

Cam-Tech Products, Inc.

SSW-40 Pneumatic Spinning Wrench

Installation and Maintenance Manual



Mail to:
P.O. Box 1177
Humble, TX 77347-1177

Ship to:
1811 Humble Place Drive
Humble, TX 77338

Phone: 281-548-2400
Fax: 281-548-2401

E-mail: sales@cam-tech.com
Website: www.cam-tech.com

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7K-0032

CAM-TECH PRODUCTS, Inc.

Cam-Tech is dedicated to providing the drilling industry quality pipe handling equipment, excellent service, and competitive prices. Our sales representatives and agent network are qualified and respected with many years of experience and are capable of handling the most complex situations.

CAM-TECH current products include ...

- Kelly Bushings — Pin and Square Drive
 - Kelly Bushing Safety Drive Pin
 - Master Bushings — Solid, Hinged, and Split
 - Casing Bowls — through 30"
 - Rotary Slips — Short, Medium, and Long
 - Safety "Flex" Handles for Manual Slips
 - AS-16 Air Slips (Gorilla Grip)
 - Drill Collar Slips — Short, Regular, and Long
 - Casing Slips — through 30"
 - Safety Clamps — through 30"
 - SSW-10 Spinning Wrenches and parts
 - SSW-30 Spinning Wrenches and parts
 - SSW-40 Spinning Wrenches and parts
 - Hydraulic Power Units
-

CAM-TECH reconditioned equipment include ...

- Kelly Bushings
- Master Bushings and Bowls
- Rotary Slips
- Drill Collar Slips
- Spinning Wrenches
- Kelly Spinners
- TW-61 Torque Wrenches
- Iron Roughnecks
- Spring Slips (PS-15)
- Power Slips (PS-16)



CAM-TECH PRODUCTS, Inc.

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SHIP: 1811 Humble Place Drive, Humble, TX 77338

MAIL: P.O. Box 1177, Humble, TX 77347-1177

PH: 281-548-2400

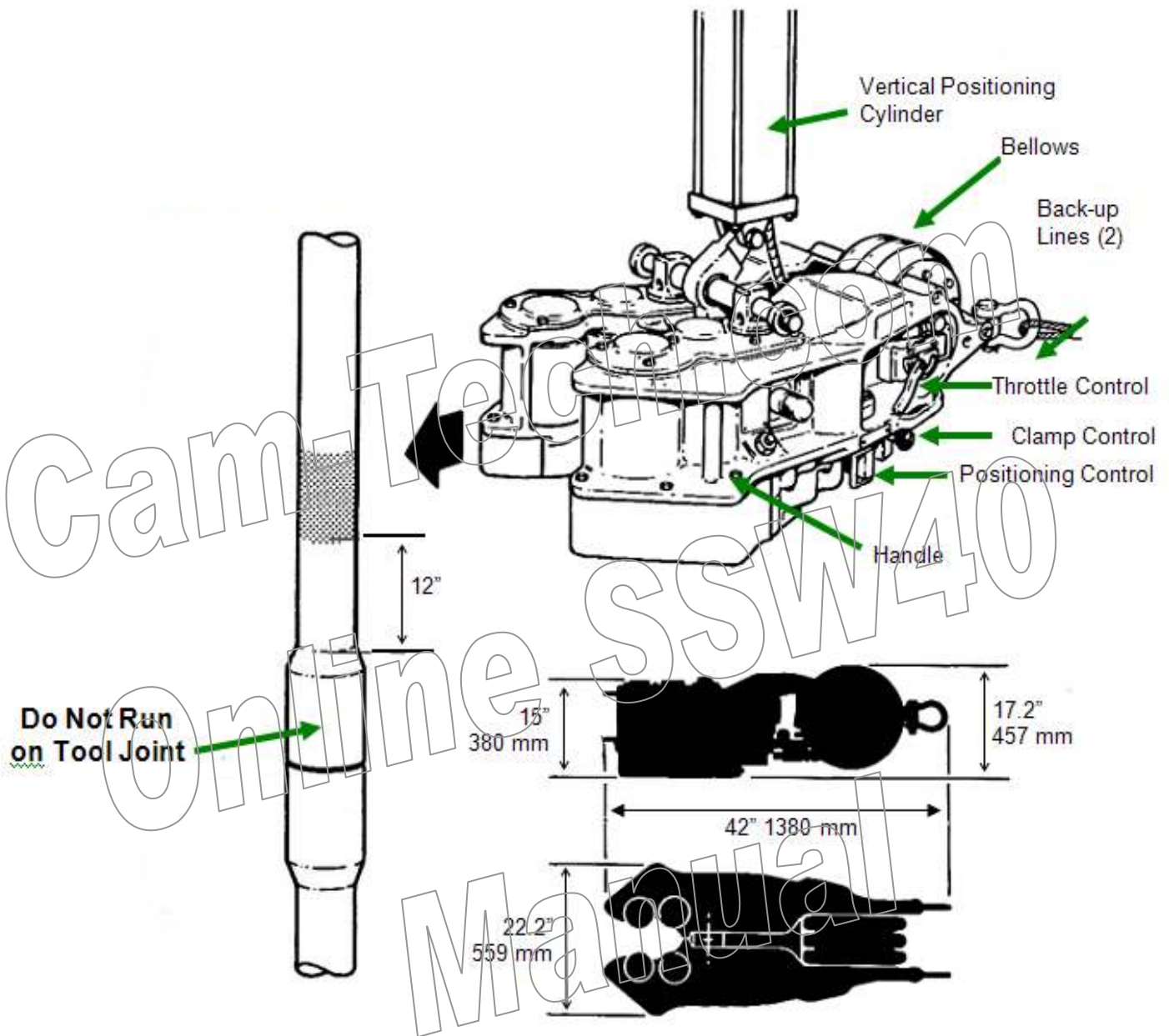
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SPECIFICATIONS



SSW-40 Specifications:

Range: 3 1/2" to 9 1/2" O.D.
Drill pipe and collars (89-241)
Air pressure: 90-125 psi. (6.2-8.6 atm)
Air consumption: 250cfm (118 dm³/S)

RPM: 0-120 (on 5" O.D. pipe)
Stall torque: 1100 ft-lbs (1493 Nm)
(on 5" O.D. pipe)
Weight: 780 lbs. (353 kg)

A word about SAFETY –

Before operating or working on this air-driven tool, you must read and understand the contents of this manual. Failure to do so could result in serious injury or death.

The material in this manual is intended to supplement, not replace your company's safety practices. Wear the required personal protective equipment required including safety boots, hardhat, safety glasses and gloves as required for the job.

High pressure air is dangerous. Never point an air hose at your face or anyone else's – grit and dust propelled by high pressure air can produce serious injuries.

Before using this tool, be sure couplings, valves and hoses are in good repair. The ends should be wrenched up tight and safety chains installed so that the ends cannot be pulled loose, and allow the lines to whip around unrestrained.

Disconnect the tool from the air supply before servicing.

Before breaking a hose coupling, be sure the standpipe valve is closed and pressure bled off by opening the throttle valve on the tool.

GENERAL DESCRIPTION

GENERAL DESCRIPTION

The Cam-Tech SSW-40 pneumatically-powered spinning wrench is designed to spin drill pipe and collars from 3-1/2" to 9-1/2" OD. It is designed as a pair of mirror-image sub-assemblies, each containing a powerful air motor and a rugged gearbox that drive a pair of steel rollers. Connected by an adjustable linkage, an air bellows provides a simple approach to achieving the powerful clamping forces needed to drive and shoulder the pipe with authority. No additional components are required, no rollers to change, and maintenance is straightforward, simple, and easy.

Controls are large and easily operated with a gloved hand. Their action is intuitive – Clamp the jaws by pressing the air valve, unclamp by pulling it, you push the throttle lever in to spin in, you pull it to spin out. Simple and direct.

SSW-40 Features:

- Compared to a spinning chain, the SSW-40 offers significant safety features including eliminating the traditional injuries associated with a chain.
- The SSW-40 is faster and more powerful than either a chain or conventional powered chain or two-roller spinning tools. It grips the pipe firmly and does not slip, even in oil-base mud.
- The rollers of the SSW-40 will not damage drill pipe as do chains and powered-chain spinning devices that tend to machine the tube body, creating stress raisers. This can result in considerable savings in drill pipe costs for the operator.
- The SSW-40 bumps the shoulders of the connection with 1100 ft-lbs of power, resulting in fewer strokes having to be taken with the tongs – saving considerable trip time and more profitable hours on bottom.
- By reducing crew fatigue, the SSW-40 helps keep the floor crew sharp and focused on the task of running pipe.

INSTALLATION:

Note: When the SSW-40 is delivered, remove all packaging. The SSW-40 will include a set of hoses and components for the air supply. The air supply components (See Figure A) will have to be installed prior to using the SSW-40.

Installation of Air Supply – See Figure A

- 1) Using as few elbows as possible to provide plenty of air flow, run a 1 ¼" rig air line up to the floor, preferably near the mast or a derrick leg. Install a 1 ¼" valve at the end of his line to allow air to be shut off for servicing the following equipment.
- 2) Attach the filter/separator, regulator and lubricator to the rig air supply (90-120 PSI). Be sure to install them on the floor or just below it with the filter/separator in the line nearest the compressor in order to maximize the life of the filter.
- 3) Run the 15-foot Cam-Tech air hose from the floor manifold to the rotary to ensure that it will allow the tool to swing on the pipe and rotate at least one foot to either side.
- 4) Check the system for leaks and if needed, and repair as required.

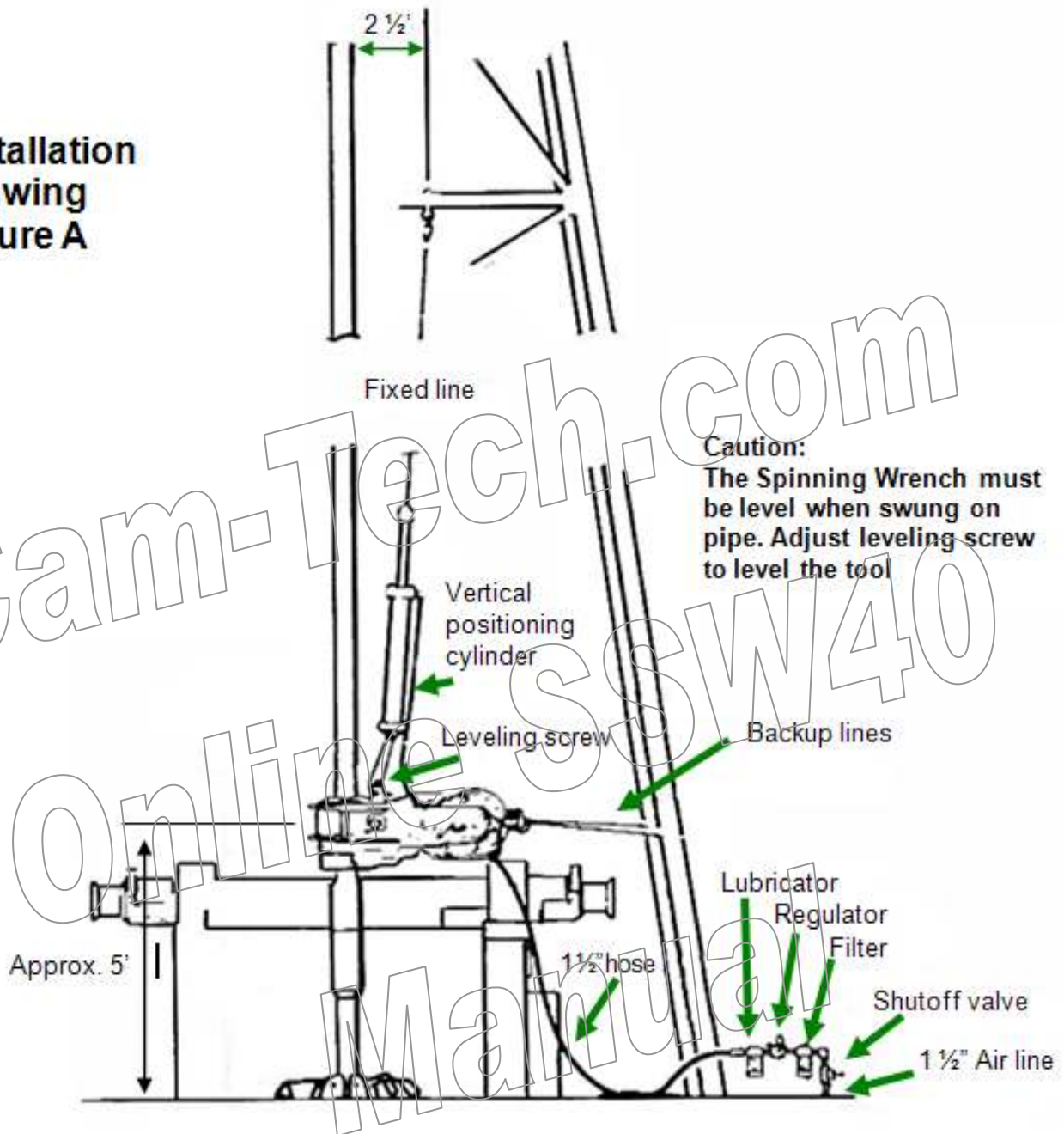
Installation of the SSW-40 – See Figure A

- 1) Attach a ½" or 5/8" suspension cable to a cross member about 2 ½ feet from the drill pipe centerline (as shown) and position the wrench across from the driller where the chainman would stand to allow eye contact between the wrench operator and the driller. This 2 ½-foot offset will allow the operator to easily swing the tool on and off the pipe.
- 2) With the lift cylinder at the midpoint of its stroke, suspend the SSW-40 approximately 5 feet above the floor. From this position, the operator can move the tool about one foot in each direction up or down to position it on the pipe.
- 3) Attach two back-up cables to the shackles on the back of the tool to restrict rotational movement to one foot or less in either direction. Do not cross the cables. For the operator's safety, do not allow the tool to rotate more than a few degrees when the throttle is applied.

CAUTION: It is important that TWO backup lines be used in order to control the movement of the tool. Failure to install **BOTH** lines could result in operator injury.

INSTALLATION

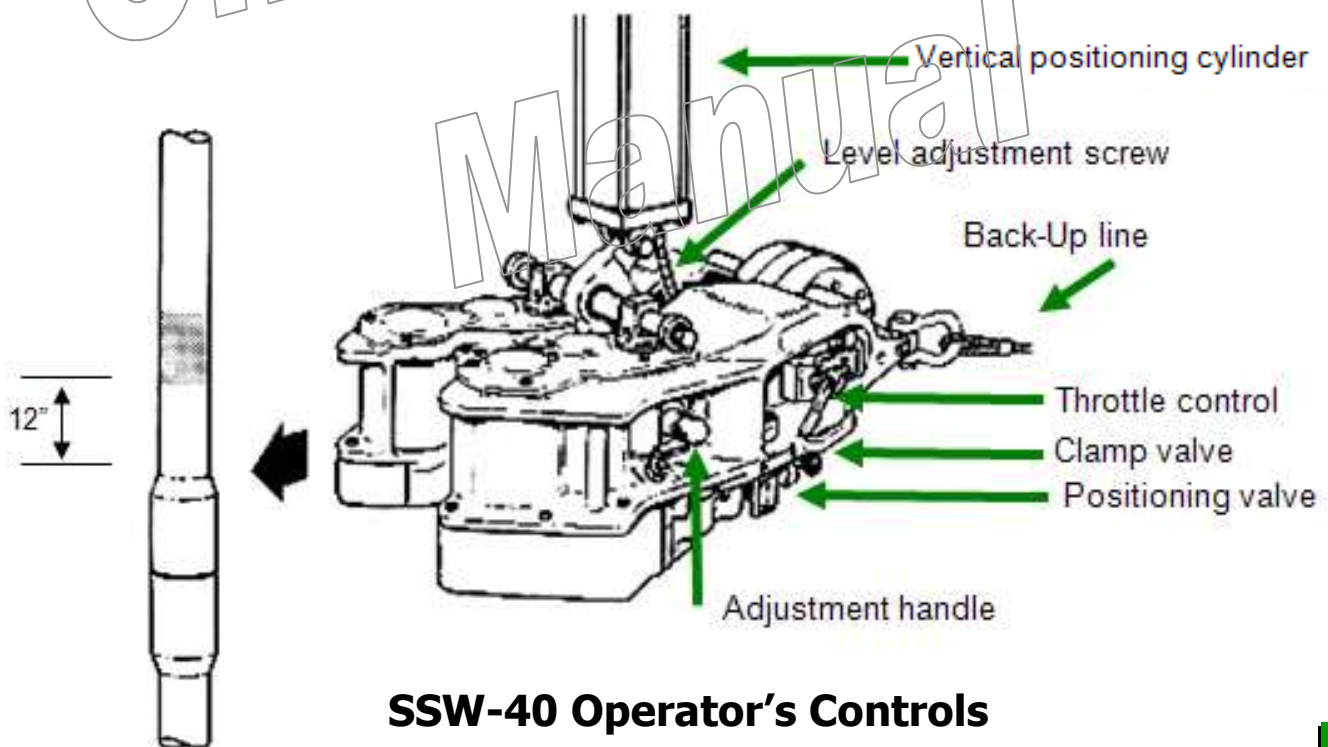
Installation
Drawing
Figure A



- 4) Connect the 25 foot air hose assembly provided, to the lubricator end of the filter/regulator/lubricator assembly.
- 5) Blow out air line to remove any trapped moisture and debris.
- 6) Pour 1/2 pint of SAE 10 oil into 25 foot hose, and then connect to spinning wrench swivel fitting.
- 7) Level tool with the rig floor using the hanger adjusting screw provided.

OPERATION

- 1) Before use, your SSW-40 must be adjusted for the pipe on which it will be working. Swing the tool onto the tube body of the pipe in the rotary. With it in the "unclamped" position, pull out the retractable adjusting handle and rotate the screw to adjust the rollers for a ½-inch clearance between the front rollers and the pipe. This will set the tool for your pipe size. To rotate collars or subs, you will have to re-adjust the tool. Be careful not to run the rollers on hard band, tool joint upset, or spiral grooves to preserve the life of the rollers.
- 2) The tool should swing on the pipe about a foot above the tool joint. If it does not reach this position, push or pull the vertical positioning lever to raise or lower the tool on the pipe.
- 3) Swing the SSW-40 on the pipe and push the clamp valve as it engages. The jaws will close on the pipe and you will see the tool pull itself into position.
- 4) Running in the hole, push the throttle lever to spin the connection in. Hold the lever down until pin shoulder of the new stand bumps up solidly against the shoulder of the box of the pipe in the rotary. Release the throttle lever.
- 5) Pull the clamp valve to release the SSW-40 from the pipe and allow it to swing clear as the lead tong is positioned.
- 6) Coming out of the hole, the procedure is reversed, swinging into position above the tool joint, clamping the tool on the pipe, and pulling the throttle lever to spin out. When the pin jumps the box, unclamp the tool and swing it clear. Note the throttle lockout that prevents spinning in the wrong direction.



SSW-40 Operator's Controls

MAINTENANCE

SEVERE PINCH HAZARD!

NEVER place hands or fingers between the rollers with the air line connected to the tool. When operating the tool, be sure to grasp **ONLY** the provided handgrips or controls.

PRE-TRIP MAINTENANCE

Before starting out of the hole, the following checks should be made to prepare the SSW-40 for service:

- 1) Check and fill the air line lubricator (1) with SAE 10 motor oil. Drain water from filter sump.
- 2) Grease the drive roller bearings (8, one zerk on each end of each roller) with multipurpose grease.
- 3) Grease the adjusting screw with multipurpose grease, and grease the adjusting handle to be sure it is free.
- 4) Grease the air hose swivel (1 zerk) with multipurpose grease.

SCHEDULED MAINTENANCE

Every Rig-Up:

- 1) Fill the air line lubricator with SAE 10 motor oil.
- 2) Before connecting to the SSW-40, blow down the air hose to the tool for a few seconds, then disconnect the air line at the lubricator and pour a cup of SAE 10 motor oil into the hose before reconnecting the hose to the tool.

Every Month:

- 1) Check rollers to be sure they are not worn to the point pipe is contacting the wrench body. Clamp the tool on the pipe and check clearance.
- 2) Check the air bellows muffler and clean as required.

Every Three Months:

- 1) Drain and refill both gearboxes with SAE 90 gear oil (below freezing temperatures, use SAE 10 motor oil).

GENERAL MAINTENANCE

Your SSW-40, if properly operated and maintained, should provide long service without significant problems. Wear items such as rollers and valves will occasionally need attention. The following pages will help direct your disassembly, service, and reassembly of the tool.

Note that these procedures, particularly servicing the air motors, should be performed in a clean, dry space, free of blowing dirt and grit. This is often best performed in a shop environment, but can be done on the rig if necessary.

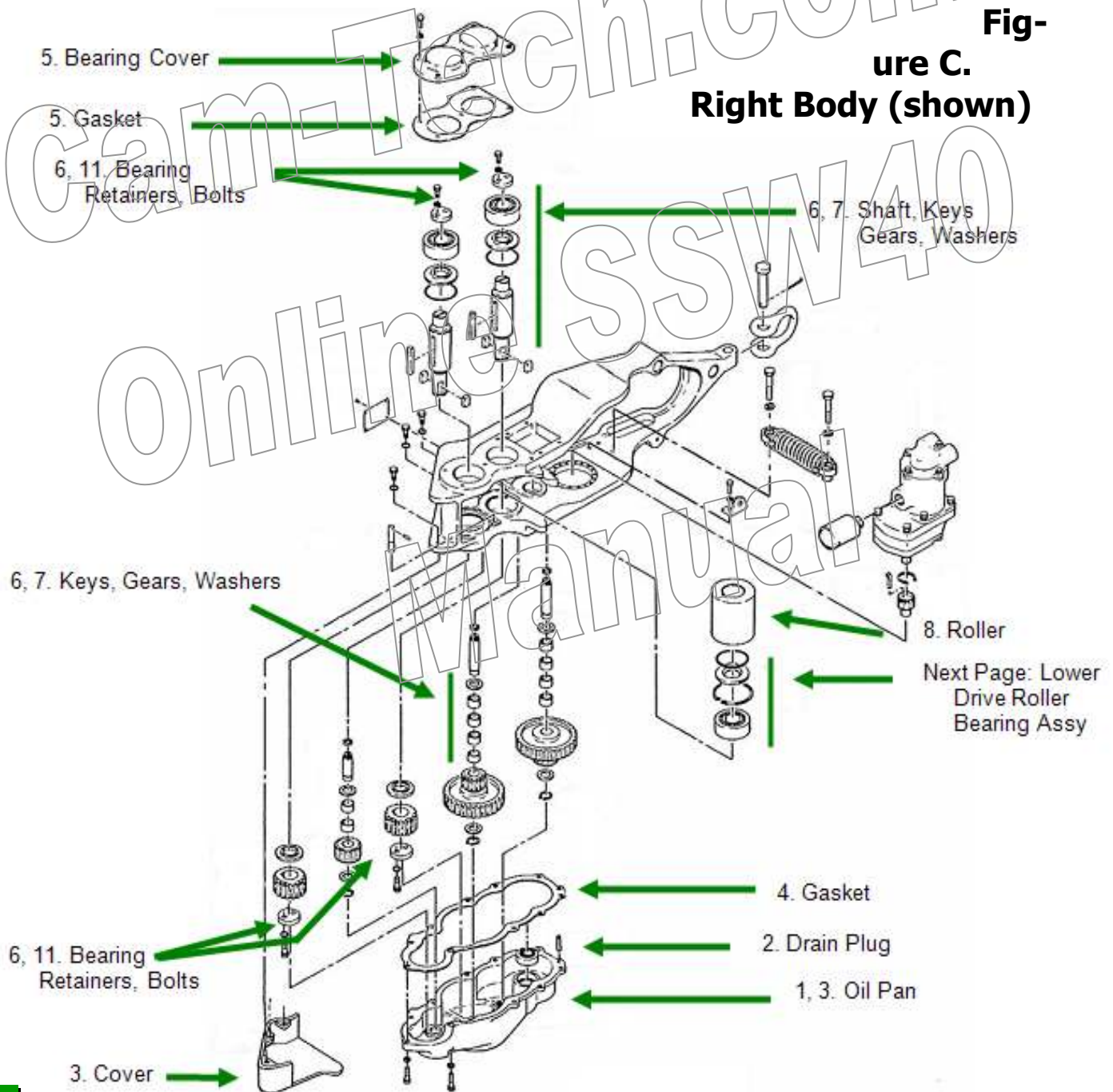
Drive Roller Replacement:

Begin this and all service procedures by reading through the steps you will perform carefully. You should be wearing the personal protective equipment designated by your company for shop work, including eye protection and safety shoes. Disconnect the tool from the air supply if you have not already done so.

- 1) Place a gallon can under the tool that is hanging level over your work area and remove the drain plugs from each oil pan. Catch oil in can and discard.
- 2) When the oil has drained, tilt the tool back and forth slightly to be sure there is no remaining oil in the pans and reinstall the drain plugs.
- 3) Remove the forward covers from the bottom of the tool, then unbolt the oil pans and remove them as well. Check the pans for metal shavings and particles that may indicate unusual wear or failure in the gear train.
- 4) Remove the gasket material both from the lip of the oil pan and from the tool body. Scrape any remnants away to ensure a smooth sealing surface when you reassemble the tool.
- 5) Remove the top bearing covers from each roller and, in the same way, clean up the sealing surfaces from any gasket remnants. Wipe the covers and pans clean and set them aside.
- 6) Unbolt the bearing retainers on the top and bottom of the roller shaft(s) and remove the roller gears, keys, and washers from the gear train.
- 7) Push the roller shafts up through the body casting, along with the upper bearings, spacer and key. This may require a soft mallet to drive the shafts upward until they release - if they have not been serviced in some time.
- 8) Pull the roller shaft out of the body, while being careful to hold onto the roller that could fall out and injure you. With the shaft extracted, you are ready to remove the roller from the body and replace it with a new part.
- 9) Repeat this procedure for all rollers. Clean and inspect bearings and gears for damage or wear. Now is the time to replace questionable parts.

MAINTENANCE

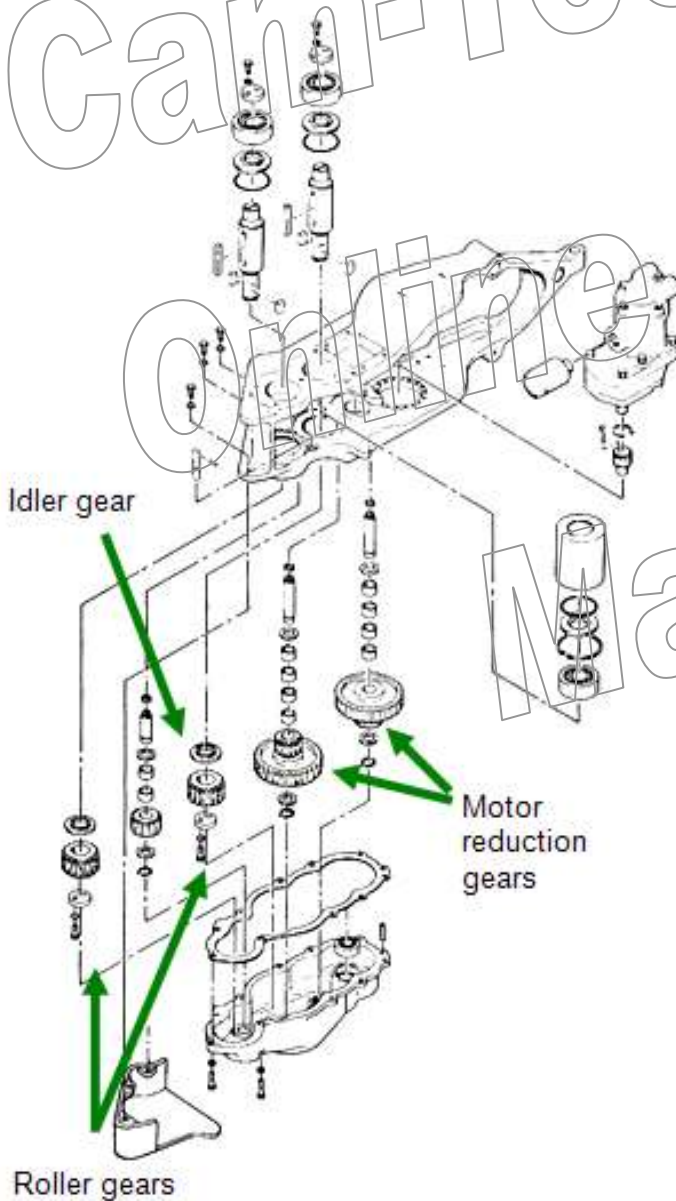
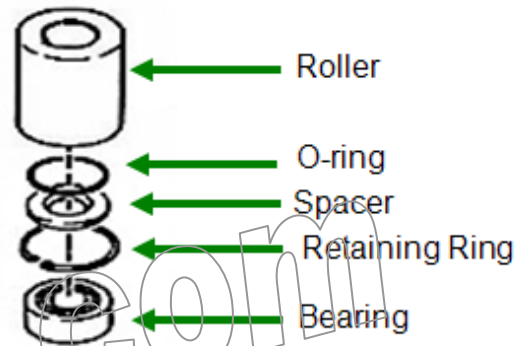
- 10) Clean all parts and use a light assembly lubricant to ease installation. Simply reverse this process to reinstall all components using all new o-rings and gaskets. Be careful not to damage seals as you reinstall them.
- 11) Torque bearing retainer bolts to 15-20 ft/lbs.
- 12) Reinstall the oil pans and gaskets, top covers with their gaskets.
- 13) Turn the tool on its side and pour one quart of SAE 90 gear oil into each oil pan before operation.



Lower Drive Roller Bearing Replacement:

As you remove the drive roller (previous pages), examine the needle bearings inside the roller for wear. If they require replacement, observe the following procedure.

- 1) Remove the lower spacer shield and o-ring.
- 2) Remove the lower retaining ring and push the bearing upward to remove it.
- 3) Pack a new bearing with grease and install in the roller by reversing the procedure you just completed. Again, be careful not to damage seals and o-rings as you reassemble the tool.



Gear Train Inspection, Maintenance

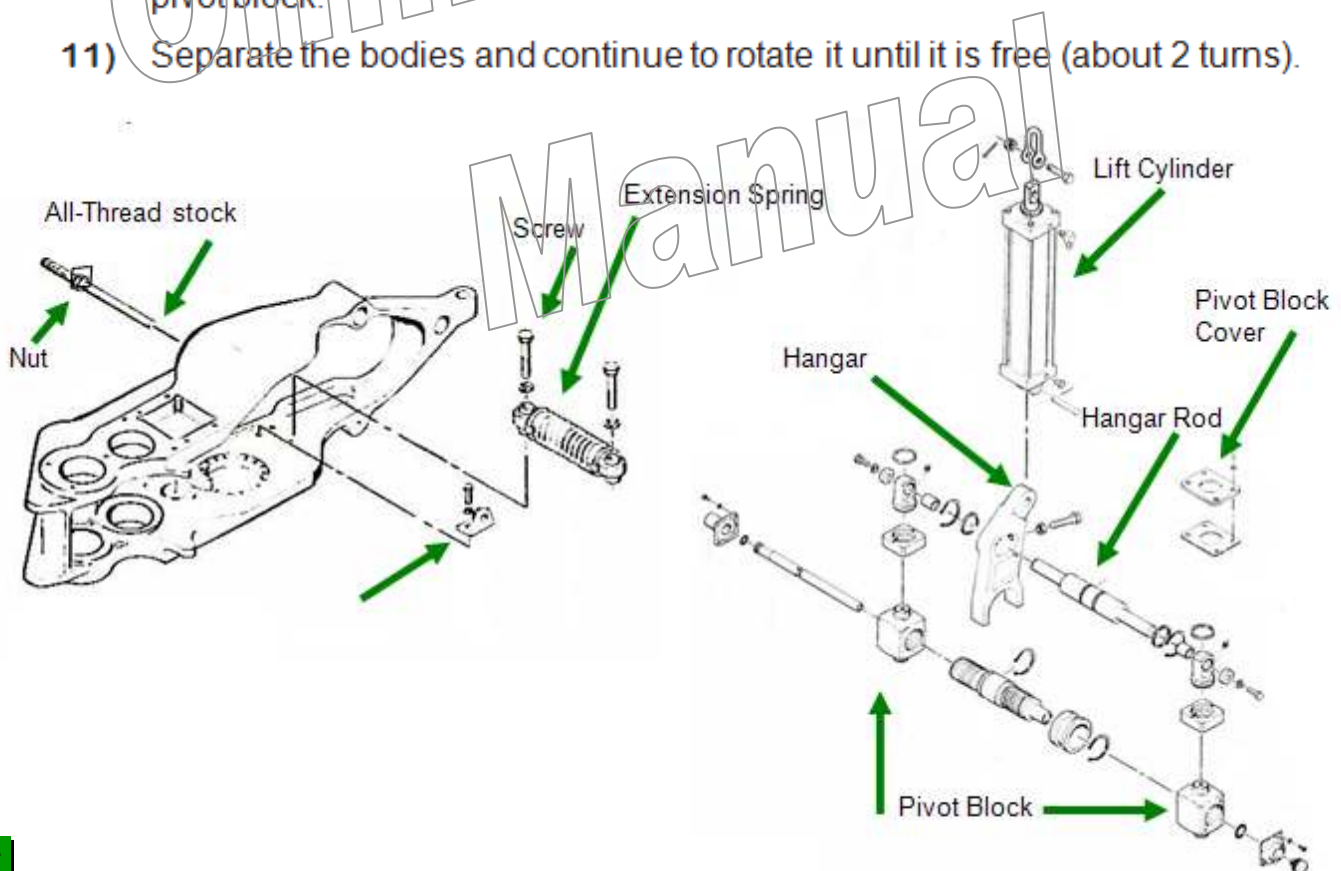
The gear train of the SSW-40 is extremely rugged, but should it require disassembly and service, the following procedures should be followed:

- 1) Use a pair of snap-ring pliers to remove the retaining rings from the gears and slip them off of their shafts.
- 2) With a bearing press, remove and replace needle bearings. NOTE: do not hammer on needle bearings or races.
- 3) Idler gear shafts may be unscrewed from the body of the tool.
- 4) Inspect all parts, replacing worn or damaged components.
- 5) Pack bearings with grease before reinstallation.

MAINTENANCE

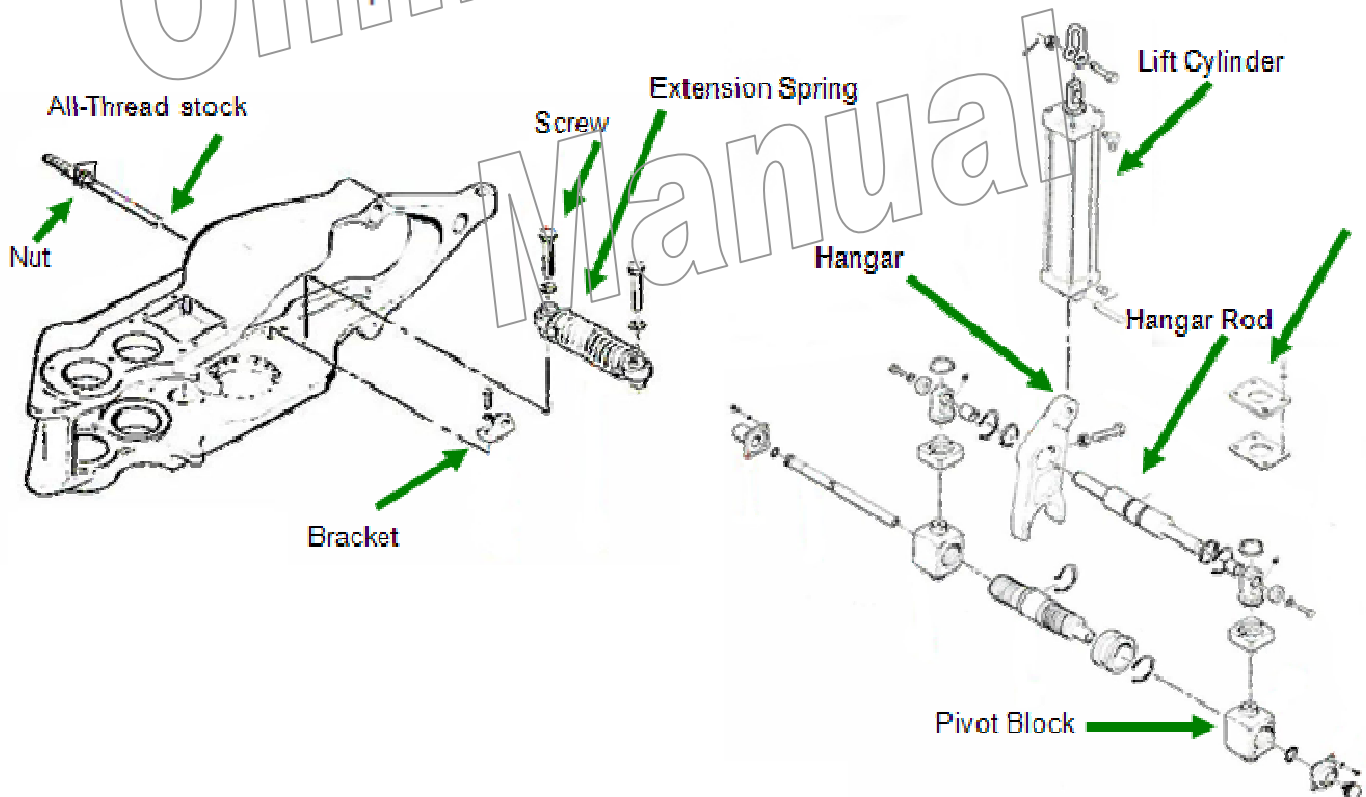
Removing Adjustment Screw

- 1) Remove the extension spring using a 6" to 8" length of 3/8" – 16 all-thread with a hex nut as a tool.
- 2) Use the tool you have made to relax tension on the spring by passing the threaded end of the tool through the eye of the bracket and make it up into the end of the extension spring.
- 3) Run the nut on the tool down to seat on the bracket.
- 4) Remove the screw, then back the screw out until the extension spring is slack, and remove the remaining hardware.
- 5) Remove the air bellows bolt from the right side of the tool and disconnect the hose from the valve exhaust muffler.
- 6) Place the tool on the work surface and remove the eight bolts securing the pivot block halves in place.
- 7) Remove the hangar rod, hangar, and lift cylinder as a unit, and set it aside.
- 8) Remove the capscrew and grease seal cap and remove the knurled knob.
- 9) Disconnect the hoses to the right side air motor.
- 10) Rotate the adjusting handle counterclockwise until it is free of the right-hand pivot block.
- 11) Separate the bodies and continue to rotate it until it is free (about 2 turns).



Replacing Adjusting Screw

- 1) Turn the new adjusting screw 1-1/4 turns into the left pivot block.
- 2) Align the right-hand body alongside the left, being sure that the adjusting screw is centered between the pivot blocks.
- 3) Push the right frame so the adjusting screw engages the right pivot block and rotate the knurled knob to release the adjusting handle, pulling it out of the screw as far as possible. Be sure that you rotate only the knob, and not the body of the screw, which would back it out of the pivot block.
- 4) When the handle is free, use it to rotate the screw to that body halves pull together. When the adjusting screw bottoms out, check to be sure it is centered within 1/8" between the pivot blocks.
- 5) Reinstall the hanger rod, hanger, and lift cylinder as an assembly with their attaching hardware. Reinstall the pivot block covers and lockwire the attaching bolts.
- 6) Reinstall the cap screw and grease seal cap. Reconnect the hoses to the right side air motor.
- 7) Replace the bellows bolt in the right side, and the mounting screw on the bottom of the bellows. Place extension spring (1) back on frame. Connect hose to valve quick exhaust muffler.

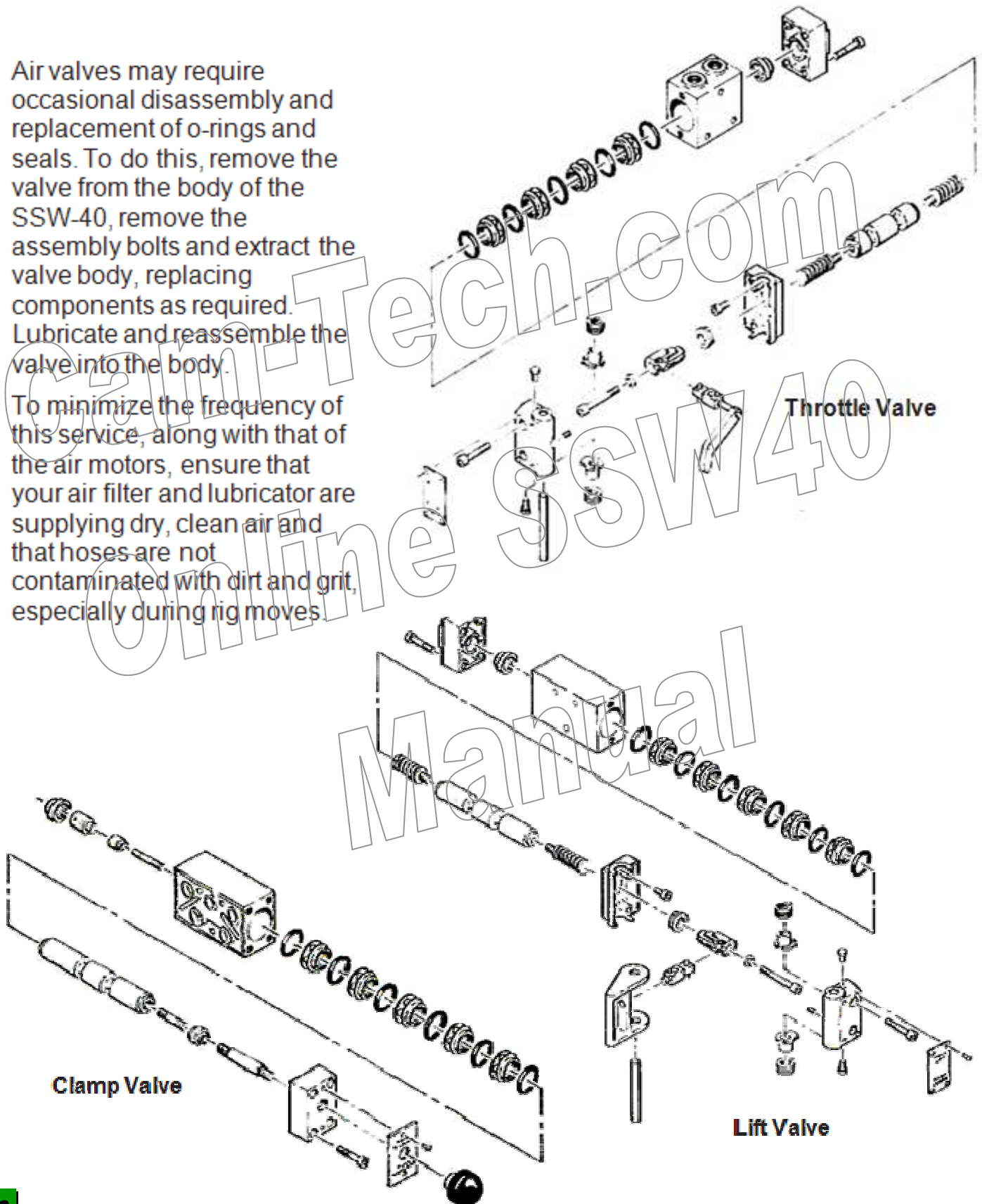


MAINTENANCE

Air Valve Service

Air valves may require occasional disassembly and replacement of o-rings and seals. To do this, remove the valve from the body of the SSW-40, remove the assembly bolts and extract the valve body, replacing components as required. Lubricate and reassemble the valve into the body.

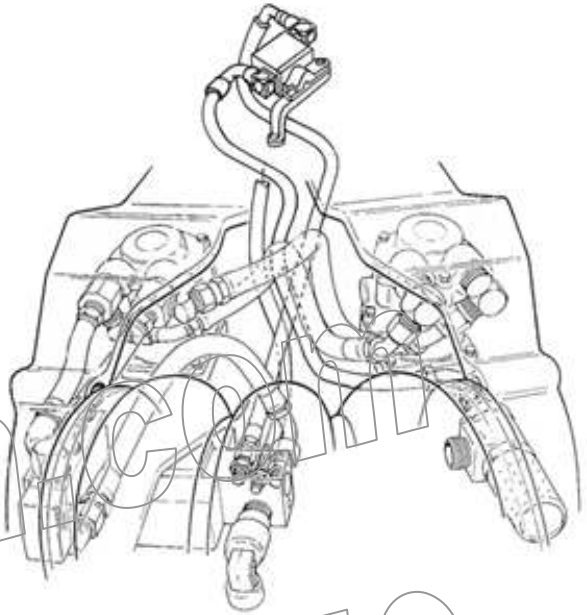
To minimize the frequency of this service, along with that of the air motors, ensure that your air filter and lubricator are supplying dry, clean air and that hoses are not contaminated with dirt and grit, especially during rig moves.



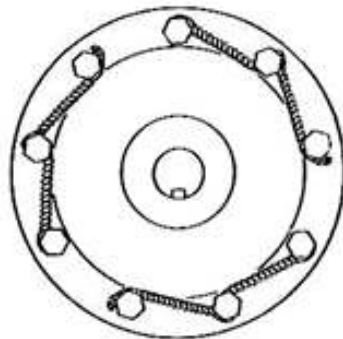
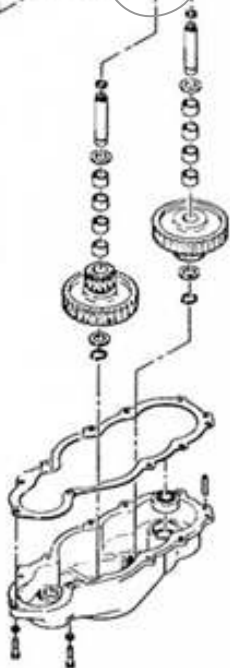
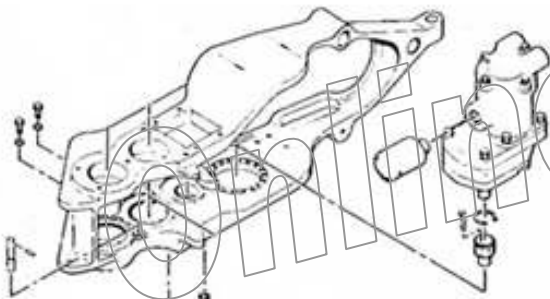
Major Service

Air Motor Removal

- 1) Remove the extension spring following the procedure (step 1) on page 9.
- 2) Use the adjusting handle to turn the screw is fully extended to access the motors.
- 3) Remove the motor hose assemblies, marking each for reassembly. If you are removing the left motor, also remove the motor valve from the inside and outside left motor.
- 4) Remove covers from motors.
- 5) If you are removing the right motor, disconnect the motor hoses and remove the air manifold.



- 6) If you have not already done so, remove the drain plug from both left and right gearcases drain oil into an approved disposal container, and remove the front covers and oil pans.
- 7) Remove the roller compound gear and the motor compound gear. This will release the motor gear and motor gear key.
- 8) Mark the position of the gear key for reassembly. The tab on one end should rest on TOP of the motor gear.



- 9) Remove the lockwire and bolts securing the motor(s). The motor can be extracted through the side opening or from between the tool bodies.
- 10) To re-install the motor, reverse this procedure, torquing each motor bolt to 8-10 ft.lbs. Lockwire all nine bolts when complete.

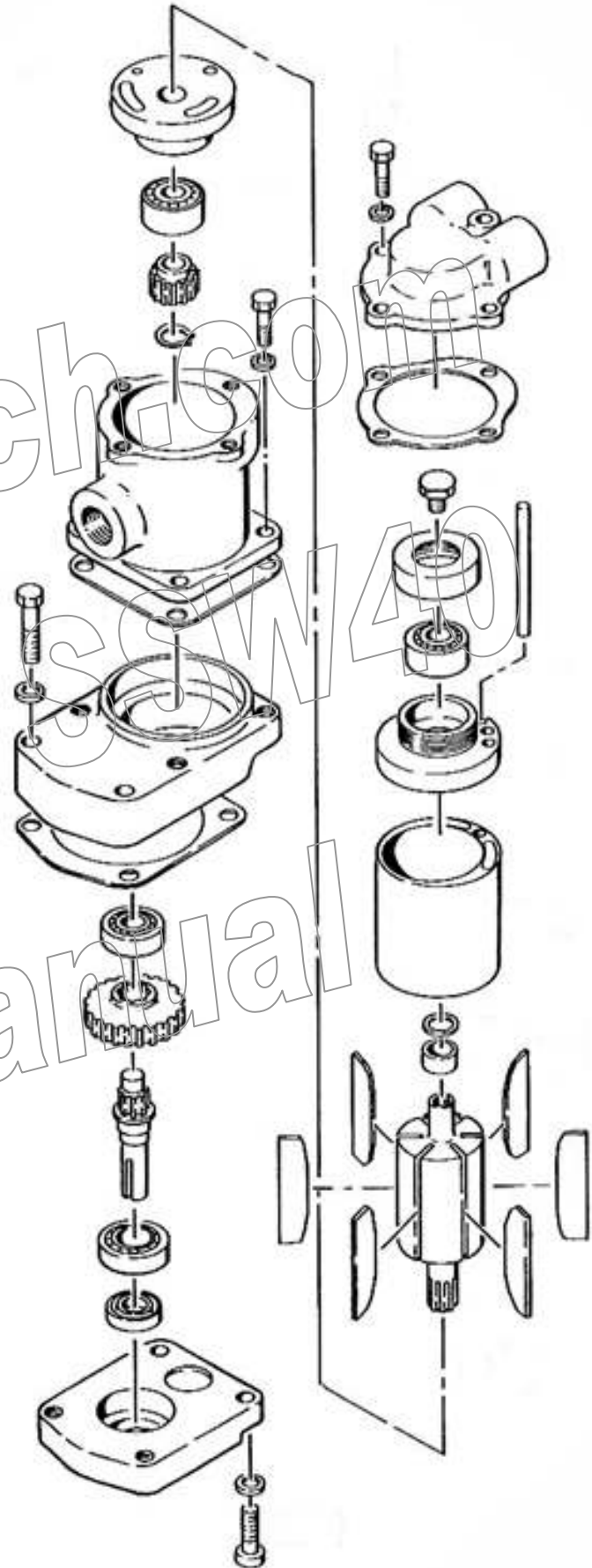
MAJOR SERVICE

Air Motor Service

Disassembly of an air motor is not complicated, but you do need to know a few fundamentals. First, it is manufactured to relatively close tolerances that are critical to performance. The bearing clamp screw has left-hand threads and is used to adjust the clearance of the shaft bearing. DO NOT turn this screw unless it is necessary, because doing so will require you to re-set the clearances and possibly re-shim the rotor bearing.

- 1) To replace vanes, remove the rotor and liner together, and then remove the retaining ring, pinion gear, LOWER end plate and liner to expose the vanes.
- 2) If you remove the UPPER end plate, you will have to re-check the clearance and reset if needed by re-shimming between the rotor bearing and bearing spacer. This clearance should be .0015" to .0020".
- 3) When re-assembling the air motor, observe the following torque specifications:

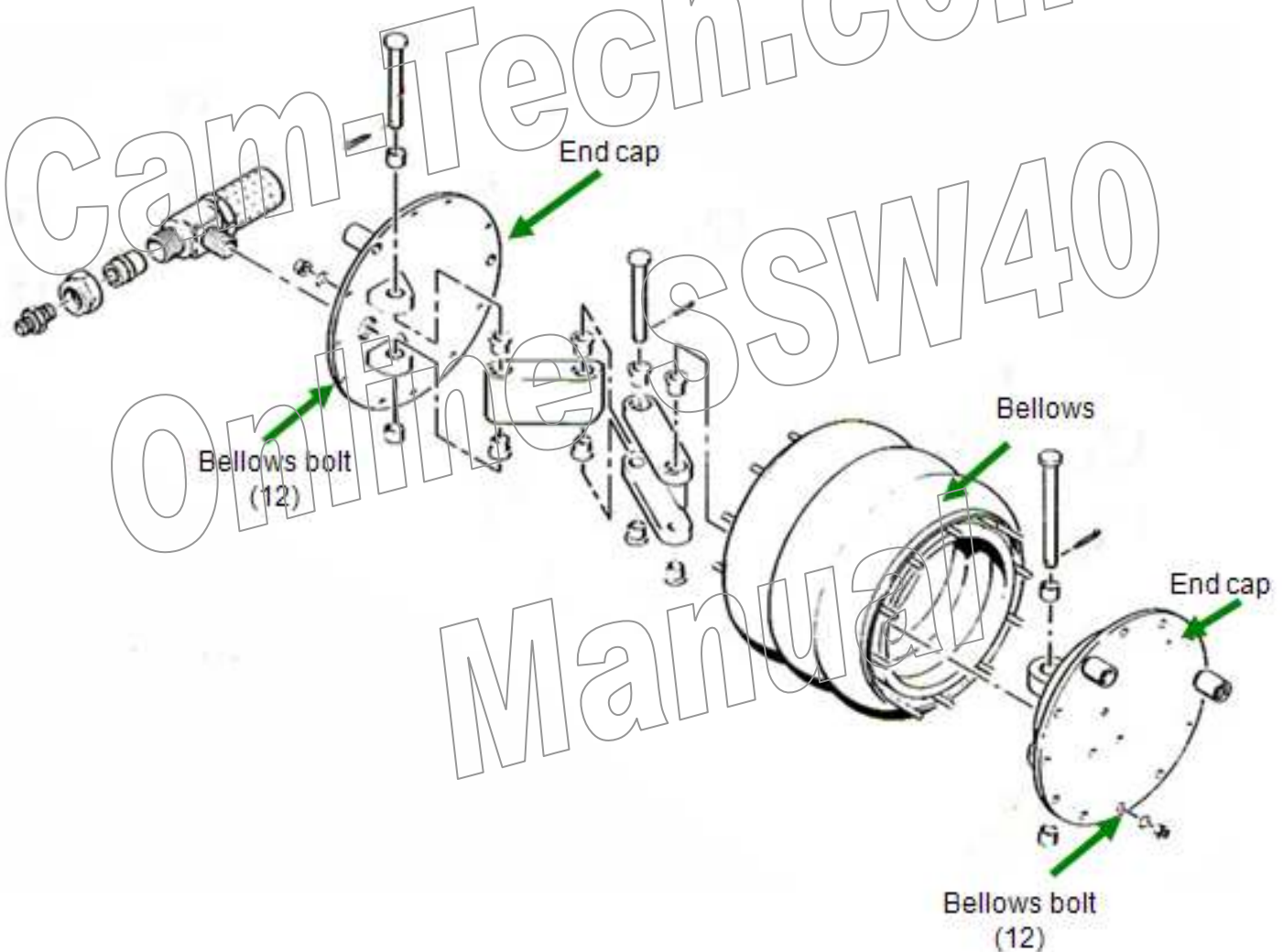
Item	Qty	Torque
1	1	33-38 ft-lbs
11	5	150-170 in-lbs
12	4	18-20 ft-lbs
13	4	150-175 in-lbs



Clamping Bellows Service

Use the drawing on this page as a guide in disassembling the Clamping Bellows

- 1) If you remove the clevis link, be sure to re-attach the LONG ends to the LEFT-HAND cap.
- 2) When bolting up the bellows to the end caps, make up all nuts finger-tight then use a criss-cross pattern to wrench up the bellows bolts. Do not let any nut get more than two turns ahead of the rest to seat and seal the bellows properly against the cap.
- 3) When you have assembled the bellows, DO NOT apply air pressure to it UNTIL IT IS INSTALLED IN THE BODIES OF THE TOOL.



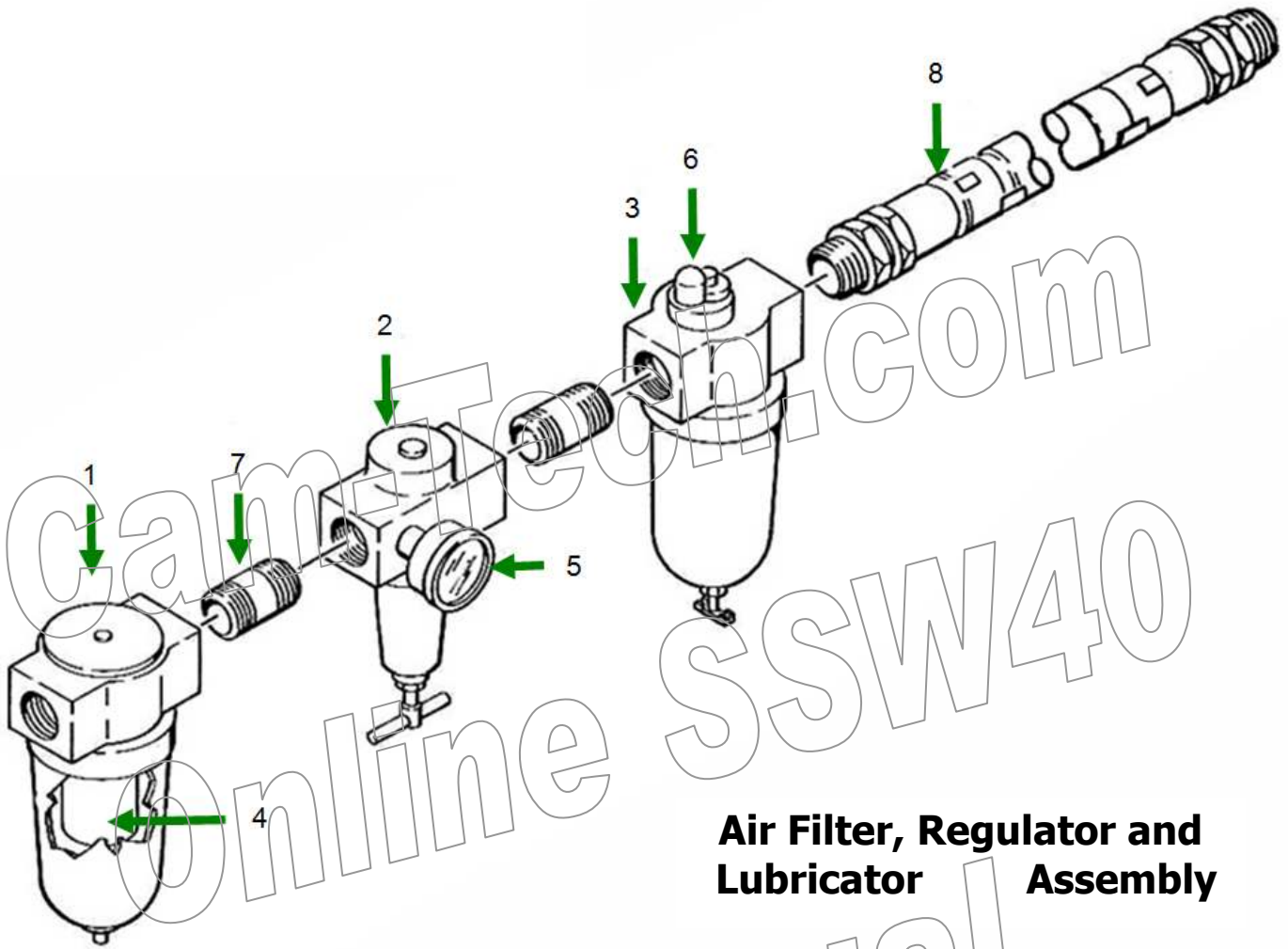
PARTS LIST

Parts List

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PARTS LIST

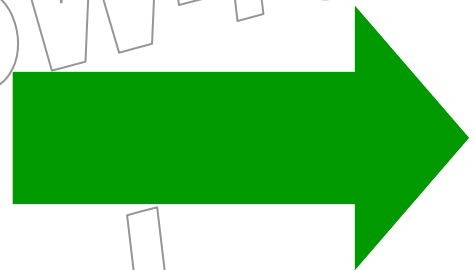


**Air Filter, Regulator and
Lubricator Assembly**

Item	Qty	Description	Part #
	1	Filter, regulator, lubricator assembly	74236
1	1	Filter	74236-1
2	1	Regulator	74236-2
3	1	Lubricator	74236-3
4	1	Filter element kit	74236-4
5	1	Gauge	74236-5
6	1	Fill cap sight dome	74236-6
7	2	Close nipple	53920-G
8	1	25-foot air hose	76157

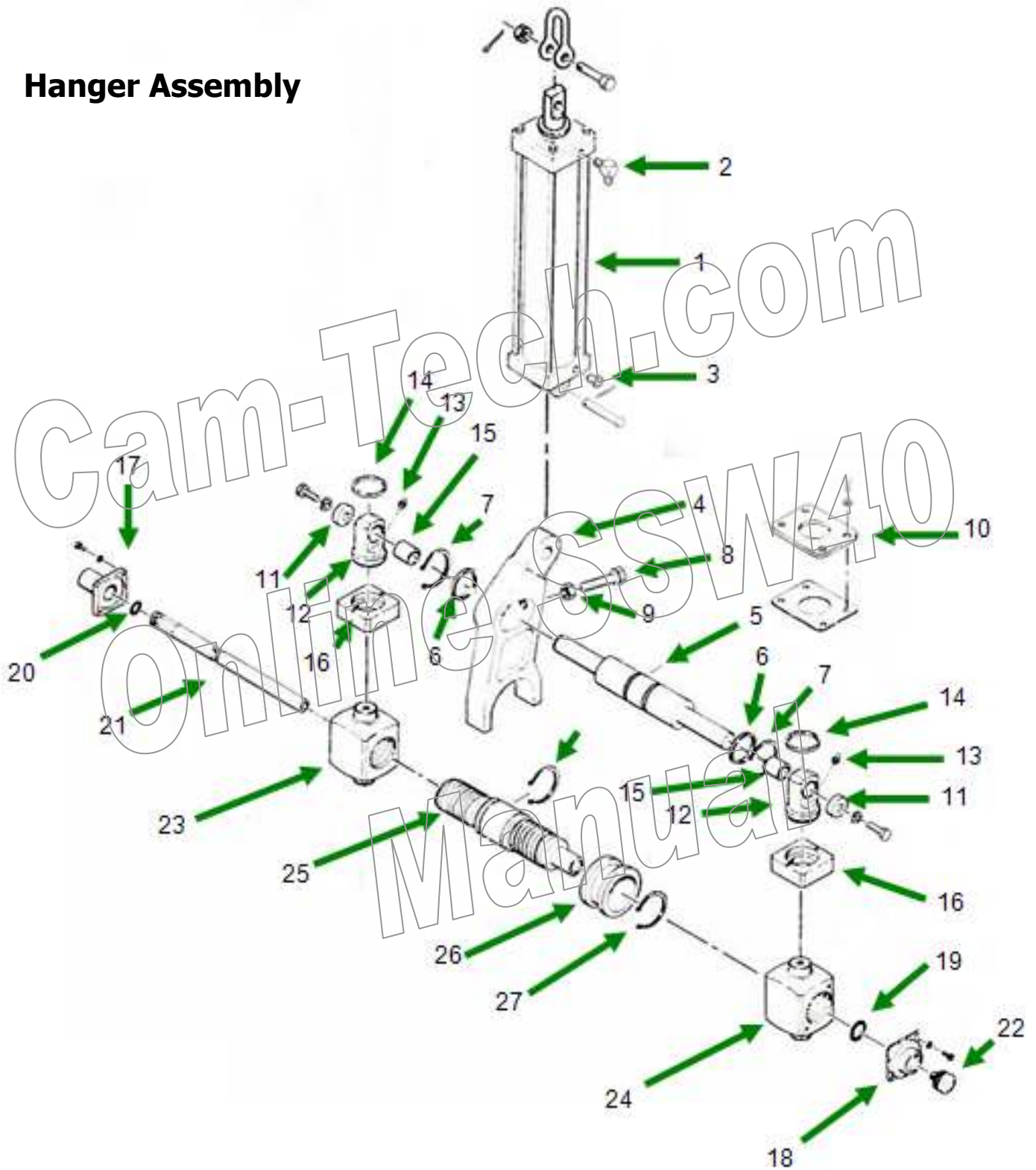
PARTS LIST

Item	Qty	Description	Part #
1	1	Lift cylinder assembly	75341
2	1	Elbow, 900, ext. pipe/370	56506-8-4-S
3	1	Filter	75937
4	1	Hanger	C-76543
5	1	Hanger rod	74242
6	2	Support washer	76256
7	2	External retaining ring	53600-156
8	1	Adjusting screw	50012-24-C8
9	1	Hex jam nut	50312-C
10	2	Pivot block cover	76230
	2	Pivot block cover gasket	76231
	8	Hex head cap screw	50006-10-C8D
	8	Regular lock washer	50906-C
11	2	Stop	74241
	2	Hex head cap screw	50010-10-C8
	2	Regular lock washer	50910-C
12	2	Machined hanger block	74610
13	2	Straight grease fitting	53201
14	2	Thrust washer	74611
15	2	Hanger block bushing	74612
16	2	Top-Counter block	74584
17	1	Cap screw	74608
	2	Socket head cap screw	50103-6-C
	2	Regular lock washer	50903-C
18	1	Grease seal cap	74607
	2	Socket head cap screw	50103-6-C
	2	Regular lock washer	50903-C
19	1	O-ring	51300-224-B
20	1	O-ring	51300-320-B
21	1	Adjustment assembly handle	75166
22	1	Knurled knob	75049
23	1	Right pivot block	76172-1
24	1	Left pivot block	76172-2
25	1	Adjustment screw	74603
26	1	Adjustment screw sleeve	74709
27	1	External retaining ring	53600-334



Hanger As-

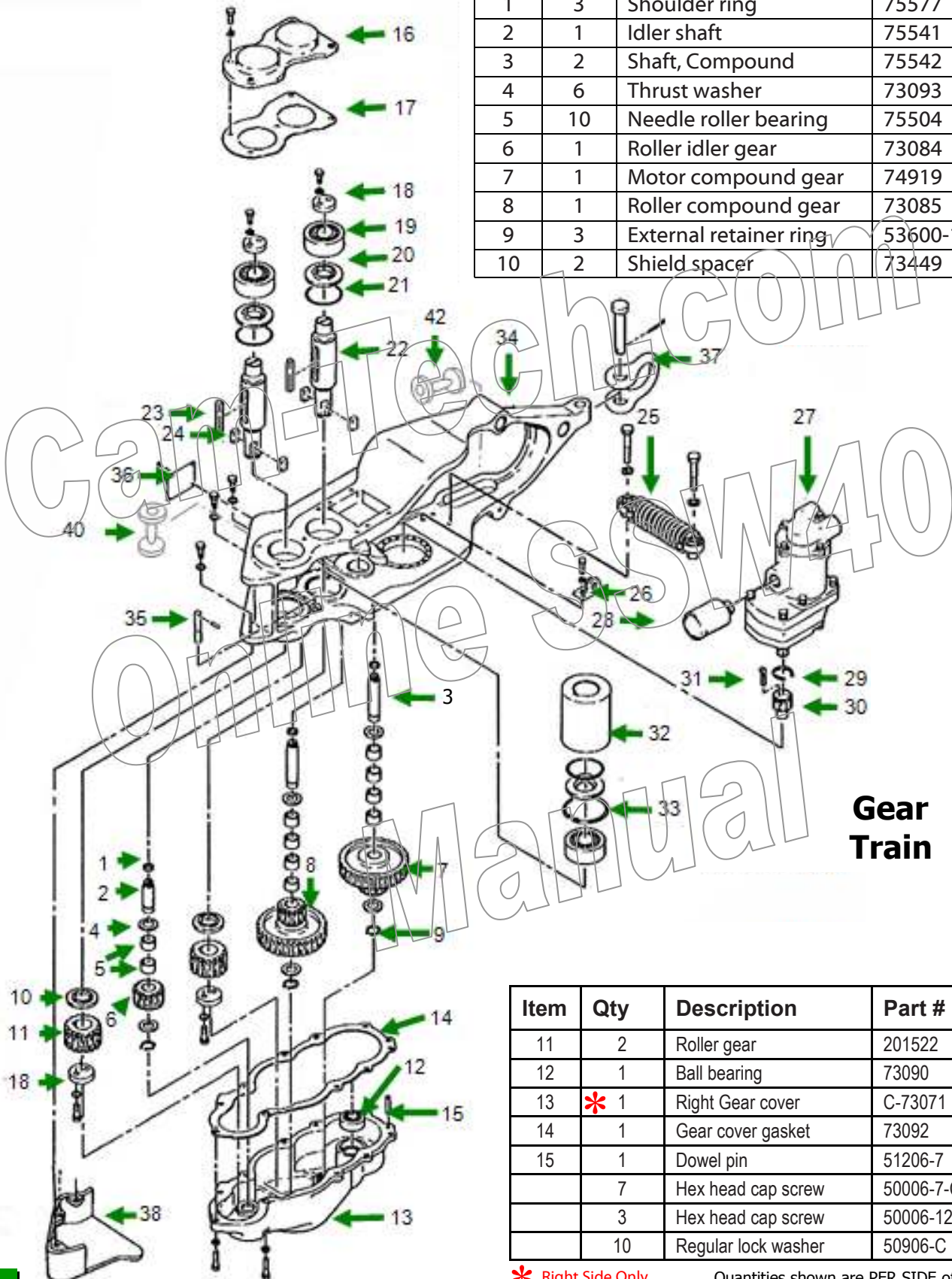
Hanger Assembly



PARTS LIST

Item	Qty	Description	Part #
1	3	Shoulder ring	75577
2	1	Idler shaft	75541
3	2	Shaft, Compound	75542
4	6	Thrust washer	73093
5	10	Needle roller bearing	75504
6	1	Roller idler gear	73084
7	1	Motor compound gear	74919
8	1	Roller compound gear	73085
9	3	External retainer ring	53600-100
10	2	Shield spacer	73449

Quantities



Gear Train

Item	Qty	Description	Part #
11	2	Roller gear	201522
12	1	Ball bearing	73090
13	* 1	Right Gear cover	C-73071
14	1	Gear cover gasket	73092
15	1	Dowel pin	51206-7
	7	Hex head cap screw	50006-7-C8
	3	Hex head cap screw	50006-12-C8
	10	Regular lock washer	50906-C

* Right Side Only

Quantities shown are PER SIDE of the tool

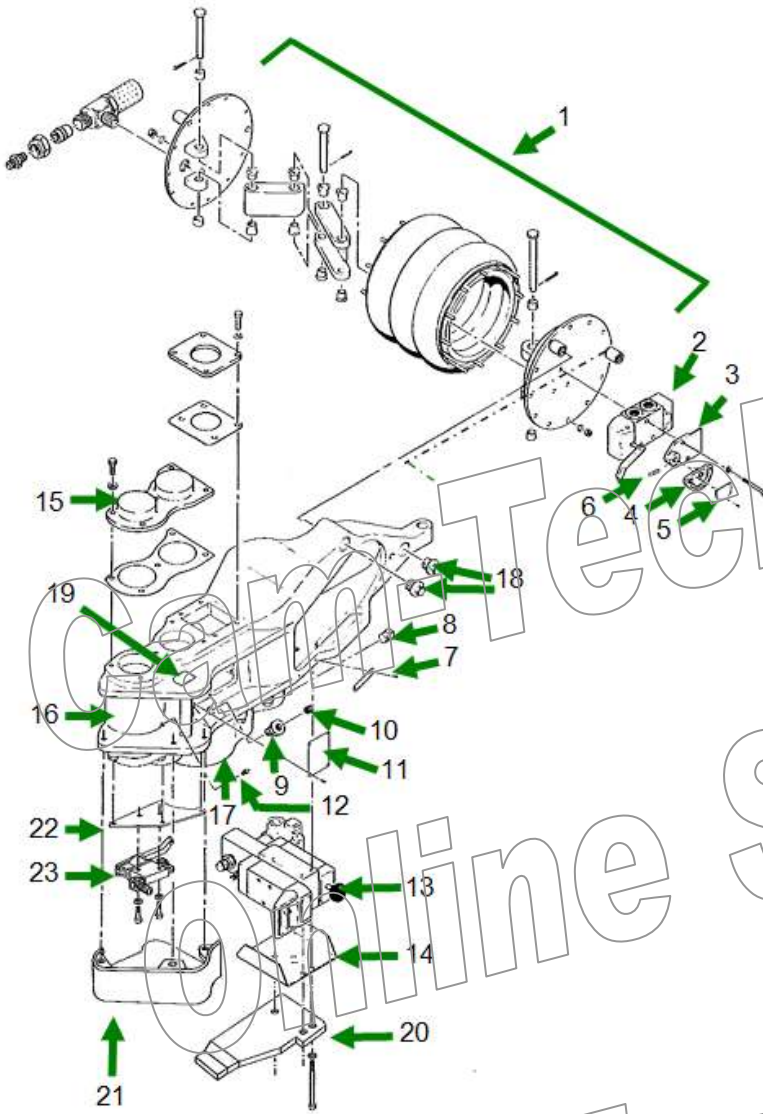
PARTS LIST

Item	Qty	Description	Part #
16	* 1	Right bearing cover	C-73067
17	1	Bearing cover gasket	73094-1
	5	Hex head cap screw	50006-7-C58
	5	Regular lock washer	50906-C
18	4	Bearing retainer	201523
	8	Drilled hex-head screw	50006-7-C8D
	8	Regular lock washer	50906-C
	A/R	Lockwire	947879-8
19	4	Roller bearing	73091
20	4	Shield spacer	76089
21	4	O-ring	51300-152-B
22	2	Drive roller shaft	201521

Item	Qty	Description	Part #
23	2	Drive roller key	73078-1
24	4	Roller gear key	75249
25	* 1	Extension spring	73110
	1	Hex-head cap screw	50010-20-C8
	1	Regular lock washer	50910-C
26	* 1	Spring mounting bracket	75752
	* 2	Hex-head cap screw	50008-6-C8
	* 2	Regular lock washer	50908-C
27	1	Air Motor	74628
	9	Drilled hex-head screw	50004-10-C8D
	9	Regular lock washer	50904-C
	A/R	Lockwire	947879-8
28	1	Muffler	74233
29	1	External retaining ring	53600-181
30	1	Motor gear	74920
31	1	Motor gear key	74194
32	2	Drive roller	76570
33	2	Internal retaining ring	53500-354
34	* 1	Right body	C-73307
35	1	Locating pin	75821
	1	Roll Pin	51604-8-C
36	* 1	Name plate	74954
	* 4	U-type drive screw	53301-10-6
37	1	Shackle w/pin	944514-9
38	* 1	Right frame cover	C-200717
	* 3	Hex-head cap screw	50008-10-C5
	* 3	Regular lock washer	50908-C
39	1	Left front safety handle	C-94011L
	2	Hex-head cap screw	C-94015
	2	Lock washer	C-94016
40	1	Right front safety handle	C-94011R
	2	Hex-head cap screw	C-94015
	2	Lock washer	C-94016
41	1	Left rear safety handle	C-94012L
	2	Hex-head cap screw	C-94015
	2	Lock washer	C-94016
42	1	Right rear safety handle	C-94012R
	2	Hex-head cap screw	C-94015
	2	Lock washer	C-94016

* Right Side Only

PARTS LIST



Controls and Left Body As-

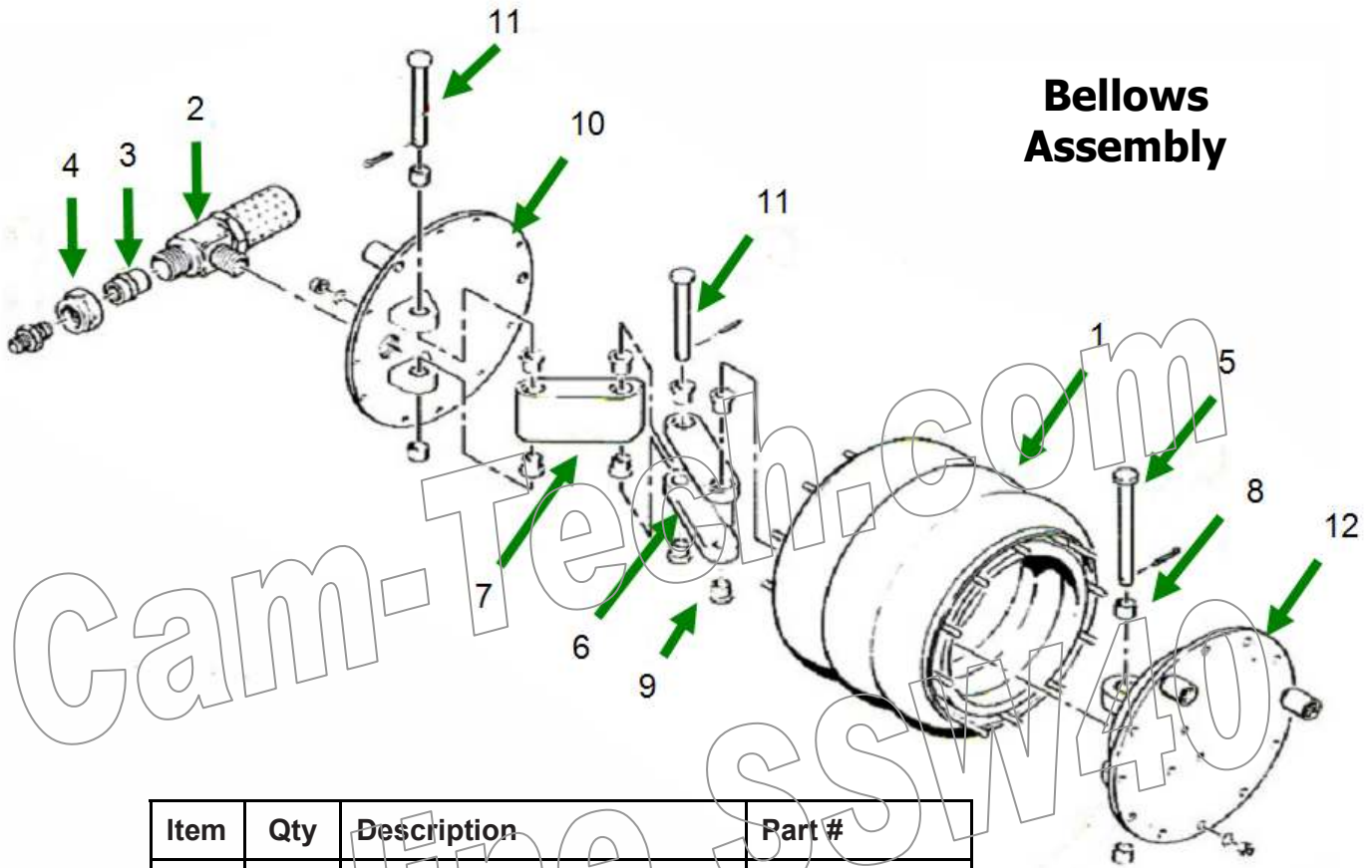
Quantities shown are
PER SIDE of the tool

Item	Qty	Description	Part #
1	1	Bellows assembly	76237
2	1	Modified motor valve	76236
3	1	Lock-Out bracket assy.	76247
	3	Hex-head cap screw	50004-24-C8
	3	Regular lock washer	50904-C
4	1	Lock-out arm assembly	73614
5	1	Spin in/out ID plate	75623
	3	U-type drive screw	53301-10-6
6	1	Roll pin	51604-8-C
7	1	Max. Opr Press. plate	75474
	2	U-type drive screw	53301-10-6
8	* 2	Drain plug	53002-12-C
9	* 2	Fill plug	74565
10	* 2	Check valve	74567
11	1	Caution plate	19320
	4	U-type drive screw	53301-10-6
12	* 8	Grease fitting	53201
13	1	Lift/clamp manifold assy.	76142
14	1	Bottom guard	76099
	3	Hex-head cap screw	50008-38-C8
	3	Regular lock washer	50908-C
15	1	Left bearing cover	C-73066
16	1	Left body	C-73306
17	1	Left gear cover	C-73070
18	* 4	Bellows bolt	74862
19	1	Storage warning decal	79227
20	1	Cover plate	200718
21	1	Left side frame cover	C-200716
	3	Hex-head cap screw	50008-6-C5
	3	Regular lock washer	50908-C
22	1	Mounting plate	200715
23	1	Valve assembly	200712
	3	Hex-head cap screw	50004-14-C8D
	A/R	Lockwire	947879-8

* Total for Both Sides

PARTS LIST

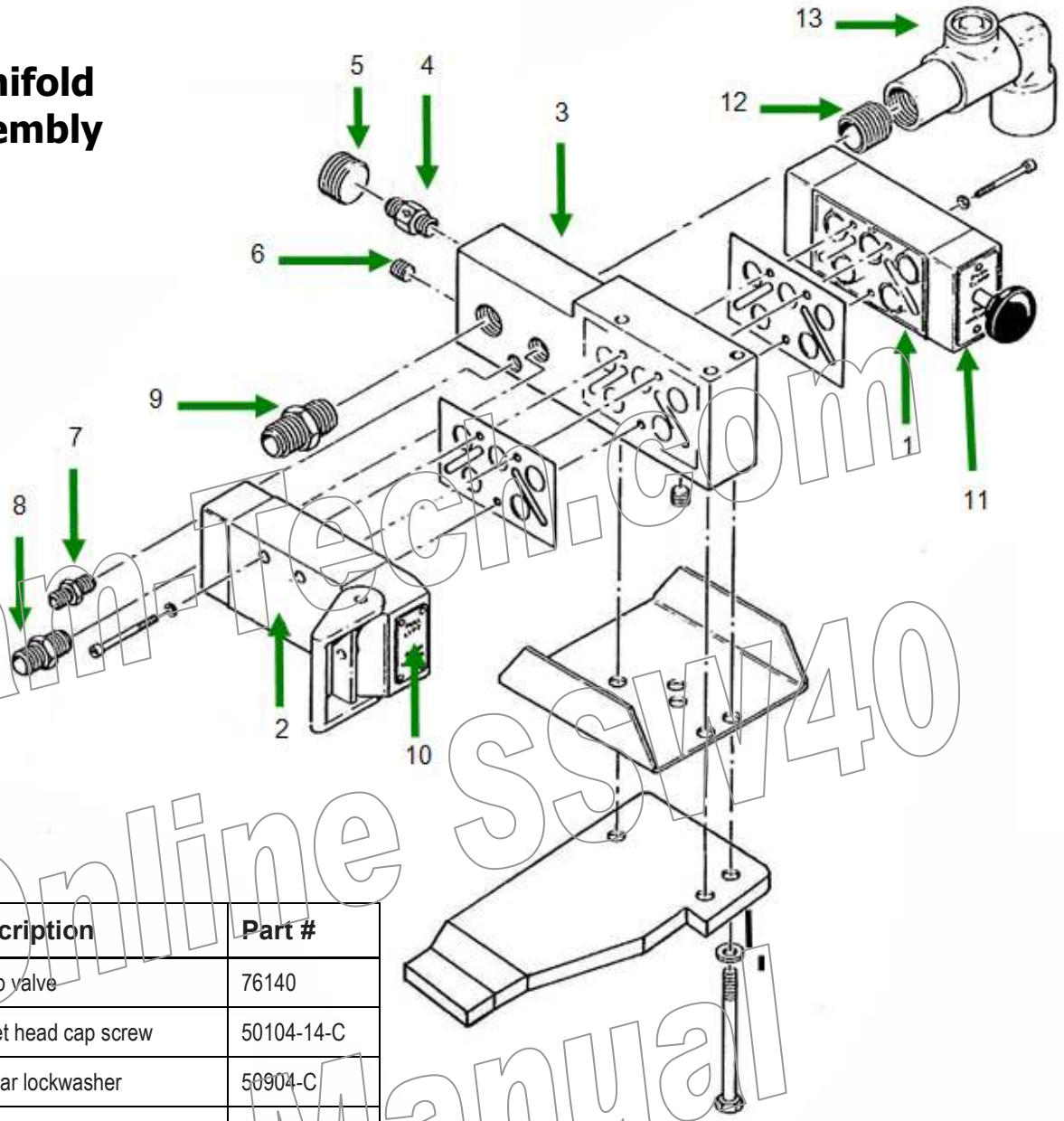
Bellows Assembly



Item	Qty	Description	Part #
1	1	Bellows actuator	73115-1
	24	Long bolt	76539
	24	Regular lock washer	50905-C
	24	Fine thread hex nut	55205-C
2	1	Quick exhaust/muffler valve	74238-2
3	1	Quick exhaust adapter	75553
4	1	Ext. pipe/37° connector	56501-6-8-S
5	1	Clevis pin	75121
	1	Cotter pin	51402-8-S
6	1	Clevis link	75828
7	1	Center link	75829
8	4	Cylindrical bushing	75874
9	8	Flanged bushing	75875
10	1	Right end cap	75830
11	2	Clevis pin	75835
	2	Cotter pin	51402-8-S
12	1	Left end cap	76234

PARTS LIST

Manifold Assembly

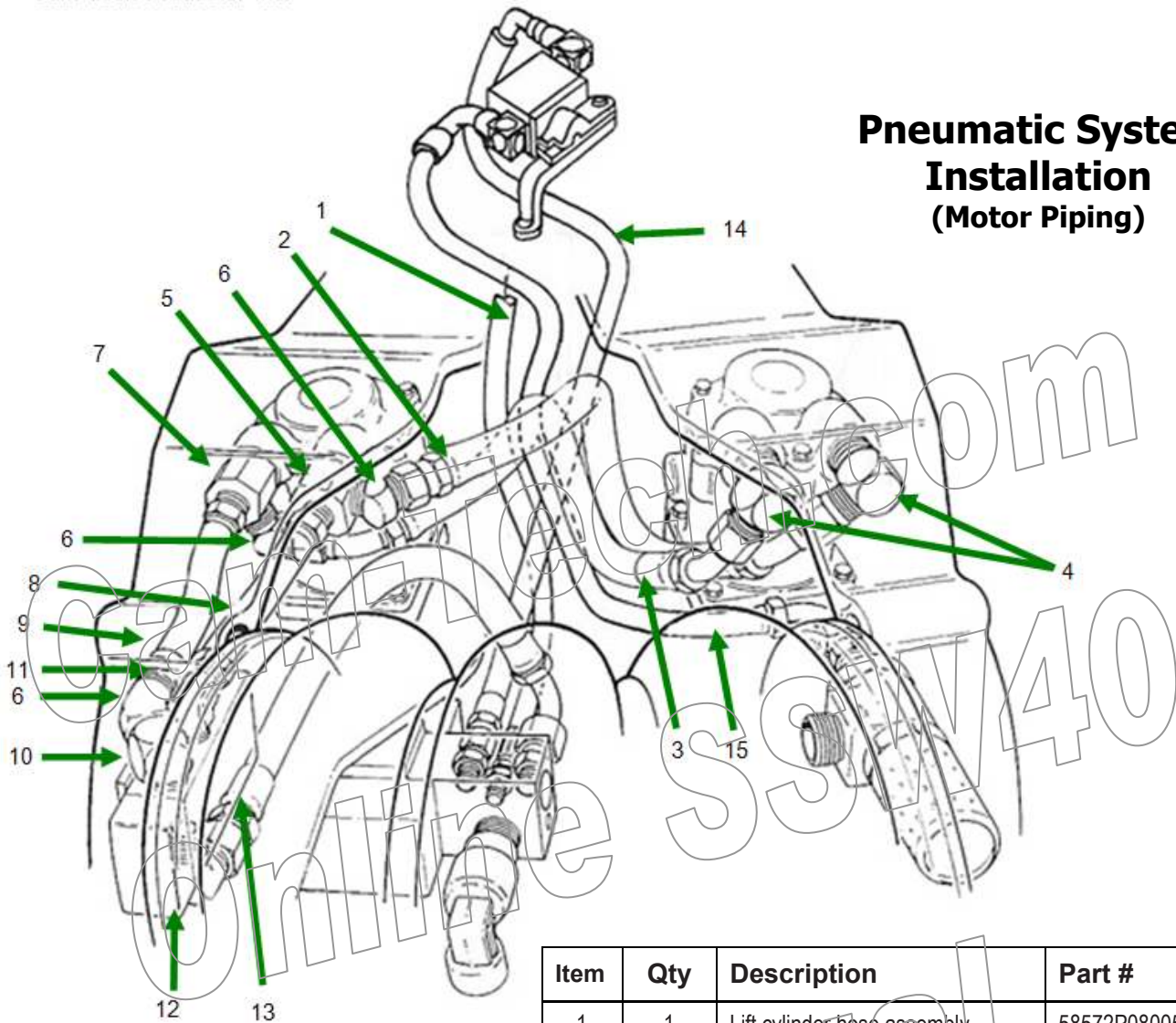


Item	Qty	Description	Part #
1	1	Clamp valve	76140
	3	Socket head cap screw	50104-14-C
	3	Regular lockwasher	50904-C
2	1	Lift valve	76141
	3	Socket head cap screw	50104-14-C
	3	Regular lockwasher	50904-C
3	1	Manifold	76101
4	1	Check valve	74731
5	1	Ext pipe countersunk hex plug	53000-16-C
6	2	Ext pipe countersunk hex plug	53000-2
7	1	Ext. pipe/37° connector	56501-4-4-S
8	1	Ext. pipe/37° connector	56501-8-8-S

Item	Qty	Description	Part #
9	1	Ext. pipe/37° connector	56501-12-12S
10	1	Lift/lower instr plate	76149
	4	U-type drive screw	53301-6-4
11	1	Clamp/unclamp instr plate	76143
	2	U-type drive screw	53301-10-6
12	1	Close nipple	53916-B
13	1	Swivel joint	19159

PARTS LIST

Pneumatic System Installation (Motor Piping)

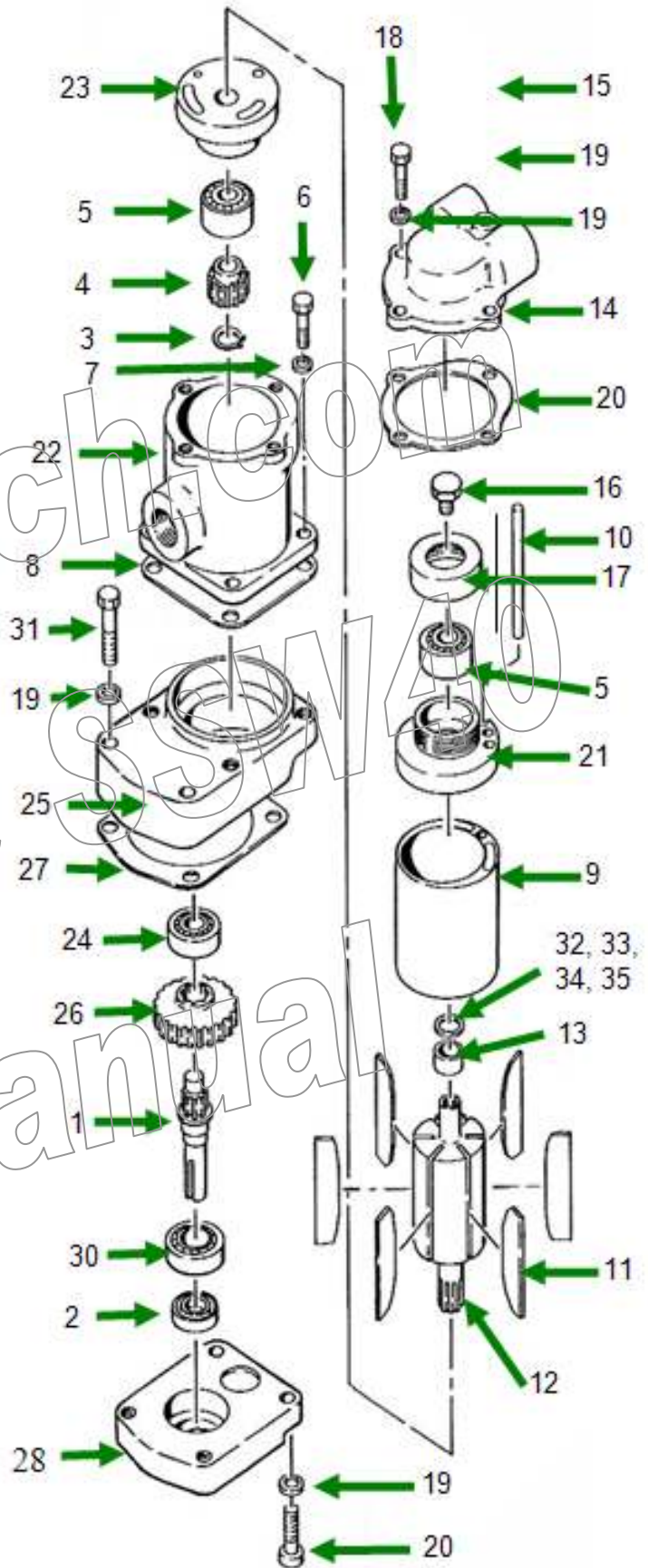


Item	Qty	Description	Part #
1	1	Lift cylinder hose assembly	58572P080051
2	1	Right motor hose assembly	75924
3	1	Left motor hose assembly	75925
4	3	90° Elbow ext. pipe/ 37°	56506-16-12S
5	1	Right "T" fitting	74253
6	2	45° Elbow, ext. pipe/ 37°	56502-12-12S
7	1	Left "T" fitting	75920
8	1	Inboard left motor hose assy.	76261-1
9	1	Outboard left motor hose assy.	76261-2
10	1	90° Elbow ext. pipe/int pipe	76250
11	1	105° Elbow ext. pipe/ 37°	76252
12	1	90° Elbow ext. pipe/ 37°	76251
13	1	Throttle valve hose assy.	76160
14	1	Quick exhaust valve hose assy.	76161
15	1	Quick exhaust valve hose assy.	990141-395

PARTS LIST

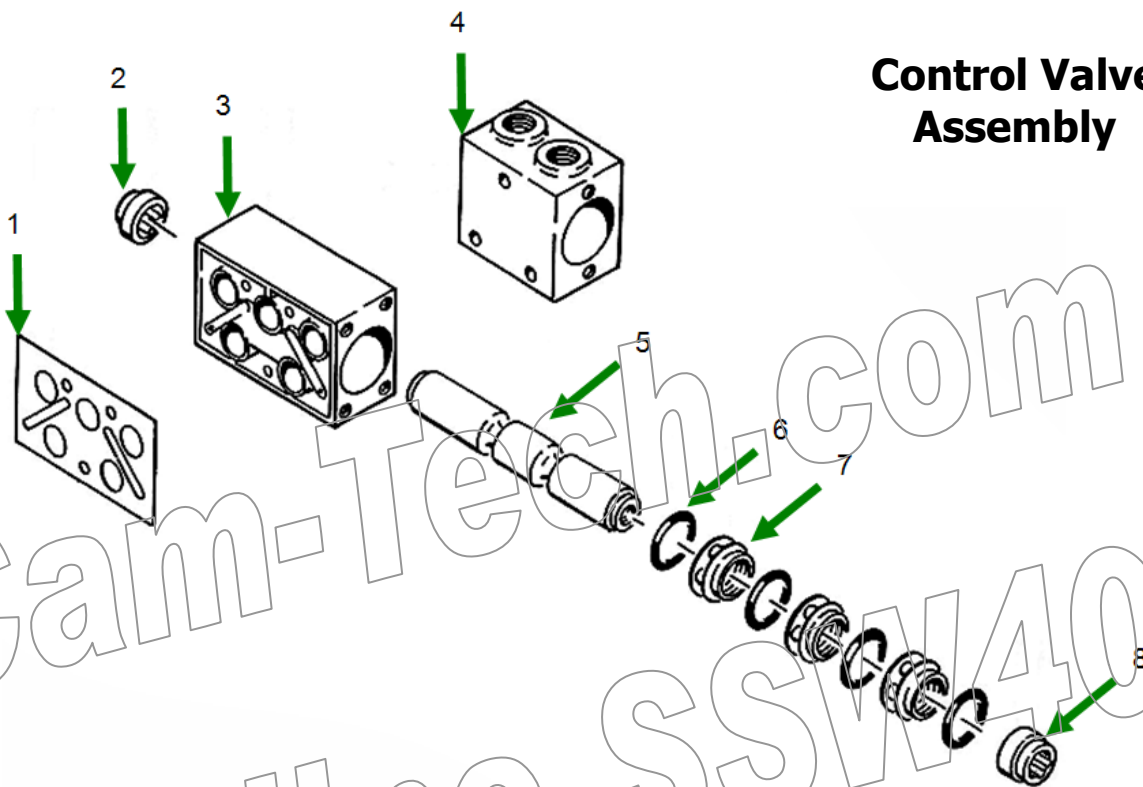
Air Motor Assembly

Item	Qty	Description	Part #
1	1	Output Shaft	74555-1
2	1	Seal	74555-2
3	1	External retaining ring	74555-3
4	1	Pinion gear, 19 teeth	74555-4
5	2	Ball bearing	74555-5
6	4	Hex head cap screw	50006-8-C5
7	4	Regular lockwasher	50906-C
8	1	Motor gear housing gasket	74555-8
9	1	Liner	14694-35
10	1	Dowel	76187-1
11	6	Rotor blade	14694-39
12	1	Rotor	76187-2
13	1	Bearing spacer	14694-40
14	1	Motor housing cover	76187-3
15	4	Hex head cap screw	50006-18-C5
16	1	Bearing clamp screw	14694-32
17	1	Bearing clamp nut	14694-34
18	4	Hex head cap screw	50006-8-C5
19	9	Regular lockwasher	50905-C
20	1	Cover gasket	74555-20
21	1	Upper end plate	14694-33
22	1	Motor housing	76187-4
23	1	Lower end plate	14694-41
24	1	Ball bearing	74555-24
25	1	Gear housing	74555-25
26	1	Gear, 50 tooth	74555-26
27	1	Housing cover gasket	74555-27
28	1	Gear housing cover	74555-28
29	2	Hex head cap screw	50006-7-C5
30	1	Ball bearing	74555-30
31	2	Hex head cap screw	50006-20-C5
32	A/R	Rotor .001 shim	14694-42
33	A/R	Rotor .002 shim	14694-43
34	A/R	Rotor .003 shim	14694-44
35	A/R	Rotor .005 shim	14694-45



PARTS LIST

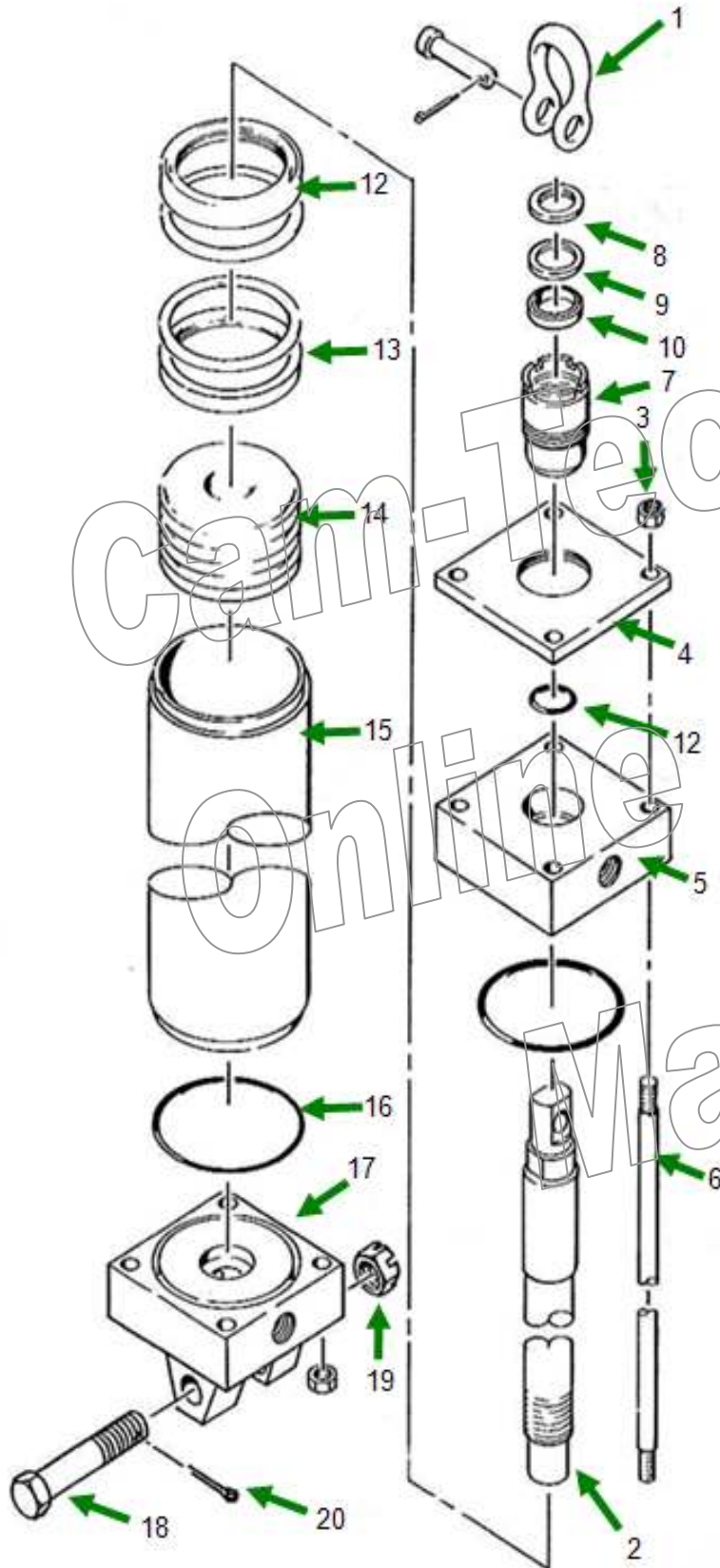
Control Valve Assembly



Item	Qty	Description	Part #
		Seal kit, motor valve	13001
		Seal kit, lift or clamp valve	75803
1	1	Gasket	75803-2
2	1	End guide	
3	1	Valve body (lift or clamp) Requires gasket	
4	1	Valve body motor valve (no gasket)	
5	1	Spool	
6	6	Seal ring	
7	1	Spacer	
8	1	End guide	

PARTS LIST

Lift Cylinder Assembly



Item	Qty	Description	Part #
1	1	Shackle w/ pin	944515-2
2	1	Piston rod	75341-1
3	8	Tie rod nut	75341-2
4	1	Retainer	75341-3
5	1	Rod end head	75341-4
6	4	Tie rod	75341-5
7	1	Gland	75341-6
8	1	Gland wiper	75341-7 *
9	1	Gland back-up washer	75341-8 *
10	1	Gland lip seal	75341-9 *
11	6	Gland O-ring	75341-10 *
12	2	Piston lip seal	75341-11 ***
13	2	Piston back-up washer	75341-12
14	1	Piston	75341-13
15	1	Body	75341-14
16	2	Body O-ring	75341-15 ***
17	1	Cap end head	75341-16
18	1	Drilled shank bolt	76925
19	1	Hex-slotted nut	50512-C
20	1	Cotter pin	51402-10

* Included in Seal Kit P/N 75802-1

** Included in Seal Kit P/N 75802-2

FOREIGN SPARE PARTS LIST

One Year's Foreign Spare Parts Kit For One Model SSW-40 P/N 76165

Consists of the following:

Item	Qty	Description	Part #
1	1	Body Seal Kit	13001
2	3	Screw	50004-22-C5
3	6	Capscrew, socket head	50104-14-C
4	8	O-ring	51300-152-B
5	4	Ring, Retaining - internal	53500-354
6	4	Ring, Retaining - external	53600-156
7	1	Hose Assy, Lift Cylinder	58572P080051
8	4	Bearing, roller	73091
9	2	Gasket, gear cover	73092
10	12	Washer, thrust	73093
11	2	Gasket, bearing retainer	73094-1
12	1	Seal Kit, Rod, Lift Cylinder	75802-1
13	1	Seal Kit, Piston, Lift Cylinder	75802-2
14	1	Clamp/Lift Valve Seal Kit	75803
15	1	Gasket	75803-2
16	1	Hose Assy, Right	75924
17	1	Hose Assy, Left	75925
18	1	Hose Assy, Throttle Valve	76160
19	1	Hose Assy, Quick Exhaust Valve	76161
20	1	Hose Assy, Inboard	76261-1
21	1	Hose Assy, Outboard	76261-2
22	4	Roller, Steel Drive	76570

SERVICE LOG

SSW-40

Serial No. _____

Rig _____

Date	Service Required	Parts	In Service	Serviced by