06.01.08

INSTRUCTION BULLETIN

& MAINTENANCE MANUAL

FOR WHIRLWIND

WHIRLWIND MODEL NO:_____

WHIRLWIND SERIAL NO.: _____

MANUFACTURE DATE: _____

DISTRIBUTOR PURCHASED THROUGH:

(IF ANY) _____

CTD MACHINES

2300 E. 11th Street • Los Angeles, CA 90021-2817

Tel (213) 689-4455 • FAX (213) 689-1255

World Wide Web: **http://www.ctdsaw.com**

e-mail: **ctdsaw@ctdsaw.com**

Set-up and Maintenance Instructions for All Whirlwind

This machine, like every Whirlwind, was tested under power prior to shipment. Nothing but the best components and raw materials were used in its construction. Like any quality tool, it must be properly maintained to give peak performance. The Operator's Manual addresses a few pre-operational tests which should be performed regularly. Any malfunctions should be corrected immediately.

A number of safety devices including our patented **"Work Presence Sensor"** are on this machine. These devices are for the protection of the operator.

CAUTION: THESE DEVICES MUST NOT BE REMOVED OR TAMPERED WITH.

The "Work Presence Sensor" will prevent the saw from cycling unless material is in place and the guard / clamp is adjusted properly. This device prevents the operator from inadvertently getting his fingers between the lumber and the guard / clamp.

CAUTION: NEVER PUT FINGERS UNDER GUARD / CLAMP OR SENSOR.

Set-Up Instructions for Whirlwind

1. Position machine and bolt to floor. If infeed and outfeed table are to be used, these should be aligned with saw top and fence. After alignment is satisfactory, bolt table legs to floor.

2. Have a certified electrician bring in power, connect machine and check voltage level. Rotation of motor should be checked while electrician is present. This should be done prior to blade installation. An arrow indicating proper rotation is affixed to the arbor access cover. All wiring must conform to the National Electrical Code, state law and O.S.H.A.

Power Requirements

	5H.P.	10H.P.
Voltage	208.....230.....460	208.....230.....460
Phase	3.....3.....3	3.....3.....3
Full Load (AMPS)	13.2.....12.....6	25.....24.....12

3. Connect air line to the air cut-off valve on the machine table top (1/4 inch female pipe thread). Pressure gauge on the regulator should indicate 90 PSI. Adjust as needed.

CAUTION: DO NOT OPERATE SAW WITH LESS THAN 60 P.S.I.

The air cut-off valve is provided so the air supply to the machine can be turned off when the saw is not in use. This valve also bleeds the system and allows the guard / clamp to lower. This is a worthwhile safety feature and its use should be encouraged by supervisors.

SAFETY NOTE: An airline interlock has been provided with this machine. This interlock must be locked when performing any maintenance or repair work.

4. A 4 inch dia. dust chute has been provided at the back of the saw. This outlet makes it easy to hook your saw up to a dust collection system. We suggest a minimum of 400 C.F.M. for dust collection. Adequate hose must be provided to allow for the movement of the guard / clamp while the saw is cycling.

5. Install saw blade. Loosen both bolts on front blade cover and swing clear. Loosen bolt on arbor access cover and swing cover clear. Remove front access door. Slide blade through blade access slot. Verify that tips will be turning in the proper direction for cutting. Tighten arbor bolt through the arbor access cover. Left hand saws use right hand threads on arbor bolt. Right hand saws use left hand threads on arbor bolt. Replace door, arbor access cover and blade access cover.

6. Check work area to be sure it is clear. Turn air cut-off valve to the on position. The guard / clamp should come up quickly.

CAUTION: DO NOT PUT FINGERS UNDER GUARD / CLAMP OR SENSOR.

Now depress the start button on the start / stop switch to turn on the motor. With both hands in the recessed area of the table top, depress the foot valve. Nothing should happen. Now, place a piece of material under the guard / clamp. Turn the air cut-off valve to the off position. The guard / clamp should lower onto the material. Adjust the guard / clamp so it will clear the material by approximately 1/4" when air pressure is restored. This is done by turning the large hand knob at the rear of the guard / clamp. Clockwise rotation lowers the guard / clamp. Counter clockwise rotation raises the guard / clamp.

CAUTION: DO NOT PUT FOOT INTO FOOT VALVE AREA UNTIL READY TO CUT.

7. After adjusting the guard / clamp height, turn the air cut-off valve to the on position. With both hands in the recessed area of the table top, depress the foot valve and hold it down. Saw should clamp material, blade should come up and make cut, blade should lower back into base and the guard / clamp should release material. If this cycle does not take place, call us. The automatic retract feature should also be checked at this time. Again, with the guard / clamp adjusted and with material in place, depress foot valve and then quickly release it. The saw should immediately return to the at rest position.

8. Installation of your Whirlwind cut-off saw is now complete. Prior to putting the saw into production, have every operator **read and understand** the Operator's Manual. It is suggested that you **document this training** and **have all operators sign a statement** that they have read and understand the instructions. Should you have any questions or comments on this machine, please feel free to give us a call.

Troubleshooting Guide for Whirlwind Cut-Off Saws

Cut Off Electricity and Lock Out Disconnect Box Before Working on Saw.

PROBLEM	CAUSE	CHECK
Air on, but guard does not move up.	A. Air pressure too low	A. Must be full regulated at inlet of cylinder. (90 P.S.I.)
	B. Guard binding at table top or cylinder pin.	B. Apply lubricating oil. Check movement of guard with air off; should be firm, but free.
Guard is up, foot valve is depressed, guard or blade does not move.	A. Guard out of adjustment.	A. Adjust guard to within 1/4" of lumber.
	B. Foot valve faulty	B. Break joint at one shot valves, depress depress foot valve & check for air flow. If no air flows to valve, Foot valve is faulty.
	C. One shot valve faulty.	C. Disconnect line between one shot and amplifier at the amplifier. Depress the foot valve and check for short blast of air. If air flow is constant, adjust one shot valve. If no air flows, one shot valve is probably bad.
	D. Amplifier faulty	D. Break joint "3" on amplifier. With board under sensor depress foot valve. If no air flows, the sensor or amp are bad. Then break joint "1" on amplifier. If sensor sends very light signal, sensor is OK.
	E. Pilot valve faulty. Indicated by constant air flow out of pilot valve muffler.	E. Remove pilot valve & inspect. Rebuild or replace.
Guard is up. Foot valve is depressed. Guard comes down, but blade doesn't come up.	A. Shock absorber is locked up	A. Disconnect lower end of shock absorber. Check for freedom of movement.
	B. Mechanical binding.	B. Check for foreign matter lodged between clevis and yoke or hinge bracket and lower end of cylinder.
	C. Pilot valve problem.	C. Check for constant air flow at pilot valve mufflers.
All other valves.	A. Pilot valve	A. Remove, clean & inspect. Piston must move freely in housing. Housing shouldn't show excessive wear.
	B. Cylinder.	B. Remove pilot to cylinder ports. Cylinder should extend and retract freely. If not, or if air leaks out opposite end of cylinder, disassemble & inspect piston & bore. Replace seals & apply pneumatic grease.

Troubleshooting Guide for Whirlwind Cut-Off Saws

Cut Off Electricity and Lock Out Disconnect Box Before Working on Saw.

PROBLEM	CAUSE	CHECK
Slow cycle.	A. Clogged muffler on pilot valve.	A. Remove muffler. Clean with solvent or replace muffler.
	B. Dust in top of pilot valve.	B. Remove cap, clean & inspect.
	C. Water in cylinder.	C. Clean and inspect.
	D. Speed adjustment screws in too far.	D. Re-adjust speed adjustment screws and screws and secure locknuts.
Air on, machine will cycle one time only when foot valve is depressed.	A. Air not exhausting at foot valve.	A. Clean with solvent or replace foot valve. (Contact block can be replaced on Linemaster foot valve.)
	B. Foot valve stuck in open position.	B. Replace contact block or foot valve.
Blade goes up, but does not return.	A. One shot valve is faulty	A. Break joint at one-shot outlet then depress foot valve and check air flow. Should get a short blast of air. If flow is constant, adjust one shot valve.
	B. Roller valve out of adjustment	B. Depress lever by hand. If blade moves down and guard moves up, roller valve needs adjustment. Do not over travel valve.
	C. Roller valve not exhausting	C. Feel for air from muffler on roller valve. If no air, remove roller valve, check for air flow. If no flow, roller valve is clogged.
	D. Mechanical binding	D. Check and lubricate clevis, yoke & guard.
Blade goes up and hits top and then returns.	A. Air blast from one shot valve is too long.	A. Adjust one shot valve.
	B. Roller valve not exhausting properly.	B. Adjust valve. Do not over travel lever.
	C. Roller valve and / or muffler clogged.	C. Clean valve & muffler. Failing that, replace valve.
	D. Cycle speed is to fast.	D. Adjust speed controls on pilot valve. Make sure locknuts are tight after making adjustment. (DO NOT OVER TIGHTEN!)
Blade retracts before roller valve is depressed.	A. Air leak in system	A. Spray every air connector with soapy water. Check for air escaping.
	B. One-shot valve not releasing long enough blast of air.	B. Re-adjust one shot valve for longer blast of air.

Electrical Problems

1. If reset button must be depressed to re-start machine:

   A. Check wire connections of magnetic starter.
   B. Check wire to motor.
   C. Check incoming wire, connections and voltage.
   D. Verify correct coils for voltage are installed.

2. If machine re-starts by depressing start / stop button:

   A. Check wire connections on start / stop switch.
   B. Follow these wires to box and check connections at box.

NOTES:

1. Closely examine rubber seals for damage.

2. Repair kit available for cylinder and some valves. Please call us for availability and pricing.

3. Do not allow sawdust or any foreign matter to enter valves or hoses while the machine is being serviced.

4. **Do not remove or tamper with any safety devices.**

Pneumatic Operation of Whirlwind Cut-Off Saws

The Whirlwind cut-off saw is a semi-automatic cut-off saw using a pneumatic cylinder and valves to operate each cycle. Incoming air is first cleaned and dried in the filter, regulated from line pressure to 90 PSI and then sent through a coalescing filter. Regulated pressure is then taken to two locations: The foot valve and the pilot valve.

Note: Whirlwind saws use a dry air system. DO NOT add lubricant to the air system.

With air pressure on and the saw "idle" the cylinder is closed. The guard is up and the blade is down. When the foot valve is depressed and held down, (open) air passes to the one shot valve and to the proximity sensor. The one shot valve allows air to pass through initially then closes to prevent further air flow. The one shot will remain closed as long as the foot valve is depressed (pressure is on the inlet port). This air then goes to the amplifier which is normally closed. The amplifier will be opened if the guard / clamp is adjusted to within 1/4" of the material by proximity sensor. If the guard / clamp is not adjusted to within 1/4" of the material, the sensor will not allow the saw to cycle.

Caution: Tampering with the sensor is dangerous and may damage other valves.

The saw will return to "idle" i.e. guard up, blade down if the foot valve is released. Air from the amplifier goes to two valves: The roller valve and the pilot valve.

The pilot valve does two things. First it directs the regulated air pressure to either end of the cylinder, depending on its position. Second, it exhausts the opposite end of the cylinder. The speed of the cylinders actuation is determined by the rate of exhaust flow. This flow is adjusted by a separate bleeder screw for each direction. These adjustments screws are located on the pilot valve housing. Air pressure from the one shot valve pushes the pilot valve piston upward which allows regulated air to flow to the bottom of the cylinder. It also allows the upper end of the cylinder to exhaust. The cylinder then begins to extend. The guard / clamp moves down and the blade moves up. The duration of this half cycle is adjusted by the upper bleed screw.

The cylinder will extend until the spindle trips the roller valve. This exhausts the air from the one shot valve to the pilot valve. The pilot valve piston shifts and exhausts the air on the bottom of the cylinder. It also directs regulated pressure to the top of the cylinder. The blade moves down and the guard / clamp moves up. The lower bleed screw on the pilot valve determines the duration of this half cycle.

When the saw is not in use, the air cut-off valve must be turned to the "Air Off" position to bleed the system for safety.

Changing V-Belts on Whirlwind Cut-Off Saws

1. Loosen four bolts which mount the motor to the table top and slide the motor forward.

2. Remove shock clevis from yoke. **Note:** Counter-balance spring must also be removed.

3. Remove belt access cover on side of saw. Using access hole, remove two bearing hanger bolts.

4. On left hand saw, loosen two bolts which mount the left hand bearing hanger to the table top. **Note:** On a right hand saw, loosen bolts which hold right hand bearing hanger.

5. On left hand saw, remove two bolts which mount the right hand bearing hanger. **Note:** On a right hand saw, remove bolts which hold left hand bearing hanger.

6. On left hand saw, swing right hand bearing hanger down and remove V-belts. Opposite on RH saw.

7. Install new V-belts and reassemble. If desired, an extra set of V-belts can be looped around the yoke and tied out of the way. This will make the next belt change much easier.

8. Pulleys must be parallel within 1/32 of an inch.

9. V-belt tightness should be 5/32 inch deflection with three (3) pounds of pressure.

10. **Note:** Improper alignment or tension will result in excessive wear on V-belts or bearings.

SUGGESTED MAINTENANCE:

1. Check filter, regulator and coalescing filter daily for moisture in bowl. Drain as needed. If your air is fairly moist, an air Dryer is highly recommended. Valves that fail due to excessive moisture are not covered under warranty.

   Note: Whirlwind saws use a dry air system. DO NOT ADD ANY LUBRICANTS TO AIR SYSTEM.

2. Lubricate external moving parts with lubricating oil.

3. Check V-belts and tighten if necessary. (See item 9 above.)

4. Keep inside of machine free of excessive sawdust. Special attention should be given to keeping foot valve area clean.

5. Keep saw blades properly sharpened. Carbide tipped blades are highly recommended. CTD Machines maintains these blades in stock at very reasonable prices.

Adjustment of Valves for Whirlwind Cut-Off Saws

The Whirlwind will give many years of useful service with a minimum of maintenance. There are some adjustments which should be checked periodically to assure trouble free operation. No electrical power is needed to check these pneumatic systems.

CAUTION: CUT OFF ELECTRICITY & LOCK OUT DISCONNECT BOX BEFORE ADJUSTING VALVES.

Roller Valve

The cam valve exhausts air captured between the one shot valve and the pilot valve, which allows the cylinder to close. It is triggered by the spindle housing. The cam valve on the saw is mounted on a bracket. Adjustment is accomplished by sliding the valve in the slots in this bracket. There should be 1/4" clearance between the table top, and the spindle housing when the spindle housing is at the top of its stroke. If the spindle housing is hitting the cast portion of the roller cam valve, the roller cam valve bracket can be adjusted by loosening the two 1/4-20 bolts which mount it to the table top.

NOTE: THE SPINDLE HOUSING SHOULD NEVER STRIKE THE TOP DURING NORMAL OPERATION.

Pilot Valve

The speed of the cycle is controlled by two slotted screws in the pilot valve. The upper screw adjusts the speed of the cylinder extending and the lower screw adjusts retraction. The speed of extension and retraction should be equal. The Whirlwind should be adjusted to 60 cycles per minute with no material under the guard. When the saw has material in place, the cutting speed will increase. Maximum cycle time while cutting is approximately 90 cuts per minute. Excessive cycle speed may reduce the life of the machine.

One Shot Valve

The one shot valve or single pulse generator, is constructed so that when air is admitted into the inlet port, it initially allows flow through the valve which then closes preventing further flow. Once closed, the one shot valve will remain closed until inlet pressure has been exhausted. Should you suspect this valve is not working properly, it should be tested as follows:

1. Apply 80 PSI to inlet port. With outlet open, valve should allow flow briefly and then close. The valve should remain closed until inlet pressure is exhausted. (It may be necessary to restrict outlet slightly to cause valve to close.)

2. Apply pressure to outlet port. With inlet open, air should pass freely through the valve.

TERMS: 30% deposit required with order, balance due prior to shipment. Order cancellations subject to restocking charge. All prices F.O.B. Los Angeles, CA Plant. All shipments are made on a freight collect basis. Specifications and prices subject to change without notice. Prices do not include special tooling. **Model and serial number are required when placing parts orders.** Installation and/or set up is not included. Lease/purchase programs are available through a third party.

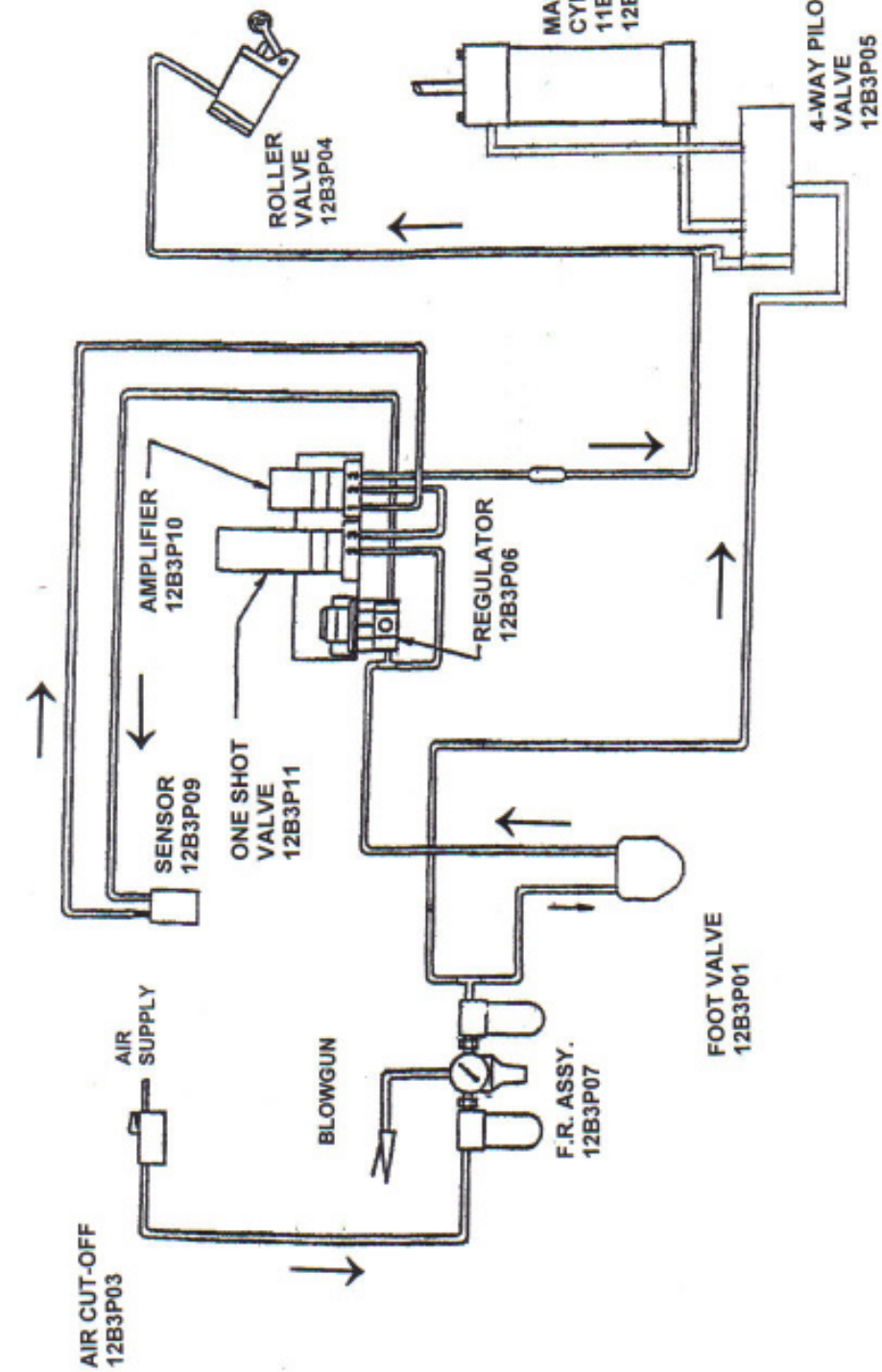
Whirlwind Cut-Off Saws Parts Identification List

Item	CTD No.	Description	Quantity
0001	12F01EL	Floor Stand Assembly Left & Right	1
0002	12C01	W214 / W218 Base Left & Right	1
0003	12C28	Bearing Hanger	2
0004	12F13	U-Bracket / Spindle Housing Left & Right	1
004A	11F07	Pivot Pin	2
0005	11F27L	Spindle Left Hand Saw	1
0005	11F27R	Spindle Right Hand Saw	1
005C	11F08	Slinger (W214), (W218)	1
005D	12F03	Flange Left Hand Saw	1
005D	12F11	Flange Right hand Saw	1
0006	12C30	Cylinder Hinge Bracket Left & Right Hand Saw	1
0007	11M19	Anchor Pin	1
0008	11F07	Anchor Bracket	1
0009	11F11	Stop Bracket	1
009A	12F22	Rubber Cushion	2
009B	11F29	Cam Valve Bracket for Left & Right Hand Saw	1
0010	12C23	Guard / Clamp Assembly	1
0013	11F21	Fence	1
0014	12C53	Dust Chute	1
0015	11F01A	Front Door / Floor Stand	1
0017	11F17	Cylinder Pin	1
0019	12C19	Blade Guard Adjustment Bracket	1
0020	11F15	(W214) Height Adjustment Screw	1
0020	12F07	(W218) Height Adjustment Screw	1
0021	11M06	Adjustment Nut	1
0022	12F21	Height Adjustment Knob	1
0023	11F01M	Blade Slot Cover	1
0025	4B6S17	10H.P. Motor ODP Baldor 3450 RPM	1
0026	12F27	Pulley - 3.65” O.D. x 1” I.D. - (Spindle)	1
0028	12F32	Pulley - 3.35” O.D. x 1-3/8 I.D. - (Motor)	1
0029	12F39	V-Belt (3 per set) W218	3
0029	154P48	V-Belt (3 per set) W214	3

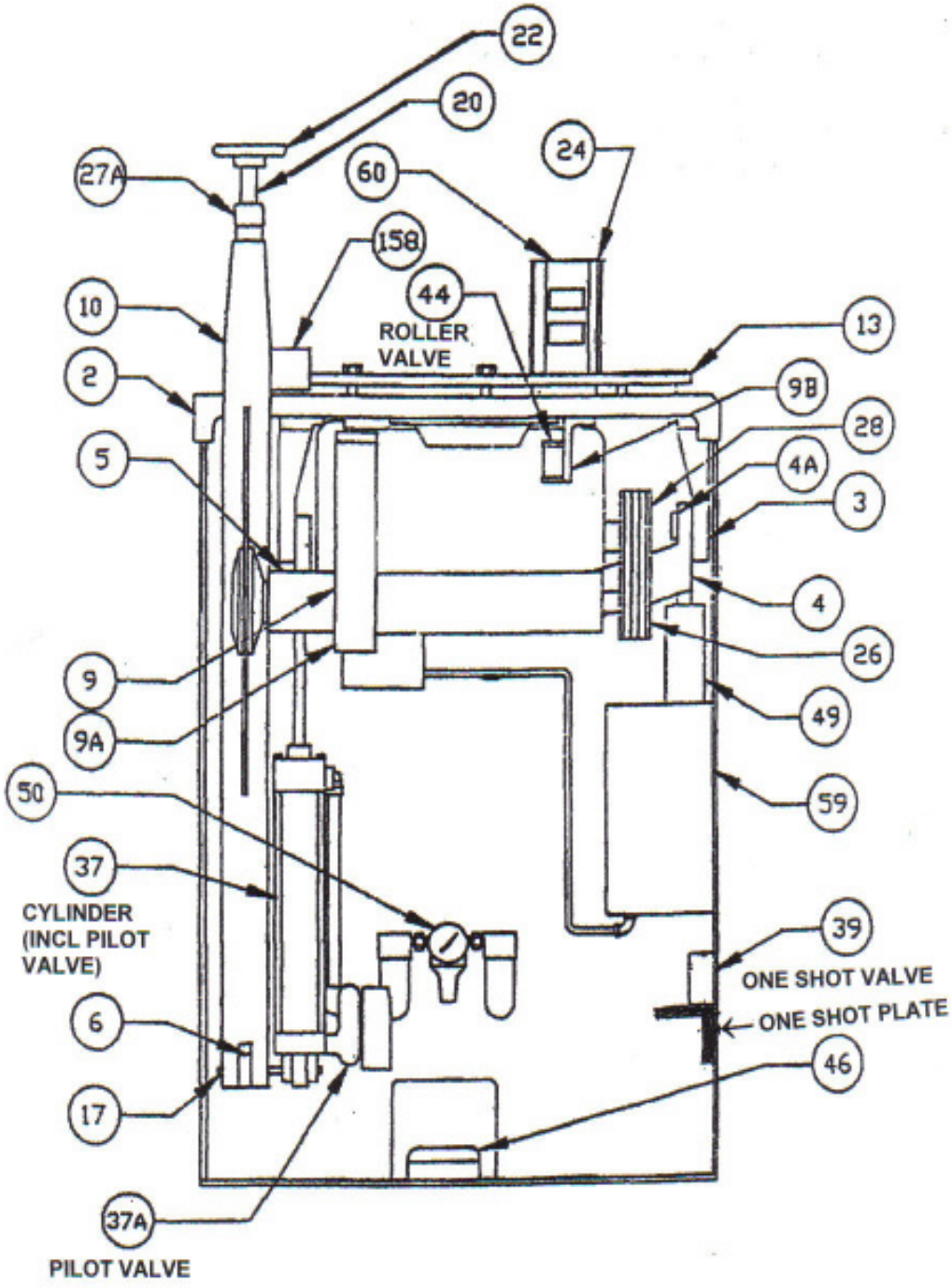
Whirlwind Cut-Off Saws Parts Identification List

Item	CTD No.	Description	Quantity
	11B3P01	Main Air Cylinder / W214	1
	12B3P02	Main Air Cylinder / W218	1
037A	12B3P05	4-Way Pilot Valve Only	1
0039	12B3P11	One-Shot Valve / Pulse Timer	1
0044	12B3P04	Roller Valve	1
0046	12B3P01	3-Way Foot Valve	1
0048	12M05	Clevis Assembly for Cylinder	1
0049	12F24	Shock Absorber	1
0050	12B3P07	FR Coalescing Filter Assembly	1
0059		Magnetic Starter	1
0060		Start / Stop Switch	1
086A		Spindle Bolt Left or Right	1
0126	12B3P03	Air Cut-Off Valve	1
0129	12B3P10	Amplifier Only for Work Pressure Sensor	1
	11F23	Front Shield / W214	1
129A	12F06	Front Shield / W218	1
0158	12B3P09	Work Presence Sensor	1
0165	12B3P06	Regulator Only for Work Presence	1
		Air Gun	1
	12B3P12	Coil Hose	1
	11F25	W214 Chip Breaker	1
	12F08	W218 Chip Breaker	1
	4B2P45	Spindle Bearings	1
	12F34	Pivot Bearings	1

WHIRLWIND MODELS



WHIRLWIND MODELS



Motor Warranty:

Motors which fail during the warranty period of one (1) year must be returned to an authorized Baldor Service Representative for examination to determine whether the failure was caused by manufacturing. In the event a replacement is required before factory examination, a motor will be sold at the list price. If the factory authorizes replacement, CTD will credit customer's account for the replacement cost. All motors are shipped F.O.B. CTD, Los Angeles, CA Plant.

Guarantee:

CTD warrants that their cut-off machines and accessories are free from defect of material, workmanship, and title, and are of the kind of quality indicated and described in applicable specifications. The foregoing warranty is exclusive and in lieu of all other warranties, whether written or oral. CTD's obligation under the foregoing warranty is limited to the repair or replacement (at CTD's option) of the part which is defective in materials or workmanship for a period of one (1) year from the date of shipment to the original purchaser, whether for warranties, negligence, or otherwise, shall not in any way include consequential damages, or costs of removing or re-installing the products. All parts and machines are shipped F.O.B. CTD, Los Angeles, CA Plant.

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