Lubricator stays connected to the tool. Internal adjustment of lubrication rate.



Ordering Number	Hose Size	Lubricator	Bowl Capacity
3067800	1/2 NPT	#0	1/6 pt (7 cl)
3067900	3/4 NPT	#1	1/3 pt (15 cl)
3068000	3/4 NPT	#2	1/2 pt (23 cl)
3068100	1 NPT	#3	1 pt (47 cl)

Air Hose Selection Guide

Note: Standard "WB-LHWW" braid hose has one layer wire braid and a left hand wire wound outside hose protector.

Hose Size (in.)	Working Pressure PSI	Length ft.		Model Number	Order Number	Air Coupling Pipe Tap Size (in.)	Wire Wound (W/W) Not Wire Wound (N/WW)	Hose OD (over wire)	
		ft.	M					in.	mm
Air Motor – 25									
3/16	250	25	7.62	3/16" -25 ft.-250	4105071	18-20	N/WW	0.437	11.11
3/16	250	50	15.24	3/16" -50 ft.-250	4105072	18-20	N/WW	0.437	11.11
Air Motors – 27, 27A, 30, 30A									
1/4	225	25	7.62	1/4" -25 ft.-225	4105075	1/8	N/WW	0.531	13.49
1/4	225	50	15.24	1/4" -50 ft.-225	4105076	1/8	N/WW	0.531	13.49
Air Motors – X-64, X-61									
1/4	225	25	7.62	1/4" -25 ft.-225	4105073	1/4	N/WW	0.531	13.49
1/4	225	50	15.24	1/4" -50 ft.-225	4105074	1/4	N/WW	0.531	13.49
Air Motor – 29									
3/8	205	25	7.62	3/8" -25 ft.-205	4105083	1/4	N/WW	0.687	17.46
3/8	205	50	15.24	3/8" -50 ft.-205	4105084	1/4	N/WW	0.687	17.46
Air Motors – 26, 31									
3/8	205	25	7.62	3/8" -25 ft.	4105088	3/8	N/WW	0.687	17.46
3/8	205	50	15.24	3/8" -50 ft.	4105089	3/8	N/WW	0.687	17.46
Air Motors – X-63, X-63A, X-65, X-65A, X-66									
3/8	625	25	7.62	3/8" -25 ft.-WB-LHWW	1717371	3/8	Left hand W/W	0.875	22.22
3/8	625	50	15.24	3/8" -50 ft.-WB-LHWW	1717372	3/8	Left hand W/W	0.875	22.22
Air Motors – 3150, 3175, 4200, 4225, 4250									
1/2	625	25	7.62	1/2" -25 ft.-WB-LHWW	1717373	1/2	Left hand W/W	1.000	25.4
1/2	625	50	15.24	1/2" -50 ft.-WB-LHWW	1717374	1/2	Left hand W/W	1.000	25.4
Air Motors – 3162, 3187, 3200, 3225, 3212, 4300, 4325									
3/4	625	25	7.62	3/4" -25 ft.-WB-LHWW	1717375	3/4	Left hand W/W	1.250	31.75
3/4	625	50	15.24	3/4" -50 ft.-WB-LHWW	1717376	3/4	Left hand W/W	1.250	31.75
All other air motors									
1	625	25	7.62	1" -25 ft.-WB-LHWW	1717377	1	Left hand W/W	1.625	41.28
1	625	50	15.24	1" -50 ft.-WB-LHWW	1717378	1	Left hand W/W	1.625	41.28

Drill Pipe

Recommendation Chart

Size	Connection	Weight	Grade	TJ ID	Tube ID	Motor	Spring Head	Finger Head	Lance
2-3/8"	2-3/8"IF/NC26	6.65#	S-135	1.750"	1.815"	3150	SRA-1470	1840	1/2"
2-7/8"	2-7/8" HTPAC	10.40#	E-75	1.500"	2.151"	3150	SRA-1470	NA	1/2"
2-7/8"	2-7/8" HTPAC	10.40#	S-135	1.500"	2.151"	3150	SRA-1470	NA	1/2"
2-7/8"	2-7/8" HTPAC	10.40#	G-105	1.500"	2.151"	3150	SRA-1470	NA	1/2"
2-7/8"	2-3/8HTSLH90	10.40#	S-135	1.975"	2.151"	3150	SRA-1470	NA	1/2"
2-7/8"	HT-26	10.40#	S-135	1.750"	2.151"	3150	SRA-1470	NA	1/2"
2-7/8"	NC26 2-3/8 IFSH	10.40#	X-95	1.500"	2.151"	3150	SRA-1470	NA	1/2"
2-7/8"	NC26 2-3/8 IFSH	10.40#	S-135	1.500"	2.151"	3150	SRA-1470	NA	1/2"
2-7/8"	2-7/8" AOH	10.40#	S-135	2.156"	2.151"	3200	SRA-1870	NA	3/4"
2-7/8"	2-7/8"IF NC31	10.40#	E-75	2.125"	2.151"	3200	SRA-1870	NA	3/4"
2-7/8"	2-7/8" AOH	10.40#	X-95	2.156"	2.151"	3200	SRA-1870	NA	3/4"
2-7/8"	2-7/8"IF NC31	10.40#	S-135	2.000"	2.151"	3200	SRA-1870	NA	3/4"
3-1/2"	3-1/2"IF NC38	13.30#	E-75	2.688"	2.764"	3250	SRA-3370	3370	1"
3-1/2"	3-1/2"IF NC38	13.30#	X-95	2.688"	2.764"	3250	SRA-3370	3370	1"
3-1/2"	3-1/2"IF NC38	13.30#	XD-105	2.563"	2.764"	3250	SRA-3370	3370	1"
3-1/2"	3-1/2"IF NC38	13.30#	S-135	2.563"	2.764"	3250	SRA-3370	3370	1"
3-1/2"	3-1/2" HT-38	13.30#	S-135	2.563"	2.764"	3250	SRA-3370	3370	1"
3-1/2"	3-1/2" XT-38	13.30#	S-135	2.563"	2.764"	3250	SRA-3370	3370	1"
3-1/2"	3-1/2"IF NC38	15.50#	X-95	2.563"	2.602"	3250	SRA-3370	3370	1"
3-1/2"	3-1/2"IF NC38	15.50#	XD-105	2.563"	2.602"	3250	SRA-3370	3370	1"
3-1/2"	3-1/2"IF NC38	15.50#	S-135	2.563"	2.602"	3250	SRA-3370	3370	1"
3-1/2"	NC-38	15.50#	S-135	2.563"	2.602"	3250	SRA-3370	3370	1"
3-1/2"	XT-38	13.30#	S-135	2.563"	2.602"	3250	SRA-3370	3370	1"
4"	XT-39	14.00#	S-135	2.688"	3.340"	3250	SRA-3270	3270	1"
4"	XT-39	15.70#	XD-105	2.688"	3.340"	3250	SRA-3270	3270	1"
4"	4" FH NC40	14.00#	S-135	2.688"	3.340"	3250	SRA-3270	3270	1"
4"	HT-40	14.00#	S-135	2.688"	3.340"	3250	SRA-3270	3270	1"
4"	XT-39	14.00#	S-135	2.813"	3.340"	3250	SRA-3270	3270	1"
4"	XT-M 38	14.00#	S-135	2.688"	3.340"	3250	SRA-3270	3270	1"
4-1/2"	4-1/2"XH NC46	16.60#	S-135	3.000"	3.826"	3275	SRA-970	970	1"
4-1/2"	4-1/2"XH NC46	20.00#	S-135	3.000"	3.640"	3275	SRA-970	970	1"
5"	4-1/2"IF NC50	19.50#	S-135	3.250"	4.276"	3300	SRA-770	770	1"
5"	XT-50	19.50#	S-136	3.750"	4.276"	3300	SRA-770	770	1"
5"	4-1/2"IF NC50	25.60#	S-135	3.250"	4.000"	3300	SRA-770	770	1"
5-1/2"	5-1/2" FH	21.90#	S-135	3.500"	4.778"	3350	SRA-5770	770 SA	1"
5-1/2"	5-1/2" FH	24.70#	S-135	3.000"	4.670"	3350	SRA-5770	770 SA	1"
5-7/8"	XT-57	23.40#	S-135	4.250"	5.153"	3400	SRA-5770	770 SA	1"
5-7/8"	XT-57	26.30#	S-135	4.250"	5.045"	3400	SRA-5770	770 SA	1"
5-7/8"	CTM57	28.70#	S-135	4.250"	4.875"	3400	SRA-5770	770 SA	1"



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