INSTALLATION & OPERATION MANUAL

FlexArm Tapping Machine

Model: A32

400 RPM model
WARNINGS & CAUTIONS FOR SAFE OPERATION

- READ THE MOTOR MANUAL AND UNIT MANUAL BEFORE OPERATING
- WEAR EYE PROTECTION WHEN OPERATING THIS MACHINE
- DO NOT WEAR JEWELRY, LOOSE CLOTHING OR LONG HAIR WHEN OPERATING
- DO NOT WEAR GLOVES WHEN OPERATING THIS MACHINE
- TURN OFF THE AIR SUPPLY BEFORE ADDING OIL TO THE FILTER/LUBRICATOR
- TURN OFF THE AIR SUPPLY BEFORE PERFORMING ANY MAINTENANCE OPERATIONS
- HEARING PROTECTION IS RECOMMENDED
- DO NOT USE DAMAGED, FRAYED OR DETERIORATED AIR HOSES AND FITTINGS
- REMOVING THE TOOL OR WEIGHT FROM THE ARM WILL ALLOW THE ARMS TO EXTEND RAPIDLY POSSIBLY CAUSING DAMAGE OR INJURY
- KEEP HANDS CLEAR OF THE MOTOR CHUCK AND TAP WHEN ACTUATING THE MOTOR
- KEEP HANDS CLEAR OF PINCH POINTS ON THE UNIT WHEN OPERATING
- PERFORM REGULAR MAINTENANCE ACCORDING TO THE MANUALS - INCLUDING FILLING THE MOTOR LUBRICATOR WITH THE CORRECT OIL AND GREASING THE MOTOR GEARS
- DO NOT ALTER OR MODIFY THE MOTOR OR UNIT
- PERIODICALLY INSPECT FOR DAMAGE, LOOSE HARDWARE OR ANYTHING IRREGULAR
- READ THE FLEXARM WARRANTY PAGE BEFORE PERFORMING ANY MAINTENANCE OR REPAIRS
FlexArm Limited Warranty

A new FlexArm has a limited, 1 year warranty on parts and labor. This warranty does not apply to a FlexArm determined to have been misused or abused, improperly maintained, or having defects attributed to the use of non-genuine repair parts.

Original pressure cylinders have a one year limited warranty from the date of purchase. When replacing one of the pressure cylinders, make sure not to scratch, mar, or nick the shaft or tube on either the old cylinder being replaced or the new cylinder being installed. All warranty cylinders must be returned to Midwest Specialties for evaluation. The warranty is void if the cylinder to be evaluated shows signs of scratches or nicks on the cylinder shaft or tube. Damaged cylinders cannot be returned to the manufacturer for warranty claims. Replacement cylinders carry a limited 30 day warranty from the date of purchase.

A new pneumatic motor also has a limited, one year warranty. Warranted to be free of defects in material and workmanship for one year from the date of purchase. This warranty does not apply to the following (perishable) components:
- filters
- springs
- blades/vanes
- O-rings

Repaired Motors and Arms carry a limited 60 day warranty from the date of the repair. Midwest Specialties is not responsible for a customer’s air quality. We supply the basic tools and offer a coalescent filter option for those who have experienced excessive moisture and water. The responsibility for clean, dry air falls upon the individual shop. Any pneumatic motor coming in for evaluation or repair with rusted components will not get warranty coverage because this is considered improper maintenance.

Tap Holders and Helicoil components are considered perishable tooling and therefore do not carry a warranty. However, Size 2 through Size 4 Tap Holders may be reworked depending on the severity of the damage or wear. Please contact Midwest Specialties for a return authorization and the holders can be evaluated.

The warranty is void if changes to the FlexArm or motor, or attempts to repair it or its components are made without the expressed authorization of Midwest Specialties Inc.

The warranty is based on normal usage which would be the equivalent of a 40hr work week.

For technical assistance or questions concerning the proper care and maintenance of the FlexArm unit or the pneumatic/hydraulic motors, please contact Midwest Specialties, Inc. at 800-837-2503.
Installation Instructions

1) Drill and tap (4) holes on a flat, smooth table or work bench for 3/8-16 bolts per the diagram in Appendix A. If mounting on a wood surface, drill the holes for comparable carriage bolts.

2) Mount the *FlexArm A-32 Tapping Machine* base mount and secure it with 3/8" bolts (see Figure 1).

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**Figure 1**

*Base Mount Assembly*
3) Insert the motor/mount assembly guide pins into the front arm block. Tighten the two 1/4-20 set screws on the bottom of the front arm block to secure the motor/mount assembly. (See Figure 2.)

![Diagram showing motor/mount assembly and front arm block connections]

**FIGURE 2**
*Assemble Motor/Mount and Front Arm Block*

4) Insert one end of the black nylon hose into the press-to-release elbow fitting on the output port of the filter/lubricator. Insert the opposite end of the hose into the press-to-release straight fitting on top of the air motor. The hose must be completely pushed into the fittings to lock in under air pressure. (See Figure 3.)
5) Install a 1/4 NPT inlet fitting into the left port of the filter/lubricator assembly and attach a 1/2" ID, incoming airline to the fitting (see Figure 3). Do not use any quick disconnect fittings on the incoming airline. The unit must have the proper air supply (90-120 psi and 27-28 cfm) AT THE MOTOR to generate the required torque to drive the tap.

![Diagram of airline connections](attachment:image.png)

FIGURE 3
Airline Connections
SEE FILTER/LUBRICATOR DIAGRAM IN THE PARTS SECTION OF THE MANUAL

6) Fill the lubricator bowl approximately 3/4 full by removing the black fill plug on top of the lubricator and pouring the oil into the fill port (see Figure 4). Use only a quality ISO VG-32 hydraulic or spindle oil. Never use Marvel Mystery Oil, synthetic air tool oil, or similar products! Do not permit the oil level to go lower than the end of the siphon tube in the lubricator bowl.

7) With the air motor running, slowly adjust the lubricator so 1-3 drops of oil are dispensed per minute through the tube on top of the lubricator dome sight. Clockwise decreases the flow and counter clockwise increases the flow. SMC brand filter/lubricators use the dome sight as the flow adjuster and Janatics brand filter/lubricators use a separate flow valve located behind the fill plug and dome sight. NOTE: It may be necessary to open the flow valve considerably before the oil starts to drip. Then slowly close the valve until the drip rate of 1-3 drops per minute is achieved. This setting will have to be checked periodically, especially if the FlexArm has not been used for a while.

8) SMC filters are equipped with an auto drain and will automatically remove water from the filter bowl. Janatics brand filters use a manual push button drain and MUST be periodically checked. Remove any water from the filter bowl by pressing the drain button located at the bottom of the filter assembly.

9) Check the counterbalance of the arm and adjust if needed (refer to the Counterbalance Adjustment sheet in this manual for detailed instructions).
Midwest Specialties/FlexArm will only warranty Filter/Lubricators that utilize an ISO Viscosity Grade 32 type hydraulic oil, comparable hydraulic, light, non detergent oil or ISO 32 Spindle oil. (EP oils are acceptable as long as they are ISO VG-32). Do not use synthetic oils.

The Filter/Lubricator will perform satisfactorily using compatible misting type, petroleum based oils, with a viscosity range of 100 to 200 SUS at 100 degrees Fahrenheit and a minimum aniline point of 200 degrees Fahrenheit. Do not use oils with adhesives, compounded oils containing solvents, graphite, detergents or anti-wear additives.

**Harmful Compressor Oils & Other Materials:**

**Compressor Oils:**

- Cellulube No. 150 & 220
- Haskel No. 568-023
- Houghton & Co. Oil No. 1120, 1130 & 1055
- Houtosafe 1000
- Krano Oil
- Keystone Penetrating Oil, No. 2 & 500
- Phrano
- Pydraul AC
- Sears Regular Motor Oil
- Sinclair Oil "Lily White"
- Skydrol
- Tenneco Anderol No. 495 & 500

**Harmful Substances:**

- Atlas Perma-Guard
- Crylex #5 Cement
- Garlock 98403 (polyurethane)
- Kano Kroil
- Loctite 271, 290, 601
- Minnesota Rubber 366Y
- Nylock VC-3
- Permabond 910
- Prestone
- Stillman SR 269-75 (polyurethane)
- Tannergas
- Vibra-Tite
- Buna-N
- Eastman 910
- Keystone penetrating oil No. 2
- Loctite Teflon sealant
- National Compound N11
- Parco 1306 Neoprene
- Petron PD287
- Stauffer Chemical Fyrquel 150
- Stillman SR 513-70 (neoprene)
- Telar
- Titon
- Zerex

Because all substances harmful to polycarbonate plastic cannot be listed, consult a Mobay Chemical or General Electric office for further information.

Midwest Specialties has the following oil available in one gallon capacity: EP Hydraulic Oil 32(light), 135-165 SUS@100 degrees Fahrenheit. The part number is EP-32.

Revision 12/13/2005
COUNTERBALANCE ADJUSTMENT:

To adjust the counterbalance of the arm, turn the knob on the slide weight counter clockwise. This will loosen the slide and allow movement in either direction.

1) For light weight tools and accessories, move the weight towards the motor mount.

2) For heavy tools and accessories, move the weight towards the rear of the arm.

NOTE: Once the weight has been positioned, the knob must be turned clockwise to prevent any future movement during operation.

** - When the arm is not being used, slide the weight towards the rear of the arm to keep the motor in a upward position. This will keep oil on the cylinder seal and extend the life of the cylinder.
OPERATING INSTRUCTIONS

The FlexArm Tapping Machine is now ready for operation. Always use proper safety precautions when using this equipment.

1) Select the correct tap holder for the tap size required. Insert the tap into the holder by depressing the locking ring. Seat the tap square into the tap holder; release the locking ring (see Figure 5).

![Diagram of tap holder and locking ring](image)

FIGURE 5
Depress Locking Ring to Insert and Seat Tap in the Tap Holder

2) Pull down the collar on the quick change chuck before inserting the tap holder (see Fig.5).
3) Insert the tap holder into the quick change chuck. Turn the holder until the "ears" of the holder locate the slots of the chuck. Push up to lock the holder into position (see Figure 6).

4) Position the air motor vertically above the hole being tapped. There can be no obstruction that interferes with the downward path of the tap holder (within a 1.30" diameter) or prohibits the tap from completing the required thread depth.

5) Actuate the air motor by depressing the throttle lever and gently guide the tap down to the hole.

6) Exert only enough downward pressure to start the tapping process. The tap will engage itself and follow the hole. When tapping a through hole, remember that the tap will protrude on the bottom side of the work piece; make sure there is sufficient clearance below the
work piece to allow the tap to break through and not hit the work surface. Use a torque style tap holder when tapping blind or bottom holes. The built-in safety clutch on this holder will ratchet and stop the tap from turning when the tap has reached the bottom of the hole.

7) When the hole is completely tapped, actuate the throttle lever and the reverse button at the same time to reverse the rotation of the air motor and remove the tap from the hole.

**DO NOT PUSH OR PULL ON THE AIR MOTOR AS THE TAP IS TAPPING THE HOLE OR BACKING OUT OF IT! THIS RESULTS IN POOR THREAD QUALITY, OVERSIZED THREADS, AND BROKEN TAPS!**

8) To change tap holders, release the tap holder by pulling down the knurled collar of the quick change chuck.
ADJUSTING TAP HOLDER TORQUE SETTINGS

The torque adapters are factory preset near the standard break torque limits developed for each tap size. The break torque limit protects the tap when tapping blind or bottom holes in mild steel (approximately 229 BHN or 25 RC). When the tap reaches the bottom of the hole, resistance will cause the torque holder's safety clutch to ratchet and stop the tap from turning, over-torquing and ultimately breaking. When tapping hardened steel (above 40 RC), stainless steel, or other tough alloys, an increase in the factory torque setting may be required in order to drive the tap the full depth of the hole. When using the torque adapters to tap soft materials or plastics, a decrease in the factory torque setting prevents the tap from over-torquing after it reaches the bottom of the hole (See "Torque Requirements for Tapping" page of this manual).

There are two locking positions (see holes at Positions A and B in diagram below) on the outside diameter of the adapter designed to hold the tail of the snap ring. These two positions permit an adjustment range from one-half to a full notch on the thread ring. The tail of the snap ring must be inserted in the hole at either position and through a notch on the thread ring in order to lock in the adjusted torque setting.

**CAUTION:** Never adjust the torque setting more than one (1) notch at a time. Adverse tapping conditions and broken taps may result!

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**NOTE:** After turning the thread ring a full notch, reinset the tail of the snap ring in the original hole (Position A). If a lesser adjustment is needed, turn the adjusting thread ring half the distance between the thread ring's notches. Rotate the snap ring and insert the tail in the hole located at Position B.

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TO INCREASE TORQUE SETTING - TURN THREAD RING CLOCKWISE

TO DECREASE TORQUE SETTING - TURN THREAD RING COUNTER-CLOCKWISE
# TORQUE REQUIREMENTS FOR TAPPING

Approximate maximum values based on sharp, 4-flute hand taps, coarse pitch at 65% thread height.

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<th>TAP SIZE</th>
<th>BRASS</th>
<th>ALUM AND LEADED BRASS</th>
<th>200 BHN STEEL</th>
<th>300 BHN STEEL</th>
<th>400 BHN STEEL</th>
<th>APPROX BREAK TORQUE (in/lbs)</th>
<th>TORQUE HOLDER FACTORY SETTING (in/lbs)</th>
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**NOTE:** All values are in inch/pounds.

- Form taps require approximately 50% more torque.
- Helical flute taps are approximately 70% of torque values shown.
- Fine pitch taps are approximately 50% of torque values shown.

**Torque Values for Air Motors at 90 psi**

- 225 rpm 3/4" capacity = 54 ft/lbs
- 400 rpm 9/16" capacity = 28 ft/lbs
- 600 rpm 3/8" capacity = 17 ft/lbs
- 1000 rpm 5/16" capacity = 9.5 ft/lbs
- 1500 rpm 1/4" capacity = 8 ft/lbs
- 2500 rpm #10 capacity = 4.1 ft/lbs

**Torque Values for Hydraulic Motors**

- GH-20 and GHM-20 = 45 ft/lbs
- GHR-30 (2 speed) = 45/135 ft/lbs
- GH-36 and GHM-36 = 175 ft/lbs
- GH-60 = 440 ft/lbs

Rev. 2/7/01
FlexArm Maintenance:

- **Extending the cylinder life: (Model A32 only)**
  When the FlexArm is not being used, the weight slide should be placed all the way toward the front of the arm. This will keep the motor in a downward position and allow oil to remain on the cylinder seal thus extending the cylinder life. Always make sure the spacers are installed when changing cylinders and that the cylinder orientation matches the diagram in the changing cylinder section of the manual.

- **Oiling the Motor:**
  If the FlexArm has been sitting a while between jobs, it may be necessary to add 4-5 drips of oil directly into the motor inlet to place oil on the vanes before running. It will take the lubricator a short time to actually get the oil to the motor when first running the unit. The lubricator must be checked periodically to ensure that the flow rate of 1-2 drops per minute is maintained.

- **Cleaning the FlexArm:**
  The FlexArm should be periodically cleaned and free of dirt, debris, grinding dust, etc., An air line can be used to blow the dust and chips away from the arms, arm joints, motor, chuck, etc., *Never* use oil or W.D.40 or any other lubricant to lubricate the arm joints (arm joints are constructed with self-lubricating bushings and require no maintenance). Never use harsh cleaners or solvents. Never allow any cleaning agent to reach the arm joints.

- **Lubricate the Base Mount: (Model A32 Only)**
  The base mount of the A32 requires very little maintenance. If it is necessary to remove the unit from the base, do not allow the shaft or needle bearings to be contaminated by dirt or foreign materials. Always clean the base mount and shaft prior to re-assembly. Lubricate the needle bearings only by removing the two flat washers on both sides of the needle bearing and applying a slight amount of grease.

- **Periodically check the bolts throughout the unit for tightness:**
  If the bolts have loosened up, use loctite 242 (blue) on the threads and reassemble. This should prevent any further problems.

- **Filter / Lubricator:**
  Check that the filter/lubricator is set for approximately 1-2 drops per minute as indicated in the FlexArm manual. Always use an ISO VG-32 or 10 wt. hydraulic oil or light spindle oil (EP-32 hydraulic oil is recommended). Never use Marvel Mystery Oil or synthetic products. Make sure to clean the filter and drain excess water from the filter bowl on a regular basis. See the FlexArm manual for detailed instructions.
FlexArm Maintenance:

- **If utilizing a motor with a quick change chuck:**
  Keep both the motor and the chuck free from contamination by cleaning regularly:
  An air line can be used to blow dust, dirt, and debris off of the motor and chuck collar.
  Make sure to clean inner surface of the chuck as well. If contaminants build up too excessively,
  it may become necessary to soak the entire chuck into a cleaning solvent or WD-40 type
  penetrating oil before using the air line. Doing this regularly will considerably reduce, and may
  even eliminate, the need to disassemble the quick change chuck to clean it. If, however, the
  chuck has accumulated so much dirt and grime that disassembly is necessary, follow the
  procedures given below:

  **Quick Change Chuck with Knurled Collar:**
  Lift the snap ring out of the groove and slide it towards the motor, resting on the chuck
  body. The collar can then slide along the chuck body, exposing the compression spring
  and the two ball bearings. (CAUTION: The ball bearings are held in place only by the
  collar; be careful not to lose these ball bearings!) Clean the exposed area of the chuck
  body, the spring, and the two ball bearings and reassemble the chuck. Use the spring to
  hold one of the ball bearings in place, position the other ball bearing, and slide the collar
  back into position (it may be necessary to depress the ejector in the center of the chuck
  body to completely slide the collar back into place). Replace the snap ring in the groove
  on the chuck body.

  **Quick Change Collar with Smooth Collar:**
  Slide the collar upward until it locks into the upper most position. The snap ring is
  located between the chuck body and the collar (on the open end where the tap holders
  insert). Use an awl or small slotted screwdriver to locate one of the snap ring ends.
  Rotate the snap ring end until it is positioned in one of the two chuck slots. It can now be
carefully lifted upward and by using a circular motion, the ring can be completely
removed. The collar can now be removed by depressing the ejector in the center of the
chuck body (CAUTION: The collar may eject rapidly. Be careful not to damage the
collar or lose the ball bearings, spring, or snap ring). Clean the exposed area of the chuck
and reassemble (It may be necessary to depress the ejector in the center of the chuck
body to completely slide the collar back into place). Replace the snap ring in the groove
on the chuck body.

Prevention will insure a long-wearing bearing surface that retains its perpendicularity. Monthly
maintenance should be performed and recorded.
Troubleshooting Guide

Refer to the following list of common problems when it appears the FlexArm A-32 Tapping Machine is not working properly. Most of these are resolvable by in-house technicians or operators. Compare any problems with those given in the examples below. Help is just a phone call away; always contact Factory Service at 800-837-2503 with any questions or concerns about operating the FlexArm A-32 Tapping Machine.

1) The tap is not maintaining perpendicularity.
   a) Check the flatness of the surface on which the unit is mounted.
   b) Make sure the motor is secure in the motor mount.
   c) Check the runout of the motor quick change chuck. The motor may be the problem.

2) The air motor does not have enough power to drive the tap.
   a) Check the air pressure to the motor; it must be 90-110 psi at the motor. Depending on the rpm of the motor, the compressor will need to supply 20-30cfm.
   b) Remove any quick disconnects in the airline leading to the unit.
   c) Lubricate the tap with the proper lubricant for the material being worked.
   d) Check the amount of oil being dispensed through the lubricator and adjust to 1-3 drops of oil per minute. Lack of oil will reduce speed and power.
   e) If the unit has been sitting a while between jobs, it may be necessary to add 4-5 drops of oil directly into the motor inlet to place oil on the vanes before running. The lubricator should be periodically checked to ensure that the flow rate of 1-3 drops per minute is maintained.
   f) Service the motor if it has been operational for more than 6 months; most likely the motor needs to be thoroughly cleaned and the vanes need to be replaced.
3) **The motor has stopped running completely.**
   
a) Disconnect the air supply. Check to see if the motor can be turned by hand.
   
b) Motor lock up is normally the result of broken vanes, faulty bearings or a broken gear tooth. Replacement parts can be ordered from Midwest Specialties.
   
c) If the motor is less than 1 year old, return to Midwest Specialties for warranty. All items except for blades, o-rings, and springs are covered for one year.
   
d) Check the type of oil being used in the lubricator. Use only an ISO viscosity grade 32 hydraulic or spindle oil. Do not use synthetic oils or oils advertised for air motors. Using the incorrect lubricator oil will cause premature wear on the blades and lead to motor lock up.
   
e) Check the amount of oil being dispensed through the lubricator and adjust to 1-3 drops of oil per minute. Excess oil can create a gummy residue and lack of oil will cause the blades to get dry, crack and eventually lock up the motor.

4) **The reverse button on the motor is sticking.**
   
a) Check the amount of oil being dispensed through the lubricator and adjust to 1-3 *drops of oil per minute.* Excess oil may create a gummy residue and cause the reverse button to stick.
   
b) Check the spring on the reverse button and make sure it is not broken or damaged. A spring can be broken and still continue to work although some damage usually results. (A broken spring is the number one reason for the button sticking)
   
c) Check the reverse button itself for burrs or dings that may need filed. Clean the area around the reverse button. Shavings or dirt particles can enter the gap between the housing and the button and cause both wear and sticking.
5) **The air motor is hot to the touch.**

a) Check the amount of oil being dispensed through the lubricator. An insufficient amount of oil will increase the friction created by the vanes. Set the lubricator to dispense a maximum of 1-3 drops of oil per minute.

b) For insufficient oil, turn off the air supply and remove the air hose. Add 3-4 drops of oil directly into the inlet adapter at the top of the motor. Reconnect the air hose and be sure that the hose is securely seated before turning on the air supply.

c) A faulty bearing can cause the motor to run hot. There are two upper rotor bearings in the top half of the motor and two lower nose bearings in the bottom half. Determine if the heat is coming from the top or bottom of the motor. Spare parts can be purchased from Midwest Specialties.

d) Lack of grease or excessive grease in the bottom gears of the motor can cause the motor to run hot. Check the motor manual for type and amount of grease. Periodic maintenance should include adding grease to the lower gear sets.

e) If the motor was taken apart and put back together, over tightening of the two halves can cause the motor to run hot. This creates excess pressure on the bearings and gears.

f) If the motor mount screw is over tightened, the motor may start to run hot. The screw should be nice and snug so the motor cannot spin in the mount. Any excessive force will tighten the housing against the nose bearings and cause friction.
6) **Oil is coming out the exhaust of the air motor.**
   a) Check the setting of the filter/lubricator assembly. It should be set for 1-3 drops of oil per minute. Excessive oil will cause a build up in the two filters at the top of the air motor. If oil continues to blow out the exhaust try turning the filter/lubricator off for a while and running the motor without oil, then set back to 1-3 drops per minute.
   b) If too much oil has accumulated in the two filters it will be necessary to simply replace the filters. Call Midwest Specialties and provide the model number off of the air motor to obtain replacement parts and service information.

7) **Air is leaking out of the top of the air motor or push-to-release fitting.**
   a) Most air leaks at the top of the motor are found where the nylon hose connects to the push release fitting. It is not unusual for a slight air leak to occur when the hose is being flexed (when the FlexArm is fully extended). Disconnect the main air supply and remove the nylon hose from the fitting. If the end of the hose looks uneven or worn, cut off the bad portion of the hose and reassemble the hose into the push release fitting. If the leak continues, and the tapping capacity is effected, replace the fitting.
   b) If the air leak is not from the push release fitting then (3) other possibilities exist:
      1. The push release fitting may be loose and needs tightened. When tightening the push release fitting you **MUST PLACE A SECOND WRENCH ON THE BLACK STEEL INLET OF THE AIR MOTOR**, otherwise the push release fitting will drive the steel fitting into the housing and crack the housing.
      2. The throttle pin inside the air motor might need adjusted. Typically this will result in the motor trying to stay running all the time, but sometimes just a small air
leak is present out of the exhaust. If this condition exists, contact Midwest Specialties and have the motor serviced.

3. The air leak may be the result of a cracked housing. If the push release fitting was over tightened or tightened without the use of a second wrench on the black steel fitting of the motor, or if the motor was dropped the housing may be cracked and need replaced. Contact Midwest Specialties and provide the model number off of the air motor for service information.

8) The arm does not balance nor adjust to support the air motor.

   a) Replace the gas cylinder. Contact Midwest Specialties for replacement cylinders. (provide the part number printed on the tube of the cylinder).

   b) Check the movement of the cylinder adjusters themselves. The dowel pins should move freely in the slots of the plates. Moving the dowel pin toward the BOTTOM increases the cylinder pressure and increases the holding force.

9) The tap does not stop turning when it reaches the bottom of a blind hole.

   a) Make sure a tap holder with a safety clutch (torque style) is being used.

   b) Adjust the torque setting on the torque style tap holder. Holders are preset for mild steel and may need slight adjustments depending on the material being tapped. See the torque setting chart in the tap holder adjustment section of the FlexArm manual.

   c) Check the condition of the tap for wear; always use sharp, 2- or 3-flute taps.

   d) Check the condition of the torque style tap holder. If the retaining ring is missing or the holder appears to be worn or damaged, the holder should be replaced. The tap holders will wear out with time and are considered perishable tooling.
10) **The balls in the tap holder keep breaking.**

a) Verify that there is no obstruction in the minimum clearance area that is restricting the downward path of the tap holder (see Operating Instructions Item #4). Once the collar is depressed on the holder, the tap should slide into the holder fairly easy. Do not force the tap into the holder. If the tap will not slide into the holder, you should verify that the shank and square of the tap are correct for the holder dimensions.

b) Verify that the tap holder and the quick change chuck aren’t striking the table or any other surface before, during or after the tapping process.

c) Check for excessive shavings, grinding dust, etc., that could be getting into the tap holder or quick change chuck collar and causing premature wear.

A new FlexArm unit has a **limited, one-year warranty** on all parts and labor. This warranty is void if changes to the unit or attempts to repair it or its components are made without the express authorization of Midwest Specialties, Inc. Quick change tap holders are considered perishable items and are not covered by the limited, one-year warranty on the **FlexArm Tapping Machine**.

revision 8/07/06
A CHUCK WITH A 3/8" GAP AND NO SPACER BETWEEN THE CHUCK AND THE MOTOR USES A B12 TAPERED CHUCK (MOTOR MODEL 7667 USES A B12 CHUCK, P/N 12300)

A TORQUE STYLE TAP HOLDER INSERTS DIRECTLY INTO THE CHUCK ON THE MOTOR AND IS ADJUSTABLE (HAS A CLUTCH) (FOR BLIND HOLES)

A CHUCK WITH A SPACER AND ALMOST NO GAP BETWEEN THE CHUCK AND MOTOR, USES A 3/8-24 OR 1/2-20 THREADED CHUCK.
(MOTOR MODEL DLO... USES A 3/8-24 CHUCK, P/N 12100)
(MOTOR MODELS 8599, 7855, 7854 USE A 1/2-20 CHUCK, P/N 12200)

A FIXED STYLE TAP HOLDER INSERTS DIRECTLY INTO THE CHUCK ON THE MOTOR AND IS NOT ADJUSTABLE (FOR THRU HOLES OR RETHREAD)

QUICK CHANGE CHUCK

JACOBS CHUCK ADAPTER
P/N 164100-SUB1

JACOBS CHUCK

1/2-20 THREAD
CHANGING THE CYLINDER IN THE A32 TAPPER:
(FOR UNITS WITH A REMOVABLE PLATE ON THE BOTTOM OF THE ARM COVER - CYLINDER ROD POINTING DOWN)

** ALWAYS INSTALL THE NEW SPACERS AND DISCARD THE OLD ONES **

** When the FlexArm is not being used, the weight slide should be placed all the way toward the rear of the arm. This will keep the motor in an upward position and allow oil to remain on the cylinder seal, thus extending the cylinder life.
** REPLACEMENT CYLINDERS INSTALLED BY THE CUSTOMER CARRY A 30 DAY LIMITED WARRANTY FROM THE DATE OF PURCHASE.

** TOOLS NEEDED:**
- Allen wrenches: 5/64", 1/8", 5/32"
- Flat screwdriver
- Cable tie cutters
- Loctite 242 or 243
- Small pin punch
- Small amount of grease
- 14" tall riser block (able to withstand 150lbs of pressure)- see diagram and step 11

** READ EACH STEP COMPLETELY BEFORE STARTING: **

01) Turn off the air supply and remove the air hose from the push release fitting in the top of the motor.

02) Remove the motor mount screw completely. Then slide the motor out of the mount. SEE DIAGRAM 3.

03) Remove the cable tie connecting the arm boot to the front block.

04) Remove the (6) socket screws holding the plate on the bottom of the arm guard.

05) Remove the (4) socket screws holding the arm guard. Slide the arm guard with the weight slide and end cap toward the back of the FlexArm and remove (this will expose the inside)

06) Remove the upper arm screw as shown in diagram 1. Only remove (1) screw (doesn't matter from which side). Using an allen wrench or pin punch, push the arm pin completely out, leaving the wrench or punch in place.

** CAUTION:** make sure not to damage the arm pin threads.

** CAUTION:** the cylinder may still have some pressure. The unit will shift once the pin is knocked out and the wrench or punch will be held tightly in the location where the arm pin used to be.

07) Squeeze the upper and lower arms together with both hands (close to the allen wrench or pin punch). This will take any pressure off the wrench or pin punch and allow you to remove it.

** CAUTION:** Slowly let the arms spread apart. The upper arms will raise to their upper most position and stop. The bottom arms should be gently guided downward to the work surface or table.

** NOTE:** The arm pin washers will fall out during this operation. Make sure not to lose them. Reassembly without these washers will result in the arm binding during movement. (there must be one washer for each end of the arm pin)
08) Remove the (2) 10-32 flat head screws holding the cylinder pin in the bottom (lower) arms. Rotate the (2) top (upper) arms and the cylinder upward and out of the way. Grab the cylinder tube (body) with both hands and turn it counter clockwise to remove it from the end fitting (clevis). Remove the necessary end fitting (clevis) from the new cylinder and screw it into the existing end fitting (clevis). This cylinder only needs to be snug - do not over tighten.

09) NOTE: Place the new cylinder in the orientation shown in the diagram. The rod end of the cylinder should be connected to the bottom arms, and the tube end of the cylinder should be connected to the top arms - refer to the diagram for correct hole location.

Install the cylinder pin AND THE NEW NYLON SPACERS onto the new cylinder. With the upper arms in the upward most position, reinstall the new cylinder - lining up the arm hole with the cylinder pin.

10) Raise the bottom two arms into the horizontal position and place onto a riser (see diagram).

NOTE: This riser should be approximately 14” tall and be able to withstand 150 lbs of force when compressing the new cylinder.

NOTE: The angle mount should be positioned in a straight line with the arms.

Place a small amount of grease or oil onto one of the arm pin washers and position the washer over the arm pin hole on the inside of the upper arm (this will keep the washer from falling).

With the motor mount and lower arms supported on the riser, compress the upper arms downward until the arm pin can be pushed into the hole and through the washer that was just installed.

11) Once the arm pin and washer are started, it is necessary to install the remaining washer on the other side. Tap the arm pin until there is enough clearance to lower the second washer between the upper arm and front block. NOTE: If the bearing unseats itself from the front block it may be necessary to gently push it back into place by sliding a flat screwdriver or knife between the upper arm and the front block.

12) Once the second washer is in place, tap the pin through with a rubber mallet. Place loctite 242 or 243 on the arm screw threads and install the arm screw.

NOTE: Do not over tighten the arm screws. The screws should be snug only.

Over tightening can damage the arm bearings and effect smooth movement.

13) Slide the arm guard cover over the arms and start all the screws before tightening them.

• Reassemble the bottom arm guard plate and start all the screws before tightening them.
• Place a new cable tie on the arm boot where it connects to the front block.
• Install the motor back into the motor mount and secure it with the socket screw.

NOTE: You must line up either slot in the motor housing with the motor mount screw. The slot in the motor is clearance for this screw. SEE DIAGRAM 3.

• Insert the air hose into the quick disconnect fitting.
• Adjust the counterbalance weight to the desired location.
DIAGRAM #1

REMOVE UPPER ARM SCREW

UPPER ARM
LOWER ARM

T-HANDLE ALLEN WRENCH OR PIN PUNCH

ARM PIN AND SCREW
DIAGRAM #2
COMPRESSING THE CYLINDER IN THE A-32 FLEXARM

<table>
<thead>
<tr>
<th>CYLINDER P/N</th>
<th>DIMENSION</th>
<th>DISTANCE</th>
<th>PRESSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C16-04511</td>
<td>A</td>
<td>4.44&quot;</td>
<td>110#</td>
</tr>
<tr>
<td>C16-06133</td>
<td>A</td>
<td>4.44&quot;</td>
<td>120#</td>
</tr>
<tr>
<td>C16-06131A</td>
<td>B</td>
<td>5.94&quot;</td>
<td>119#</td>
</tr>
<tr>
<td>8533SM</td>
<td>B</td>
<td>5.94&quot;</td>
<td>534 N</td>
</tr>
</tbody>
</table>
DIAGRAM #3

Motor mount screw must line up with the slot in the motor housing.

Remove upper arm screw.

Upper arm

Lower arm

Top View

Side View
CYLINDER REPLACEMENT PARTS

The Cylinder Part Number for your unit is screen-printed in white or is printed on a paper label on the black barrel of the cylinder. When ordering replacement cylinders, please provide the complete part number taken from the cylinder on your unit.

<table>
<thead>
<tr>
<th>SMC FILTER/LUBRICATOR REPLACEMENT PARTS</th>
<th>Description</th>
<th>P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter (complete half)</td>
<td>AF20-N02C-CZ</td>
<td></td>
</tr>
<tr>
<td>Filter Element, 6 micron</td>
<td>AF20P-060S</td>
<td></td>
</tr>
<tr>
<td>Metal Filter Bowl Kit (bowl, guard, O-ring and auto drain)</td>
<td>AD27-CZ</td>
<td></td>
</tr>
<tr>
<td>Lubricator (complete half)</td>
<td>AL20-N02-CZ</td>
<td></td>
</tr>
<tr>
<td>Metal Lubricator Bowl Kit (bowl, guard and O-ring)</td>
<td>C2SL-CZ</td>
<td></td>
</tr>
<tr>
<td>O-ring for Bowl (for filter or lubricator side)</td>
<td>C2SFP-26GS</td>
<td></td>
</tr>
<tr>
<td>Mounting Bracket (with (2) O-rings)</td>
<td>Y20T</td>
<td></td>
</tr>
<tr>
<td>O-ring for Mounting Bracket</td>
<td>165032</td>
<td></td>
</tr>
<tr>
<td>Fill Plug (with O-ring)</td>
<td>AL20P-060AS</td>
<td></td>
</tr>
<tr>
<td>Filter/Lubricator Assembly</td>
<td>0391M (SMC)</td>
<td></td>
</tr>
<tr>
<td>Filter/Lubricator/Regulator w/Gauge</td>
<td>0390M (SMC)</td>
<td></td>
</tr>
</tbody>
</table>

MISCELLANEOUS ITEMS

<table>
<thead>
<tr>
<th>Item</th>
<th>P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tap Lubricant, 1 gallon</td>
<td>LB-2000</td>
</tr>
<tr>
<td>Tap Lubricant, 1 gallon (for Tap Sizes over 5/8)</td>
<td>LB-1000</td>
</tr>
<tr>
<td>Tap Paste, 8 ounce</td>
<td>79030</td>
</tr>
<tr>
<td>Hydraulic Oil, 1 gallon (Air Motor)</td>
<td>EP-32</td>
</tr>
<tr>
<td>Spanner Wrench</td>
<td>FX900060</td>
</tr>
<tr>
<td>Stand for Tap Holders</td>
<td>FX900040</td>
</tr>
</tbody>
</table>
| Replacement Manuals, Tapper/Assembler    | Specify Model Number
SMC FILTER/LUBRICATOR

- MOUNTING BRACKET
- DOMESIGHT/FLOW ADJUSTER
- FILL PLUG
- AIR INLET
- FILTER
- OUTPUT TO AIR MOTOR
- LUBRICATOR
- SIPHON TUBE
- BOWL
- WATER DRAIN
This page applies to units with a "Janatics" brand filter/lubricator
(parts diagram is on the next page)

Cylinder Replacement Parts

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<table>
<thead>
<tr>
<th>Description</th>
<th>P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter (complete half)</td>
<td>F13913</td>
</tr>
<tr>
<td>Filter Element, 5 micron</td>
<td>592000</td>
</tr>
<tr>
<td>Metal Filter Bowl Kit (bowl, guard, O-ring and drain)</td>
<td>LA2000F</td>
</tr>
<tr>
<td>Lubricator (complete half)</td>
<td>L1391</td>
</tr>
<tr>
<td>Metal Lubricator Bowl Kit (bowl, guard O-ring and wing nut)</td>
<td>LA2000L</td>
</tr>
<tr>
<td>O-ring for Bowl (for filter or lubricator side)</td>
<td>650015</td>
</tr>
<tr>
<td>Mounting Bracket (with (2) O-rings)</td>
<td>Y20TB</td>
</tr>
<tr>
<td>O-ring for Mounting Bracket (2 req'd)</td>
<td>165032B</td>
</tr>
<tr>
<td>Fill Plug Assembly (plug + O-ring)</td>
<td>LA2405</td>
</tr>
<tr>
<td>Filter/Lubricator Assembly</td>
<td>0391M (Janatics)</td>
</tr>
<tr>
<td>Filter/Lubricator/Regulator w/Gauge</td>
<td>0390M (Janatics)</td>
</tr>
</tbody>
</table>

Miscellaneous Items

<table>
<thead>
<tr>
<th>Description</th>
<th>P/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tap Lubricant, 1 gallon</td>
<td>LB-2000</td>
</tr>
<tr>
<td>Tap Lubricant, 1 gallon (for Tap Sizes over 5/8)</td>
<td>LB-1000</td>
</tr>
<tr>
<td>Tap Paste, 8 ounce</td>
<td>79030</td>
</tr>
<tr>
<td>Hydraulic Oil, 1 gallon (Air Motor)</td>
<td>EP-32</td>
</tr>
<tr>
<td>Spanner Wrench</td>
<td>FX900060</td>
</tr>
<tr>
<td>Stand for Tap Holders</td>
<td>FX900040</td>
</tr>
<tr>
<td>Replacement Manuals, Tapper/Assembler</td>
<td>Specify Model Number</td>
</tr>
</tbody>
</table>

Prices are available upon request

Rev. 8/07/06
JANATICS FILTER/LUBRICATOR

- MOUNTING BRACKET
- DOMESIGHT
- FLOW ADJUSTER (REAR)
- FILL PLUG (FRONT)
- AIR INLET
- OUTPUT TO AIR MOTOR
- LUBRICATOR
- SIPHON TUBE
- FILTER
- BOWL
- WATER DRAIN
## A32 - PARTS LIST

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>01190</td>
<td>Base Mount</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>01180</td>
<td>Angle Mount (with Needle Bearings)</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>0612M</td>
<td>Nylon Lock Nut</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>0609M</td>
<td>Thrust Bearing (4 req'd per Angle Mount)</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>0611M</td>
<td>Flat Thrust Washer (8 req'd per Angle Mount)</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>0623M</td>
<td>Needle Bearing (4 req'd per Angle Mount)</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>0610M</td>
<td>Arm Bearing (8 used total inside guard)</td>
<td></td>
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<tr>
<td>08</td>
<td>0608M</td>
<td>Arm Pin (4 used total inside the guard)</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>0378M</td>
<td>Arm Bumper</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>01230</td>
<td>Arm Guard</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>01240</td>
<td>Arm Guard Plate</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>01210</td>
<td>Weight Block (1-1/4&quot; tail)</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>01220</td>
<td>Weight Slide, 1/4&quot; (used with Wt. Block)</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>0604M</td>
<td>Boot (for Arm Guard)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>0603M</td>
<td>Front Block (attaches to Motor Mount)</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>0620M</td>
<td>Pin (for Motor Mount, 2 req'd per Unit)</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>01100</td>
<td>Motor Mount</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>836-55.25</td>
<td>Hose, Nylon, Black</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>0391M</td>
<td>Filter/Lubricator Assembly</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>FX900075M</td>
<td>Auto Tap Lubricator (continuous flow style)</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>01120</td>
<td>V-Block, Motor Mount (Option)</td>
<td></td>
</tr>
</tbody>
</table>

**WHEN ORDERING CYLINDERS, PLEASE PROVIDE THE NUMBERS FROM THE OLD CYLINDER**

Example: C16-06133 = 120 Lbs. pressure  
Example: C16-19652 = 135 Lbs. pressure  
Example: 853353M= 534 Newtons

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Rev. 02/23/07
APPENDIX – A

CUSTOMER DRAWING
A32 BASE MOUNT, CAST IRON

\( \phi 0.406 \) – 4 PLCS – EQUALLY SPACED
ON \( \phi 4.500 \) BOLT CIRCLE

AS CAST SURFACE
\( \phi 5.50 \)
Alignment Check List:

01. How are you checking the unit alignment?

02. What type of table is the FlexArm mounted to? Is the FlexArm moved?

03. Are both the Base Mount AND the Angle Mount completely tightened before any tapping is done?

04. Are all the bolts on the FlexArm tight and secure?

05. Has the FlexArm been dropped or damaged?

06. How is the part being fixtured? Are the fixtures moved?

07. Is the part fixtured level to the FlexArm Base Mount? The work piece MUST be secure AND level to the tapper base.

08. Has the hole in the part been drilled straight? How are you checking the hole alignment?

09. How deep is the hole you are tapping? Is it a blind hole or a through hole?

10. What hole diameter are you drilling? What percentage of thread are you trying to achieve?

11. What size tap are you using? Threads per inch?

12. What type of tap are you using? (Bottom, Lead, Plug, etc.)

13. What brand of type are you using? Is it new?

14. What type of material are you tapping?

15. If you are using a magnet:
   a. Is the bottom of the magnet free from burrs?
   b. Is the top of the magnet flange free from burrs?
   c. Is the rear pin free from burrs (the portion that rides against the flange)?