

Index Table

Model 1092

Installation, Operating and Maintenance Instructions



Black & Webster Products Division

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Warranty

Air-Hydraulics, Inc. warrants to the original user that all products manufactured will be free from defects in material and workmanship and will possess the characteristics represented in writing by us. Claim for breach of the above warranty must be made within a period of one year from date of delivery to the user. Upon satisfactory proof of claim, we will make any necessary repairs or corrections, or at our discretion, replace defective parts at the factory, transportation charges prepaid. Charges for correcting defects will not be allowed, nor can we accept goods returned for correction unless we are notified in writing and the return or correction is authorized by us in writing. **The foregoing is in lieu of all other warranties, expressed or implied, including any warranties that extend beyond the description of the product.** This paragraph set forth the extent of our liability for breach of any warranty in connection with the sale or use of our products. It is understood we will not be liable for consequential damages such as loss of profit, or expense, whether based on tort or contract. This warranty is void if the articles covered by the warranty have not been properly installed, maintained and used.

Table Hook-Up

Air-Hydraulics Inc. recommends that the air line supplying the table be at least 3/8" pipe or 3/8" i.d. hose. The maximum pressure is 110 p.s.i. Anything above this could be dangerous to the machine operator and/or other personnel.

Refer to the schematic on page when plumbing controls for table hook-up. One 3/8" n.p.t. 2-position, 4-way valve controls the index cylinder and locking cylinder. Care should be taken not to restrict flow to the table.

When checking the table to operation after hook-up, make sure the table is held securely (clamped or bolted). The table can shift or jump if left loose on a bench.

Sequence of Operation

The sequence of operation for the indexer is as follows:

1. The directional control valve is shifted by the pilot or solenoid signal. This causes the locking cylinder to retract, unlocking the table. *Note:* The signal to the solenoid or pilot must be maintained until the table top has completed its movement.
2. With the locking cylinder clear of the index ring, the index cylinder retracts, moving the index arm which then turns the table top.
3. After the index cylinder is fully retracted, the directional control valve is shifted back. This forces the locking cylinder forward and locks the table into position. When the locking cylinder locks the table into place, it pushes the index pawl out of the index ring.
4. With the index pawl clear of the index ring, the index cylinder moves forward until it hits the stop rod. When the stop rod is adjusted properly, the index pawl is spring actuated into the next slot on the index ring and the index cycle is complete.
5. The index table is now ready for the next index cycle.



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Note: If using a manual operation to shift the directional control valve that controls the index cylinder, make sure to hold the valve fully shifted until the table stops moving. There is a built-in cushion for the index cylinder which slows the movement of the table just before the cylinder is fully retracted. If the valve is released too soon, the locking cylinder may not be able to engage the locking ring. If the table is not locked, the table top will return to its original position.

Table Adjustments

Air-Hydraulics, Inc. index tables are built, tested and adjusted at the factory prior to shipment. After receipt of the table, you may find minor adjustments are required to meet your operational requirements.

The first adjustment should be in the general speed of the table during the index. To increase the indexing speed of the table, turn the speed control on the index cylinder counter-clockwise & clockwise to decrease. Care must be taken not to set the speed of the table so high that the cushion will not be able to slow the cylinder.

The second adjustment is the cushion. Turning the cushion adjustment screw in the clockwise direction increases the amount of cushioning and counter-clockwise decreases the amount of cushioning. The cushion should be set so a visible slowing of the table top occurs just prior to stopping. **Do not operate the index table with the cushion not functioning.** Possible damage can occur if there is insufficient cushioning of the tabletop.

The third adjustment is the override stop. This stop aligns the notch in the index ring with the locking cylinder plunger. If movement in the table is detected when the locking cylinder plunger engages into the index ring, loosen the large jam nut on the override stop-bolt. Make minor changes clockwise or counter-clockwise until the movement is eliminated and then re-tighten the jam nut.

Adjustment of the stop-rod should not be necessary as it has been adjusted at the factory. In the event of the table being disassembled for repair or maintenance, it may become necessary to adjust the stop-rod. The stop-rod is used to adjust the point where the index pawl drops into a slot in the index ring and is ready to index the table top. If the stop-rod is inadvertently moved, use the following procedure to readjust the stop-rod. Remove connections for the power source from the index table; loosen the jam nut on the stop-rod until there is approximately 1-1/2" of threads showing. Make sure the table is in position to be locked and then apply power to the back of the locking cylinder. With the signal maintained to the locking cylinder, pressurize the back of the index cylinder and slowly turn the stop-rod in a clockwise direction until the pawl drops into a slot in the ring. If the table is locked up, the stop-rod will not be able to be turned when the pawl drops in the slot. Turn the stop-rod in a counter-clockwise direction ¼ to ½ turns and tighten the jam nut. The index cylinder stroke should be correct, allowing the pawl to drop into a slot every cycle.

Maintenance

In order to extend the life of the table and achieve maximum efficiency, it is recommended that all seals and gaskets be changed on a yearly basis. When changing seals and gaskets, we also recommend that the index pawl and pawl return spring be changed at the same time. After repeated index cycles, the effectiveness of the pawl return spring is lessened.

A regular lubrication schedule is recommended to maintain accuracy and reliability in the index table. Grease fittings are supplied and should be greased (1-2 pumps) with a good quality lithium grease on a weekly basis to start. Take care not to over lubricate the table. Excess grease will accumulate inside of the table and will cause internal parts to move slower due to increased friction.

It is recommended that at least one complete seal kit be stocked to repair your table. Seals and gaskets are sold in complete sets only.

If any problems are encountered with your table, feel free to call Air-Hydraulics, Inc., Jackson, Michigan, and someone in our service department will be glad to assist. If a comprehensive maintenance program suited for your application is desired, we can also help set up a program.

Instructions for Mounting Tooling to Air-Hydraulics Inc. Indexer

1. Mount table to the machine where the drilling, tapping, reaming, etc. is to be done. If the sub-plate has already been installed by the factory, remove it from the index table.
2. Connect the power source to the table with the proper valving according to the schematic and instructions provided.
3. Index the table to insure proper operation. The table must be in the locked position before machining.
4. Indicate sub-plate mounting holes from the center hole through the table spindle (.500" dia.) or the center hole in the table top (2.12:" dia.). Locate the bolt and dowel pin holes from the drawing provided by Air-Hydraulics, Inc.

Caution: Holes in the table top must not break through to the table base. A maximum depth of 7/16" is recommended. Use the bottom tap for the 3/8-16 UNC tapped holes.

5. The sub-plate should have a .500" diameter bored hole in the center of its bottom surface. This hole coincides with the center hole of the table spindle. With this hole as an indicating center, the mounting holes in the sub-plate can be drilled to match those in the table top.
6. Install the sub-plate on the table.
7. Perform the work required to install tooling, tooling nests, clamps, etc. on the sub-plate at the position required.
8. Index the table and repeat step (7) until all tooling holes are installed.
9. After all holes are drilled, tapped, reamed, etc. install the tooling next.
10. Remove the table from the drilling machine and position the table on the machine where it is to be used. With the table in the locked position, locate it in the desired location for machine operation. Attach the table to the bolster plate of the machine.

Note: Air-Hydraulics, Inc. recommends that the table and fixtures be doweled in place to insure repeatability.

1092 Index Table Parts List

Note: When ordering replacement parts for this table, specify Model 1092 and serial number. Air-hydraulics cannot be held responsible for parts shipped in error if the model and serial number are not supplied.

Detail No.	Part No.	Part Name	Qty.
1	T1092-01	Base	1
2	T1088-02	Table Top	1
◆3	T1088-03-##STA	Station Ring	1
4	T1092-04ASSY	Index Arm	1
5a	TCN-19138	Main Bearing Cone	1
5b	TCN-19283	Main Bearing Cup	
6	T1088-07	Index Pawl	1
7	T1088-09	Spindle	1
8	T1088-10	Connecting Link	1
9	T1088-11	Index Cyl. Rod	1
10	T1092-12	Index Cyl. Back Cap (w/ shock absorb. use T1088-SA-12)	1
11	T1088-13	Index Cyl. Piston	1
12	T1088-14	Cyl. Front Head	1
13	T1088-15	Index Cyl. Body	1
14	6520-06-04	Tube Fitting	2
15	T1088-18	Cyl. Tie Rod	4
16	82478	Allen Hex Nut	4
17	23833	Index Ring to Table Top S.H.C.S.	1
18	26816	Connecting Link Pin	1
19	T1088-25	Cushion Rod	1
◆20	T1088-26-##STA	Index Table Stop Bolt	1
21	T1088-CC-26C	Over Ride Stop Bolt	1
*22	568-330	Index Cyl. Piston O-Ring	1
23	T1088-28	Pawl Return Spring	1
24	V2.500 x 2.875	Index Cyl. Body Gaskets	2
*25	568-216	Index Cyl. Rod Seal	1
26	23259	Cushion Plug Screw	1
27	W07	Main Bearing. Lock Washer	1
28	T1088-35	Cushion Adj. Needle	1
*29	568-010	Valve Stem O-Ring	1
30	#111	Check Valve Spring	1
31	BALL-0.375	Check Valve Ball	1
32	T1088-39	Main Bearing. Lock Nut	1
33	23163	Limit Switch Bracket Screws	2
34	T1088-43	Stop Rod Retaining Block	1
35	N07	Spindle Retaining Nut	1
36	24133	Check Valve Plug	1

Continued on next page.



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1092 Index Table Parts List Continued

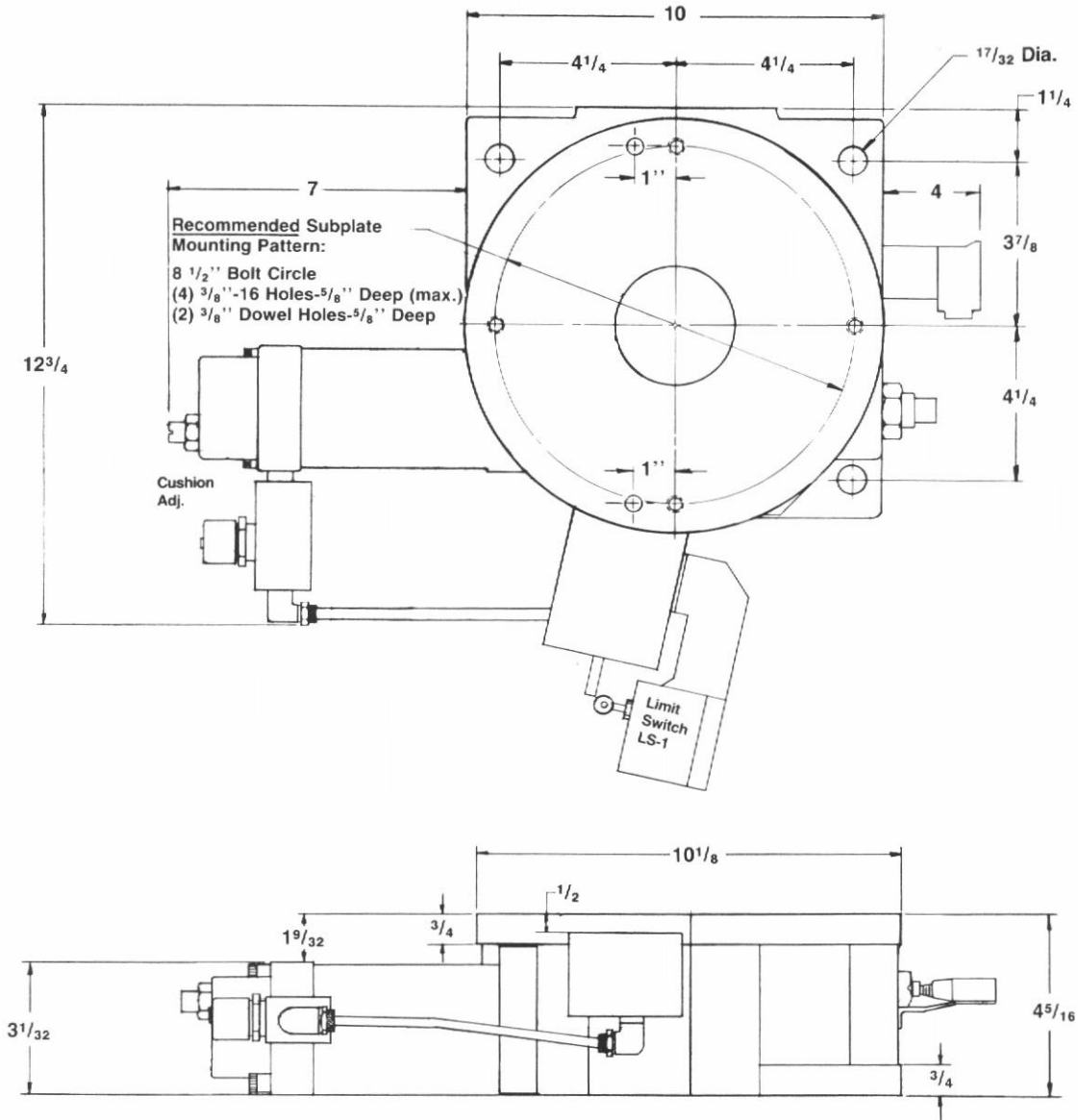
Detail No.	Part No.	Part Name	Qty.
37	A11B-20	Plastic Tubing	1 FT
38	26770	Dowel Pin	2
39	26333	Stop Block Retaining Screw	1
40	T158-56	Grease Fitting	2
41	36265	Stop Rod Lock Nut	1
42	FRL-104104-F02	Speed Control Valve	1
43	T150-59	Actuator Rod Spring	1
44	T1092-57	Limit Switch Actuator Rod	1
45	36259	Cushion Valve Lock Nut	1
46	66410	Pipe Nipple	2
47	568-114	Cushion Rod Seal O-Ring	1
48	568-210	Locking Cyl. Cap O-Ring	1
49	T1088-67	Locking Cyl. Front Head	1
50	T158-61	Wear Plate-Woodruff	1
51	T1088-68	Locking Piston & Rod Assembly	1
52	568-220	Locking Cyl. O-Ring	1
53	V2.000 x 2.750	Locking Cyl. Gasket	1
54	T1088-71	Locking Cyl. Back Cap	1
55	23216	Locking Cyl. Mtg. Bolt	2
56	RQ8	Limit Switch-Locking Cylinder	1
57	2RN	Limit Switch-Index Cylinder	1
58	T158-54	Bracket-Index Cylinder Limit Switch	1
59	T158-47	Bracket-Locking Cylinder Limit Switch	1
60	36265	Jam Nut	1

* All O-rings and gaskets and seals are sold collectively as a kit. The part number is: T1092-CS.

◆ “##” equals the number of stations or index positions. For example, if four stations, then the part number would be T1088-03-04STA for the station ring and T1088-26-04STA for the index table stop-bolt.

Torque Specifications		
Model	Cylinder Mounting Bolt (ea)	Cylinder Tie Rod/Hex Nut (ea)
1092-xx	75 ft.lb.	95 ft.lb.

Model 1092 Dimensions



Model 1092 Dimensions Continued

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Dial Plate Diameter	10"
Dial Plate Material	Fremax 15
Recommended Max. Tooling Wt. within Table O.D.	
Without LFLS Wear Bearing	200 lbs.
With LFLS Wear Bearing	400 lbs.
Max. Unsupported Sub-Plate O.D.	20"
Standard Index Range	4 to 24
Spindle Through Hole I.D.	¾"
Accuracy (at table diameter)	±.001"
Cushioned Index Stroke and Speed Control	Standard
Torque or Power Stroke	390 lbs., 2 ½" radius
Max. Cylinder Stroke	3.687"
Max. Side Pressure (Radial lbs. @ 500 r.p.m.)	1,320 lbs.
Thrust (@ 500 r.p.m.)	1,140 lbs.
Max. Side Pressure in Stop Position	5,480 lbs.
Air Requirements	
Air supply must be filtered and lubricated	
Supply Pipe size (min.)	3/8" NPT
Min. Air Pressure	80 PSIG
Max. Air Pressure	110 PSIG
Air Consumption @ 100 PSIG	35 in ³ /cycle
Valve required	2 pos 4 way
Shipping Weight	100

PIPING SCHEMATIC

