INSTALLATION & OPERATION MANUAL

FlexArm Assembler:

Models:

CVA-10
FAV-14
FAV-18
FAV-24

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REV.000

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 3 year limited 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 3 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 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:

- filters
- blades/vanes
- springs
- O-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 Number	Max Motor Torque		Working Range		Max Tool Weight	
	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

1) Drill and tap 3/8-16 bolt holes on a flat, smooth table or work bench. If mounting on a wood surface, use comparable carriage bolts. (See Figure 1.)

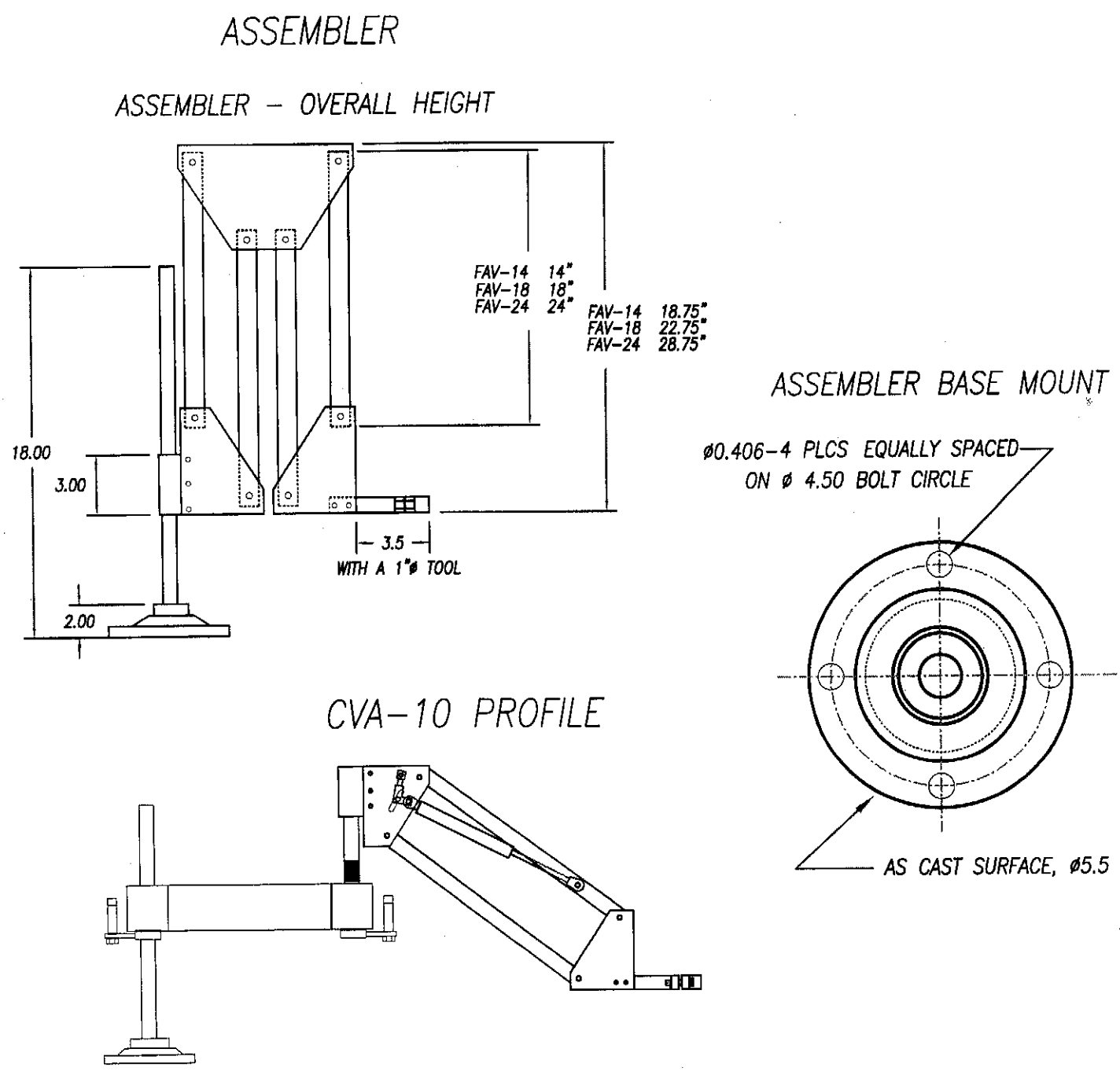


Figure 1
Profile and Base Mount Diagrams for FAV-14, FAV-18, FAV-24 and CVA-10

2) Secure the base mount with (4) 3/8-16 x 1" bolts.

3) Adjust the collar on the post of the base mount to reach the desired height for the unit.

4) Slide the unit onto the post.

5) The unit is counterbalanced at the factory to accommodate the required tool weight. If adjustments are needed, see the **Counterbalance Adjustments** Sheet enclosed for instructions on changing the counterbalance.

6) If the unit is ordered with an air motor, check the air line connections to make sure the hose has not come loose from the press-to-release fittings during shipping; the hose must be completely pushed into the fittings to lock in under air pressure.

7) **SEE FILTER/LUBRICATOR DIAGRAM IN THE PARTS SECTION OF THE MANUAL:**

If the unit is ordered with a filter/lubricator, install a ¼ NPT air fitting into the left port (filter side) and attach a 1/2" ID, 100 psi. incoming air line to the fitting.

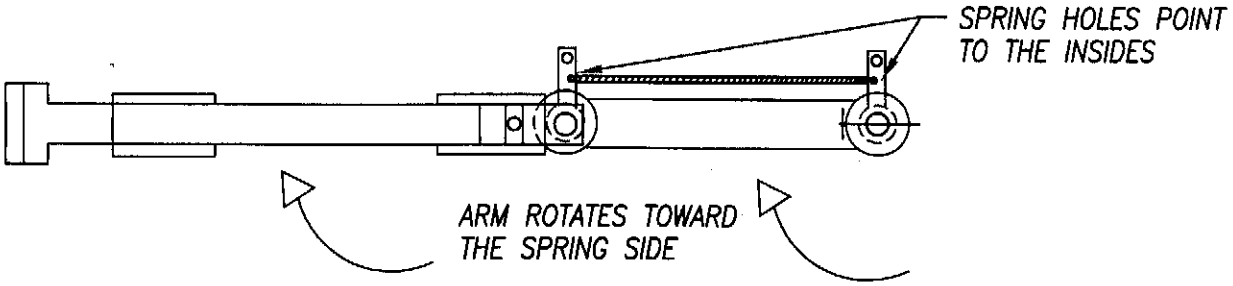
a) Fill the lubricator bowl approximately ¾ full by removing the fill plug screw on top of the lubricator and pouring the oil into the fill port. Use only a quality ISO VG-32 type hydraulic or spindle oil. **Never use Marvel Mystery Oil, synthetic air tool oil, or similar products.** Do not permit the oil level to be lower than the end of the siphon tube in the lubricator bowl.

b) 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 turns decrease the flow and counter-clockwise turns increase the flow. **SMC** brand lubricators use the dome sight as the flow adjuster and **Janatics** brand 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.

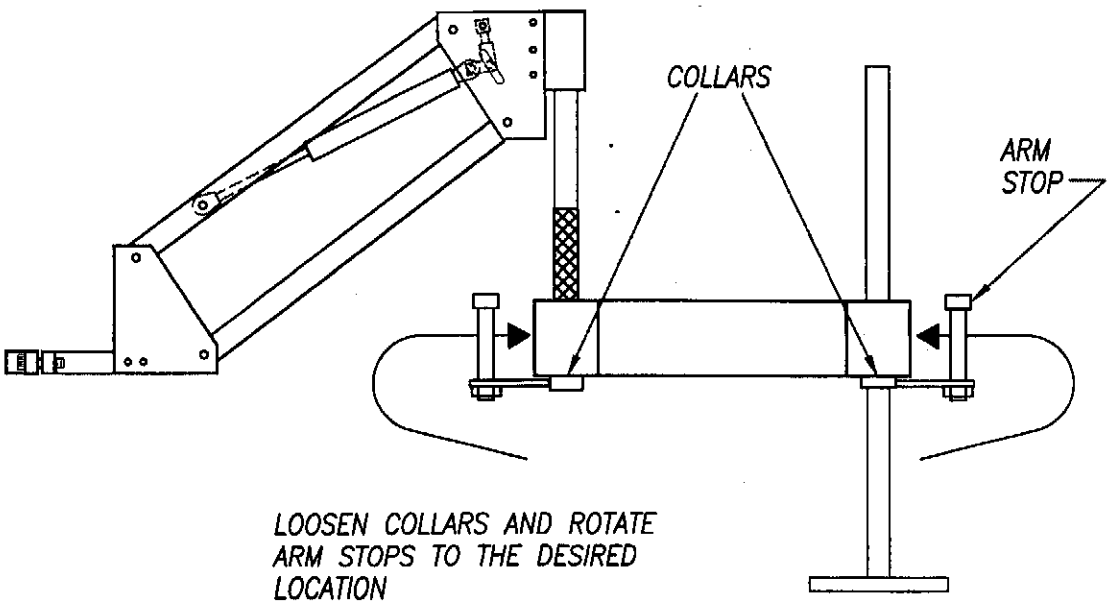
8) **SMC** filters are equipped with an auto drain and will automatically remove water from the filter bowl. **Janatics** brand filters use a manual push button drain and MUST be periodically checked. Remove any water from the filter bowl by pressing the drain button located at the bottom of the filter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

9) **Always wear safety glasses and use proper safety precautions when operating this unit. Gloves are not recommended when operating this machine.**

ADJUSTING THE ARM ROTATION ON THE CVA



THE SPRING CAN BE PLACED ON EITHER SIDE OF THE UNIT – DEPENDING ON OPERATOR PREFERENCE. IN ORDER TO USE THE SPRING ON THE OPPOSITE SIDE, THE ARM STOPS MUST BE SWITCHED SO THAT THE SPRING HOLES ALWAYS REMAIN POINTING TO THE INSIDES.



LOOSEN COLLARS AND ROTATE ARM STOPS TO THE DESIRED LOCATION

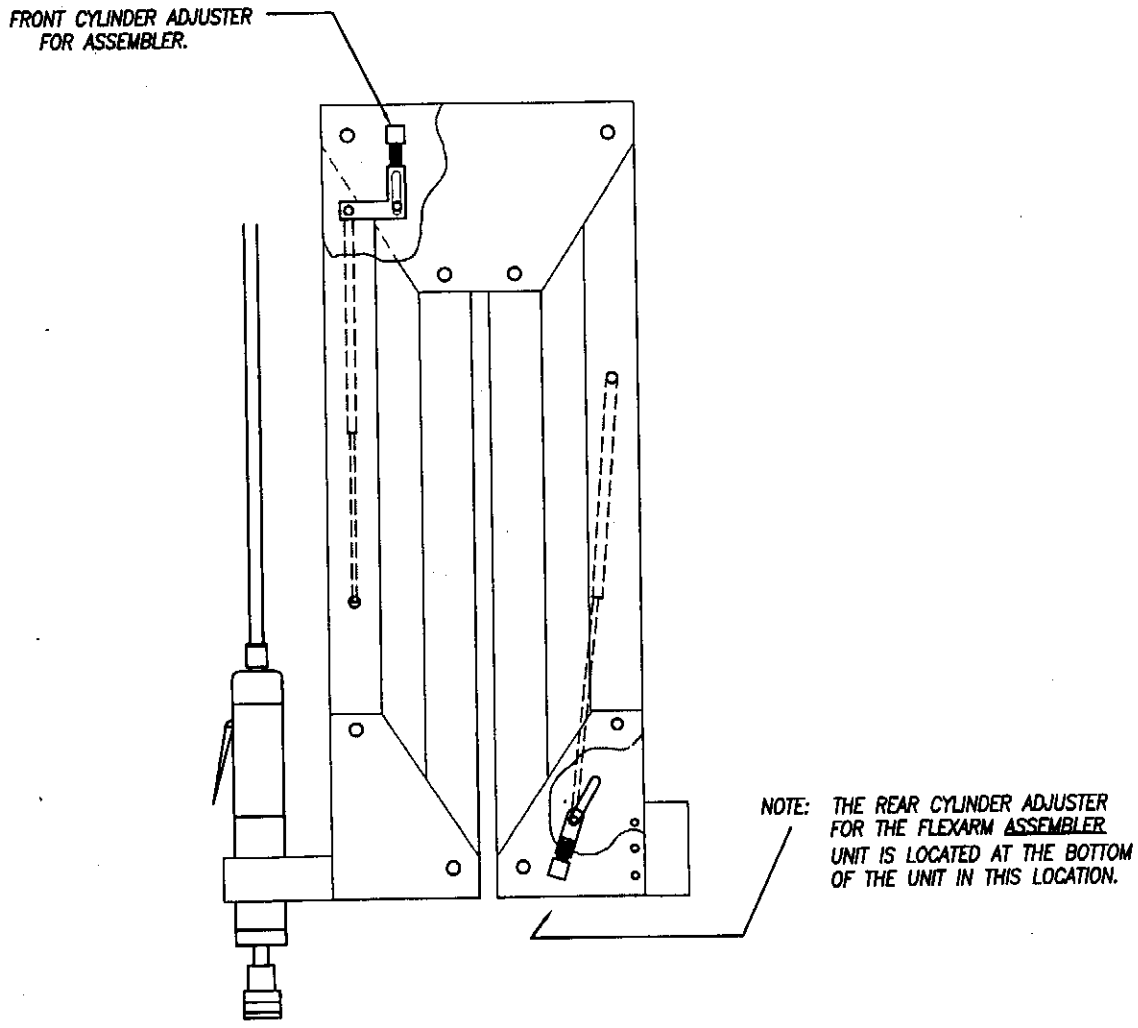
Counterbalance Adjustments

To adjust the counterbalance of the arm, turn the adjuster screw located between the top plates and rear plates (CVA's will only have one adjuster and FAV's will have two). This will move the dowel pin up or down in the plate slot.

1) For light weight tools and accessories, decrease cylinder pressure by moving the dowel pin towards the top of the slot.

2) For heavy tools and accessories, increase cylinder pressure by moving the dowel pin towards the bottom of the slot.

NOTE: The ideal counterbalance will hold the tool just above the workpiece when not being used. Once the operator releases the tool the arm should lift up slightly and remain in place for the next operation.



Adjusting the Counterbalance for the Front Arm

CVA-10 - FRONT CYLINDER REPLACEMENT

F1. Adjust front cylinder turning socket head screw on the adjuster until the pin of the adjuster reaches the lowest position in the slot of the top plates.

F2. Hold the front arm securely. Remove the arm screws on the front plates so that the front arm is free and access to the front cylinder can be made.

F3. Once the screws are removed, slowly guide the front arm up to the fully extended position as indicated on the diagram. This removes all the tension from the cylinder.
CAUTION: *Care must be exercised when taking the arm apart!*

F4. Remove the stripper bolt attaching the cylinder to the arm.

F5. Unscrew the cylinder tube, ***by hand***, from the end fitting attached to the adjuster.

F6. Remove the end fitting from the tube end of the new cylinder. Use care not to damage or scratch the cylinder rod. Dents or scratches on the cylinder rod will cause the nitrogen gas to leak, leadingto the need for another cylinder.

F7. Using both hands, screw the tube end of the new cylinder into the end fitting attached to the adjuster. It is only necessary to get the cylinder hand tight - do not over tighten.

F8. Replace the stripper bolt attaching the cylinder to the arm.

F9. Reassemble the front arm and plates with the front arm screw. Be certain that all fasteners are secured.

Contact Technical Support at 419-738-8147 for additional information

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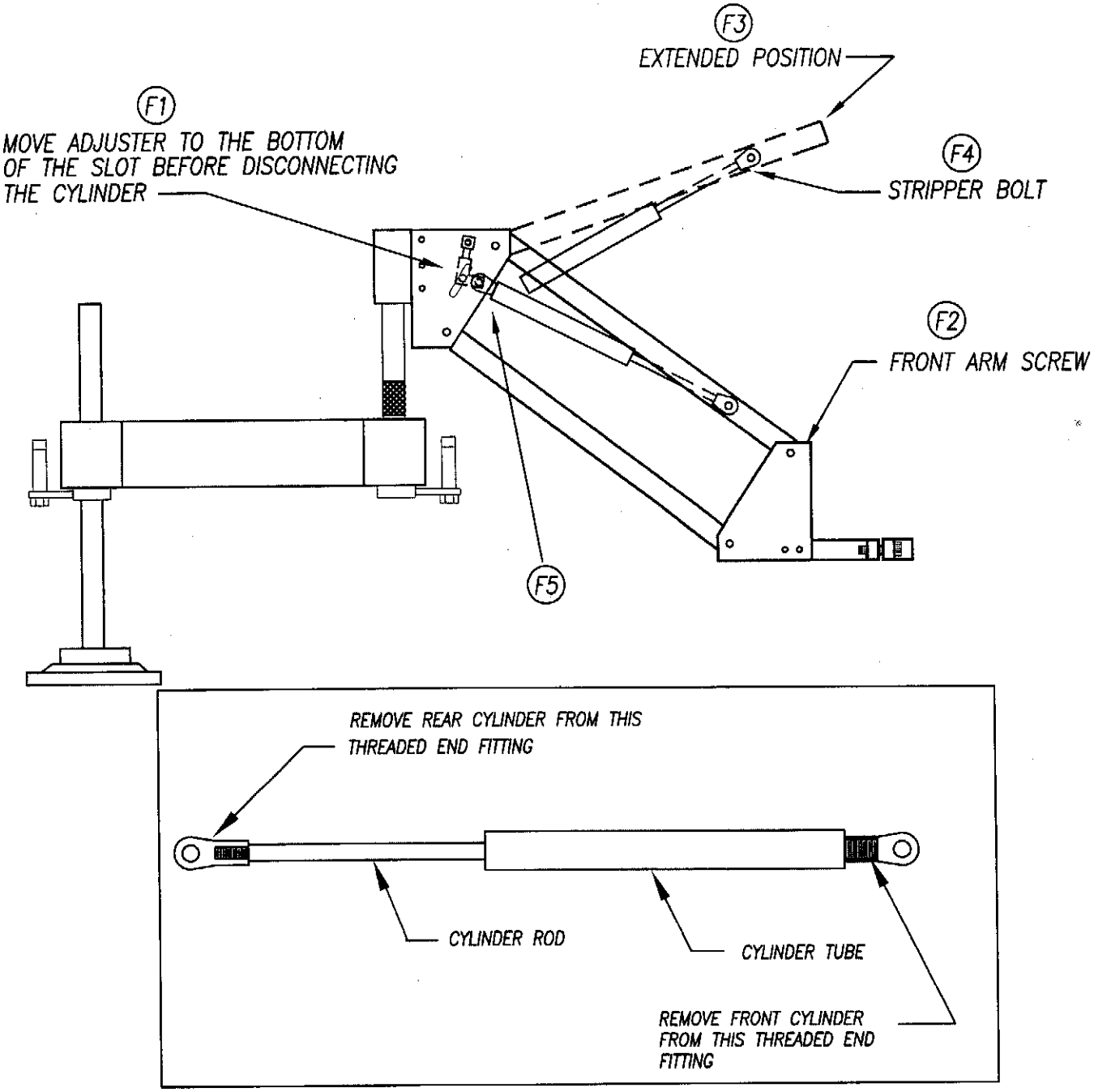
REV. 01/03/05

CVA CYLINDER REPLACEMENT DIAGRAM



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FAV ASSEMBLER
CYLINDER REPLACEMENT INSTRUCTIONS
(Refer to the Cylinder Replacement Diagram)

REAR CYLINDER REPLACEMENT

R1. Adjust the rear cylinder by turning the socket head screw on the adjuster. Turn the screw with a 3/16 allen wrench until the pin of adjuster reaches the lowest position in the slot of the side plates.

R2. Raise the two front arms to the fully extended position.

R3. While supporting the front arms, remove the rear arm screws on the top plates so that the rear arm is free and access to the rear cylinder can be made.
CAUTION: *Carefully lower and place the front portion of the FlexArm on the work surface after the rear arm screws have been removed. Care must be exercised when taking the arm apart!*

R4. Remove the stripper bolt attaching the cylinder to the arm.

R5. Unscrew the old cylinder from the end fitting attached to the rod end of the cylinder. Leave the old cylinder end fitting and adjuster between the plates, you will reuse them.
CAUTION: You will have to wrap a towel or rubber matting around the cylinder rod to remove it and also to tighten the new cylinder. Dents or scratches on the cylinder rod will cause the nitrogen gas to leak, leading to the need for another cylinder and voiding any warranty.

R6. Remove the end fitting from the rod end of the new cylinder. Use care not to damage or scratch the cylinder rod. Dents or scratches on the cylinder rod will cause the nitrogen gas to leak, leading to the need for another cylinder.

R7. Screw the new cylinder into the end fitting attached to the adjuster.

R8. Replace the stripper bolt attaching the cylinder to the arm.

R9. Reassemble the rear arm and plates with the rear arm screws. **Be certain that all fasteners are secured using loctite 242 (blue, removable).**

FAV ASSEMBLER
FRONT CYLINDER REPLACEMENT

F1. Adjust the front cylinder by turning the socket head screw on the adjuster. Turn the screw with a 3/16 allen wrench until the dowel pin of the adjuster reaches the lowest position in the slot of the top plates.

F2. Hold the front arm securely. Remove the arm screws on the front plates so that the front arm is free and access to the front cylinder can be made.

F3. Once the screws are removed, slowly guide the front arm up to the fully extended position as indicated on the diagram.
CAUTION: *Care must be exercised when taking the arm apart!*

F4. Remove the stripper bolt attaching the cylinder to the arm.

F5. Unscrew the tube end, **by hand**, from the end fitting attached to the adjuster.

F6. Remove the end fitting from the tube end of the new cylinder. Use care not to damage or scratch the cylinder rod. Dents or scratches on the cylinder rod will cause the nitrogen gas to leak, leading to the need for another cylinder.

F7. Using both hands, screw the tube end of the new cylinder into the end fitting attached to the adjuster. It is only necessary to get the cylinder hand tight - do not over tighten.

F8. Replace the stripper bolt attaching the cylinder to the arm.

F9. Reassemble the front arm and plates with the front arm screws. **Be certain that all fasteners are secured using loctite 242 (blue, removable).**

*Contact Technical Support at **419-738-8147** for additional information.*

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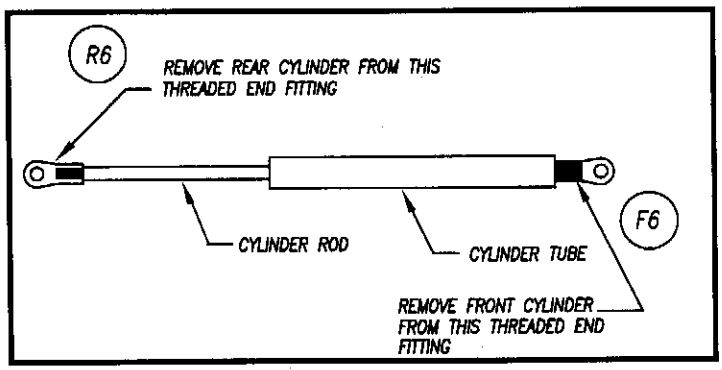
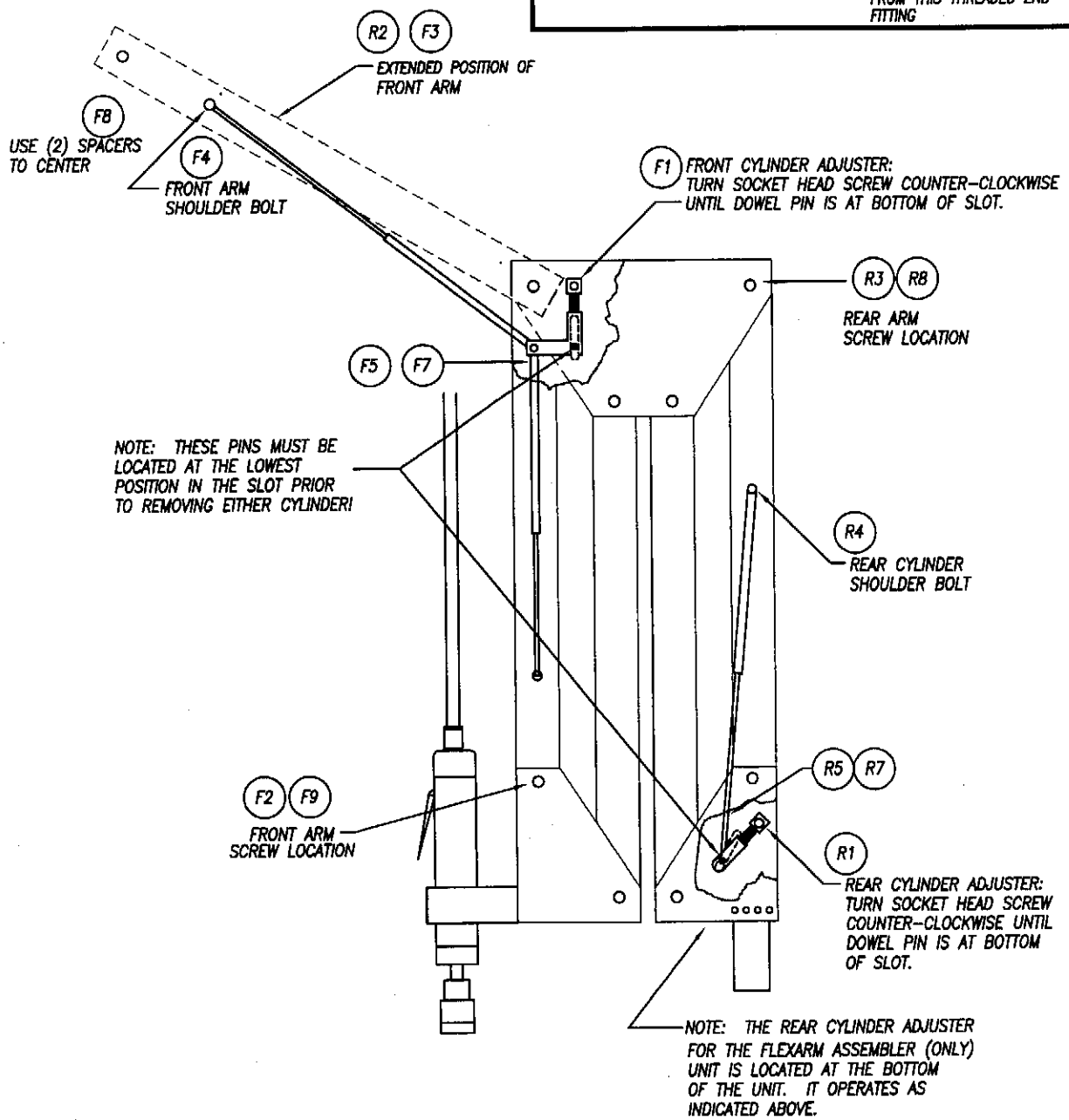
CAUTION!!

EXERCISE EXTREME CARE WHEN FRONT ARM SCREWS ARE REMOVED FROM BOTH FRONT PLATES. TENSION STILL EXISTS EVEN WHEN THE ADJUSTER HAS BEEN TAKEN TO THE LOWEST LEVEL, AND CAN CAUSE THE ARM TO SPRING OUT WITHOUT WARNING!





MAINTENANCE

Monthly lubrication is adequate. Do not allow the rear mount to become contaminated by dirt or foreign materials. If contamination occurs, clean the bore of the rear mount and the shaft of the rear post thoroughly. Lubricate the post through the grease fitting located on the rear mount.

Periodically check/tighten all fasteners and hardware.

TROUBLESHOOTING

1) The arm does not balance nor adjust to support the tool weight:
   a) Replace worn cylinder
   b) The unit was counterbalanced for a specific weight when purchased; when changing tools, it may be necessary to change cylinders to accommodate the new tool weight. Contact factory service for proper replacement cylinder information.

2) The arm movement is too stiff:
   a) Check fasteners and hardware; they cannot be overtightened.
   b) Adjust the arm stop; it should turn freely. (See Figure 1)
   c) Dirt or foreign material may have built up in the arm pivot points; use an air gun to blow all foreign materials out of these locations.
   d) Check counterbalance adjustment.

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.

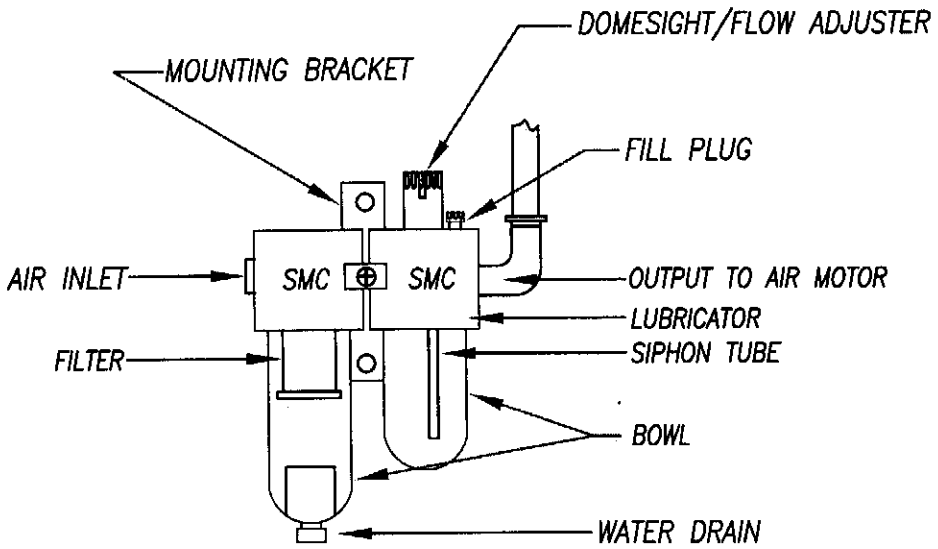
Midwest Specialties has the following oil available in one gallon capacity:
EP Hydraulic Oil 32(light), 135-165 SUS@100 degrees Fahrenheit. The part number is EP-32.

CYLINDER REPLACEMENT PARTS

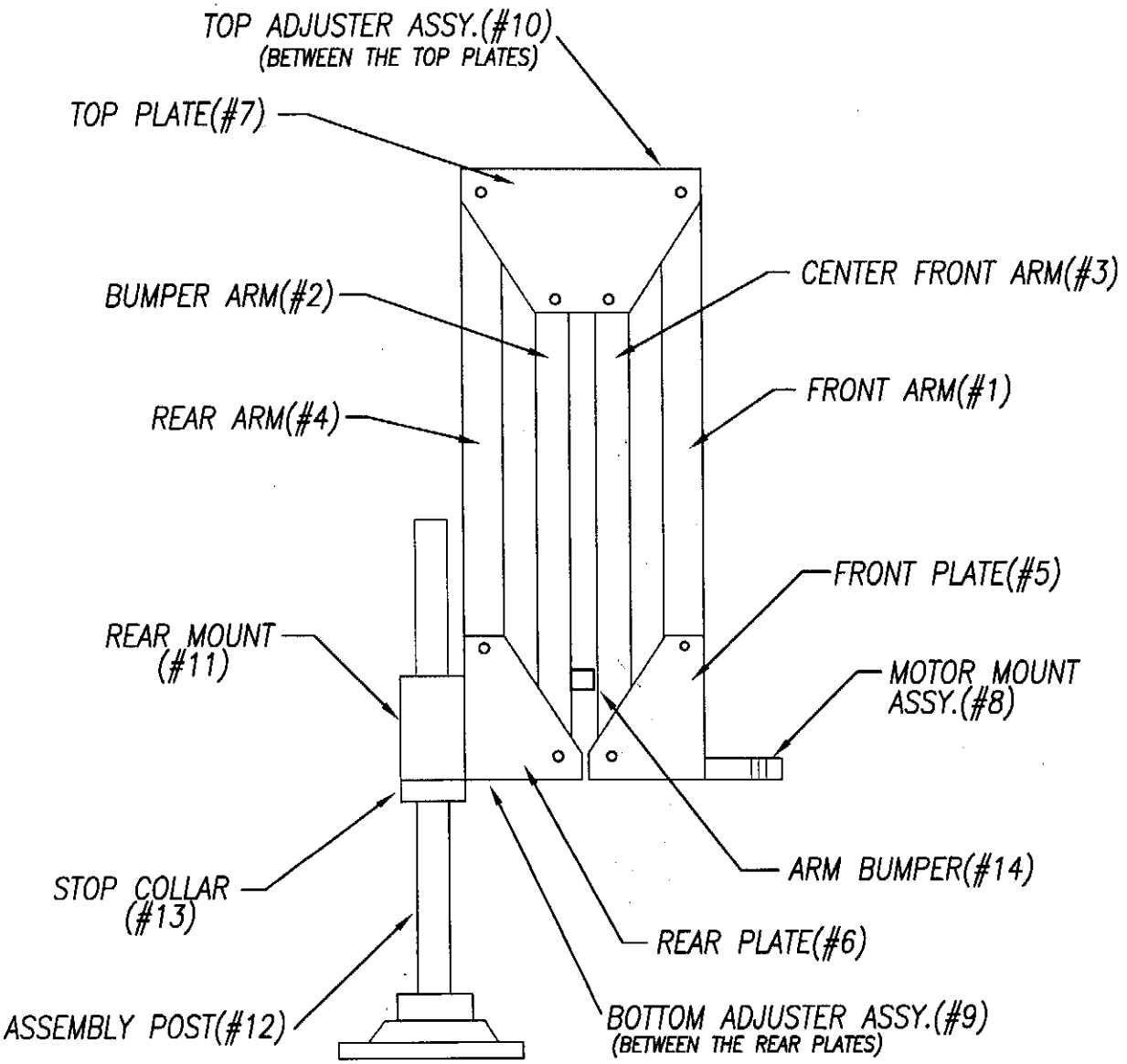
The cylinder Part Number for your unit is screen–printed in white or is printed on a paper label on the black barrel of the cylinder. The cylinder number is prefixed by "C–16" and is followed by 5 digits When ordering replacement cylinders, please provide the complete "C–16" number taken from the cylinder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



FAV ASSEMBLER PARTS DIAGRAM



LEFT SIDE VIEW

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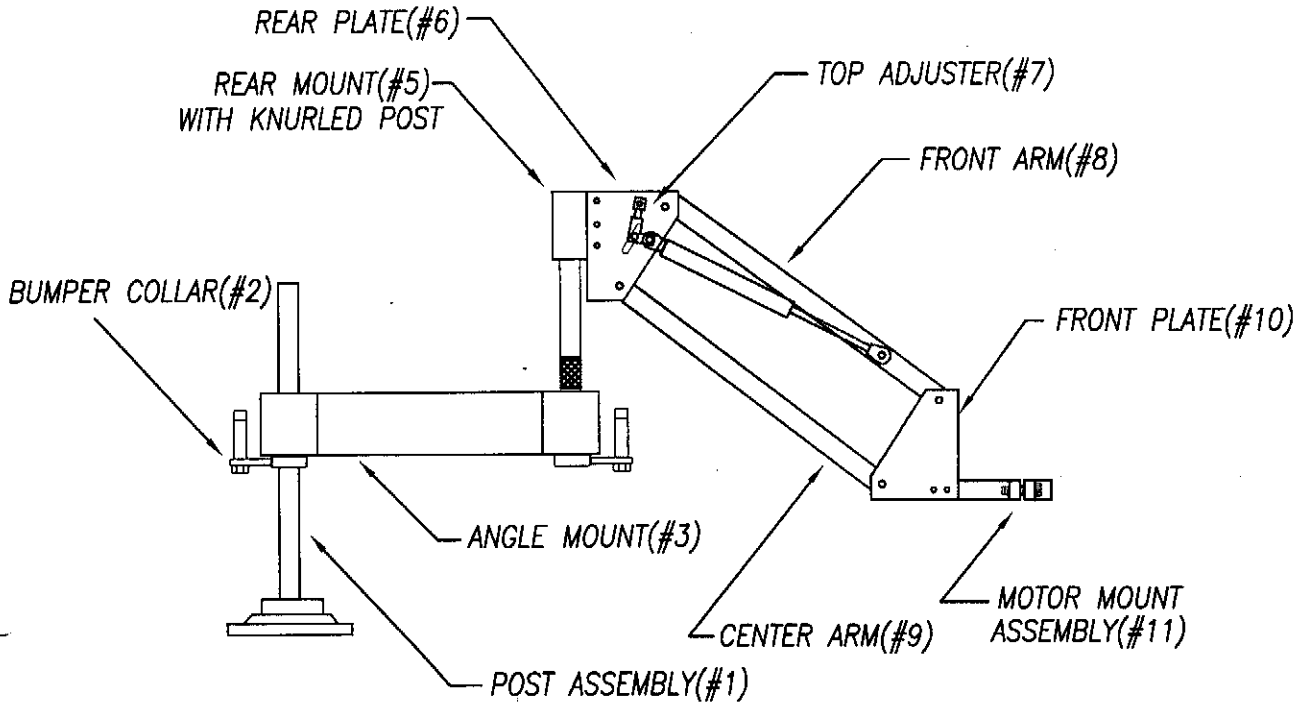
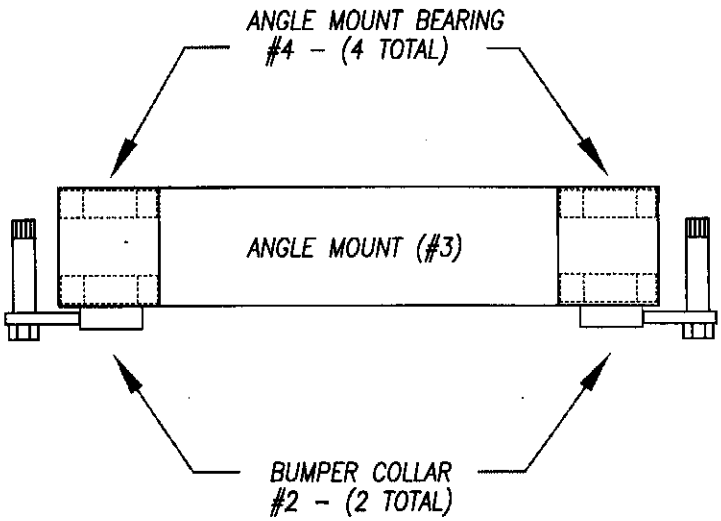
FAV-14, -18, -24 ASSEMBLER PARTS

ITEM	PART #	DESCRIPTION	PRICE EACH	QTY	EXT.
		NOTE: Arms do not include the (2) bushings			
1	01990	Front Arm, 24"			
	01910	Front Arm, 18"			
	01810	Front Arm, 14"			
2	01992	Bumper Arm, 24"			
	01920	Bumper Arm, 18"			
	01820	Bumper Arm, 14"			
3	01992	Center Arm, 24"			
	01920	Center Arm, 18"			
	01820	Center Arm, 14”			
4	01994	Rear Arm, 24"			
	01930	Rear Arm, 18"			
	01830	Rear Arm, 14"			
	0100M	Bronze Bushing			
5	07210	Plate, Front, Right			
	07215	Plate, Front, Left			
6	07220	Plate, Rear, Right			
	07225	Plate, Rear, Left			
7	06100	Plate, Top, Right			
	06150	Plate, Top, Left			
8	08200	Motor Mount Assembly (Mount and Cap)			
9	13100B	Bottom Adjuster Assy			
10	13300A	Top Adjuster Assy (adjuster, swivel bar, LH-RH screw, dowel pin and clevis)			
11	03100	Rear Mount (stepped, with 7/8" diam. hole)			
12	04400A	Post Assembly with 7/8” diameter shaft			
13	0073M	Stop Collar for 7/8" diameter shaft			
14	0378M	Bumper (only) for Arm (old # 9540K23)			
	08100	Dynabrade Swivel Fitting, FAS-16, FAS-21			
	Rev. 12/16/13				

CVA PARTS DIAGRAM





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CVA-10 PARTS PRICE

ITEM	PART #	QTY USED	DESCRIPTION	PRICE EACH	QTY	EXT.
01	04400A	1	Post Assembly (7/8” diam. rod + Base)			
02	0130M	1	Bumper Collar Set (2 - 7/8” collars with spring)			
03	04300	1	Angle Mount			
04	0126M	4	Bearing for Angle Mount (4 used) - 7/8”ID			
05	360081	1	Rear Mount with Knurled Post (stepped mount with 7/8” rod)			
06	07225	1	Right Hand Rear Plate (same as FAV Left Rear)			
06	07220	1	Left Hand Rear Plate (same as FAV Right Rear)			
07	13600	1	Top Adjuster Assembly			
08	01840	1	Arm, 14" Front (with bushings)			
09	01820	1	Arm, 14” Center (with bushings)			
	0100M		Bushing for Arm (2 used per Arm)			
10	07210	1	Assembler Right hand Front plate			
10	07215	1	Assembler Left hand Front plate			
11	08200	1	Motor Mount Assembly (Mount and Cap)			
	0128M	1	Spring (only) for Bumper Collar			
	0391M		Filter/Lubricator Assembly			
	0390M		Filter/Lubricator with Regulator & Gage			
	Rev. 12/16/13					

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