

HHB-5,000 MILLHOG®

HHB5KO-3-26



USER MANUAL



DISCONNECT POWER SUPPLY BEFORE SERVICING



UNDERSTAND ALL INSTRUCTIONS BEFORE USING

ESCO Tool
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ESCO Tool Guarantee

Guarantee: The manufacturer guarantees its products to be free from defects in material or workmanship for a period of one year from date of shipment from its factory. Said guarantee will not apply if equipment is used in conditions of service for which it is not recommended. The manufacturer is not responsible for damage to its products through improper use, physical damage, poor operating practice, or normal wear.

If any device is found unsatisfactory under the guarantee, the buyer must notify ESCO Tool in writing and after receipt of shipping instructions, buyer must return it directly to ESCO Tool, 75 October Hill Road, Holliston, MA 01746, USA, shipping charges prepaid. Such equipment will be replaced or put in satisfactory operating condition, free of all charges except transportation. The correction of any factory defect by repair or replacement by the manufacturer shall constitute fulfillment of all obligations to the purchaser. Manufacturer's guarantee is void if unauthorized repairs are made to its products.

Manufacturer shall not be liable for consequential damage in case of failure to meet the conditions of any guarantee or shipping schedule, nor will claims for labor, loss of profit, repairs, or other expenses incidental to replacement be allowed.

No other representations, guarantees or warranties, expressed or implied, are made by the manufacturer in connection with the manufacture and sale of its equipment.

Hold Harmless Agreement

Customer agrees to defend, indemnify and hold ESCO Tool, its owners, agents, officers, and/or employees free and harmless from and against any and all claims, liabilities, losses, costs and out of pocket expenses (including attorney's fees) arising out of, or in connection with the ESCO Tool equipment, its use or transportation, or out of operations conducted by customer, its agents, employees, contractors, representatives, guests or invitees, including, but not limited to, active and/or passive negligence.

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Instructions for putting into use

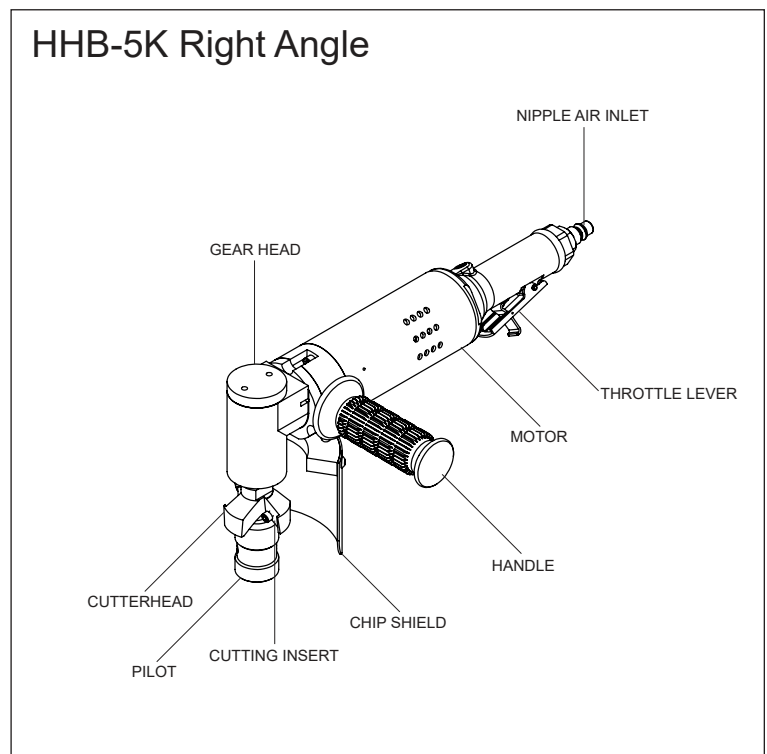
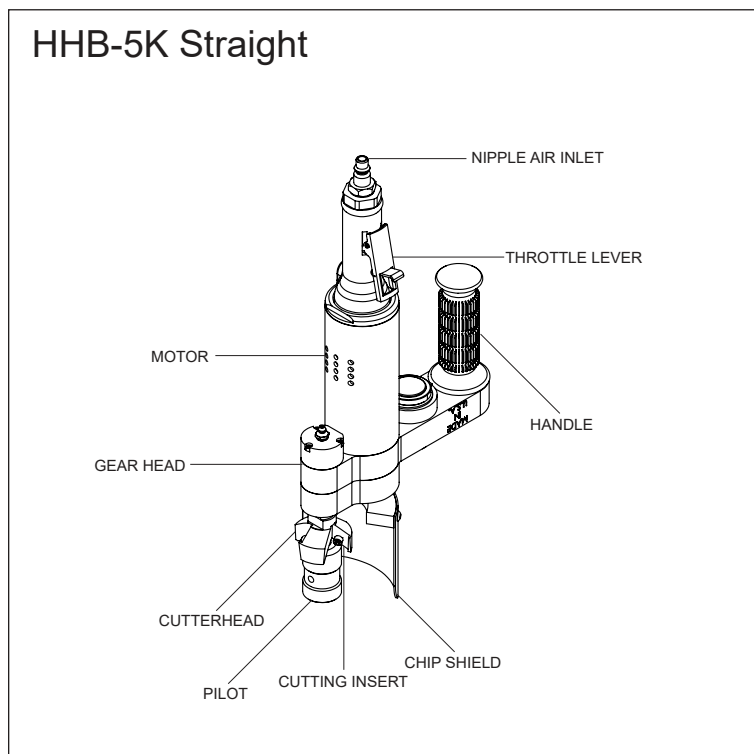
Unpacking

1. Use caution when handling the tool. Cutting blades are sharp. Typically they are protected, however, exposed blades can cause injury.
2. Clean any excess oil, grease or rust preventative from the surface of the tool.

Power supply

1. Recommended air pressure, 90 psi (6.2 bar)
2. Recommended air volume, 40 cfm (1133 lt/min.)
3. Clean moisture free air is essential for trouble free operation.
4. Oil laden operating air should be used. Use a light weight air tool motor oil (s.a.e.10).
5. A hose whip with filter and lubricator is provided with each tool. Be sure air filter is clean and lubricator is full before use.

Illustrated description of function



Limitation on ambient conditions

1. In damp, moist or humid air, extra precaution must be taken in order to provide the tool with moisture free, oil laden air.
2. In temperatures below 32 degrees Fahrenheit (0 Celsius) a lubricant with antifreeze, such as Marvel Air-Tool Oil, must be used.

List of contents

- Gear Head Assembly
- One or more Pilots
- One or more Cutterhead Assemblies
- Motor Assembly
- Air Hose Assembly
- Hand Tool Set
- User Manual
- Case Assembly

Safety precautions

Precautions and use of personal protective equipment

1. Power tools are not insulated for coming into contact with electric power sources.
2. Tool must not be used in an explosive atmosphere.
3. Do not use tool in a manner other than stated. Use other than stated in the instructions is forbidden.
4. For air powered tools, use valved, quick connect couplers to avoid an unrestrained compressed air hose after disconnecting.
5. Use care regarding the drawing in or trapping of long hair, loose clothing, etc.
6. Cover all exposed skin before operating. Cutting blades are sharp and produce hot chips. Both can cause injury.
7. Do not connect power source until tool is ready to prep the pipe or tube.
8. Use caution when handling, disconnect power source before removing from work, changing blades, performing maintenance or breaking down.
9. Personal protective garments should include but not be limited to...
 - a. Safety glasses
 - b. Work gloves
 - c. Work boots, or shoes
 - d. Protective clothing
 - e. Hearing protection when operator is exposed to long periods of use
10. Have all nearby persons wear safety glasses with side shields.

Special safety precautions

1. Always disconnect power supply before installing or changing cutting blades, securing to pipe or tube, adjusting, moving or breaking machine down.
2. Do not modify or defeat safety devices.
3. Cutting blades are sharp and can cause serious injury. Use caution when handling.
4. Chips can be hot and sharp. Be careful when clearing from tool.
5. Moving and stationary parts can pinch or cause serious injury. Pay extra attention to rotating cutting blades as they cannot be adequately guarded.
6. During use, machinery may separate, lurch or fall.

Explanation of symbols



Caution (refer to accompanying documents).



Safety glasses must be worn.



Protective gloves, cutting blades and chips can be hot and sharp.



Work boots, or shoes



Protective clothing



Hearing protection



Pinch points

Disclaimer

1. If the equipment is used in a manner not specified by ESCO Tool, the protection provided by the equipment may be impaired.

Operating ergonomics

1. Tool must be mounted at a reasonable working height.
2. Tool may be used in any orientation.
3. Operator must be in a position not to be injured as the machinery may separate, lurch or fall. Operator must have both feet on a stable platform. Reaching or leaning is not acceptable operating ergonomics.

Operating Instructions

Identification of operating controls and their use

(All tools have similar manner controls except as noted.)

OPERATING INSTRUCTIONS

Gear Head

- Rotates cutterhead.
- Axially moves on mandrel

Cutterhead

- Rotates and holds the cutting blades.

Pilot

- Locates cutterhead.
- Provides point of rotation for cutterhead.

Throttle lever

- Locking throttle lever requires deliberate action by the operator to activate the tool.
- Actuating lever starts tool.
- Release of lever stops tool.

Nipple air inlet

- Accepts valved quick connect coupler for connecting air supply.
- Always disconnect air supply before installing, changing or securing blades, adjusting, moving, or breaking down.

Motor

- Provides power to the gear head.
- Pneumatic or electric

Cutting insert

- Machine end preparations on tube or pipe.

Chip Shield

- Stops chips from hitting operator.

Handle

- Used to control the tool while operating.

Selection of proper tooling**Cutterhead selection**

1. Measure the outside diameter of pipe or tube.
2. Select a cutterhead that either matches the outside diameter or is at least one size larger yet still covers the minimum tube inside diameter. See cutterhead size range chart, 5.
 - a. Sizes are 1-1/4", 1-1/2", 1-3/4", 2", 2-1/4", 2-1/2", 2-3/4", 3", 3-1/4", 3-1/2", 3-3/4", 4".
 - b. Cutterheads for tangent tubes are available on request.

Pilot selection

1. The minimum wall thickness (m.w.t.) in tube can vary as much as ten percent. Therefore, we recommend three pilots for each outside diameter and m.w.t. combination unless you use a dial caliper, or similar tool, to determine the exact inside diameter.
2. Pilots that are too tight will rub on the inside diameter and prevent the tool from developing the proper speed.
3. Pilots that are too loose will prevent the tool from being centered causing excessive chatter, increased blade wear and possible damage to the gear drive.
4. Properly sized pilots are .015" (.38mm) to .030" (.76mm) under pipe or tube inside diameter.
5. If a dial caliper, or similar tool, is not available, use the following formula for sizing pilots, m.w.t. x 2.20 minus the outside diameter minus .030" (.76mm) equals the first pilot size, minus .015" (.38mm) equals second pilot size, minus .015" (.38mm) equals third pilot size.
6. Pilots must be securely fastened to the cutterhead.

Cutting insert selection

1. Two standard cutting blade inserts sizes are available, 1/2" and 5/8".
2. Both sizes of cutting blade inserts are available in double edge and four edge.
 - a. Two edge cutting inserts work on the widest range of pipe and tube materials.
 - b. Four edge inserts are best suited for low alloy pipe and tube materials such as carbon steel.
3. 1-1/4" and 1-1/2" cutterheads use 1/2" cutting blade inserts
 - a. 1-3/4", 2", 2-1/4", 2-1/2", 2-3/4", 3", 3-1/4", 3-1/2", 3-3/4", 4" cutterheads use 5/8" cutting blade inserts.
4. Cutting blade inserts and cutterhead angles should be matched to your welding specification.
 - a. Consult factory for special applications such as: flat facing, weld removal, "J" preps, etc.

Installation of proper tooling

Cutterhead installation

- a. When installing, right hand rotation.
- b. Securely tighten.
- c. When removing, left hand rotation.

Pilot installation

- a. Thread into cutterhead, right hand rotation.
- b. Be sure to tighten securely.
- c. When removing, left hand rotation.
- d. 1-1/4" and 1-1/2" cutterheads accept pilots with 3/8" x 24 thread.
 - i. 1-3/4", 2", 2-1/4", 2-1/2", 2-3/4", 3", 3-1/4", 3-1/2", 3-3/4" and 4" cutterheads accept pilots with 1/2" x 20 thread.

Cutting insert installation

- b. When installing double edge inserts be sure the cutting edge is not in direct contact with the cutterhead blade insert seating surface.
- c. Insert attaching screw through center of blade and securely tighten using an allen wrench.
- d. When the cutting edge becomes dull, or worn out, remove the screw that goes through the of the cutting blade insert and rotate the blade being sure that the cutting edge does not come in direct contact with the cutterhead blade insert seating surface.

Mounting the tool to the work

1. Set-up of the track and weld tabs
 - a. Two weld tabs are used with the standard five foot track.
 - b. Bolt the first weld tab to one end of the track.
 - c. Line the second weld tab cut-line indicator up with the cut-line and weld tab to the tube panel or tube membrane
 - d. Slide the track onto the second weld tab, which should be at the opposite end of the track from the first, then thread bolt on and tighten bolt (1/2" wrench).
 - e. Be sure the cut line indicator is 90 degrees off the track and aligns with the cut-line, then weld into place.
 - f. Securely tighten weld tab bolts.
 - g. When done remove track from weld tabs and pry weld tabs free and clean off excess weld material. Weld tabs can be used numerous times.
2. Mounting the chassis post assembly and tool on the track
 - a. Be sure the cutterhead, pilot and cutting blades are securely tightened.
 - b. Slide the chassis and post assembly onto the track.
 - c. Slide the tools sealed linear slides over the safety interlock fingers and onto slide post.

Power connection

1. Use only the air hose supplied with the tool.
2. This hose has a valved quick connect coupler which will hold back all air that is in the supply hose.
 - a. This feature allows the air supply to be safely removed from the tool at any time.
3. Connect the air supply.
4. For electric tools, be sure to connect the tool to a properly grounded outlet and, if using an extension cord, be sure that the extension cord is properly sized for the application. Failure to properly size an extension cord can result in personal injury and/or harm to the electric motor.

Operation of tool

Hand held (not track mounted)

1. Hold tool firmly with both hands
2. Insert the pilot into the inside diameter of the tube.
3. Cutting blades should not be resting on tube end before activating throttle lever.
4. Be sure the cutterhead can rotate freely, without coming into contact with the tube or pipe, when first starting the tool.
5. Engage the throttle, this will activate the tool.
6. With the cutterhead spinning move the tool so cutting blades come in contact with the tube being beveled.
7. Bevel tube to desired height, then pull tool away from the tube end and release the throttle lever, this will stop the tool.
8. Proceed to the next tube or disconnect air if done.

Track mounted

1. Insert the pilot into the inside diameter of the tube.
2. Cutting blades should not be resting on tube end before activating throttle lever.
3. Be sure the cutterhead can rotate freely, without coming into contact with the tube or pipe, when first starting the tool.
4. Engage the throttle, this will activate the tool.
5. With the cutterhead spinning slide the tool on the chassis assembly so the cutting blade inserts come in contact with the tube being.
6. Bevel tube to desired height, then pull tool away from the tube end and release the throttle lever, this will stop the tool.
7. With the throttle lever deactivated, slide the tool on the slide post so the cutting blade inserts touch the finished bevel
8. Slide the depth stop so it touches the sealed linear slide and securely tighten.
9. Proceed to the next tube or disconnect air if done.

Tool limits**Size limits**

1. Pipe
 - a. Minimum inside diameter is .450”.
 - b. Maximum outside diameter is 4”.
 - c. Maximum wall thickness.
2. .260” (6.6mm) using 1/2” cutting blade inserts.
3. .400” (10.16mm) using 5/8” cutting blade inserts.
4. Pilot
 - a. Minimum 2-1/2” (63.5mm) of straight pipe or tube to insert pilot.
 - i. Shorter pilots are available if you have less than 2-1/2” of straight pipe or tube, consult factory.

Material limits

1. Difficult materials may require the following to maximize blade life.
 - a. Use of double edge inserts.
 - b. Lubrication such as cutting oil, soluble oil, soapy water, plain water, etc.
 - c. The more powerful tool, HHB-10,000 series may bevel through tube surface hardening.
 - d. Use of Millhog end prep tools.
 - e. Consult factory.

Maintenance and servicing

Regular cleaning and lubrication

1. Hose whip, filter and lubricator
 - a. Inspect filter element by removing nut from end of filter assembly.
 - b. If the filter is dirty or plugged replace it using filter repair kit.
 - c. Remove filler plug from lubricator and be sure the adjusting screw is set half way between open and closed.
 - d. Fill lubricator, use a light weight air tool motor oil (SAE 10).
2. Gear housing grease
 - a. There is no grease fitting on rental tools. This is because of the tendency to over grease. Excess grease can back up into the air motor and cause failure.
 - b. A single pump from a grease gun after every two hundred hours of use is sufficient for all tools equipped with a grease fitting.
 - c. Use Lubriko T-522 (NLGI 0), or equal..
3. Lubrication for storage
 - a. Before putting the tool away, fill air inlet with a liberal amount of air tool oil and actuate motor momentarily. This will distribute oil to internal motor parts, preventing rust build up.
 - b. Wipe tool down using soft cloth removing all dirt, grease, oil and chips.
 - c. Lightly coat tool with rust preventive.

User service

1. A qualified air tool technician can provide all service for this machine.
 - a. Factory service or assistance is always available, contact us at the numbers below.
 - b. Complete drawings and parts lists are provided in section six.
 - i. No special tools are required to perform complete service.

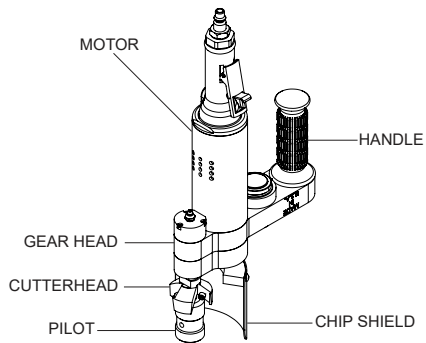
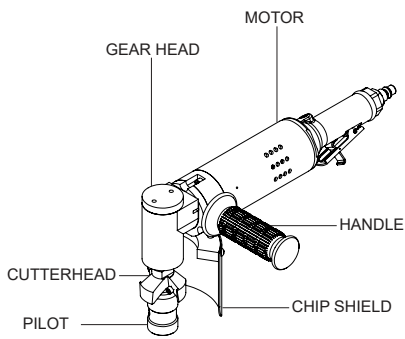
Servicing by manufacturer or agent

1. Factory service, return the tool to the Factory address listed below.
2. Agent service, if applicable return tool to the Agent listed below.
 - a. If unsure of Agent contact the factory.

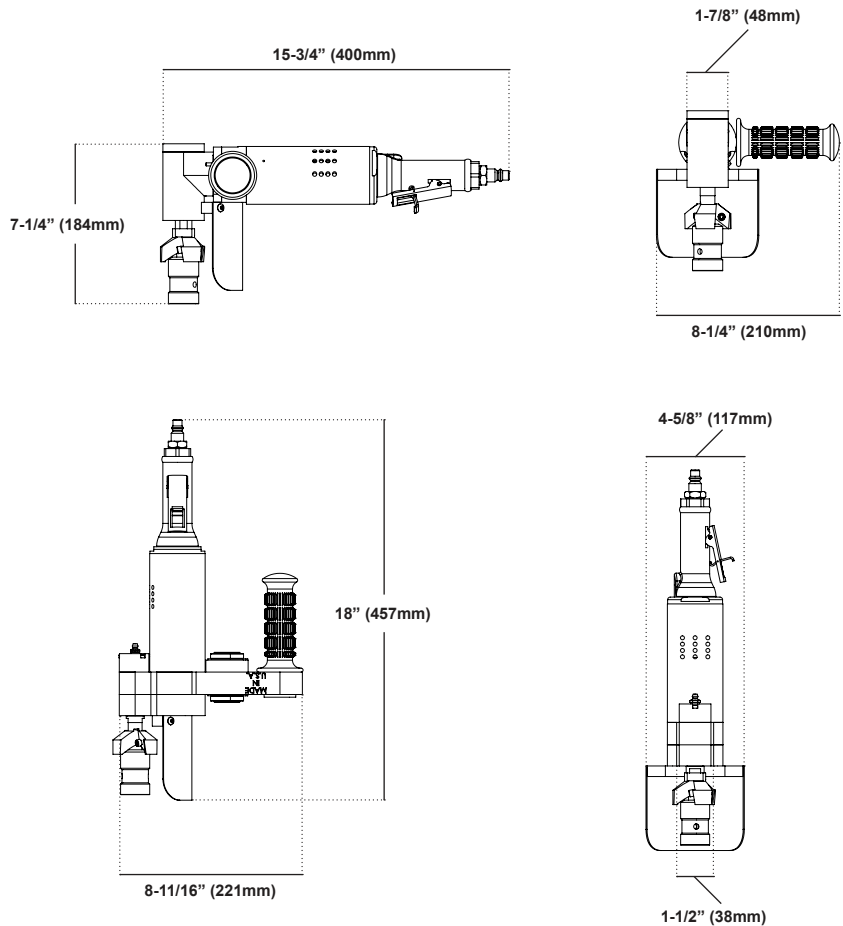
ASSOCIATED PARTS

BLADES: *HIGH SPEED CARBIDE INSERTS*
 LOCATING METHOD: *PILOTS*
 DRIVE OPTIONS: *PNEUMATIC*

COMPONENT IDENTIFICATION



DIMENSIONS



POWER SPECS

	STRT	RA
POWER OUTPUT	1.5 HP	1.5 HP
POWER DRAW	90 PSI	90 PSI
VOLUME	50 CFM	50 CFM
POWER OUTPUT	1119 W	1119 W
POWER DRAW	6.2 BAR	6.2 BAR
VOLUME	1416 LT/MIN	1416 LT/MIN
CUTTERHEAD SPEED	5,000 RPM	5,000 RPM

HANDLING SPECS

	STRT	RA
WORK WEIGHT (lb)	9	8
SHIP WEIGHT (lb)	41	40
SHIP DIMS (in)	7 X 18 X 27	7 X 18 X 27
WORK WEIGHT (kg)	4.1	3.6
SHIP WEIGHT (kg)	18.6	18.1
SHIP DIMS (mm)	177 X 457 X 666	177 X 457 X 666

PACKAGING ASSEMBLIES

PART #: CC01-ST-01

DESCRIPTION: CASE ASM, HHB STR

ITEM #	QTY	PART #	DESCRIPTION
1	1	CC01	CASE, CC01
2	1	FP-CC01-01	FOAM, TOP
3	1	FP-CC01-03	FOAM, HHB STR
4	1	MLB.02	LBL, MILLHOG
5	1	FLB.01	LBL, FLAG

PART #: CC01-RA-01

DESCRIPTION: CASE ASM, HHB RA

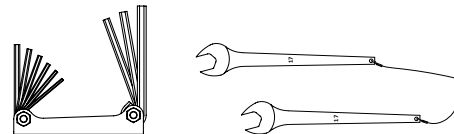
ITEM #	QTY	PART #	DESCRIPTION
1	1	CC01	CASE, CC01
2	1	FP-CC01-01	FOAM, TOP
3	1	FP-CC01-02	FOAM, HHB RA
4	1	MLB.02	LBL, MILLHOG
5	1	FLB.01	LBL, FLAG

HAND TOOL SETS

PART #: 300-10

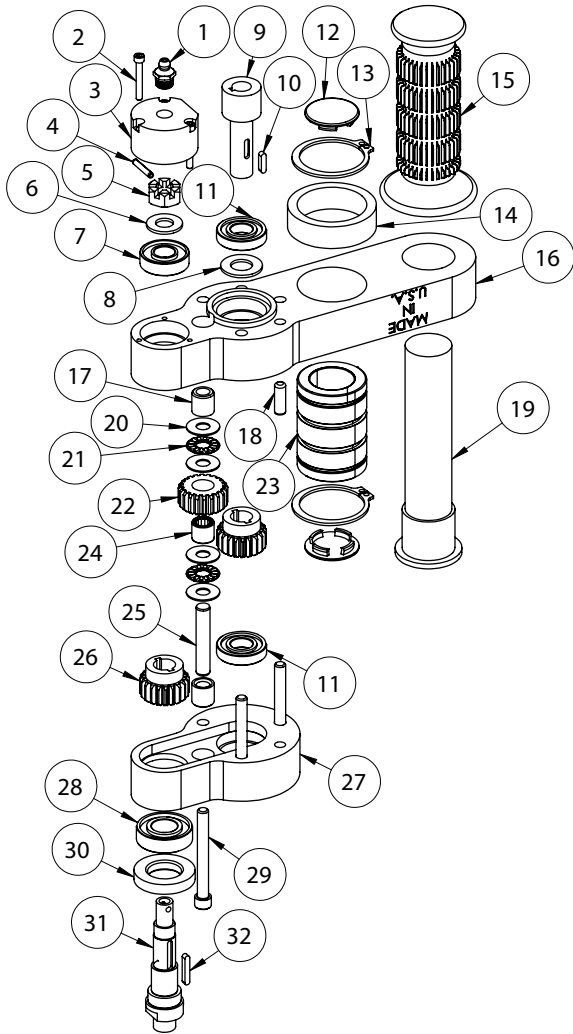
DESCRIPTION: HAND TOOL SET, 10

ITEM #	QTY	PART #	DESCRIPTION
1	1	285-0516	AWS (5/64 - 1/4)
2	1	299-1717	WRENCH SET (17 X 17)
	2	290-0017	OEWS (17)



PART #: 50-201-01

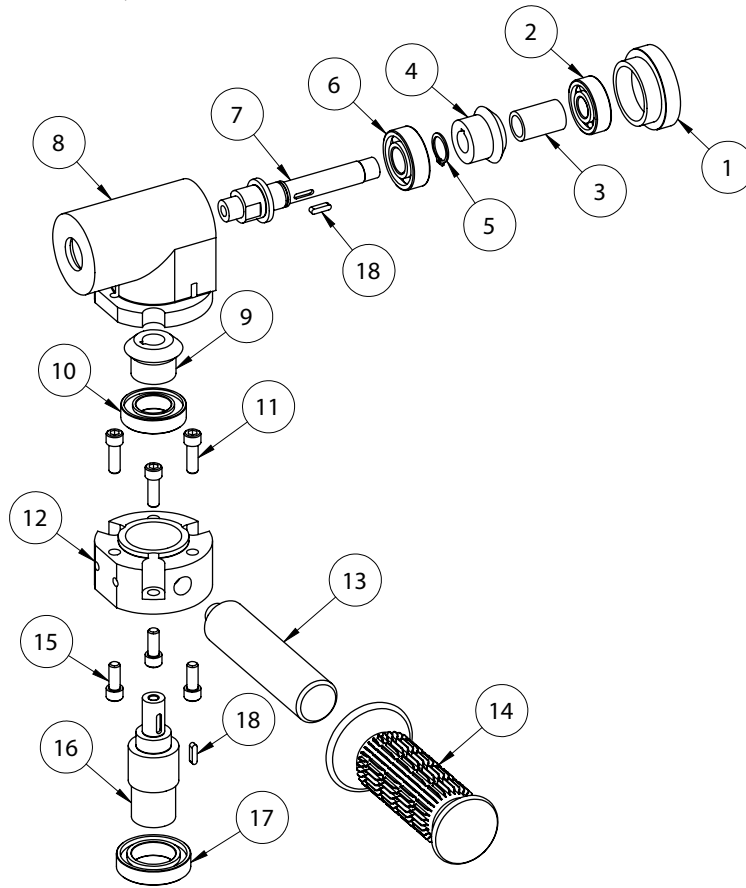
DESCRIPTION: GEAR HEAD ASM, 5K



ITEM #	QTY	PART #	DESCRIPTION
1	1	50-01	GREASE FITTING
2	3	110-1216	SHCS (6-32 X 1)
3	1	50-03	END CAP
4	1	134-4312	SSP (1/8 X 3/4)
5	1	177-025	CASTLE NUT (7/16-20)
6	1	50-05	THRUST WASHER
7	1	311-030	BALL BEARING
8	1	50-25	THRUST WASHER
9	1	50-22	DRIVE SHAFT
10	2	50-23	KEY
11	2	312-030	BALL BEARING
12	2	1050-27	DUST CAP
13	2	210-156	EXTERNAL RETAINING RING
14	1	1050-29	SLEEVE
15	1	50-29	GRIP
16	1	50-30	UPPER HOUSING
17	2	50-15	BUSHING
18	2	133-4812	DP (1/4 X 3/4)
19	1	50-28	HANDLE
20	4	318-005A	THRUST WASHER
21	2	318-005B	THRUST BEARING
20 & 21	2	318-005	THRUST BEARING ASM
22	1	50-18	IDLER GEAR
23	1	1050-30	SHAFT BEARING
24	1	316-016	RADIAL ROLLER BEARING
25	1	133-4928	DP (5/16 X 1-3/4)
26	2	50-07	DRIVE GEAR
27	1	50-26	LOWER HOUSING
28	1	311-031	BALL BEARING
29	3	110-2036	SHCS (1/4-20 X 2-1/4)
30	1	50-12	BEARING RETAINER
31	1	50-11	CUTTERHEAD SHAFT
32	2	50-10	KEY

PART #: 50-201RA-01

DESCRIPTION: GEAR HEAD ASM, 5KRA



ITEM #	QTY	PART #	DESCRIPTION
1	1	50-81	END CAP
2	1	311-014	BALL BEARING
3	1	50-83	SPACER
4	1	50-84	DRIVEN GEAR
5	1	210-059	EXTERNAL RETAINING RING
6	1	311-017	BALL BEARING
7	1	50-88	DRIVEN SHAFT
8	1	50-89	HOUSING, R-A
9	1	50-84	DRIVEN GEAR
10	1	311-027	BALL BEARING
11	3	110-2012	SHCS (1/4-20 X 3/4)
12	1	50-97	ADAPTER
13	1	10-121	HANDLE
14	1	50-29	GRIP
15	3	110-2010	SHCS (1/4-20 X 5/8)
16	1	50-94	DRIVE SHAFT
17	1	311-029	BALL BEARING
18	2	50-23	KEY

CUTTERHEAD ASSEMBLIES

NOTE: 1050-01 & 1050-02 USE 1/2" INSERT. ALL OTHER CUTTERHEADS USE 5/8" INSERTS.

PART #: 1050-01

DESCRIPTION: CUTTERHEAD ASM, 1-1/4

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-01A	CUTTERHEAD, 1-1/4
2	3	110-1608	SHCS (10-24 X 1/2)

PART #: 1050-02

DESCRIPTION: CUTTERHEAD ASM, 1-1/2

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-02A	CUTTERHEAD, 1-1/2
2	3	110-1608	SHCS (10-24 X 1/2)

PART #: 1050-03

DESCRIPTION: CUTTERHEAD ASM, 1-3/4

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-03A	CUTTERHEAD, 1-3/4
2	3	110-2008	SHCS (1/4-20 X 1/2)

PART #: 1050-04

DESCRIPTION: CUTTERHEAD ASM, 2

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-04A	CUTTERHEAD, 2
2	3	110-2008	SHCS (1/4-20 X 1/2)

PART #: 1050-05

DESCRIPTION: CUTTERHEAD ASM, 2-1/4

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-05A	CUTTERHEAD, 2-1/4
2	3	110-2008	SHCS (1/4-20 X 1/2)

PART #: 1050-06

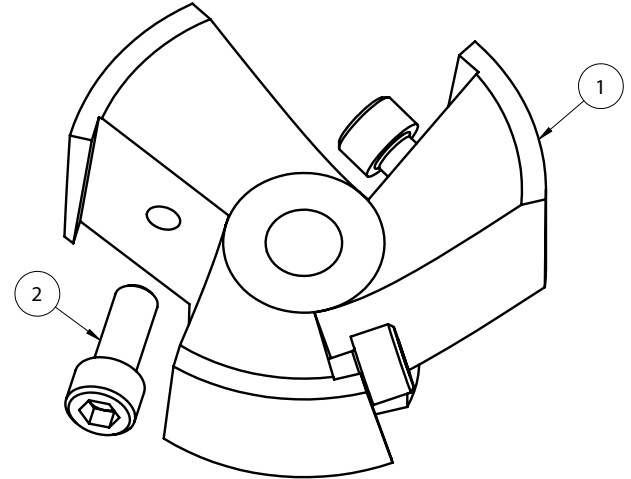
DESCRIPTION: CUTTERHEAD ASM, 2-1/2

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-06A	CUTTERHEAD, 2-1/2
2	3	110-2008	SHCS (1/4-20 X 1/2)

PART #: 1050-07

DESCRIPTION: CUTTERHEAD ASM, 2-3/4

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-07A	CUTTERHEAD, 2-3/4
2	3	110-2008	SHCS (1/4-20 X 1/2)



PART #: 1050-08

DESCRIPTION: CUTTERHEAD ASM, 3

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-08A	CUTTERHEAD, 3
2	3	110-2008	SHCS (1/4-20 X 1/2)

PART #: 1050-09

DESCRIPTION: CUTTERHEAD ASM, 3-1/4

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-09A	CUTTERHEAD, 3-1/4
2	3	110-2008	SHCS (1/4-20 X 1/2)

PART #: 1050-10

DESCRIPTION: CUTTERHEAD ASM, 3-1/2

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-10A	CUTTERHEAD, 3-1/2
2	3	110-2008	SHCS (1/4-20 X 1/2)

PART #: 1050-11

DESCRIPTION: CUTTERHEAD ASM, 3-3/4

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-11A	CUTTERHEAD, 3-3/4
2	3	110-2008	SHCS (1/4-20 X 1/2)

PART #: 1050-12

DESCRIPTION: CUTTERHEAD ASM, 4

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-12A	CUTTERHEAD, 4
2	3	110-2008	SHCS (1/4-20 X 1/2)

PILOTS

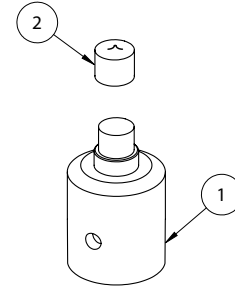
PILOTS ARE TURNED DOWN AT THE FACTORY TO THE SPECIFIC ID OF THE APPLICATION. TYPICALLY PILOTS WILL BE MADE IN SETS OF 3 SLIGHTLY DIFFERENT SIZES TO ACCOMMODATE VARIATION AND IMPERFECTIONS IN TUBES/PIPES. PILOT BLANKS ARE PILOTS THAT HAVE NOT BEEN TURNED DOWN TO FINISHED DIAMETER.

PART #: 1050-40A

DESCRIPTION: PILOT (.400 - 1.500)

NOTE: 1050-40A HAS A 3/8-24 THREAD AND IS ONLY USED ON THE 1050-01 CUTTERHEAD. ALL OTHER PILOTS HAVE A 1/2-20 THREAD AND CAN BE USED ON ALL OTHER CUTTERHEADS.

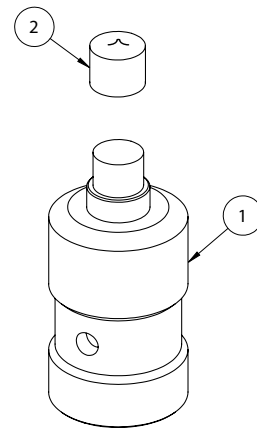
ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-140	PILOT BLANK (.400 - 1.500)
2	1	1050-45A	THREAD CAP (3/8)



PART #: 1050-40

DESCRIPTION: PILOT (.400 - 1.500)

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-140	PILOT BLANK (.400 - 1.500)
2	1	1050-45	THREAD CAP (1/2)



PART #: 1050-41

DESCRIPTION: PILOT (1.501 - 2.500)

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-141	PILOT BLANK (1.501 - 2.500)
2	1	1050-45	THREAD CAP (1/2)

PART #: 1050-43

DESCRIPTION: PILOT (3.501 - 3.900)

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-143	PILOT BLANK (.400 - 1.500)
2	1	1050-45	THREAD CAP (1/2)

PART #: 1050-42

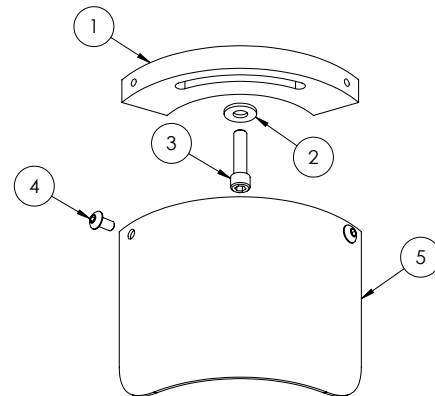
DESCRIPTION: PILOT (2.501 - 3.500)

ITEM #	QTY	PART #	DESCRIPTION
1	1	1050-142	PILOT BLANK (2.501 - 3.500)
2	1	1050-45	THREAD CAP (1/2)

PART #: 50-71-01

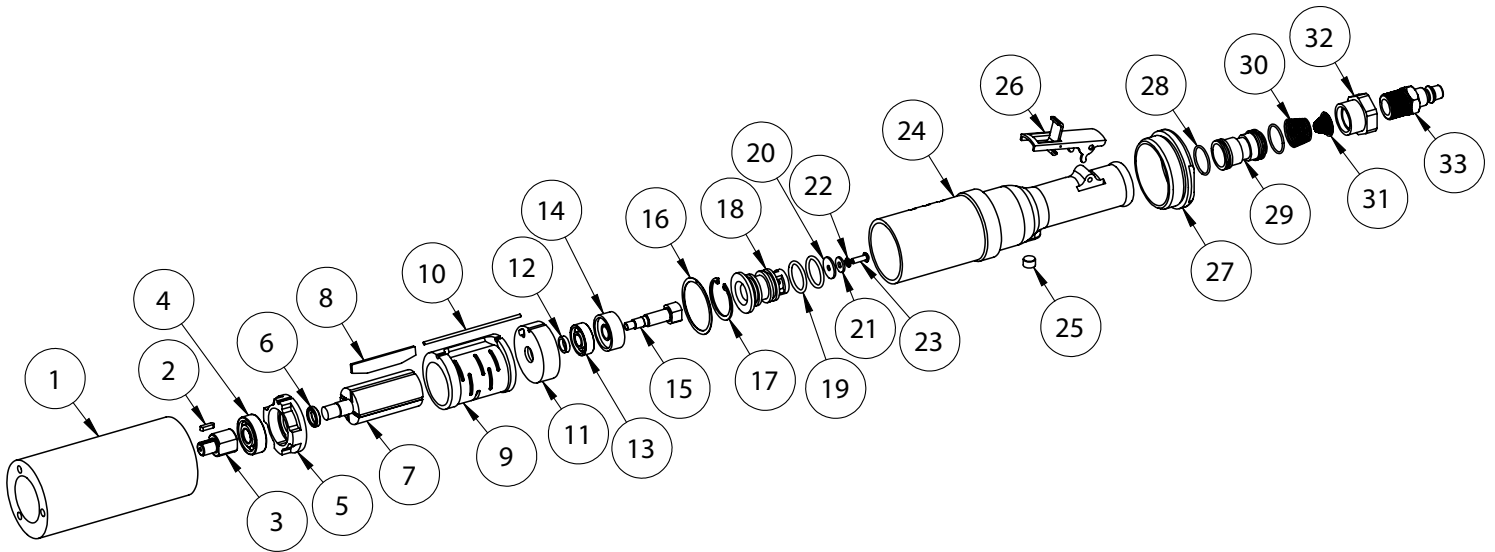
DESCRIPTION: CHIP SHIELD ASM

ITEM #	QTY	PART #	DESCRIPTION
1	1	50-74	CHIP SHIELD BRACKET
2	1	165-011	WASHER
3	1	110-2016	SHCS (1/4-20 X 1)
4	2	111-1606	BHCS (10-24 X 3/8)
5	1	50-71	CHIP SHIELD



PART #: 50-68-01

DESCRIPTION: PN MOTOR ASM (5K)



* **PART #:** 18-48A
DESCRIPTION: THROTTLE LEVER ASM

ITEM #	QTY	PART #	DESCRIPTION
1	1	18-48	THROTTLE LEVER
2	1	134-4516	SSP (5/32 x 1)

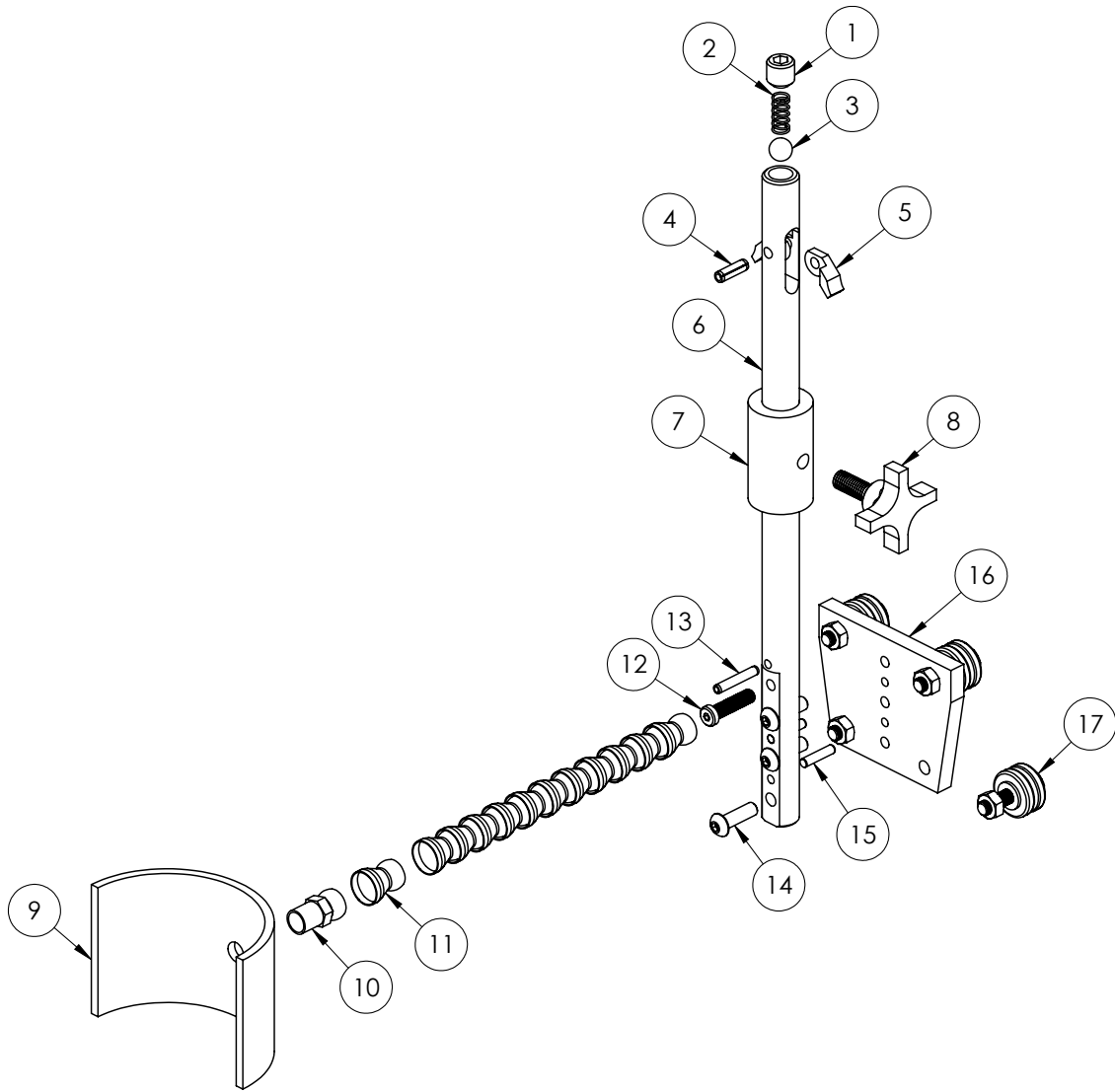
PART #: 50-68-01

DESCRIPTION: PN MOTOR ASM (5K)

ITEM #	QTY	PART #	DESCRIPTION
1	1	50-46	HOUSING
2	1	50-23	KEY
3	1	50-44	DRIVE COUPLER
4	1	311-014	BALL BEARING
5	1	50-42	FRONT END PLATE
6	1	50-41	SPACER
7	1	50-40	ROTOR
8	1	50-54	ROTOR BLADES (SET OF 4)
9	1	50-47	CYLINDER
10	1	50-48	ALIGNMENT PIN
11	1	50-49	REAR END PLATE
12	1	50-50	SPACER
13	1	311-004	BALL BEARING
14	1	50-52	FLOW CONTROL
15	1	50-53	END SHAFT
16	1	50-55	GASKET
17	1	200-131	INTERNAL RETAINING RING
18	1	50-57	OILER BODY
19	2	230-118	O-RING
20	1	18-40	SEAL
21	1	160-008	WASHER
22	1	166-008	LOCK WASHER
23	1	111-1408	BHCS (8-32 X 1/2)
24	1	50-66	THROTTLE HANDLE
25	1	50-67	PLUG
26*	1	18-48A	THROTTLE LEVER ASM
27	1	50-59	HOUSING NUT
28	2	230-020	O-RING
29	1	18-43	VALVE
30	1	18-45	SPRING
31	1	18-50	SCREEN
32	1	18-49	COUPLER
33	1	355-5052	NIPPLE (3/8 X 1/2 NPT)

PART #: 1050-83

DESCRIPTION: TRACK POST ASM



PART #: 1050-83

DESCRIPTION: TRACK POST ASM

ITEM #	QTY	PART #	DESCRIPTION
1	1	130-3412	SHSS (3/4-10 X 3/4)
2	1	1050-67	SPRING
3	1	1050-68	BALL
4	1	134-5016	SSP (3/8 X 1)
5	2	1050-70	WING LOCK
6	1	1050-73	TRACK POST
7	1	1050-71	DEPTH STOP
8	1	1050-72	BRAKE HANDLE
9	1	1050-82	CHIP SHIELD
10	1	1050-81B	SHIELD CONNECTOR
11	12	1050-81A	FLEX CONNECTOR
12	1	113-2424	LHCS (3/8-16 X 1-1/2)
13	1	134-4824	SSP (1/4 X 1-1/2)
14	3	111-2420	BHCS (3/8-16 X 1-1/4)
15	1	133-4818	DP (1/4 X 1-1/8)
16	1	1050-75	BASE PLATE
17*	4	1050-78	WHEEL ASM

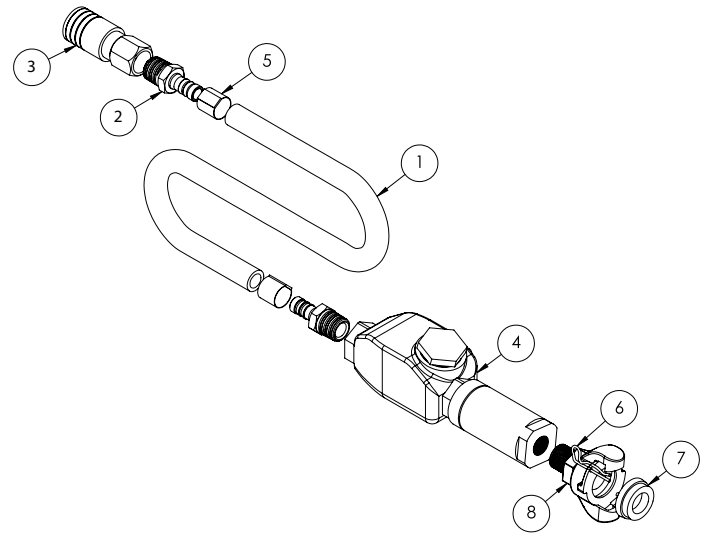
* **PART #:** 1050-78
DESCRIPTION: WHEEL ASM

ITEM #	QTY	PART #	DESCRIPTION
1	1	124-6645	BOLT (M10-1.25 X 45)
2	2	1050-78A	WHEEL HALF
3	1	1050-77	WASHER
4	1	175-066	NUT (M10-1.25)

PART #: AH-202

DESCRIPTION: HOSE ASM, 1/2 (3/8 CPL)

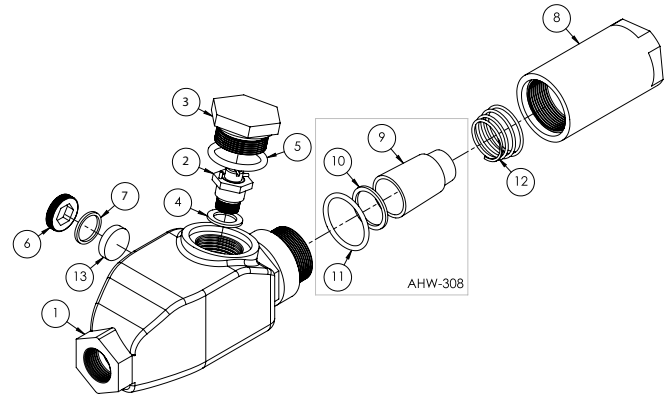
ITEM #	QTY	PART #	DESCRIPTION
1	6	340-050	HOSE (1/2 X 12)
2	2	350-5252	HOSE BARB (1/2 X 1/2 NPT)
3	1	352-5052	Q-C COUPLER (3/8 X 1/2 NPT)
4*	1	AHW-307A	FILTER & LUBRICATOR ASM
5	1	AHW-313A	HOSE CLAMP (1 ID)
6	1	AHW-306	SAFETY PIN
7	1	AHW-304	SEAL
8	1	AHW-305	CHICAGO FITTING, 1/2



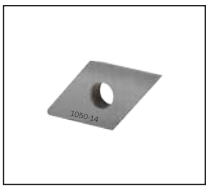
*

PART #: AHW-307A
DESCRIPTION: FILTER & LUBRICATOR ASM

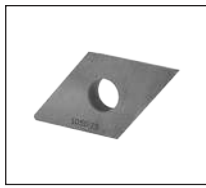
ITEM #	QTY	PART #	DESCRIPTION
1	1	AHW-311	LUBRICATOR HOUSING
2	1	AHG-310	OIL ADJ VALVE ASM
3	1	AHG-308	FILLER PLUG
4	1	AHG-311	VALVE GASKET
5	1	230-214	O-RING
6	1	AHG-313	SIGHT DISK LOCK NUT
7	1	AHG-312A	SEAL
8	1	AHW-310	FILTER HOUSING
9	1	AHW-308A	FILTER
10	1	AHW-308B	GASKET
11	1	230-122	O-RING
9, 10 & 11	1	AHW-308	FILTER REPAIR KIT
12	1	AHW-312	SPRING
13	1	AHG-312B	SIGHT DISC



HIGH SPEED INSERTS



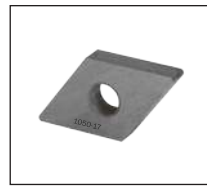
1050-14
2 EDGE INSERT
1/2" / 12.7MM WIDE



1050-15
2 EDGE INSERT
5/8" / 15.9MM WIDE



1050-16
4 EDGE INSERT
1/2" / 12.7MM WIDE



1050-17
4 EDGE INSERT
5/8" / 12.7MM WIDE

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