Form # Z541
Date 2-02/A

Model 5093 & 5093L 1" Super Duty "D" Handle Impact Tools

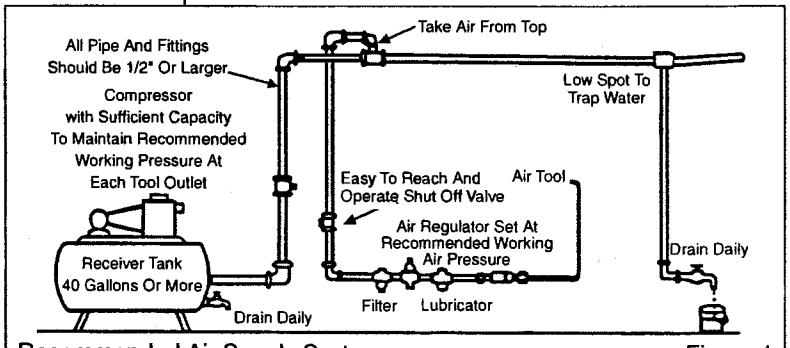
IMPORTANT

Read these instructions carefully before installing, operating, servicing or repairing this tool. Keep these instructions in a safe accessible place.

SAFETY MESSAGES		WARNING	Operator Instructions
Personal Safety Equipment		Always Read Instructions Before Using Power Tools	**Includes:**
Use – Safety Glasses	**YES**	Always Wear Safety Goggles	**Safety Rules**
Use – Safety Gloves		Wear Hearing Protection	**Foreseen Use**
Use – Safety Boots		Avoid Prolonged Exposure To Vibration	**Work Stations**
Use – Breathing Masks			**Putting Into Service**
Use – Ear Protectors	**YES**		**Operating**
			Dismantling and Assembly.

Safety rules when using a 5093/5093L Impact Tool

- Use only impact sockets and extensions, universal joints, etc., rated as being suitable for use with impact tools.
- Prolonged exposure to vibration may cause injury.
- Read all instructions before using this tool. All operators must be fully trained in its use and aware of these safety rules.
- Do not exceed the maximum working air pressure.
- Use personal protection equipment as recommended.– Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to cause cancer, birth defects and other reproductive harm.
- Use compressed air only at the recommended conditions.
- If the tool appears to malfunction, remove from use immediately and arrange for service and repair. If it is not practical to remove tool from service, then shut off the air supply to the tool and write or have written a warning note and attach it to the tool.
- If tool is to be used with a balancer or other suspension device, ensure that the tool is firmly attached to the suspension/support device.
- When operating the tool, always keep the body and particularly the hands away from the working attachment fixed to the tool.
- The tool is not electrically insulated. Never use the tool if there is any chance of coming into contact with live electricity.
- Always when using the tool, adopt a firm footing and/or position and grip the tool sufficiently only to overcome any reaction forces that may result from the tool doing work. Do not overgrip.
- Use only correct spare parts for maintenance and repair. Do not improvise or make temporary repairs. Major servicing and repairs should only be carried out by persons trained to do so.
- Do not lock, tape, wire, etc. the 'On/Off' valve in 'On' position. The throttle trigger/lever, etc. must always be free to return to the 'Off' position when released.
- Always shut off the air supply to the tool and press the 'On/Off' valve to exhaust the air from the feed hose before fitting, removing or adjusting the working attachment fitted to the tool.
- Before using the tool, make sure that a shut off device has been fitted to the supply line and the position is known and easily accessible so that the air supply to the tool can be shut off in an emergency.
- Check hose and fittings regularly for wear.
- Take care against entanglement of the moving parts of the tool with clothing, hair, ties, cleaning rags, rings, jewelry, watches, bracelets, etc. This could cause the body or parts of the body to be drawn towards and in contact with the moving parts of the tool and could be very dangerous.
- It is expected that users will adopt safe working practices and observe all local, regional or country legal requirements when installing, using or maintaining the tool.
- Take care that the exhaust air does not point towards any other person or material or substance that could be contaminated by oil droplets. When first lubricating a tool or if the tool exhaust has a high oil content, do not allow the exhaust air to come near very hot surfaces or flames.
- Never lay the tool down until the working attachment has stopped moving.
- When the tool is not in use, shut off the air supply and press throttle trigger/lever to drain the supply line. If the tool is not to be used for a period of time, first lubricate, disconnect from air supply and store in a dry average room temperature environment.
- If the tool is passed from one user to a new or inexperienced user, make sure these instructions are available to be passed with the tool.
- Do not remove any manufacturer fitted safety devices where fitted, i.e., wheel guards, safety trigger, speed governors, etc.
- Wherever possible, secure workpiece with clamps, a vise, etc. to make it rigid so it does not move during the work operation. Keep good balance at all times. Do not stretch or overreach.
- Try to match the tool to the work operation. Do not use a tool that is too light or heavy for the work operation. If in doubt, seek advice.
- In general terms, this tool is not suitable for underwater use or use in explosive environments — seek advice from manufacturer.
- Try to make sure that the work area is clear to enable the work task to be performed safely. If practical and possible, try to clear unnecessary obstructions before starting work.
- Always use air hose and couplings with minimum working pressure ratings at least 1 1/2 times the maximum working pressure rating of the tool.



Recommended Air Supply System — Figure 1

Foreseen Use Of The Tool – 5093/5093L

The impact tool is designed for the tightening and loosening of threaded fasteners within the range as specified by the manufacturer. It should only be used in conjunction with suitable impact type 1" square female drive nut running sockets. Only use sockets which are of the impact type. It is allowed to use suitable extension bars, universal joints and socket adaptors between the square output drive of the impact tool and the square female drive of the socket. Do not use the tool for any other purpose than that specified without consulting the manufacturer or the manufacturer's authorized supplier. To do so may be dangerous. Never use an impact tool as a hammer to dislodge or straighten cross threaded fasteners. Never attempt to modify the tool for other uses and never modify the tool for even its recommended use as a nutrunner.

Work Stations

The tool should only be used as a handheld, hand operated tool. It is always recommended that the tool is used when standing on a solid floor. It can be used in other positions, but before any such use, the operator must be in a secure position having a firm grip and footing and be aware that when loosening fasteners the tool can move quite quickly away from the fastener being undone. An allowance must always be made for this rearward movement so as to avoid the possibility of hand/arm/body entrapment.

Putting Into Service

Air Supply

Use a clean lubricated air supply that will give a measured air pressure at the tool of 90 p.s.i./6.2 bar when the tool is running with the trigger fully depressed and the air regulator in its maximum opening flow position. Use recommended hose size and length. It is recommended that the tool is connected to the air supply as shown in figure 1. Do not connect a quick connect coupling directly to the tool, but use a whip or leader hose of approximately 12 inches length. Do not connect the tool to the air line system without incorporating an easy to reach and operate air shut off valve. The air supply should be lubricated. It is strongly recommended that an air filter, regulator, lubricator (FRL) is used, as shown in Figure 1, as this will supply clean, lubricated air at the correct pressure to the tool. Details of such equipment can be obtained from your supplier. If such equipment is not used, then the tool should be lubricated by shutting off the air supply to the tool, depressurizing the line by pressing the throttle lever on the tool. Disconnect the air line and pour into the hose adaptor (8) a teaspoonful (5ml) of a suitable pneumatic motor lubricating oil preferably incorporating a rust inhibitor. Reconnect tool to air supply and run tool slowly for a few seconds to allow air to circulate the oil. If tool is used frequently, lubricate on daily basis and if tool starts to slow or lose power. When lubricating, also ensure that the air strainer in hose adaptor (8) is clean.
It is recommended that joint tightness of the threaded fastener assembly be checked with suitable measuring equipment.
It is recommended that the air pressure at the tool while the tool is running is 90 p.s.i./6.2 bar.

Operating

The output of the impact tool in prime working condition is governed by mainly three factors:
a) the input air pressure;
b) the time the impact tool is operated on the joint. Normal time for joints of average tension requirement 3 to 5 seconds;
c) the setting of the air regulator for a given joint at a given pressure operated for a given time.
The air regulator (19) can be used to regulate the output of the impact tool if no other means of control is available. It is strongly recommended that an external pressure regulator, ideally as part of a filter/regulator/lubricator (FRL), is used to control air inlet pressure so that the pressure can be set to help control the tension required to be applied to the threaded fastener joint.
There is no consistent, reliable torque adjustment on an impact tool of this type. However, the air regulator can be used to adjust torque to the approximate tightness of a known threaded joint. To set the tool to the desired torque, select a nut or screw of known tightness of the same size, thread pitch and thread condition as those on the job. Turn air regulator to low position, apply tool to nut and gradually increase power (turn regulator to admit more air) until nut moves slightly in the direction it was originally set. The tool is now set to duplicate that tightness, note regulator setting for future use. When tightening nuts not requiring critical torque values, run nut up flush and then tighten an additional one-quarter to one-half turn (slight additional turning is necessary if gaskets are being clamped). For additional power needed on disassembly work, turn regulator to its fully open position. This impact tool is rated a 1" bolt size.
Rating must be downgraded for spring U bolts, tie bolts, long cap screws, double depth nuts, badly rusted conditions and spring fasteners as they absorb much of the impact power. When possible, clamp or wedge the bolt to prevent springback.
Soak rusted nuts in penetrating oil and break rust seal before removing with impact tool. If nut does not start to move in three to five seconds use a larger size impact tool. Do not use impact tool beyond rated capacity as this will drastically reduce tool life.
NOTE: Actual torque on a fastener is directly related to joint hardness, tool speed, condition of socket and the time the tool is allowed to impact. Use the simplest possible tool-to-socket hook up. Every connection absorbs energy and reduces power.
Auxiliary Handle. The auxiliary handle is attached with 4 screws and can be secured in any position to suit the comfort of the operator. Make sure the handle is fixed securely.
The trigger/regulator valve regulates the power of the impact blows and the frequency. The trigger/regulator valve is located underneath the forward and reverse lever. It has four positions: '0', '1', '2' and '3'. '0' is the off position and '3' the most powerful. Always check that the reverse lever is in the appropriate position to suit the direction of rotation required before using the tool. The position 'F' is for tightening a right hand threaded joint and 'R' for loosening.
For best results:
1) Always use the correct size impact type socket.
2) Use extra deep sockets in place of extension bars where possible.
3) Do not use oversized, worn or cracked sockets.
4) Hold the tool so the socket fits squarely on the fastener. Hold the tool firmly, but not too tightly, pressing slightly forward.

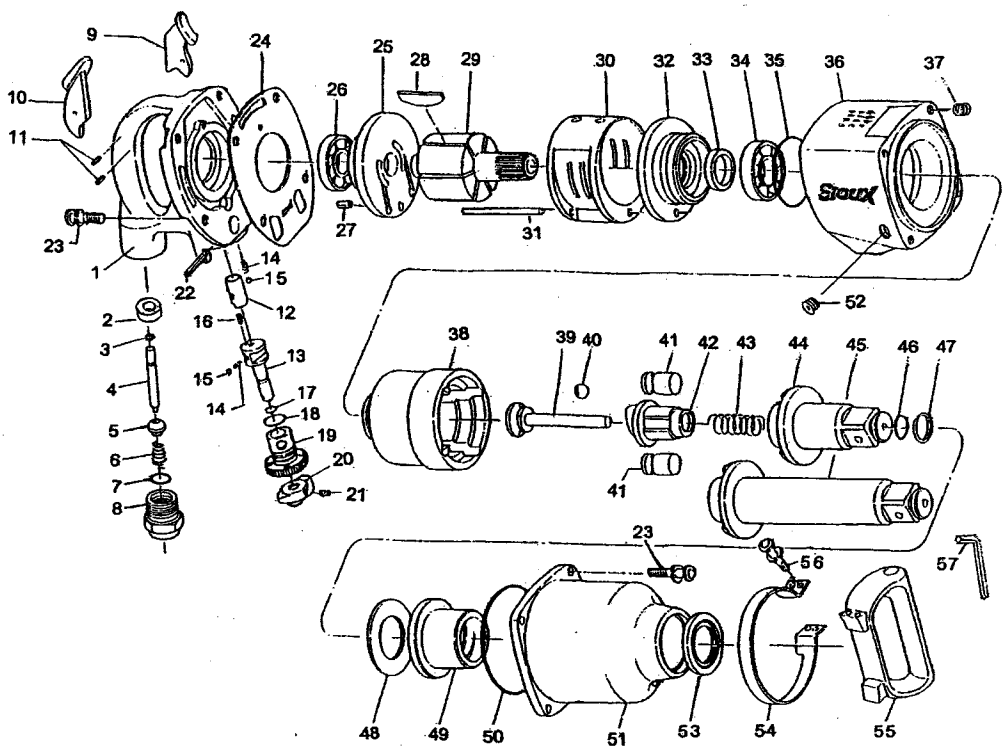
Dismantling & Assembly Instructions

The models 5093 and 5093L are identical except for anvil (44) and (45). Model 5093 has a short anvil and model 5093L has a 6" extension anvil.
Disconnect tool from air supply.
If fitted, first remove the dead handle by removing 4 capscrews (56). Remove handle band (54) and dead handle (55). Remove oil fill plug (52) and drain the oil from front end into a suitable container. Clamp the rear housing with bushing (1) in a vise with soft jaws and remove 4 capscrews (23) with 4 lockwashers. Hammer housing with bushing (51) can be lifted clear of the tool complete with oil seal (53) and anvil bushing (49). Oil seal (53) may be hooked out of and anvil bushing (49) pressed out of hammer housing (51). O-ring (50) may be taken off the front end of hammer housing (51). Remove anvil (44) or (45), anvil spacer (48), cam (42), 2 hammer pins (41), ball (40), pilot shaft (39) and spring (43). Note, later models may have pilot shaft (39) as a one piece assembly. Lift off hammer cage (38). Retaining ring (47) may be pried off and O-ring (46) taken off anvil (44) or (45). Remove 4 capscrews (23) and separate the handle assembly from the motor assembly. The gasket (24) is then released.
The motor housing assembly may be dismantled by tapping the splined end of the rotor (29) and this will slide through the motor housing complete with 6 rotor blades (28) and motor rear plate and bearing assembly. Remove 6 rotor blades (28) from rotor (29). Pull off the rear plate and bearing assembly from rotor (29) and with a suitable punch, tap out bearing (26) from rear plate (25). Support the motor housing (36) at the handle so that the outside diameter of the cylinder (30) is clear and push out the cylinder complete with pin (31) and end plate (32) complete with bearing (34) and oil seal (33). Remove O-ring (35). Bearing (34) may be tapped out by using a suitable punch and oil seal (33) hooked out of front plate (32). Do not remove the 8 helicoil inserts (37) from motor housing (36).
To dismantle the handle assembly, grip the rear housing (1) in a vise fitted with soft jaws and unscrew hose adaptor (8) complete with strainer and O-ring (7). Remove spring (6), valve ball (5), valve pin (4) complete with O-ring (3). Do not remove the valve bushing (2) from rear housing (1) unless a replacement is required. Carefully pry off O-ring (3) from valve pin (4). Tap out pins (11) and remove inside trigger (9) or outside trigger (10). Drive out pin (22) and pull out reverse valve and regulator assembly, taking care not to lose ball (15) and spring (14). Unscrew plug (21) through reversing lever (20) and pull off reversing lever (20). Reversing valve (13) complete with O-ring (17) can be pushed through air regulator (19). O-ring (18) can be pried off air regulator (19) and O-ring (17) from reversing valve (13). Do not attempt to remove ball (15) and spring (14) from reversing valve (13) and only remove pin (16) if a replacement is required. Do not remove bushing (12) from rear housing (1).

Reassembly

Clean all components and examine for wear, cracks, etc. before reassembling. Look in particular for wear and cuts on oil seals and O-rings, wear on rotor blades, and wear and cracks on anvils (44) or (45), pilot (39), cam (42) and pins (41). Check in particular the area of the square

5093 1" SD Inside/Outside Lever Impact Tool
5093L 1" SD Inside/Outside Lever Impact Tool with 6" Extended Anvil



Ref. No.	Part No.	Description
1	505754	Throttle Handle Housing
2	505755	Valve Bushing
3	505197	O-Ring
4	505634	Valve Pin
5	505255	Valve Ball
6	505256	Throttle Spring
7	505293	O-Ring
8	505257	Hose Adaptor
9	505756	Throttle Trigger (Inside)
10	505757	Throttle Trigger (Outside)
11	505294	Spring Pin (2)*
12	505758	Bushing
13	505223	Reversing Valve
14	505220	Spring (2)*
15	505221	Steel Ball (2)*
16	505194	Spring Pin
17	66593	O-Ring
18	505199	O-Ring
19	505759	Air Regulator
20	505225	Reverse Valve Lever
21	505210	Plug
22	505193	Spring Pin
23	505207	Cap Screw with Washer (8)*
24	505760	Gasket
25	505229	Rear Plate
26	505228	Ball Bearing
27	505195	Spring Pin
28	505749	Rotor Blade (6)
29	505750	Rotor
30	505751	Cylinder
31	505747	Guide Pin

Ref. No.	Part No.	Description
32	505233	Front Plate
33	505234	Oil Seal
34	505235	Ball Bearing
35	505202	O-Ring
36	505761	Motor Housing
37	505236	Helicoil Insert (8)*
38	505237	Hammer Cage
39	505239	Pilot Shaft
40	505238	Cam Ball
41	505240	Hammer Pins (2)*
42	505241	Hammer Cam
43	505242	Cam Release Spring
44	505243	Assy Anvil (5093 Includes Figs. 46 & 47)
45	505244	Assy Anvil (5093L Includes Figs. 46 & 47)
46	505201	O-Ring (5093 & 5093L)
47	505245	Retainer Ring (5093 & 5093L)
48	505246	Anvil Spacer
49	505247	Anvil Bushing
50	505203	O-Ring
51	505752	Hammer Housing
52	505209	Oil Plug
53	505249	Oil Seal
54	505753	Handle Band
55	505637	Dead Handle
56	505633	Cap Screw with Washer (4)*
57	505632	Hex Wrench
Not Shown	505001	Warning Label
Not Shown	505764	Nameplate (5093)
Not Shown	505765	Nameplate (5093L)
Not Shown	67255	Nameplate Screw (2)*

* Order Quantity as needed

drive on anvils (44) and (45) and make sure that retaining ring (47) and O-ring (46) on anvils (44) and (45) still provide adequate socket retention. Make sure that the faces of end plates (25) and (32) that abut cylinder (30) are flat and free from surface markings and burrs. If necessary, lap faces with a very fine grade of abrasive paper. Use only manufacturer or authorized distributor replacement parts. Coat all parts with a suitable pneumatic motor lubricating oil and assemble in the reverse order. See notes below.
When reassembling the reverse valve and regulator assembly into the rear housing, make sure that the pin (22) in reversing valve (13) locates in the smaller, deeper "D" shaped recess in the rear housing.
When reassembling the motor assembly, first build up motor assembly locating pins in end plate in holes in cylinder. Locate pin (27) in rear plate (25) Press on motor housing locating the tapped holes in the motor housing with the four holes in the rear housing. On completing assembly, ensure that all parts are locked tight, the anvil will rotate, and the trigger, reverse valve and regulator all operate freely. Remove oil plug (52) from hammer housing (36) and pour in 3.5 fl. oz. (100cc) of a standard SAE20 grade oil. Do not overfill as this will result in a reduction in power of the tool. Pour into the hose adaptor, with the trigger depressed, 10 ml of a pneumatic tool lubricating oil (one preferably containing a rust inhibitor). Connect tool to a suitable air supply and run the tool slowly for 2 to 3 seconds to allow the oil to circulate. Reset for operation. Refer to section on Operating Instructions.

Operation Specification		
	5093	5093L
Average Air Consumption	8.3 cfm (60 scfm)	8.3 cfm (60 scfm)
Operating Torque	600-1400 lb.ft. (814-1898 Nm)	500-1300 lb.ft. (678-1763 Nm)
Maximum Torque	3000 lb.ft. (4068 Nm)	2700 lb.ft. (3661 Nm)
Air Inlet Thread	1/2-14NPT	1/2-14NPT
Overall Length	16.1" (410 mm)	21.1" (535 mm)
at 90 PSIG/6.2 bar		

NOTES

Manufacturer/Supplier

Sioux Tools, Inc.
117 Levi Drive
Murphy, NC 28906
U.S.A.
Tel No. 828-835-9765 **Fax No. 828-835-9685**

Product Type
1" Super Duty "D" Handle Impact Tools

RPM
4,000
Cycles Per Min.

CE

Model No/Nos
5093 - Std. Anvil
5093L - 6" Ext. Anvil

Serial No.

Product Net Weight		Recommended Use Of Balancer Or Support	Recommended Hose Bore Size – Minimum	Recommended Max. Hose Length
5093	5093L			
25.6	**28.0** lbs	**YES**	**1/2** Ins **13** M/M	**30** Ft **10** M
11.6	**12.7** Kg			

Air Pressure

Recommended Working	**6.2**	bar	**90**	PSI
Maximum	**6.2**	bar	**90**	PSI

Noise Level: **Sound Pressure Level 92.0 dB(A)**
Sound Power Level 103.0 dB(A)

Test Method: **Tested in accordance with Pneurop test code PN8NTC1 and ISO Standard 3744**

SAFETY MESSAGES

Personal Safety Equipment

Use – Safety Glasses	**YES**
Use – Safety Gloves	
Use – Safety Boots	
Use – Breathing Masks	
Use – Ear Protectors	**YES**

WARNING

- Always Read Instructions Before Using Power Tools
- Always Wear Safety Goggles
- Wear Hearing Protection
- Avoid Prolonged Exposure To Vibration

Vibration Level **4.4** Meters / Sec^2

Test Method: **Tested in accordance with ISO standards 8662 Parts 1 & 7**

CE

Declaration of Conformity

Sioux Tools Inc.

117 Levi Drive, Murphy, NC 28906, U.S.A.

declare under our sole responsibility that the product

Model 5093 & 5093L 1" SD Impact Tools, Serial Number

to which this declaration relates is in conformity with the following standard(s) or other normative document(s)

EN792 (Draft), EN292 Parts 1 & 2, ISO 8662 Parts 1 & 7, Pneurop PN8NTC1

following the provisions of **89/392/EEC as amended by 91/368/EEC & 93/44/EEC Directives**

Gerald E Seebeck

Gerald E. Seebeck (President)

Name and signature or equivalent marking of authorized person

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