



## Torque Controlled Tube Rolling Controls Models:

**9040-1250**

**9040-600**

**9040-400**



## Operating and Maintenance Instructions



**Read and Understand Operating Instructions  
Before Operating Tool**

Elliott Tool Technologies Ltd • 1760 Tuttle Avenue • Dayton, Ohio 45403 U.S.A.  
Phone: +1 800 332 0447 • +1 937 253 6133 • Fax: +1 937 253 9189

Elliott Tool Technologies UK Ltd • Broadstone Hill • Old Chalford • Chipping Norton • OXON • OX7 5QL • England  
Phone: +44 (0) 1608 672815 • Fax: +44 (0) 1608 672810

# 9040 Series Tube Rolling Controls



<b>Tool Specifications</b>			
<b>Model</b>	<b>9040-1250</b>	<b>9040-600</b>	<b>9040-400</b>
<b>Free Speed</b>	1250rpm	600rpm	400rpm
<b>Minimum Torque</b>	14 in. lbs. 1.58Nm	22 in. lbs. 2.49Nm	44.15 in. lbs. 5.0Nm
<b>Maximum Torque</b>	108 in. lbs. 12.2Nm	193 in. lbs. 21.81Nm	318 in. lbs. 36Nm
<b>Sound Pressure Level Lpa</b>	83 dBa	83 dBa	83 dBa
<b>Sound Pressure Level Lwa</b>	94 dBa	94 dBa	94 dBa
<b>Weight</b>	10.5 lbs. 4.76Kg	10.5 lbs. 4.76Kg	10.5 lbs. 4.76Kg
<b>Length</b>	12-1/4" 311mm	12-1/4" 311mm	12-1/4" 311mm
<b>Side to Center Distance</b>	1-7/16" 36.5mm	1-7/16" 36.5mm	1-7/16" 36.5mm
<b>Minimum Hose Diameter</b>	3/8" 9.5mm	3/8" 9.5mm	3/8" 9.5mm
<b>Air Consumption</b>	60 cfm 1700 l/min	60 cfm 1700 l/min	60 cfm 1700 l/min
<b>Tube Capacity</b>	3/4" 19mm	1" 25.4mm	1-1/4" 31.7mm
<b>Square Size</b>	3/8" SQ	3/8" SQ	3/8" SQ
<b>Q.C. Chuck Size</b>	3/8" Standard 1/2" Optional	3/8" Standard 1/2" Optional	3/8" Standard 1/2" Included

# Safety Recommendations

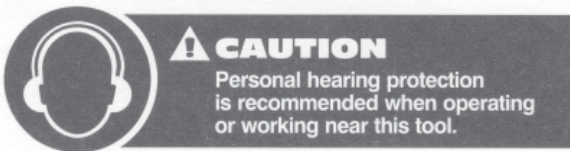
For your safety and the safety of others, read and understand the safety recommendations and operating instructions before operating this tool.

## ALWAYS WEAR PROTECTIVE EQUIPMENT

### EYE AND FACE PROTECTION



### HEARING PROTECTION



Hearing protectors are required in high noise areas, 85 dBA or greater. The operation of other tools and equipment in the area, reflective surfaces, process noises and resonate structures, can substantially contribute to and increase the noise level in the area.



Moving components can entangle and enwrap. And can result in serious injuries. Never wear loose fitting clothes, gloves, ties or jewelry when working with or near any power tool with an exposed rotating shaft or spindle.

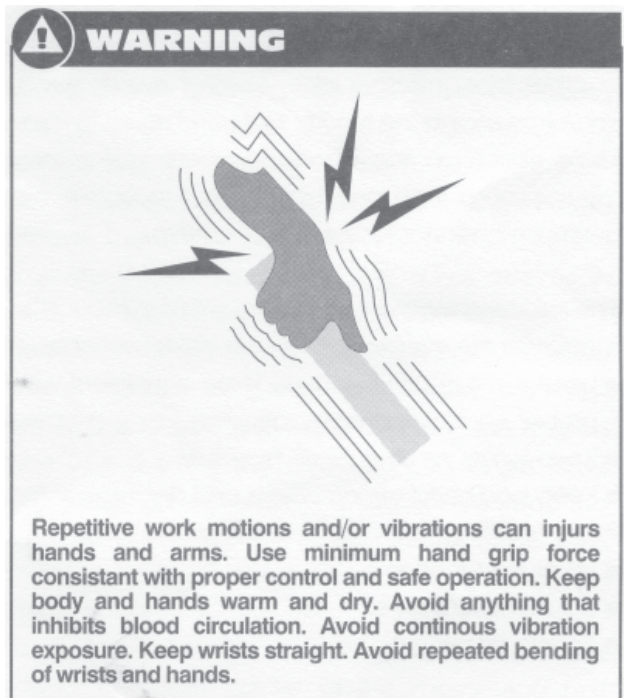


Tools with clutches can stall rather than shut-off if adjusted over the maximum power output of the tool, or if there is a drop in air pressure. Operator must then resist the stall torque until the throttle is released.

Higher torque pneumatic tools, inline and right angle, are supplied with a torque reaction bar designed to work with the torque of the tool it is specified for. These bars can be braced against the work or other suitable points to absorb and relieve the operator of the torque reaction transmitted by the tool.



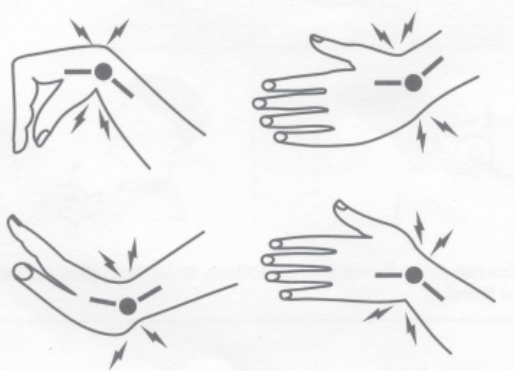
Some individuals are susceptible to disorders of the hands and arms when exposed to tasks, which involve highly repetitive motions and/or vibrations. Those individuals predisposed to vasculatory or circulatory problems may be particularly susceptible. Cumulative trauma disorders such as carpal tunnel syndrome and tendinitis can be caused or aggravated by repetitious, forceful exertions of the hands and arms. These disorders develop gradually over periods of weeks, months, and years.



## Safety Recommendations Continued

**TASKS SHOULD BE PERFORMED IN SUCH A MANNER THAT THE WRISTS ARE MAINTAINED IN A NEUTRAL POSITION WHICH IS NOT FLEXED, HYPEREXTENDED, OR TURNED SIDE TO SIDE.**

**STRESSFUL POSTURES SHOULD BE AVOIDED AND CAN BE CONTROLLED THROUGH TOOL SELECTION AND WORK LOCATION**



Any user suffering from prolonged symptoms of tingling, numbness, blanching of the fingers, clumsiness or weakened grip, pain in the hand, or any other disorder of the shoulders, arms, wrists, or fingers is advised to consult with a physician. If it is determined that the symptoms are job related or aggravated by movements and postures dictated by the job design, it may be necessary for the employer to take steps to prevent further occurrences. These steps might include, but are not limited to, repositioning the work piece or redesigning the workstation, reassigning workers to other jobs, rotating jobs, altering a work pace, and/or changing the type of tool used so as to minimize stress on the operator. Some tasks may require more than one type of tool to obtain the optimum operator/tool/task relationship.

The following recommendations will help reduce or moderate the effects of repetitive work motions:

- Uses a minimum handgrip force consistent with proper control and safe operation;
- Keep wrists as straight as possible;
- Keep body and hands warm and dry.

Avoid anything that inhibits blood circulation

- smoking tobacco
- cold temperatures
- certain drugs

Avoid highly repetitive movements of the hands and wrists, and continuous vibration exposure.



Use of this tool may produce hazardous fumes, particles, and/or dust. To avoid adverse health effects utilize adequate ventilation and/or a respirator. Read the material safety data sheet of any materials involved in the tube expansion process.



This Elliott Tool product is designed to operate on minimum 90 psig (6.2 bar), maximum 125 psig (8.6) air pressure. If the tool is properly sized and applied, higher air pressure is unnecessary. Excessive air pressure increases the loads and stresses on the tool parts, mandrels, rolls and cages and may result in premature wear and or breakage. Installation of a filter-regulator-lubricator in the air supply line ahead of the tool is required.

Before the tool is connected to the air supply, check the throttle for proper operation (i.e., the throttle moves freely and returns to the closed "OFF" position when released). Clear the air hose of accumulated dust and moisture. Be careful not to endanger adjacent personnel. Before removing a tool from service or changing sockets, make sure the airline is shut off and drained of air. This will prevent the tool from operating if the throttle is accidentally engaged.

It is essential for safe operation that any operator of OUR TOOLS uses good balance, sure footing, and proper posture in anticipation of a torque reaction. Ensure that the operator's hands will not be wedged or pinched between the work and the tool when operating.

**NOTE: ANY USE OF THIS TOOL OTHER THAN IT'S INTENDED PURPOSE COULD CAUSE MAJOR DAMAGE TO THE TOOL AS WELL AS POSE A RISK TO THE OPERATOR.**

## Operating Instructions

Our tools are designed to operate at a minimum of 90 psi (6.2 bar) and a maximum of 125 psi (8.6 bar).

**NOTE-** using over 100 psi (6.8 bar) will cause faster tool operation but will also lead to premature wear and or tool breakage of the expander rolls and mandrel.

Fluctuation in air pressure has no effect on the torque Control Unit, as this section is independent of the motor. A low air pressure situation will result in the tool operating slower, resulting in longer rolling cycles.

See page 12 and 13 for tube rolling set up instructions. To adjust tools torque loosen set screw (73) and turn adjustment nut to increase or decrease torque setting. Once desired torque or wall reduction is achieved during the setup procedure, tighten set screw (73).

We recommend that our 9040 Models are Lubricator be used within our 15 ft supply line. A quality grade S.A.E#10 or equivalent lubricating oil is recommended. With the 9040 motors running, set the lubricator to 5-10 drops of oil per minute.

The gear section of your 9040 series' motor is fitted with a pressure type grease fitting. Approximately once every four (4) weeks, pump two (2) shots of grease into the unit using a hand type grease gun.

**CAUTION: DO NOT OVER LUBRICATE** (see above).

If excessive amount of grease is forced into the gear section, the grease will ultimately work its way into the motor section and will result in sluggish tool operation.

## Service Instructions

To maintain efficient operation for continuous use, these tools should be adjusted and serviced periodically. If accurate torque cannot be maintained, check the shut-off trip as follows:

Remove two screws (80) holding valve cover (79) in place. Remove cover to expose trip. (During forward rotation the trip abuts valve (5A). See page 6 for trip adjustment illustration.)

### **WARNING - REMOVE AIR SUPPLY FROM TOOL PRIOR TO ANY DISASSEMBLY**

Remove entire torque section as follows: Remove 4 socket head cap screws (78). Using tru-arc pliers, remove lock ring (162). Carefully remove driving cam (61) and operating cam (55). Care should be taken to prevent loss of the balls contained in the units. Clean drive spindle (52) and inspect for wear in the ball spline grooves. If spline is worn or dimpled, it should be replaced. If spline and front bearing (47) show no sign of wear, further disassembly of this unit is unnecessary. Check follower (64) for excessive wear.

In reassembly, carefully position regulating spring (54) on spring guide (46). Place operating cam (55) on spindle, aligning grooves of the spindle and grooves in the cam. Check condition of guide springs (58), place a spring in each groove. Install five 5/32" (3.96mm) balls in each groove. (Note: as these are extra precision balls, no substitution should be made)

Place a small amount of grease on each angled face of the operating cam, install inner ball retainer (57) and ball retainer (56). On each angled face of the cam, place two of the larger balls (60). Install driving cam (61). Do not dislodge the balls from the helical faces. Install large lock ring (62). The unit can then be handled in a normal manner.

To disassemble the motor package, hold the end of the drive spider of the motor and pull gear section from machine. Slide the motor package from the unit. Disassemble the motor package to check for wear in the cylinder liner and to examine the motor blades. Install new blades if the old blades show excessive wear.

## Service Instructions Continued

Install cylinder on the end plate; check blades (20) for proper placement; install the front bearing support (22). Slide the motor package in place, carefully dropping the dowel pin # 8010126 (assembled in the rear end of the cylinder) into the locating hole at the bottom of the case. The gear case of the 600 RPM tool is a standard two-stage planetary system and disassembly and reassembly of the unit is very simple.

Slide the gears from the gear case, clean, inspect, re-grease and reinstall in the gear case. Slide the gear case into the housing and install dowel pin (39).

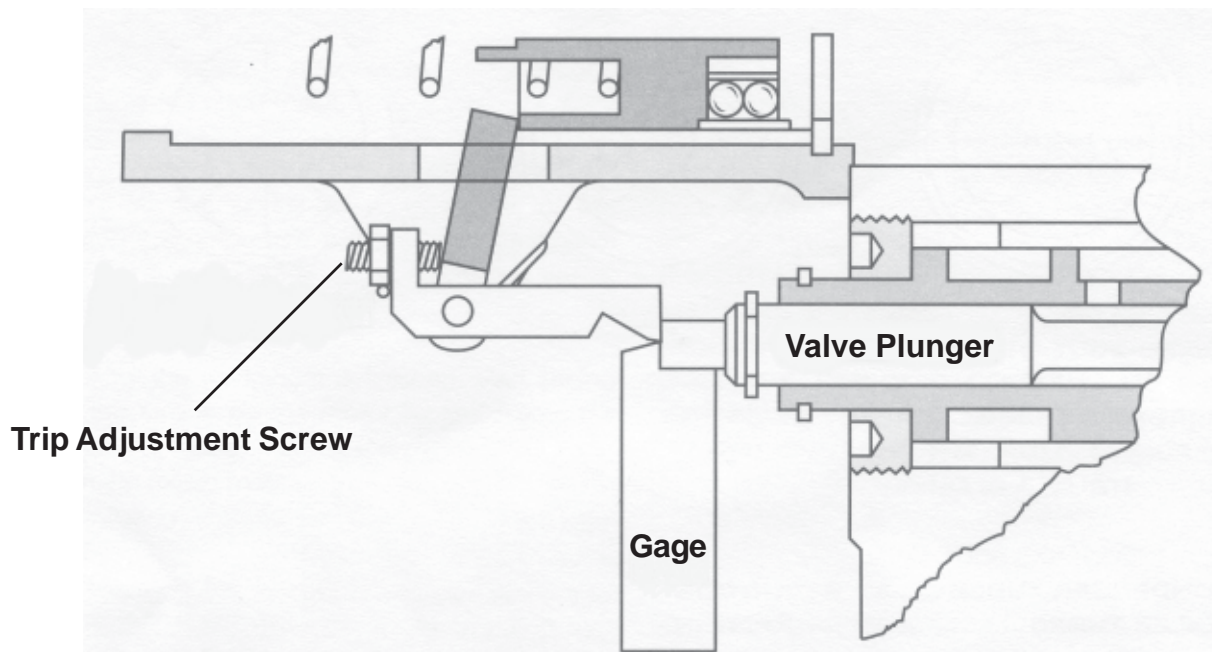
Reinstall the torque unit on the motor case. (When installing the cam section on the motor housing, be sure to depress the trip so the follower will not jam on the top side of the operating cam while aligning front case with the motor.)

Once the torque case is aligned in the motor housing and the screws are installed, the trip can be released.

Before reinstalling the valve cover, push forward on the operating lever (11), and manually depress the trip. In depressing the trip with the finger, the valve (5A) will slide forward, simulating the operation of the tool at shut-off. By pulling back on the lever (11) the outer valve that surrounds the valve (5A), should slide into the rearward position before valve (5A) moves within. If the outer valve is tight to the degree of sticking in the bushing (1) the motor would run forward rather than in reverse, causing over-rolling of joints. It is therefore essential that the outer valve be free in the bushing.

After the above checks have been made, reinstall the valve cover. Ensure adequate lubrication of all parts during reassembly.

## Trip Adjustment Instructions for 9040 Model Torque Control Rolling Motors



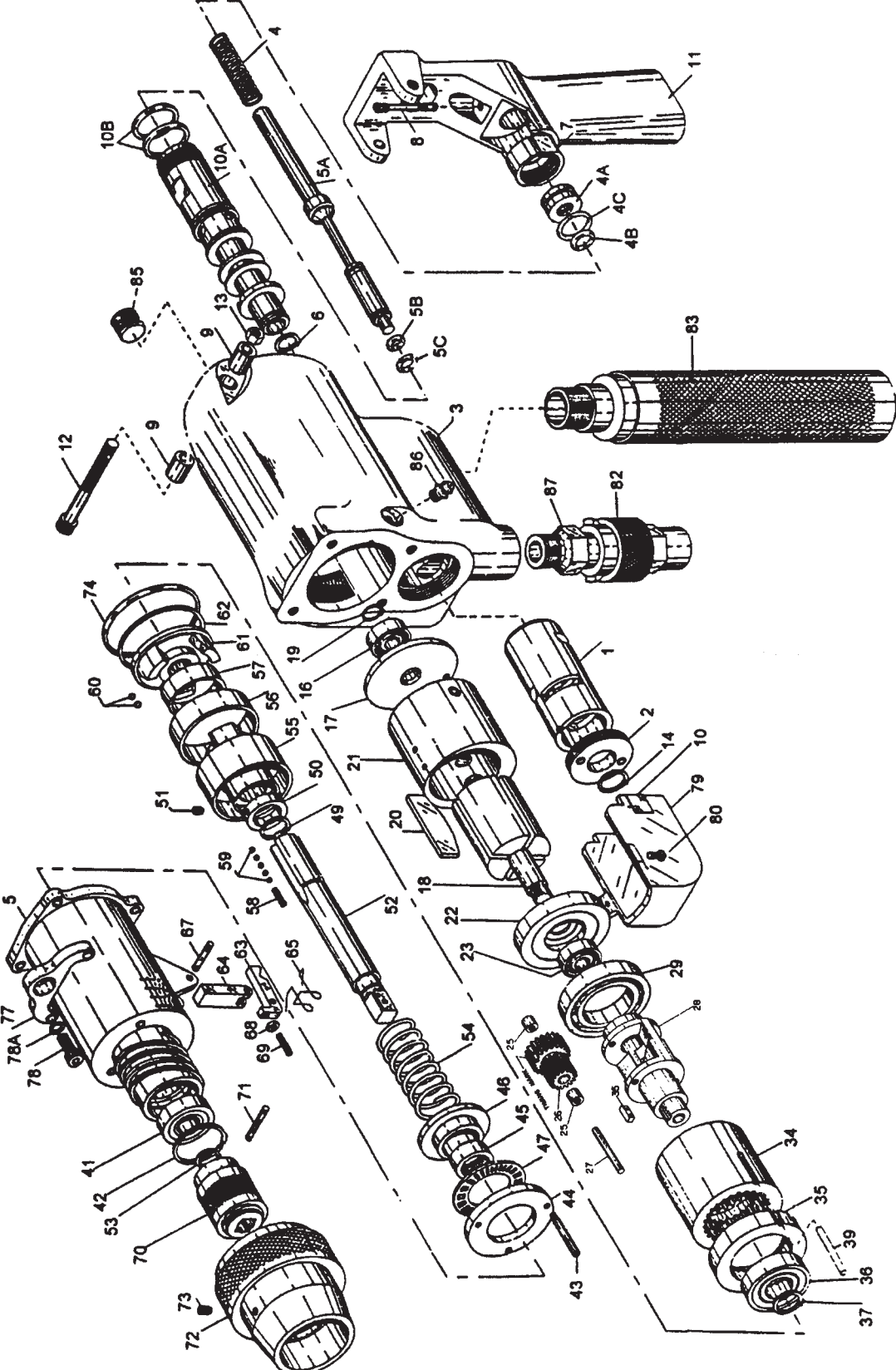
The trip mechanism on our series 9040 rolling motors have an overall confined travel of 0,118" (3mm). For proper operation, the trip mechanism should be set to a maximum engagement of 0,062" (1,57mm) with the abutting valve plunger. (See Diagram)

The above adjustment allows the valve to shut off at the mid-point of the total trip movement of the tool.

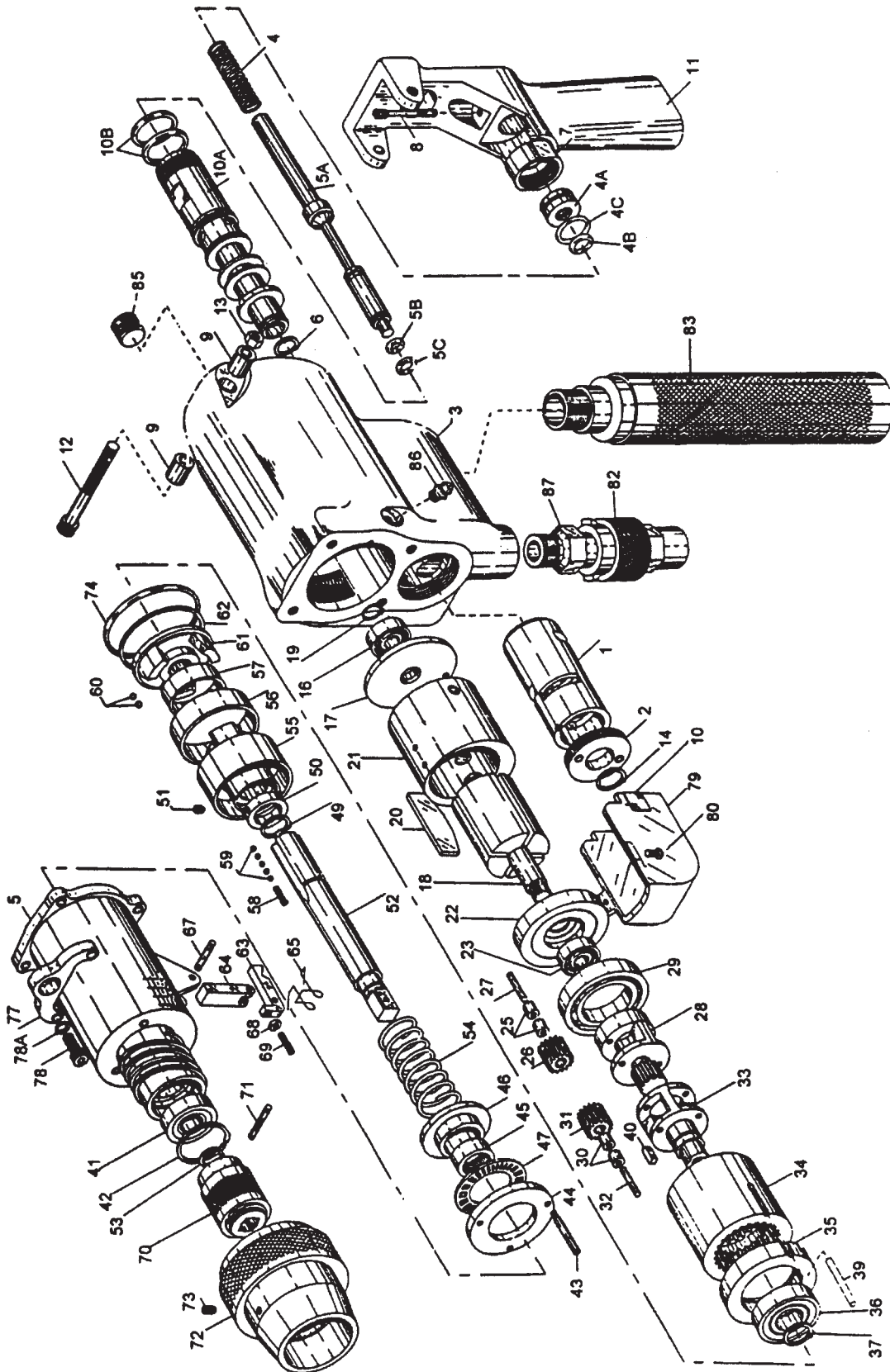
We recommend that this adjustment be made with the tool running in the clockwise direction, with the Torque Adjustment Nut on digit 5 and no load being placed on the tool.

Our Adjustment Gauge is recommended to ensure the correct set up of the trip mechanism (See Diagram)

# Model 9040-1250



# Model 9040-600







# Parts List

ITEM	DESCRIPTION	9040-1250		9040-600		9040-400	
		PART NUMBER	QTY	PART NUMBER	QTY	PART NUMBER	QTY
1	BUSHING	9040- 850-27	1	9040- 850-27	1	9040- 850-27	1
2	LOCK NUT	9040- 850-19	1	9040- 850-19	1	9040- 850-19	1
3	CASE	9040- 850-1RE	1	9040- 850-1RE	1	9040- 850-1RE	1
4	SPRING	9040- 850-22	1	9040- 850-22	1	9040- 850-22	1
4A	SHAFT SEAL	9040- 850-70	1	9040- 850-70	1	9040- 850-70	1
4B	O-RING	9040- 500-31	1	9040- 500-31	1	9040- 500-31	1
4C	O-RING	9040 RTV65	1	9040 RTV65	1	9040 RTV65	1
5	CAM CASE	9040- 900-2A	1	9040- 900-2A	1	9040- 900-2A	1
5A	VALVE	9040- 850-21A	1	9040- 850-21A	1	9040- 850-21A	1
5B	O-RING	9040- 200-16	1	9040- 200-16	1	9040- 200-16	1
5C	O-RING	9040- 2-011	1	9040- 2-011	1	9040- 2-011	1
6	LOCK RING	9040- 402S24	1	9040- 402S24	1	9040- 402S24	1
7	CAP	9040- 850-26	1	9040- 850-26	1	9040- 850-26	1
8	PIN	9040- 850-34	1	9040- 850-34	1	9040- 850-34	1
9	BUSHING	9040- 850-1B	2	9040- 850-1B	2	9040- 850-1B	2
10	TRIP GAUGE	9040- 10	1	9040- 10	1	9040- 10	1
10A	DIRECTION VALVE	9040- 850-28A	1	9040- 850-28A	1	9040- 850-28A	1
10B	O-RING	9040- 2-020	2	9040- 2-020	2	9040- 2-020	2
11	LEVER	9040- 850-1L	1	9040- 850-1L	1	9040- 850-1L	1
12	LEVER PIN	9040- 850-35	1	9040- 850-35	1	9040- 850-35	1
13	SELF LOCK NUT	9040 M6	1	9040 M6	1	9040 M6	1
14	RETAINING RING	9040- 402-23	1	9040- 402-23	1	9040- 402-23	1
16	BEARING	9040- 300G29	1	9040- 300G29	1	9040- 300G29	1
17	REAR THRUST	9040- 1000-74	1	9040- 1000-74	1	9040- 1000-74	1
18	ROTOR	9040- 1000-73-700S	1	9040- 1000-73-700S	1	9040- 1000-73-700S	1
19	RETAINING RING	9040- 500-24	1	9040- 500-24	1	9040- 500-24	1
20	BLADES	9040- 1000-72S	4	9040- 1000-72S	4	9040- 1000-72S	4
21	CYLINDER	9040- 1000-71S	1	9040- 1000-71S	1	9040- 1000-71S	1
22	FRONT THRUST	9040- 900-7-45	1	9040- 900-7-45	1	9040- 900-7-45	1
23	BEARING	9040- 400-13	1	9040- 400-13	1	9040- 400-13	1
25	BEARING	9040- 400-16	4	9040- 400-16	4	9040- 400-16	4
26	PLANET GEAR	9040- 900-12	2	9040- 500-12-30	2	9040- 500-12-400	2
27	PLANET PIN	9040- 900-18	2	9040- 500-18	2	9040- 500-18	2
28	SPIDER	9040- 900-25	1	9040- 900-25-45-1	1	9040- 900-25-400-1	1
29	BEARING	9040- 900-3	1	9040- 1000-88	1	9040- 1000-88	1
30	BEARING	N/A		9040- 400-16	6	9040- 400-16	6
31	PLANET GEAR	N/A		9040- 500-12-40	3	9040- 500-12-400	3
32	PLANET PIN	N/A		9040- 500-18	3	9040- 500-18	3
33	GEAR SPIDER	N/A		9040- 900-25-45	1	9040- 900-25-400	1
34	GEAR HOUSING	9040- 900-20	1	9040- 900-20-45	1	9040- 900-20-400	1
35	BEARING SUPPORT	9040- 900-58	1	9040- 900-58-45	1	9040- 900-58-45	1
36	REAR BEARING	9040- 700-7	1	9040- 700-9	1	9040- 700-9	1
37	RETAINING RING	9040- 900-15	1	9040- 900-15	1	9040- 900-15	1
39	PIN	9040- 900-19	1	9040- 900-19	1	9040- 900-19	1
40	CAM KEY	9040- 900-53	1	9040- 900-53	1	9040- 900-53	1
41	BEARING	9040- 500-13	1	9040- 500-13	1	9040- 500-13	1
42	RETAINING RING	9040- 900-6	1	9040- 900-6	1	9040- 900-6	1
43	PRESSURE PIN	9040- 900-10	3	9040- 900-10	3	9040- 900-10	3
44	PRESSURE PAD	9040- 900-11	1	9040- 900-11	1	9040- 900-11	1
45	BEARING	9040- 1000-64	1	9040- 1000-64	1	9040- 1000-64	1
46	SPRING GUIDE	9040- 900-13	1	9040- 900-13	1	9040- 900-13	1
47	FRONT BEARING	9040- 900-14	1	9040- 900-14	1	9040- 900-14	1
49	RETAINING RING	9040- 900-15	1	9040- 900-15	1	9040- 900-15	1
50	LOCK RING	9040- 900-45	1	9040- 900-45	1	9040- 900-45	1
51	SOC SET SCREW	9040- 51	1	9040- 51	1	9040- 51	1
52	SPINDLE	9040- 900-4	1	9040- 900-4	1	9040- 900-4	1

# Parts List

ITEM	DESCRIPTION	9040-1250		9040-600		9040-400	
		PART NUMBER	QTY	PART NUMBER	QTY	PART NUMBER	QTY
53	RETAINING RING	9040- 900-5	1	9040- 900-5	1	9040- 900-5	1
54	SPRING	9040- 850-44	1	9040- 850-44	1	9040- 850-44	1
55	OPERATING CAM	9040- 900-49	1	9040- 900-49	1	9040- 900-49	1
56	RETAINER	9040- 100-52	1	9040- 100-52	1	9040- 100-52	1
57	BALL RETAINER	9040- 900-52	1	9040- 900-52	1	9040- 900-52	1
58	GUIDE SPRING	9040- 900-47	3	9040- 900-47	3	9040- 900-47	3
59	STEEL BALL	9040- 900-48	15	9040- 900-48	15	9040- 900-48	15
60	STEEL BALL	9040- 1000-48	6	9040- 1000-48	6	9040- 1000-48	6
61	CAM	9040- 900-54	1	9040- 900-54	1	9040- 900-54	1
62	RETAINING RING	9040- 900-24	1	9040- 900-24	1	9040- 900-24	1
63	TRIP GAUGE	9040- 850-18	1	9040- 850-18	1	9040- 850-18	1
64	FOLLOWER	9040- 900-17	1	9040- 900-17	1	9040- 900-17	1
65	SPRING	9040- 1000-16	1	9040- 1000-16	1	9040- 1000-16	1
67	PIN	9040- 100-37	1	9040- 100-37	1	9040- 100-37	1
68	HEX NUT	9040- 68	1	9040- 68	1	9040- 68	1
69	SOC SET SCREW	9040- 69	1	9040- 69	1	9040- 69	1
70	QUICK CHANGE CHUCK	9040- 850-375	1	9040- 850-375	1	9040- 850-375	1
71	SPLIT PIN	9040- 71	1	9040- 71	1	9040- 71	1
72	ADJUSTING NUT	9040- 900-43	1	9040- 900-43	1	9040- 900-43	1
73	NYLON TIP SET SCREW	9040- 73	1	9040- 73	1	9040- 73	1
74	O-RING	9040- 2-033	1	9040- 2-033	1	9040- 2-033	1
77	BRACKET	9040- 900-56	1	9040- 900-56	1	9040- 900-56	1
78	BTN HD CAP SCREW	9040 M6X22	2	9040 M6X22	2	9040 M6X22	2
78	BTN HD CAP SCREW	9040 M6X16	2	9040 M6X16	2	9040 M6X16	2
78A	MED LOCK WASHER	9040- 10	4	9040- 10	4	9040- 10	4
79	COVER	9040- 850-1C	1	9040- 850-1C	1	9040- 850-1C	1
80	BTN HD CAP SCREW	9040- 80	2	9040- 80	2	9040- 80	2
81	EX TYPE LOCK WASHER *	9040- 6	2	9040- 6	2	9040- 6	2
82	QC NIPPLE	9040 HOF	1	9040 HOF	1	9040 HOF	1
83	CLOSE NIPPLE	9040- 83	1	9040- 83	1	9040- 83	1
84	MUFFLER COMPLETE	9040 A85061MF	1	9040 A85061MF	1	9040 A85061MF	1
85	PLUG	9040- 1000-42	1	9040- 1000-42	1	9040- 1000-42	1
86	ZERK	9040- 86	1	9040- 86	1	9040- 86	1
87	QC COUPLER	9040 EZ308F8L	1	9040 EZ308F8L	1	9040 EZ308F8L	1
100	REACTION BAR	Not Included		Not Included		9040- 100	1

**\*Not shown in illustration.**

Optional 1/2" Q.C. Chuck 9040D850-500 (Included with 9040-400 only.)

# Tube Rolling Procedure

The following suggestions are offered to aid in the setting up process for rolling tubes into a heat exchanger, condenser or boiler. A good start insures good result.

**A)** Pick 3 to 5 tubes in the unit to be rolled and complete the worksheet on the back of this page. It is important that the measurements used in the set-up are actual. Never use average dimensions.

**B)** After the worksheet is finished, start setting up the torque control motor by test rolling the first of the tubes. The first test roll must be done with the rolling motor set for low torque to avoid over rolling.

**C)** Measure the tube I.D. after rolling if more expansion is needed increase the torque setting on the control and roll the second tube. Check the finished I.D. This step may have to be repeated on tube #3 by this time, the torque setting should be corrected.

**D)** Roll tubes 4 and 5 to double check the set-up. These tubes should measure as calculated within the allowable tolerance.

- Condenser tubes 10 to 17 ga  
(3.4mm to 1.5mm  $\pm$  0.001" / 0.025mm)
- Condenser tubes 18 to 24 ga  
(1 .25mm to 0.5mm  $\pm$  0.0005" / 0.012mm)
- Boiler tubes 4 to 10 ga  
(6.5mm to 3.4mm  $\pm$  0.002" / 0.05mm)
- Boiler tubes 12 to 18 ga  
(2.8 mm to 1 .25 mm  $\pm$  0.001" / 0.025mm)

**IMPORTANT: REROLL ALL THE TEST TUBES THAT WERE UNDER SIZE.**

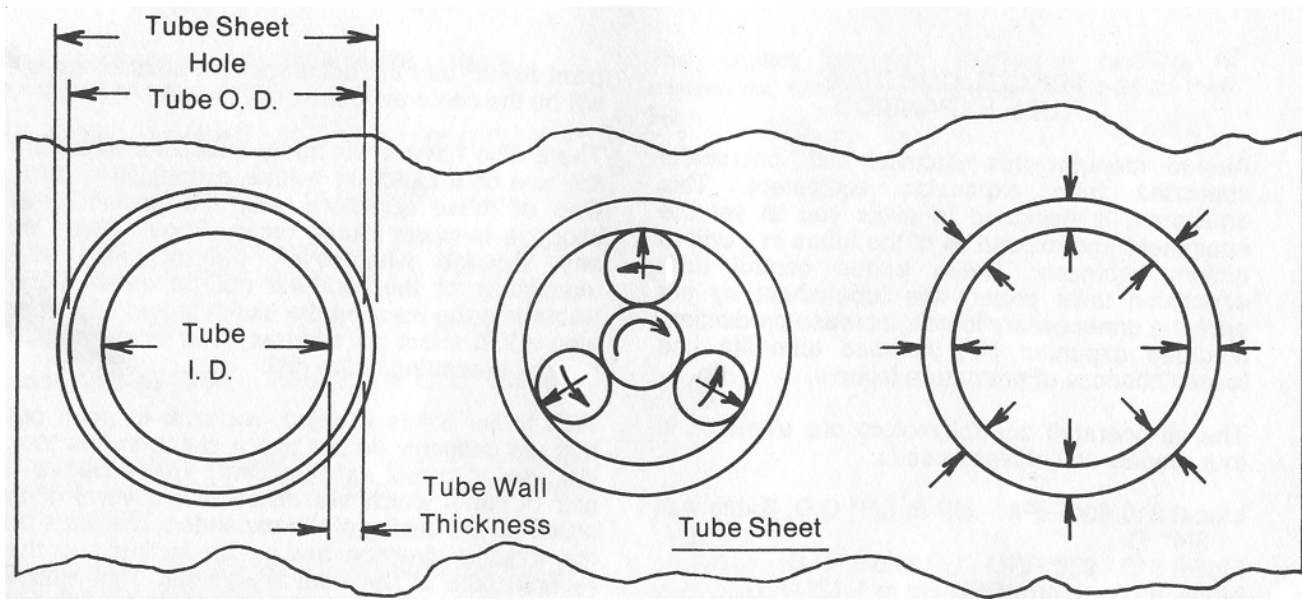
**E)** The rolling control is now set and ready to roll the rest of the tubes in the unit. The use of the torque control system will ensure the uniform tightness of all tubes.

**IMPORTANT NOTE:  
TO ENSURE THE BEST TOOL LIFE AND THE HIGHEST QUALITY TUBE TO TUBE SHEET CONTACT, PERIODIC CLEANING OF THE EXPANDER IS NECESSARY. PROPER LUBRICATION OF THE ROLL MANDREL AND THRUST BEARING IS A MUST!**

## LUBRICATION OF THE TUBE EXPANDERS

A quality lubrication oil, SAE#10 grade is popular for Tube expansion in normal tube size. For sever rolling of heavy gauge tubes or alloy materials a Viscous heavy oil of approximately SAE#60 is recommended. We can also supply water-soluble lubricant, our part number P8782 available in quart, gallon and five-gallon sizes.

# Tube Wall Reduction Set-up Guide



- Step A – Measure Tube Sheet Hole**
- Step B – Measure Tube OD**
- Step C – Calculate Clearance (A-B)**
- Step D – Measure Tube ID**
- Step E – Calculate Total Tube Wall Thickness (B-D)**
- Step F - Calculate 7% Wall Reduction (.07 X E)**
- Step G – Calculate Finished Rolled Tube ID (C+D+F)**

STEP	TUBE #	EXAMPLE	1	2	3	4	5
A	TUBE SHEET HOLE	.760"					
B	-TUBE OD	.750"					
C	=CLEARANCE	.010"					
D	+ TUBE ID	.620"					
E	TUBE WALL THICKNESS ( X2 )	.130"					
F	+ CALCULATED % WALL REDUCTION (7%)	.009"					
G	= FINISHED ROLLED TUBE ID	.639"					

## Tube Materials:

- Copper & Copper Alloy
- Carbon Steel & Brass
- \*Stainless Steel & Titanium

## Wall Reduction of a Double Tube Wall

- 8 - 10%
- 5 - 8%
- 4 - 5%

\* 4 or 5 roll expanders are recommended for these materials that work-harden rapidly and have extreme spring back memory.



***tube  
expanders***

- Boiler Expanders
- Heat Exchanger Expanders
- Condenser Expanders
- Refinery Expanders

***tube rolling motors  
& torque controls***

- Electric
- Pneumatic

***tube  
cleaners***

- Air & Water Driven Motors  
(Internal/External Drives)
  
- Jiffy Guns  
("Shoot-Thru" Devices)
  
- Roto-Jet  
(Rotating Flex Shaft)

***additional  
products***

- Tube and Joint Testers
  
- Tube Plugs  
(High & Low Pressure)

***retubing  
tools***

- Tube Gauges
- Tube Cutters
- Manual Tools
- Spear Type Tube Pullers
- Collet-Type Tube Pullers
- CYCLGRIP Tube Extractors
- Grooving Tools
- End-Prep Tools

***metal working  
products***

- Back Chamfering Tools
- Carbide Roller Burnishing Tools
- Diamond Burnishing Tools
- Elliptical Deburring Tools
- Fine Boring Tools
- Internal Recessing Tools
- Magic Vise
- Mechanical Joining Tools
- Roller Burnishing Tools
- Single Blade Reamers

o o o o o o o o o o o o o o o o

P.O. Box 1165-45401 • 1760 Tuttle Avenue • Dayton, Ohio 45403-3428 USA  
Phone: +1 937 253 6133 • +1 800 332 0447 • Fax +1 937 253 9189  
[www.elliott-tool.com](http://www.elliott-tool.com)