INSTALLATION & OPERATION MANUAL

FlexArm Assembler

Model: A32 Arm Only with V-block

Distributed by Ergonomic Partners

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Manufacturers of

matrix positioning systems

FlexArm

ASSIMBLER

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 <u>new</u> FlexArm has a 3 year limited warranty on parts and labor. This warranty does not apply to a FlexArm determined to have been misused or abused, <u>improperly maintained</u>, or having defects attributed to the use of non-genuine repair parts.

<u>Original</u> pressure cylinders have a 3 year limited warranty <u>from the date of purchase</u>. 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 1 year warranty from the date of purchase**.

Pneumatic motors have a 3 year limited warranty (warranted to be free of defects in material and workmanship from the date of purchase). This warranty does not apply to the following (perishable) components:

filtersblades/vanesO-rings

This warranty is void if it has been determined that the motor was misused, abused or improperly maintained.

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.

Once the original warranty expires, repaired Motors and Arms carry a limited 60 day warranty from the date of the repair.

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 of 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**.

TORQUE AND WEIGHT LIMITATIONS

Model Max Mot		or Torque	Working Range		Max Tool Weight	
Number	Ft Lbs	Nm	Inches	Cm	Lbs	Kg
OCVA-24	7	9.5	13-36	33-91	7	3.2
CVA-10	10	13.6	8-28	20-71	10	4.5
FAV-14	10	13.6	19-37	48-94	10	4.5
FAV-18	10	13.6	21-46	53-117	10	4.5
FAV-24	10	13.6	30-57	76-145	10	4.5
CVA-20	20	27.1	8-28	20-71	12	5.4
FAV-14-20	20	27.1	19-37	48-94	15	6.8
CVA-30	30	40.7	8-28	20-71	12	5.4
FAV-14-30	30	40.7	19-37	48-94	15	6.8
A-32	50	68	11-34	28-86	12	5.4
OCVA-M-60	50	68	19-43	48-109	12	5.4
S-36	80	109	14-51	36-130	25	11.3
B-19	100	137	1-42	3-107	35	15.9
M-60	80	109	22-76	56-193	14	6.4
RNR-20	120	163	15-72	38-183	50	22.7
G-30	150	204	20-76	51-193	50	22.7
G-36	400	542	20-78	51-198	50	22.7
G-60	800	1085	20-84	51-213	60	27.2

^{***}Exceeding the weight and Torque Limitations will void the factory warranty***

Installation Instructions

- 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).

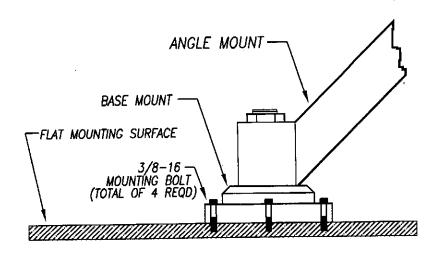


FIGURE 1
Base Mount Assembly

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.)

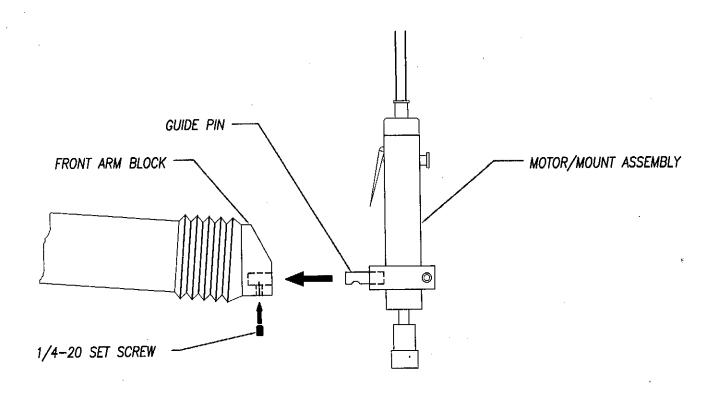


FIGURE 2
Assemble Motor/Mount and Front Arm Block

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.)

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.

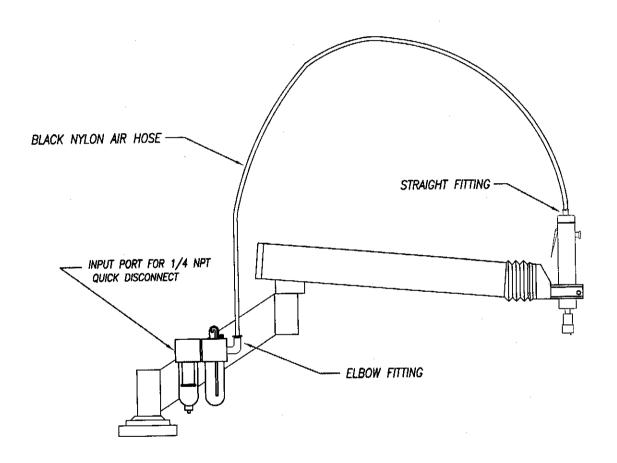


FIGURE 3
Airline Connections

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.
- 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).

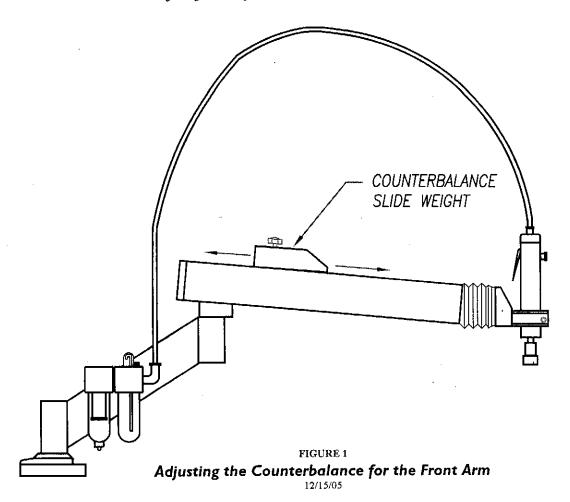
COUNTERBALANCE ADJUSTMENT:

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.



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 acutally 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.

Rev. 7/03/04

CHANGING THE CYLINDER IN THE A32 TAPPER:

(FOR UNITS <u>WITH A REMOVABLE PLATE</u> 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 <u>rear</u> 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 <u>bottom</u> (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: <u>Place the new cylinder in the orientation shown in the diagram</u>. 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 <u>AND THE NEW NYLON SPACERS</u> 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.

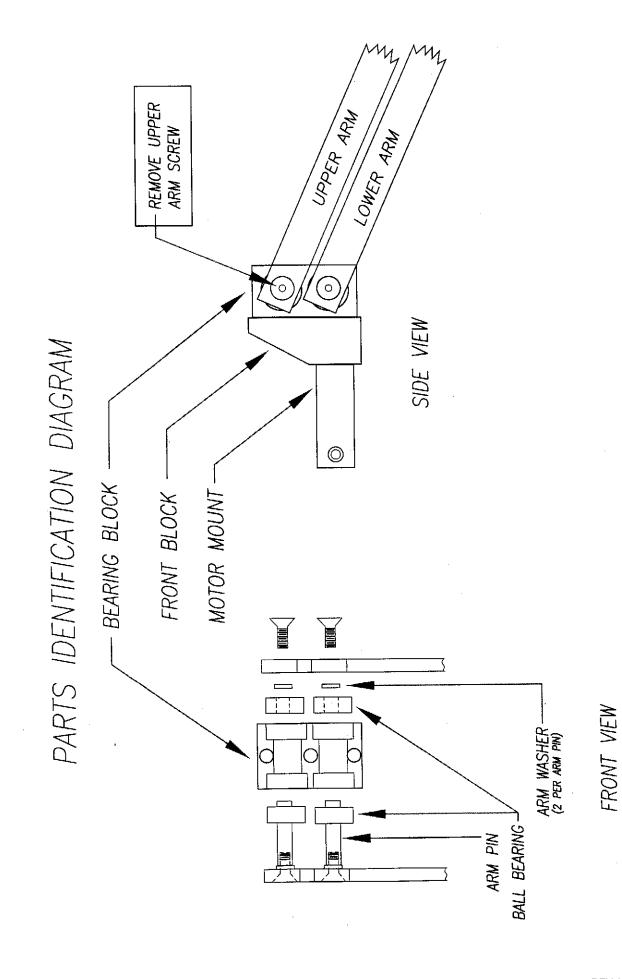
NOTE: Do not over tighten the arm screws. The screws should be snug only.

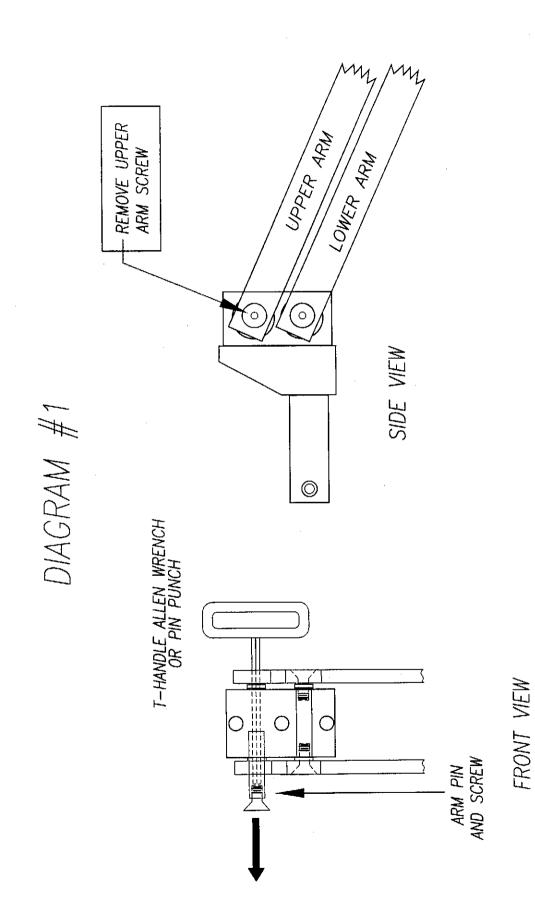
Over tightening can damage the arm bearings and effect smooth movement.

- 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.

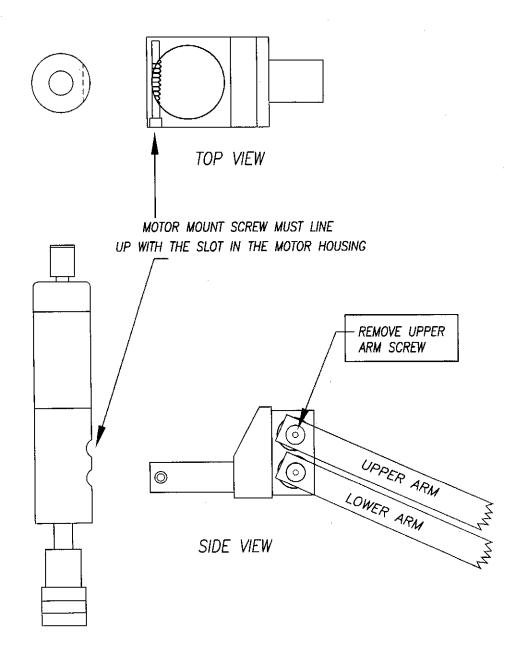
 The slot in the motor is clearance for this screw. SEE DIAGRAM 3.
- Insert the air hose into the quick disconnect fitting.
- Adjust the counterbalance weight to the desired location





DISTANCE 4.44" 5.94" DIAGRAM #2 COMPRESSING THE CYLINDER IN THE A-32 FLEXARM DIMENSION ω CYLINDER P/N -CYLINDER ROD END -CYLINDER PIN C16-06131A 8533SM C16-04511 C16-06133 - CYLINDER TUBE END - CYLINDER PIN LOWER ARM 0 RISER BLOCK

DIAGRAM #3



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

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

Zerex

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.

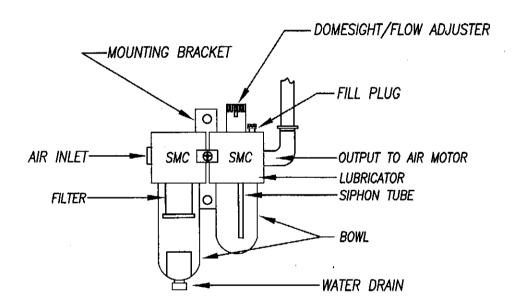
Revision 12/15/2005

CYLINDER REPLACEMENT PARTS

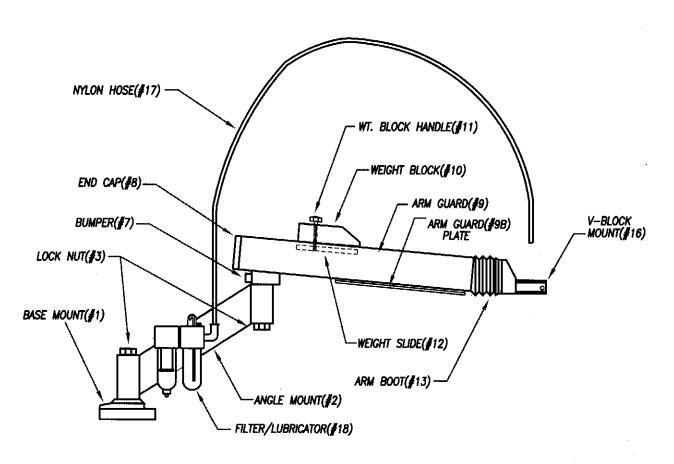
The cylinder Part Number for your unit is screen—printed in white or is printed on a paper label on the black barrel of the cylinder. The cylinder number is prefixed by "C-16" and is followed by 5 digits When ordering replacement cylinders, please provide the complete "C-16" number taken from the cylinder on your unit.

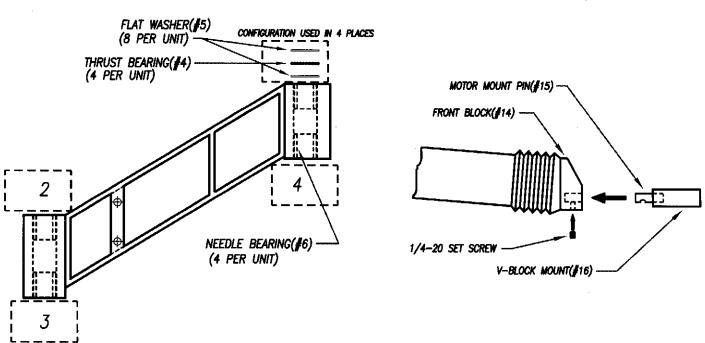
Part No:	Description:					
420001	FILTER BOWL KIT (INCLUDES POLY BOWL, METAL GUARD, O RING,					
	AND AUTO DRAIN)					
420002	FILTER ELEMENT (5 MICRON)					
420003	O-RING FOR BOWL (FOR FILTER OR LUBRICATOR SIDE)					
420004	MOUNTING BRACKET & FRONT CLAMP (WITH 2 O-RINGS, 2 SCREWS)					
420005	O-RING FOR MOUNTING BRACKET (2 REQ.)					
420007	LUBRICATOR BOWL KIT (INCLUDES BOWL, GUARD & O-RING)					
420008	DOME SIGHT					
420009	FILL PLUG					
420000	FILTER ASSEMBLY (COMPLETE HALF)					
420006	LUBRICATOR ASSEMBLY (COMPLETE HALF)					
	MISCELLANEOUS ITEMS					
LB-2000	TAP LUBRICANT, 1 GALLON					
EP-32	HYDRAULIC OIL, 1 GALLON (AIR MOTOR)					
0391	FILTER/LUBRICATOR (COMPLETE ASSEMBLY WITH HOSE FITTING)					
0390	FILTER/LUB WITH GAUGE (COMPLETE ASM WITH HOSE FITTING)					

SMC FILTER/LUBRICATOR



A32 ARM ONLY PARTS DIAGRAM





Midwest Specialties, Inc.

851 Industrial Drive

Wapakoneta, OH 45895-9239

Phone: 800-837-2503 Fax: 419-738-8140

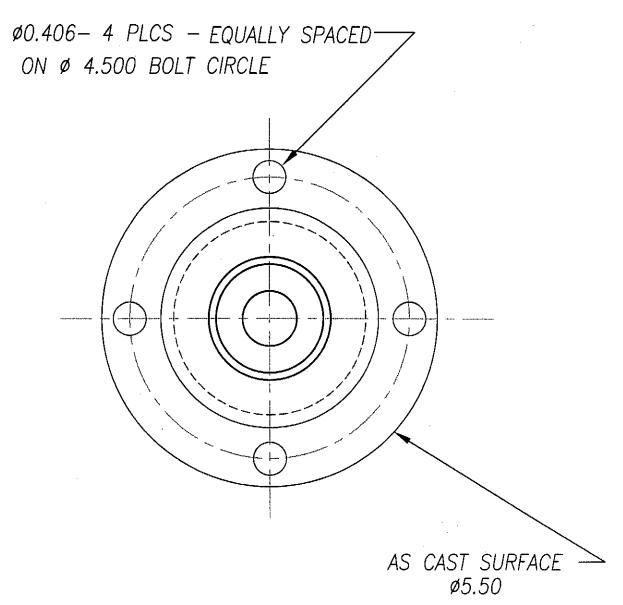
email: flexarm@flexarminc.com

A32 - PARTS PRICE LIST

ITEM	PART#	DESCRIPTION	PRICE EACH	QTY	EXT.
01	01190	Base Mount			
02	01180	Angle Mount (with 4 Needle Bearings)			
03	0612M	Nylon Lock Nut			
04	0609M	Thrust Bearing (4 req'd per Angle Mount)			
05	0611M	Flat Thrust Washer (8 req'd per Angle Mount)			
06	0623M	Needle Bearing (4 req'd inside Angle Mount)			
	0610M	Arm Bearing (8 req'd total inside guard)			
	0608M	Arm Pin (4 req'd total inside the guard)			
	0601M	Rear Bearing Block with Post			
07	0378M	Arm Bumper			
	01300	Rear Bearing Block with Post			
08	0606M	End Cap (for Arm Guard)			
09	01230	Arm Guard			
09B	01240	Arm Guard Cover Plate			
10	01210	Weight Block (1-1/4" tall)			
11	0607M	Handle with stud (for Weight Block)			
12	01220	Weight Slide, 1/4" (used with Wt. Block)			
13	0604M	Boot (for Arm Guard)			
14	0603M	Front Block (attaches to Motor Mount)			
15	0620M	Pin (for Motor Mount, 2 req'd per Unit)			
16	01100	Motor Mount (bore mount for air motor)			
17	S36-55.25	Hose (black Nylon)			
18	0391M	Filter/Lubricator Assembly (with elbow fitting)			
	0384M	Straight push-to-release air fitting			
	0385M	Elbow push-to-release air fitting			
	FX900075M	Auto Tap Lubricator (option)			
	FX900090	Auto Depth Stop 400/600/1000rpm (option)			
	01120	V-Block, 2 piece Motor Mount (Option)			
		WHEN ORDERING CYLINDERS, PLEASE PROVDE THE NUMBERS FROM THE OLD CYLINDER Example: C16-06133 = 120 Lbs. pressure Example: C16-13652 = 135 Lbs. pressure Example: 8533SM = 534 Newtons			
	Rev. 08/25/11				

APPENDIX - A

CUSTOMER DRAWING A32 BASE MOUNT, CAST IRON



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