

RP Series

OPERATION AND MAINTENANCE

MANUAL

RP SERIES

Pneumatic Torque Wrenches

MODELS RP-500, RP-1000, RP-2000, RP-3000 AND RP-6000



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NOTICE

Series RP-500, RP-1000, RP-2000, RP-3000 and RP-6000 Pneumatic Torque Wrenches are designed for installing and removing threaded fasteners requiring precise high torque during bolt makeup and maximum torque during bolt breakout.

TorcUP Inc. is not responsible for customer modification of tools or for applications on which TorcUP Inc. was not consulted.

WARNING

**IMPORTANT SAFETY INFORMATION ENCLOSED.
READ THIS MANUAL BEFORE OPERATING TOOL.**

**IT IS THE RESPONSIBILITY OF THE EMPLOYER TO PLACE THE INFORMATION IN THIS
MANUAL INTO THE HANDS OF THE OPERATOR.
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.**

**The Raptor tools contain alloy components which may
cause a hazard in certain explosive environments.**

General Description of TorcUP RAPTOR Series Pneumatic Torque Wrenches

The RAPTOR Series Pneumatic Torque Wrench provides torque settings of up to 6,000 Ft/lbs in clockwise and counter clockwise rotation, and it's free joint execution allows for random positioning of the tool.

Torque can be adjusted by regulating the amount of airflow to the torque wrench and by manipulating the air pressure regulating valve at the Filter/Regulator/Lubricator Unit (RAPTOR F/R/L). The accuracy of maintaining a selected torque is subject to the stability of your air supply. An airflow of 40 to 55 CFMs guarantees optimum performance even within a non-protected working environment.

The use of other than genuine TorcUP replacement parts may result in safety hazards, decreased tool performance, increased maintenance, and may invalidate all warranties. Repairs should be made only by authorized personnel. Consult your nearest TorcUP Authorized Service Center.

Refer All Communications to the Nearest TorcUP Office or Distributor.

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WARNING

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY

Do NOT Exceed Maximum Pressure. See Torque Chart with Tool. Damage May Occur.

Do not use damaged, frayed or deteriorated pneumatic hoses and fittings.



Always wear eye protection when operating or performing maintenance on this tool.



Always wear ear protection when operating this tool.



Do not carry the tool by the hose.



Keep body stance balanced and firm. Do not overreach when operating this tool.



The Reaction Arm must be positioned against a positive stop. Do not use the arm as a dead handle. Take precautions to make certain the operator's hand cannot be pinched between the arm and a solid object.



USING THE TOOL

- Keep hands, loose clothing and long hair away from the reaction arm and working area during operation.
- This tool will exert a strong reaction force. Use proper mechanical support and correct reaction arm positioning to control these forces. Do not position the reaction arm so that it tilts the tool off the axis of the bolt, and never use the swivel inlets as a reaction stop.
- Avoid sharp bends and kinks that will cause severe back-up pressure in hoses and lead to premature hose failure.
- Use only accessories recommended by TorcUP.
- Use only impact sockets and accessories. Do not use hand (chrome) sockets or accessories.
- Use only sockets and accessories that correctly fit the bolt or nut and function without tilting the tool off the axis of the bolt.
- This tool is not insulated against electric shock.
- This equipment must not be operated or serviced unless the operator reads the operating instructions and fully understands the purpose, consequences and procedures of each step.

Depending on the working environment, your local health and safety regulations may require you wear protective gear (i.e. safety shoes, hard hat, gloves, coveralls, etc.). In case external forces are exerted on the equipment, non-compliance with these regulations may result in injury. **EAR PROTECTION MUST BE WORN WHEN OPERATING THIS TOOL.**

SAFETY INFORMATION

OPERATIONAL SAFETY

1. Inspect, maintain, operate and install the tool in accordance with all applicable standards and regulations (local, state, country, federal, etc.)
2. Do not remove any labels. Replace any damaged labels immediately.
3. Always use clean dry air. Exceeding the maximum PSI recommended for the tool and noted calibration chart may result in tool damage and/or hazardous situations including excessive speed, rupture, or incorrect output torque or clamp load.
4. Be sure all hoses and fittings are at least a 1/2" I.D. and tightly secured.
5. Ensure an accessible emergency shut off valve has been installed in the air supply line and make others aware of its location.
6. To prevent hose whipping if a hose fails or a coupling disconnects, install a properly sized safety air fuse upstream of the hose and use an anti-whip device across any hose coupling without an internal shut-off.
7. Do not use damaged, frayed or deteriorated air hoses and fittings. Do not paint hoses.
8. Keep clear of whipping air hoses. Shut off the air compressor before approaching a whipping hose.
9. Always turn off the air supply, bleed the air pressure and disconnect the air supply hose before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool or any accessory.
10. Do not lubricate tools with flammable or volatile liquids such as kerosene, diesel or jet fuel. Only use TorcUP recommended lubricants.
11. Only use proper cleaning solvents to clean parts. Use only cleaning solvents which meet current safety and health standards. Use cleaning solvents in a well ventilated area.
12. Keep work area clean, uncluttered, ventilated and illuminated.

PERSONAL SAFETY

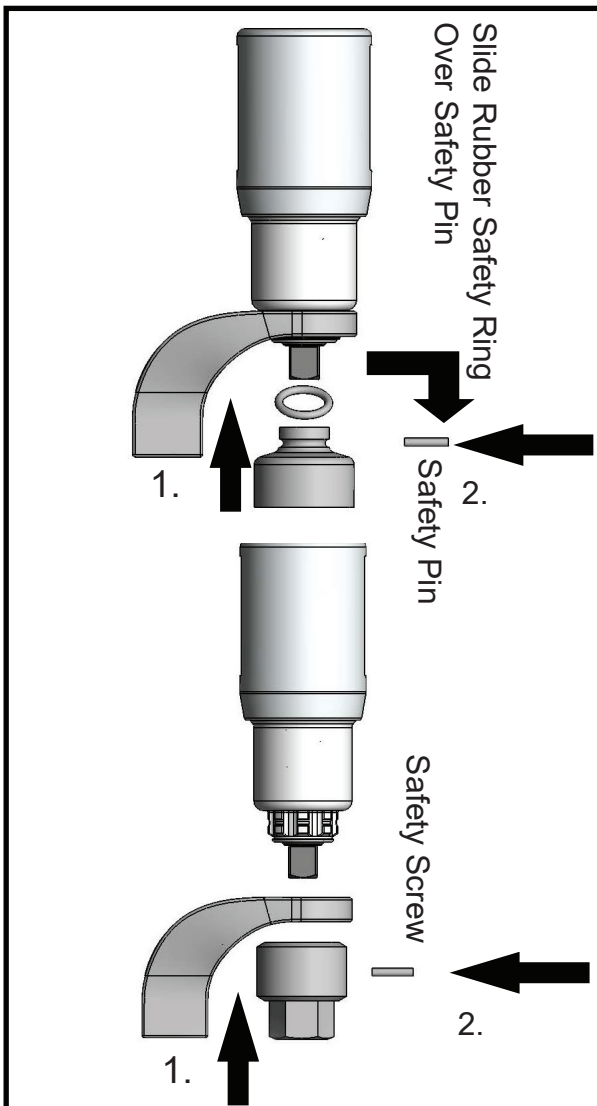
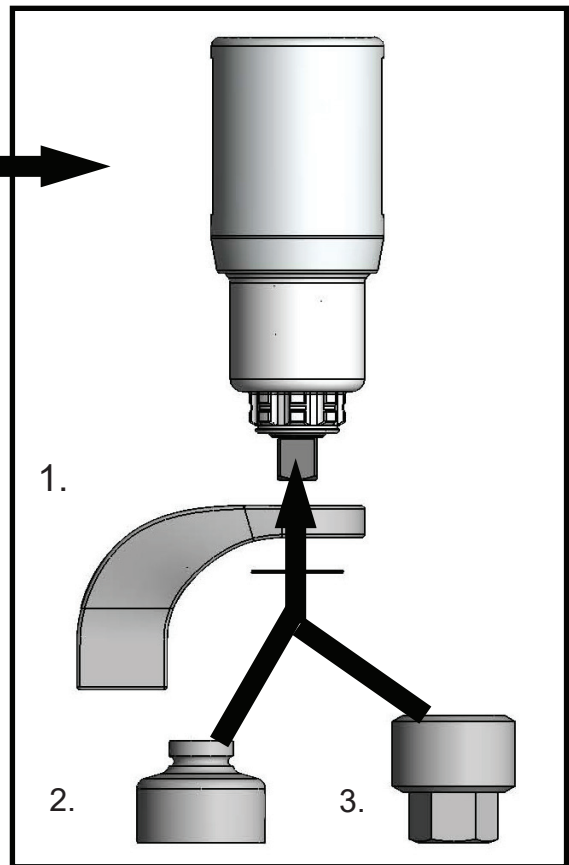
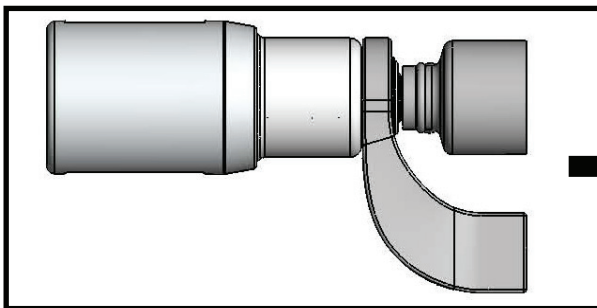
1. When wearing gloves, always be sure that the gloves will not prevent the throttle mechanism from being released.
2. Always wear eye protection when operating or performing maintenance on this tool.
3. Always wear hearing protection when operating this tool.
4. Always use Personal Protective Equipment appropriate to the tool used and the material being worked on. This may include dust mask or other breathing apparatus, safety glasses, ear plugs, gloves, apron, safety shoes, hard hat and other equipment.
5. Avoid breathing in any exhaust from tool use.
 - a. Some dust may also be created by working in close proximity to the following chemicals:
 - i. Lead from lead-based paints
 - ii. Crystalline silica from bricks and cement and other masonry products
 - iii. Arsenic and chromium from chemically treated lumberYour risk from these exposures varies depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as dust masks that are specially designed to filter out microscopic particles.
6. Keep others at a safe distance from your work area or ensure they use appropriate personal protective equipment.

SAFETY INFORMATION

7. Be aware of buried, hidden or other hazards in your work environment. Do not contact or damage cords conduits, pipes, or hoses that may contain electrical wires, explosive gases or harmful liquids.
8. Keep hands, loose clothing, long hair and jewelry away from the working end of the tool.
9. Power tools can vibrate in use. Vibration, repetitive motions or uncomfortable positions may be harmful to your hands and arms. Stop using any tool if discomfort, tingling feeling or pain occurs. Seek medical advice before resuming.
10. Keep your body stance balanced and firm. Do not overreach when operating this tool. Anticipate and be alert for sudden changes in motion, reaction torques, or forces during start up and operation.
- 11. DO NOT USE THE TOOL WHEN TIRED OR WHEN UNDER THE INFLUENCE OF MEDICATION, DRUGS OR ALCOHOL.**
12. Never use a damaged or malfunctioning tool or accessory.
13. Do not modify the tools, safety devices or accessories.
14. Do not use this tool for purposes other than those recommended.
15. Never exceed the rated PSI of the tool.

PLACING THE TOOL IN SERVICE

1. Ensure the air line is not connected to the tool before performing the following steps.
2. Ensure the reaction arm is properly attached and secured to the splined section of the torque tool.
3. Select your desired square drive size and bolt/nut AF size impact socket or hex-drive socket for use.
4. Secure impact socket onto the tool square drive with a safety pin and secure a safety o-ring on the socket.
5. Use a quality Filter/Lubricator/Regulator Unit that meets airflow requirements or use a TorcUP RAPTOR F/R/L Unit.
6. Ensure F/R/L has proper pneumatic oil for lubrication. See the requirements for oil specifications sheet.
7. See illustration below for details:



IMPORTANT

For long life of the air motor:

Use a quality F/R/L Unit

Must meet airflow requirements

Lubricator provides oil to air motor

Filter separates water to extend life
to motor vanes

Regulator allows accurate
setting of output

OPERATING PROCEDURES

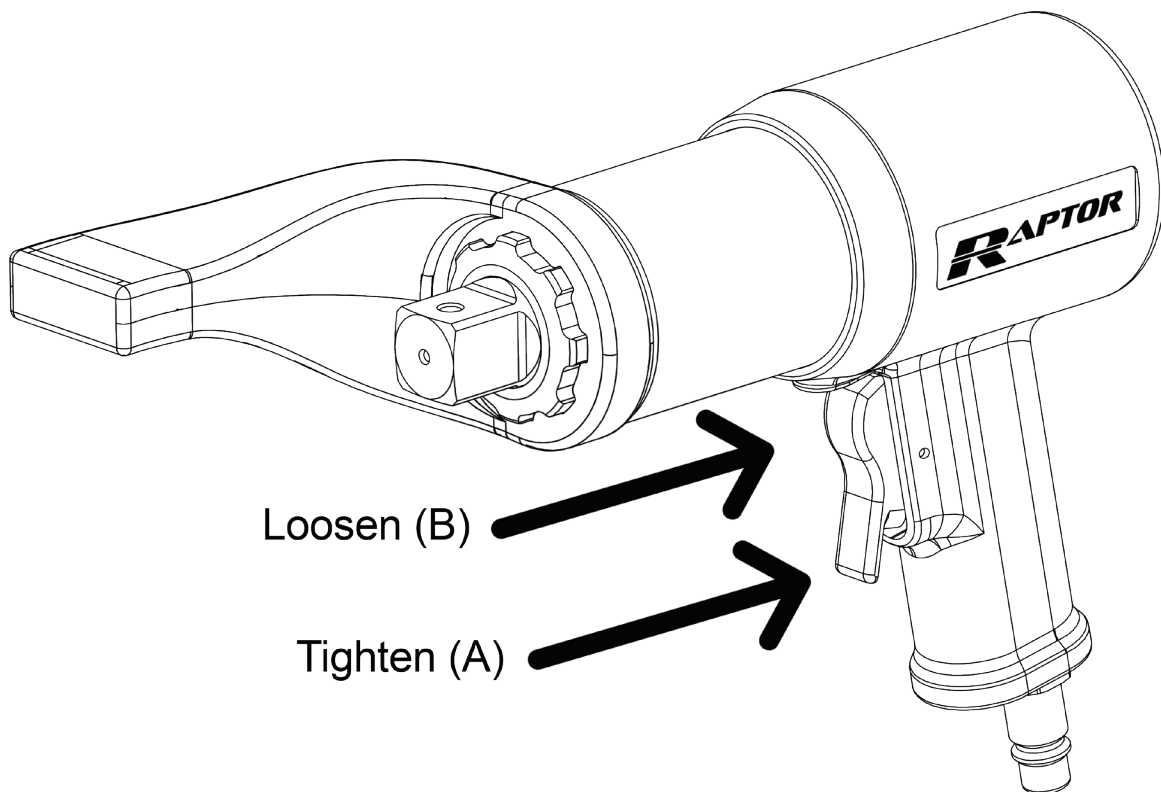
1. Torque depends on the air pressure exerted on the air motor under load. Adjusting the F/R/L Unit Regulator Knob initially sets the torque. To decrease the torque output, turn the regulator counter-clockwise to lower the air flow/pressure. All Raptors are shipped and calibrated per TorcUP ISO 17025: 2005 procedures.
2. Check for the desired torque setting for your selected model on the supplied torque chart. On the RAPTOR F/R/L, adjust the air pressure by using the air regulator knob for the desired pressure/torque. With the RAPTOR Series Torque Wrench under load (not on the nut/bolt), press the trigger until the pressure is set for desired torque output and airflow/pressure. While the RAPTOR Series Torque Wrench is under load, running at free speed (not on the nut/bolt), adjust the RAPTOR F/R/L pressure at the same time.

A. SETTING TORQUE FOR BOLT TIGHTENING

1. Establish the air pressure required using the Torque Calibrated Chart provided with the tool.
2. Press the trigger using the tightening direction per A on the below diagram.
3. Adjust the regulator until the correct pressure is shown on the gauge by turning the adjustment knob clockwise.

B. SETTING TORQUE FOR BOLT LOOSENING

1. Set the air pressure at the max PSI for the tool.
2. Press the trigger using the loosening direction per B on the below diagram.



OPERATING PROCEDURES

NOTICE

After extended use of the RAPTOR Series Torque Wrench, the air pressure setting should be re-checked and may require a minor adjustment. This is usually caused by variations in your air supply unit providing airflow to the F/R/L Unit or due to weather conditions.

IMPORTANT

In the case of degrading performance or other apparent damage, immediately send your RAPTOR Series Torque Wrench to TorcUP, Inc or contact your Local Representative or Distributor. The unit must be properly packaged for shipping.

OPERATING PROCEDURES

Unauthorized manipulation of air motor, valves, & TorcUP F/R/L Unit or tampering with either will result in loss of warranty! Also, for the life of your TorcUP RAPTOR Series Torque Wrench, the air supply should be clean and free of particles, water and other remnants. Pollution of the hose couplings or aggressive substances reaching the air motor via the supply hose may cause damage to the air motor vanes. Use approved F/R/L Units to obtain oil-enriched and filtered supply. Non-compliance with the specified operating air pressure will result in higher wear of the motor. Degradation in performance is likely to result. Also, for extreme cold weather, use approved cold weather pneumatic lubrication to prevent freeze ups.

WARNING

Beware of low-pressure air components. Do not fold or bend the supply hose excessively and check the hose for damage before use. A damaged hose must not be used, as there is a risk of a hose burst. This may lead to a wildly lashing hose with a risk of personal injury. Also, check the air fitting and connections for tightness or damage.

TIGHTENING AND LOOSENING OF BOLTS OR NUTS

WARNING

TIGHTENING AND LOOSENING OF BOLTS OR NUTS

- Beware of non-fixed, freely rotating reaction arms or of rotating impact sockets.
- Loose clothes, long hair, cables, etc. are always to be kept away from the danger/rotation area. When the machine is put into operation, it is mandatory to wear ear protection, safety shoes and safety goggles.
- Never leave a running RAPTOR Series Torque Wrench unattended and always be ready to switch off the machine if necessary. Maintain a safety distance of arm length.
- Always place the impact socket or hex driver snugly onto the screw or nut/bolt. Faulty screw or nut/bolt connections may result in exceeding the mechanical stress limit of the material, causing it to break. Parts that splinter off may cause bruises or even life-threatening injuries.
- Due to emission of an air-oil mixture, a breathing mask must be worn, especially when working over the head and in tight, secluded spaces.

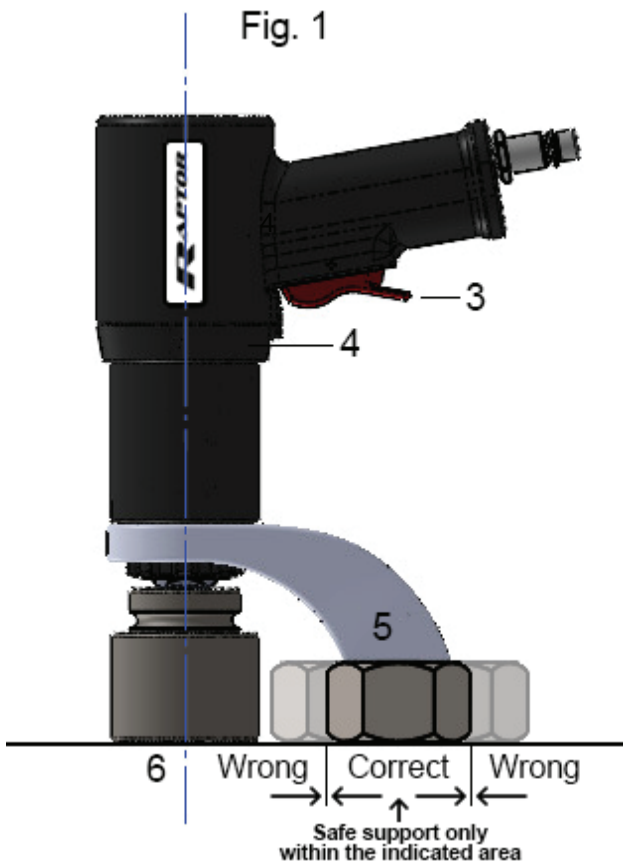
When torquing and untorquing fasteners, always hold/position the RAPTOR Series Torque Wrench in line with the fastener axis to avoid damage to the application. See Figure 1 on the following page.

NOTICE

The indicated calibrated torque settings have to be considered only as a guideline. Because of variations in pressure and/or air flow, as well as other application issues, deviations from the calibration certificate may be necessary. Due to the CFM required, when the tool is running at free speed, it may not be possible to set the regulator to the desired pressure due to air pressure drop off. The CFM requirement is lower once the tool is under load, so if this happens, set the regulator to the desired PSI without the tool running. Try tightening down the fastener and check the PSI when the tool stalls. If the tool stalls at the PSI setting, the desired torque has been reached. If it has stalled before, try adjusting regulator higher until the correct stall PSI is reached.

TIGHTENING AND LOOSENING OF BOLTS OR NUTS

Because of the high mechanical stress on the RAPTOR Series air motor, it is essential to provide the F/R/L Unit with sufficient oil supply. Non-compliance bears a risk of damaging the vanes of the air motor. Enriching the supply by adjusting the oil feed on the F/R/L to 2 to 3 drops per minute will suffice for heavy continuous equipment use.



1. Place your RAPTOR Series Torque Wrench completely over and on the fastener to be tightened or loosened. (4)
2. Ensure the reaction area / movement is taken up by the Reaction Arm (5). Also, ensure the reaction is stable and will support counter torque.
3. Hold the RAPTOR Series Torque Wrench perpendicular to the fastener axis (6) for the complete duration of the rotation process for tightening or loosening.
4. After pressing the trigger (3) on the pistol grip, when tightening the fastener the Tool will rotate until it becomes torqued, and the RAPTOR Series Torque Wrench will then stall out.
5. The trigger will then need to be depressed in the opposite direction for opposite tool rotation to release the counter torque load off the reaction arm. Once this is done, you then can remove the tool from the bolt and move on to the next fastener.
6. For loosening a fastener, the unit will continue to rotate until the fastener is removed OR once the fastener is loose you can remove it by hand and move to next fastener.
7. Continue the process for tightening or loosening for each fastener you require.
8. If torque requirements require your application to go in torque increments, then set RAPTOR Series Torque Wrench to your first torque requirement. Tighten fastener as per your required tightening bolt sequence. Then, reset for the next settings on the F/R/L unit by adjusting the regulating knob as described earlier.
9. Your personnel can be trained by your TorcUP Representative or Distributor on use of this product if so desired.

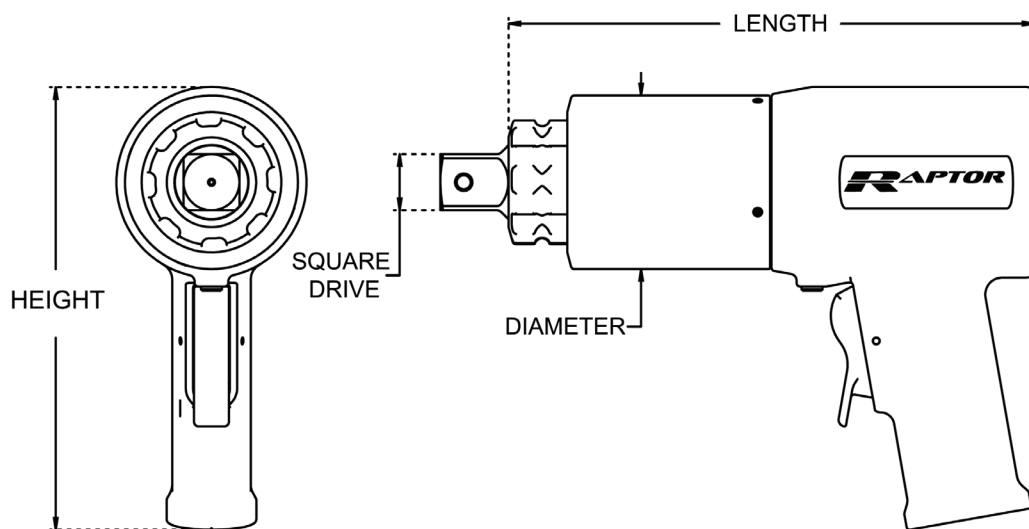
CHANGING ACCESSORIES

1. Remove the RAPTOR Series Torque Wrench from work while depressing the trigger. Then, back off the regulator knob to decrease the pressure to zero.
2. Disconnect the air hose to the RAPTOR Series Torque Wrench.
3. Remove and change the socket or accessory adaptor for the next project. Ensure the socket or accessory is properly secured to the square drive with a locking pin and safety securing o-ring.

TECHNICAL SPECIFICATIONS

Model Number	RAPTOR 500	RAPTOR 1000	RAPTOR 2000	RAPTOR 3000	RAPTOR 6000
Square drive	3/4"	1"	1"	1"	1 1/2"
Min. Torque (ft/lbs)	78	148	231	484	714
Max. Torque (ft/lbs)	530	1030	2015	3070	5990
Min. Torque (nm)	106	201	313	656	968
Max. Torque (nm)	719	1396	2732	4162	8121
Height (in)	7.89"	7.89"	7.89"	7.89"	7.89"
Height (mm)	200.4	200.4	200.4	200.4	200.4
Square Drive (in)	0.75"	1.0"	1.0"	1.0"	1.5"
Square Drive (mm)	19.05	25.4	25.4	25.4	38.1
Dimension Length (in)	6.90"	8.87"	9.40"	11.62"	12.32"
Dimension Length (mm)	175.3	225.3	238.8	269.7	312.9
Diameter (in)	2.56"	2.85"	3.09"	3.75"	5.00"
Diameter (mm)	65.0	72.4	78.5	95.3	127.0
Weight (lbs) w/o arm	9	12	13.9	20	36
Weight (Kg) w/o arm	4.1	5.4	6.3	9.1	16.3
Performance Data (RPM)					
- RPM @ 10 psi	16.5	7.0	3.5	1.75	1.25
- Tool Max Pressure	80psi	70psi	90psi	65psi	90psi
- RPM @ MAX psi	44	15	9.0	4.0	3.0

Requirements: Air Pressure 10-90 psi - Flow 44-55 CFM



TECHNICAL SPECIFICATIONS

Air Reg. PSI	RAPTOR 500	RAPTOR 1000	RAPTOR 2000	RAPTOR 3000	RAPTOR 6000
10					
20					
30					
40					
50					
60					
70					
80					
90					

Please consult the calibration torque chart specific to your purchase or rental tool. Do NOT exceed maximum pressure. See Torque Chart. Tool Damage may occur.

NOISE AND VIBRATIONS

Sound pressure level, measured in accordance OSHA & German Machinery-Noise-Information-Leaflet-3-GSGV requirements dated 18 Jan 1991, §1, (1 e) at maximum equipment performance is just over 85 dB(A).

In accordance with §1, (2) of the same leaflet sound pressure levels were measured for different work cycles, with the sensor at a distance of 1 meter to the geometric center of the machine. Vibrations become moderate just prior reaching the pre-set torque value.

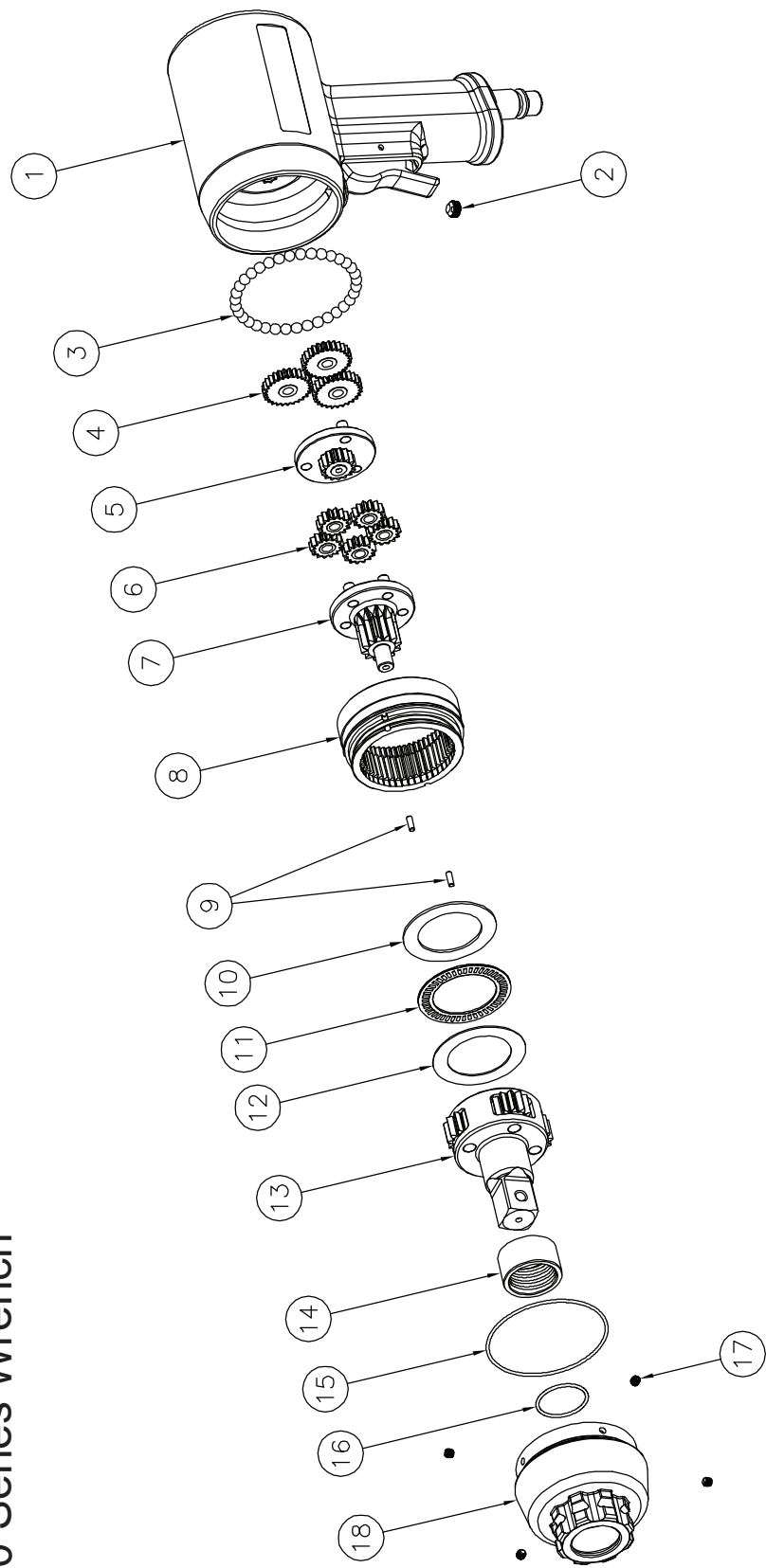
On request RAPTOR Series Pneumatic Torque Wrenches with lower sound pressure levels (<85 dB(A)) are available as special modification. Because this modification comprises a sound absorber, relevant torque values may change on given unit.

Beware of components under pressure. Inadvertent activation of the torque wrench may lead to both a risk of injury as well as damage to property. When detaching the supply air hose always shut off air to supply first. Non-compliance with procedure may result in an out-of-control supply hose thus risking personal injury and damage to property.

STORING YOUR RAPTOR SERIES TORQUE WRENCH

1. Shut off the pressurized air to the F/R/L by turning off the air to the F/R/L Unit.
2. Bleed off the air by depressing the toggle switch in either direction on the Pistol Grip.
3. Disconnect the supply hose from the F/R/L Unit, and disconnect the air hose at the RAPTOR Series Pneumatic Torque Wrench.
4. If the RAPTOR Series Torque Wrench is not to be used for an extended period of time, spray pneumatic lubricating oil into the RAPTOR Series Fitting. Reconnect the air hose and supply hose to the F/R/L Unit air inlet fitting. Cycle the F/R/L unit momentarily to ensure that 2-3 drops of lubricating oil has entered into the air motor. Then stop and shut-off the system as previously mentioned above. Store your RAPTOR Series Torque Wrench in the case that it was shipped in.

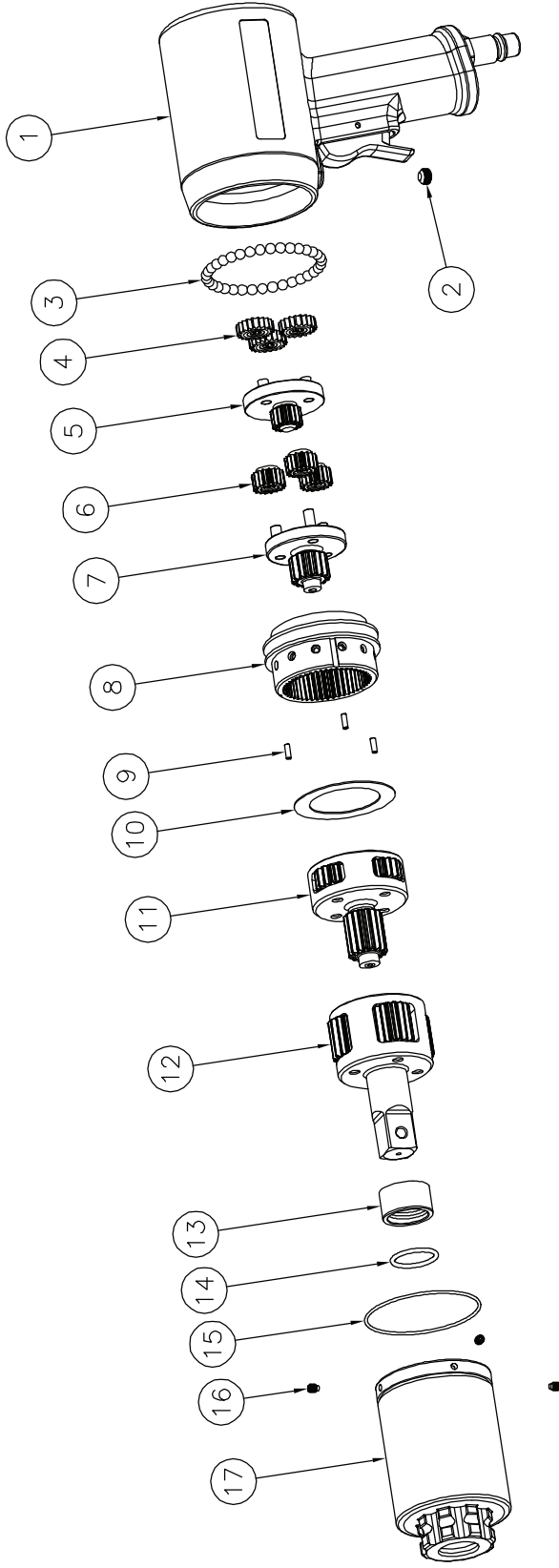
RP-500 Series Wrench



Part Numbers for Ordering

ITEM	NAME	PART #	QTY.
1	Air Motor Handle Gen 3	RP3-AM19-ASSY	1
2	Ball Retainer	RP-AM19-41	1
3	Steel Ball	RP-CM-BB	35
4	1st Stage Spur Gear	RP3-05-ST1-G	2
5	1st Stage Gear Carrier	RP3-05-ST1	1
6	2nd Stage Spur Gear	RP3-05-ST2-G	5
7	2nd Stage Gear Carrier	RP3-05-ST2	1
8	High Speed Annulus	RP3-05-HSA	1
9	High Speed Annulus Dowel	RP3-05-DOWEL	2
10	Thrust Washer B	RP3-05-TRB	1
11	Needle Roller Thrust Bearing	RP3-05-NRB	1
12	Thrust Washer A	RP3-05-TRA	1
13	Drive Stage Assembly	RP3-05-DSTA	1
14	Main Bearing	RP3-05-MB	1
15	Main Annulus O-Ring	RP-CM-OR-MA	1
16	Drive Annulus O-Ring	RP3-05-OR-DA	1
17	Drive Annulus Set Screw	RP3-05-SS-DA	4
18	Drive Annulus	RP3-05-DA	1

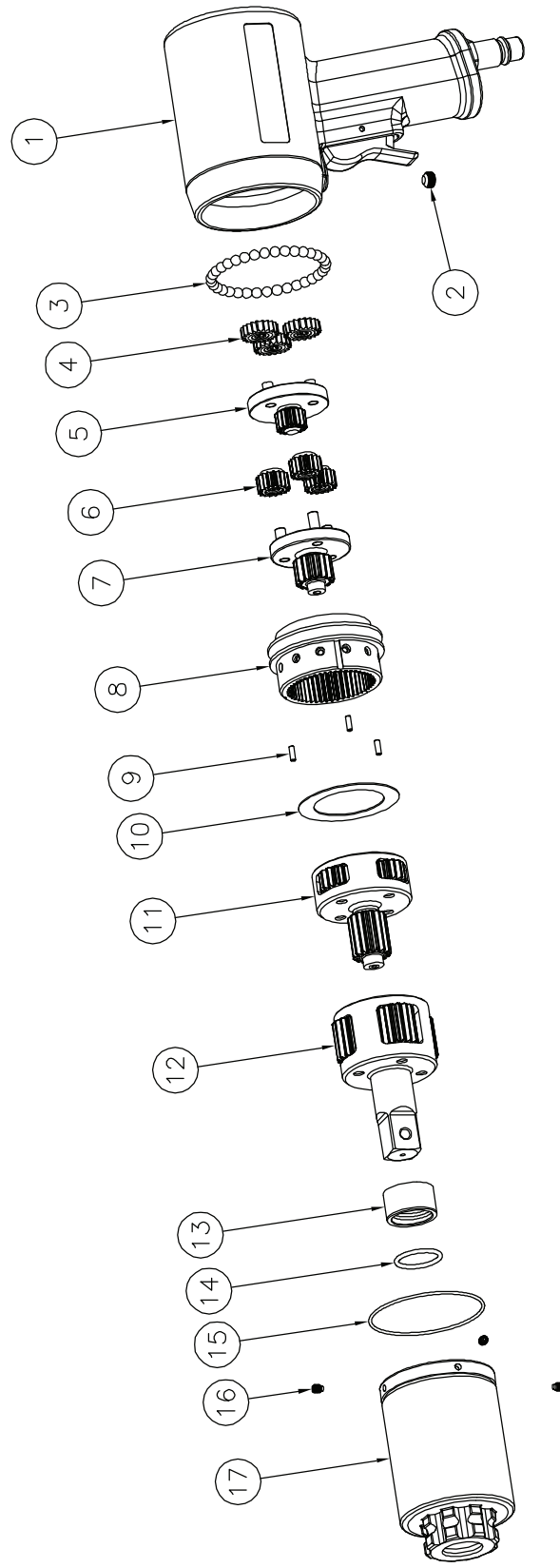
RP-1000 Series Wrench with 3/4" Drive



Part Numbers for Ordering

ITEM	NAME	PART #	QTY.
1	Air Motor Handle	RP-AM19-ASSY	1
2	Air Motor Ball Retainer	RP-AM19-41	1
3	Steel Ball	RP-CM-BB	35
4	1st Stage Spur Gear	RP-10-ST1-G	3
5	1st Stage Gear Carrier	RP-10-ST1	1
6	2nd Stage Spur Gear	RP-10-ST2-G	3
7	2nd Stage Gear Carrier	RP-10-ST2	1
8	High Speed Annulus	RP-10.30-HSA	1
9	High Speed Annulus Dowel	RP3-05-DOWEL	3
10	Thrust Washer	RP-10-TW	1
11	3rd Stage Assembly	RP-10-ST3A	1
12	Drive Stage Assembly	RP-10-DSTA	1
13	Main Bearing	RP-10-MB	1
14	Drive Annulus O-Ring	RP-10-OR-DA	1
15	Main Annulus O-Ring	RP-CM-OR-MA	1
16	Drive Annulus Set Screw	RP-CM-SS-DA	4
17	Drive Annulus	RP-10-DA	1

RP-1000 Series Wrench with 1" Drive

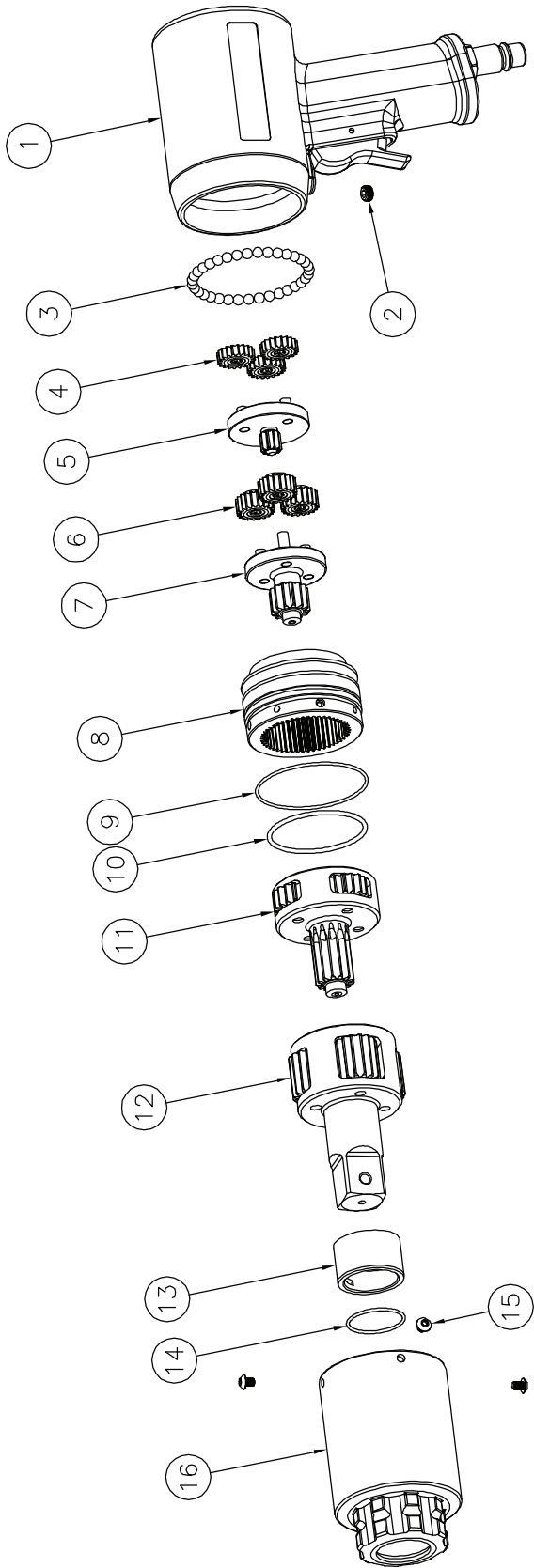


Part Numbers for Ordering

ITEM	NAME	PART #	QTY.
1	Air Motor Handle	RP-AM19-ASSY	1
2	Air Motor Ball Retainer	RP-AM19-41	1
3	Steel Ball	RP-CM-BB	35
4	1st Stage Spur Gear	RP-10-ST1-G	3
5	1st Stage Gear Carrier	RP-10-ST1	1
6	2nd Stage Spur Gear	RP-10-ST2-G	3
7	2nd Stage Gear Carrier	RP-10-ST2	1
8	High Speed Annulus	RP-10.30-HSA	1
9	High Speed Annulus Dowel	RP3-05-DOWEL	3

ITEM	NAME	PART #	QTY.
10	Thrust Washer	RP-10-TW	1
11	3rd Stage Assembly	RP-10-ST3A	1
12	Drive Stage Assembly	RP-10-DSTA-1	1
13	Main Bearing	RP-10-MB	1
14	Drive Annulus O-Ring	RP-10-OR-DA-1	1
15	Main Annulus O-Ring	RP-CM-OR-MA	1
16	Drive Annulus Set Screw	RP-CM-SS-DA	4
17	Drive Annulus	RP-10-DA-1	1

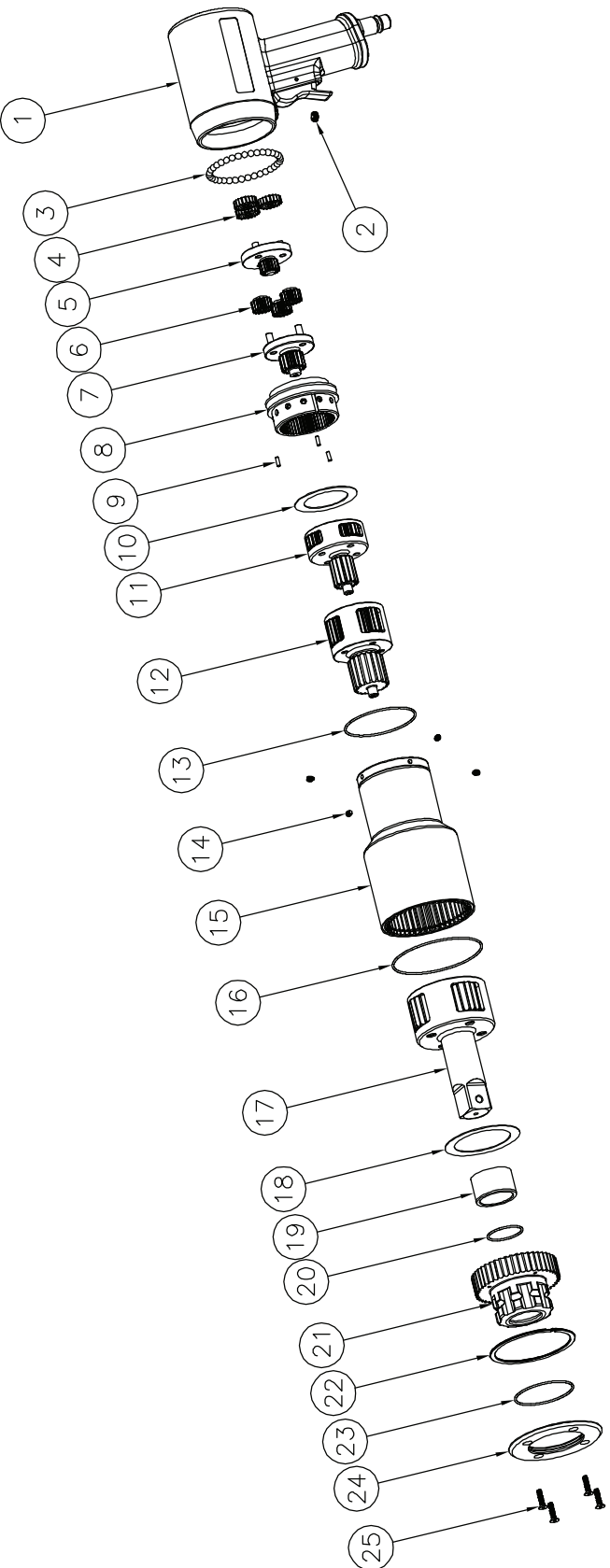
RP-2000 Series Wrench



Part Numbers for Ordering

ITEM	NAME	PART #	QTY.	ITEM	NAME	PART #	QTY.
1	Air Motor Handle	RP-AM19-ASSY	1	9	Main Annulus O-Ring (Small)	RP-CM-OR-MA	1
2	Air Motor Ball Retainer	RP-AM19-41	1	10	Main Annulus O-Ring (Large)	RP-20.60-OR-MA	1
3	Steel Ball	RP-CM-BB	35	11	3rd Stage Assembly	RP-20-ST3A	1
4	1st Stage Spur Gear	RP-20-ST1-G	3	12	Drive Stage Assembly	RP-20-DSTA	1
5	1st Stage Gear Carrier	RP-20-ST1	1	13	Main Bearing	RP-20-MB	1
6	2nd Stage Spur Gear	RP-20-ST2-G	3	14	Drive Annulus O-Ring	RP-20-OR-DA	1
7	2nd Stage Gear Carrier	RP-20-ST2	1	15	Drive Annulus Set Screw	RP-20.60-SS-DA	4
8	High Speed Annulus	RP-20.60-HSA	1	16	Drive Annulus	RP-20-DA	1

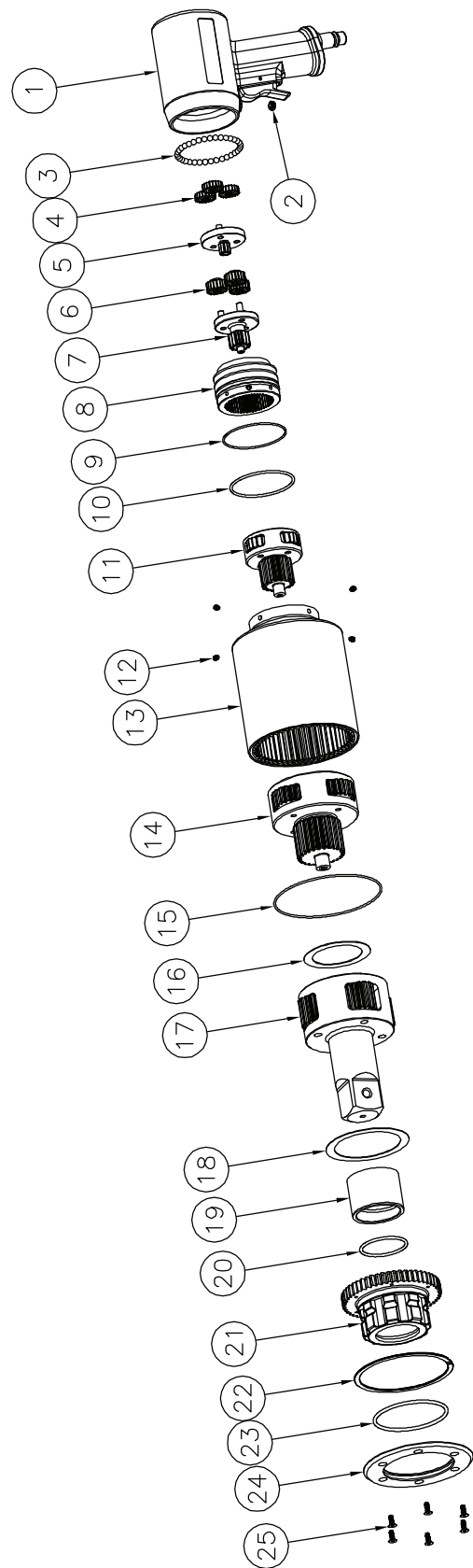
RP-3000 Series Wrench



Part Numbers for Ordering

ITEM	NAME	PART #	QTY.
1	Air Motor Handle	RP-AM19-ASSY	1
2	Air Motor Ball Retainer	RP-AM19-41	1
3	Steel Ball	RP-CM-BB	35
4	1st Stage Spur Gear	RP-30-ST1-G	3
5	1st Stage Gear Carrier	RP-30-ST1	1
6	2nd Stage Spur Gear	RP-30-ST2-G	3
7	2nd Stage Gear Carrier	RP-30-ST2	1
8	High Speed Annulus	RP-10.30-HSA	1
9	High Speed Annulus Dowel	RP3-05-DOWEL	3
10	High Speed Thrust Washer	RP-30-HSA-TW	1
11	3rd Stage Assembly	RP-30-ST3A	1
12	4th Stage Assembly	RP-30-ST4A	1
13	Main Annulus O-Ring	RP-CM-OR-MA	1
14	Drive Annulus Set Screw	RP-CM-SS-DA	4
15	Drive Annulus	RP-30-DA	1
16	Drive Annulus O-Ring	RP-30-OR-DA	1
17	Drive Stage Assembly	RP-30-DSTA	1
18	Drive Stage Thrust Washer	RP-30-DSTA-TW	1
19	Main Bearing	RP-30-MB	1
20	Annulus Head O-Ring	RP-30-OR-AH	1
21	Annulus Head	RP-30-AH	1
22	Retaining Ring	RP-30-RR	1
23	Annulus Cap O-Ring	RP-30-OR-AC	1
24	Annulus Cap	RP-30-AC	1
25	Annulus Head Screw	RP-30-AH-SCREW	4

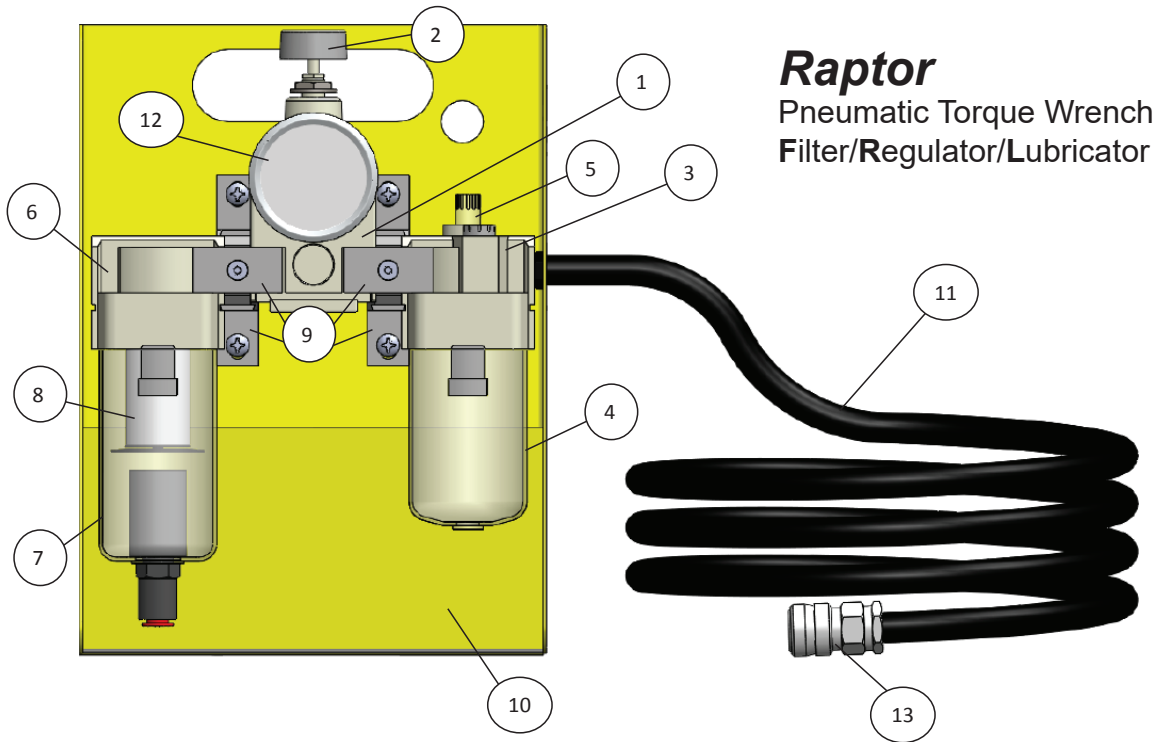
RP-6000 Series Wrench



Part Numbers for Ordering

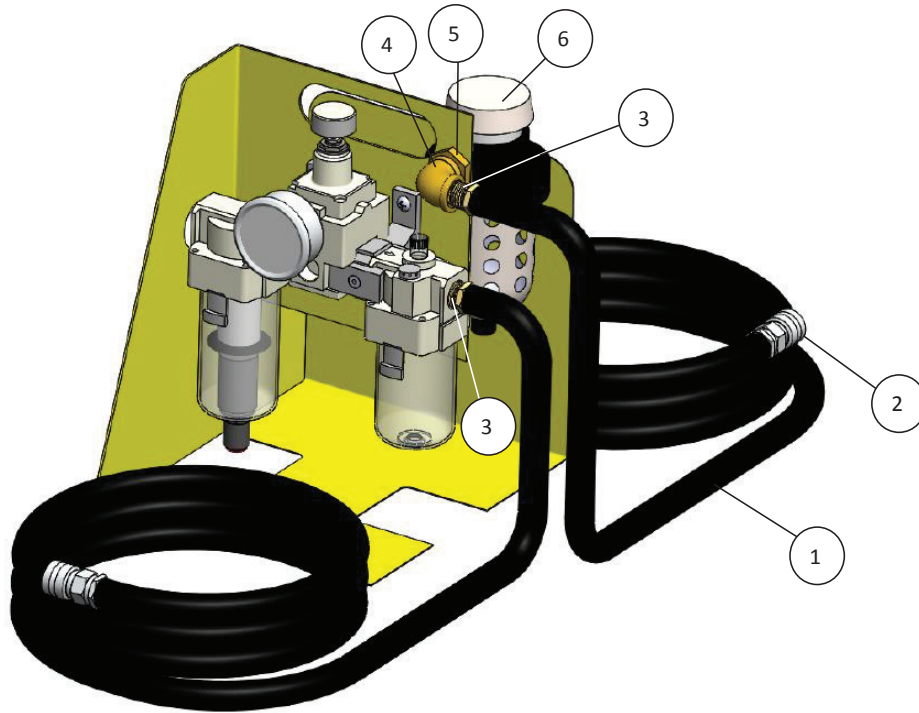
ITEM	NAME	PART #	QTY.
1	Air Motor Handle	RP-AM19-ASSY	1
2	Air Motor Ball Retainer	RP-AM19-41	1
3	Steel Ball	RP-CM-BB	35
4	1st Stage Spur Gear	RP-60-ST1-G	3
5	1st Stage Gear Carrier	RP-60-ST1	1
6	2nd Stage Spur Gear	RP-60-ST2-G	3
7	2nd Stage Gear Carrier	RP-60-ST2	1
8	High Speed Annulus	RP-20.60-HSA	1
9	Main Annulus O-Ring (Small)	RP-CM-OR-MA	1
10	Main Annulus O-Ring (Large)	RP-20.60-OR-MA	1
11	3rd Stage Assembly	RP-60-ST3A	1
12	Drive Annulus Set Screw	RP-20.60-SS-DA	4
13	Drive Annulus	RP-60-DA	1
14	4th Stage Assembly	RP-60-ST4A	1
15	Drive Annulus O-Ring	RP-60-OR-DA	1
16	4th Stage Thrust Washer	RP-60-ST4A-TW	1
17	Drive Stage Assembly	RP-60-DSTA	1
18	Drive Stage Thrust Washer	RP-60-DSTA-TW	1
19	Main Bearing	RP-60-MB	1
20	Annulus Head O-Ring	RP-60-OR-AH	1
21	Annulus Head	RP-60-AH	1
22	Retaining Ring	RP-60-RR	1
23	Annulus Cap O-Ring	RP-60-OR-AC	1
24	Annulus Cap	RP-60-AC	1
25	Annulus Head Screw	RP-60-AH-SCREW	4

RAPTOR F/R/L BOM



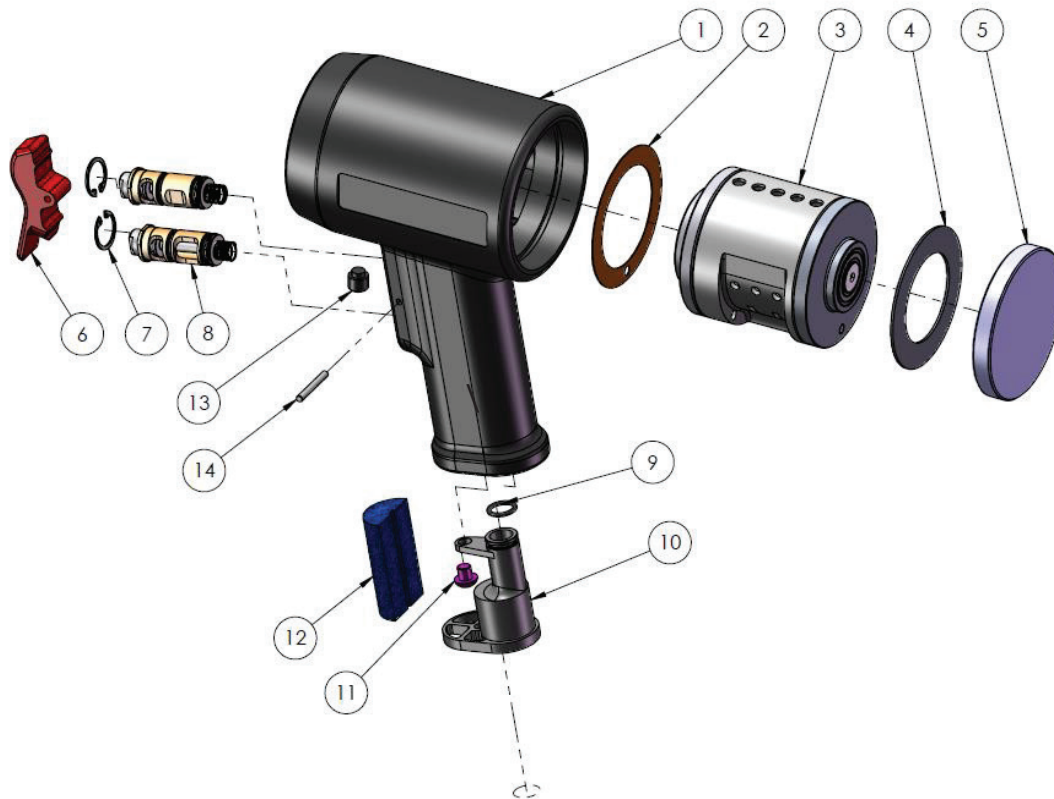
ITEM	QTY.	PART #	DESCRIPTION
1	1	RP-FRL-001	Precision Regulator
2	1	RP-FRL-001-K	Knob for Precision Regulator
3	1	RP-FRL-002	Lubricator Unit
4	1	RP-FRL-002-B	Bowl Assembly for Lubricator Unit
5	1	RP-FRL-002-SG	Sight Glass for Lubricator Unit
6	1	RP-FRL-003	Filter with Auto Drain
7	1	RP-FRL-003-B	Bowl Assembly for Filter w/ Auto Drain
8	1	RP-FRL-003-F	Filter Element
9	2	RP-FRL-004	Mounting Brackets
10	1	RP-FRL-005	Yellow Roll Cage
11	1	RP-FRL-006	10' Hose Assembly
12	1	RP-FRL-007	Pressure Gauge
13	1	RP-FRL-010	½" Hose Barb to Female Coupler
N/A	1	RP-FRL	RP Filter/Regulator/Lubricator Assembly

RAPTOR F/R/L SILENCER SYSTEM



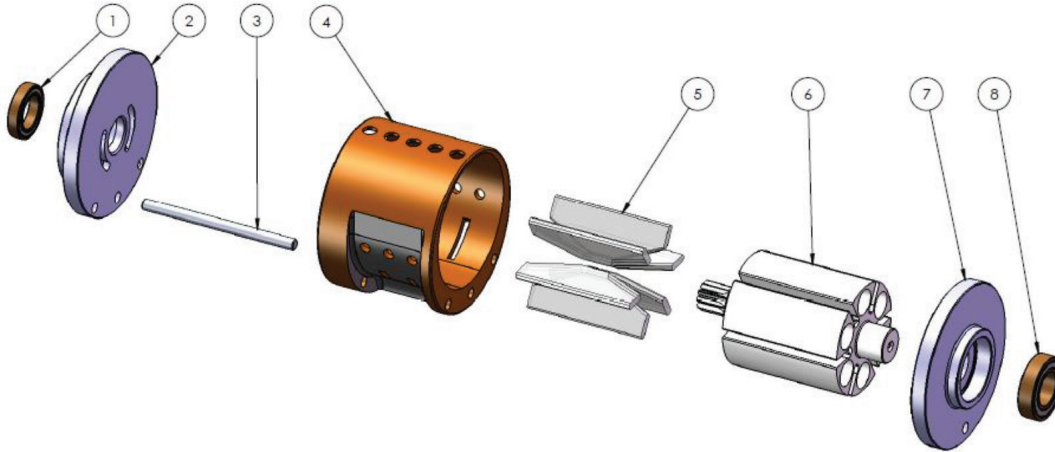
ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	RP-FRL-006	10' Hose Assembly
2	1	RP-FRL-010	1/2" Hose Barb to Female Coupler
3	1	RP-FRL-008	1/2" NPT Fitting to 1/2" Push Lock
4	1	RP-FRL-016	1/2" NPT Male to 1/2" NPT Female 90°
5	1	RP-FRL-017	1/2" NPT Lock Nut
6	1	AP-CEM	Coalescing Exhaust Muffler
N/A	1	RPA-SilencerKit	Raptor F/R/L with Silencer Kit

RAPTOR HANDLE ASSEMBLY



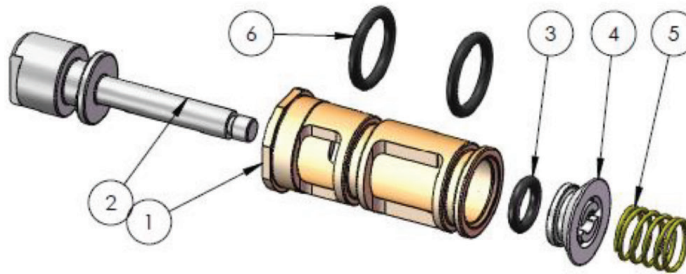
ITEM	QTY.	PART #	DESCRIPTION
1	1	RP-AM19-01	HANDLE HOUSING
2	1	RP-AM19-03	GASKET
3	1	RP-AM19-11-1	MOTOR ASSEMBLY
4	1	RP-AM19-21	BACKHEAD SPACER
5	1	RP-AM19-23	BACKHEAD
6	1	RP-AM19-25	TRIGGER
7	2	RP-AM19-27	SNAP RING
8	2	RP-AM19-29	POPPET VALVE ASSEMBLY
9	1	RP-AM19-33	INLET BUSHING O-RING
10	1	RP-AM19-35	INLET BUSHING
11	1	RP-AM19-37	INLET BUSHING CAP SCREW
12	1	RP-AM19-35-1	INLET BUSHING MUFFLER ELEMENT
13	1	RP-AM19-41	BALL RETAINER
14	1	RP-AM19-43	DOWEL PIN
N/A	1	RP-AM19-ASSY	RAPTOR HANDLE ASSEMBLY

RAPTOR MOTOR ASSEMBLY



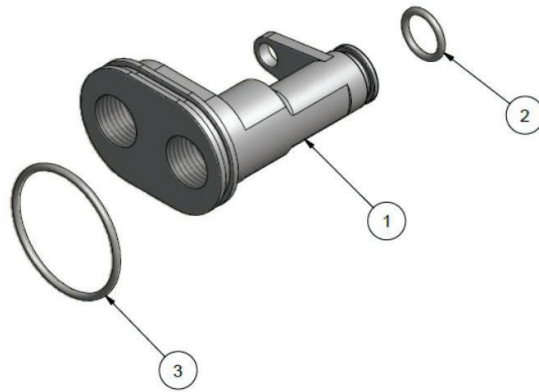
ITEM	QTY.	PART #	DESCRIPTION
1	1	RP-AM19-05	FRONT BEARING
2	1	RP-AM19-07	FRONT END PLATE
3	1	RP-AM19-09	DOWEL
4	1	RP-AM19-11	MOTOR HOUSING
5	6	RP-AM19-13	VANES
6	1	RP-AM19-15	ROTOR
7	1	RP-AM19-17	BACK END PLATE
8	1	RP-AM19-19	BACK BEARING
N/A	1	RP-AM19-11-1	MOTOR ASSEMBLY

RAPTOR POPPET VALVE ASSEMBLY



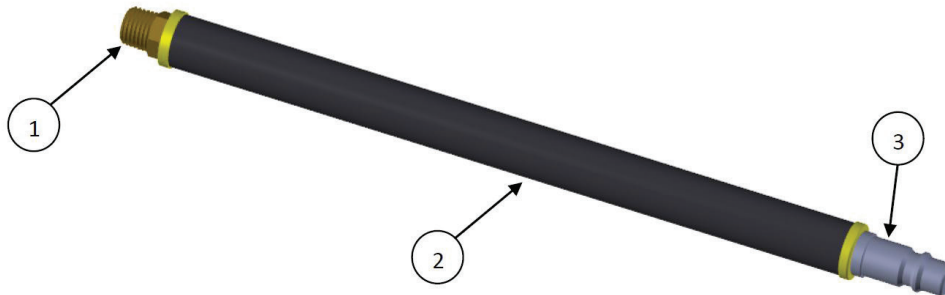
ITEM	QTY.	PART #	DESCRIPTION
1	1	RP-AM19-29-1	POPPET VALVE BODY
2	1	RP-AM19-29-2	POPPET VALVE STEM
3	1	RP-AM19-29-3	POPPET VALVE SMALL O-RING
4	1	RP-AM19-29-4	POPPET VALVE
5	1	RP-AM19-31	POPPET VALVE SPRING
6	2	RP-AM19-33	POPPET VALVE LARGE O-RING
N/A	1	RP-AM19-29	POPPET VALVE ASSEMBLY

RAPTOR DUAL PORT INLET ASSEMBLY



ITEM	QTY.	PART #	DESCRIPTION
1	1	RP-AM19-2PORT-1	DUAL PORT INLET
2	1	RP-AM19-33	DUAL PORT INLET SMALL O-RING
3	1	RP-AM19-2PORT-2	DUAL PORT INLET LARGE O-RING

RAPTOR DUAL PORT INLET HOSE



ITEM	QTY.	PART #	DESCRIPTION
1	1	RP-FRL-012	3/8" NPT FITTING TO 1/2" PUSH LOCK
2	1	RP-FRL-HOSE	1' PNEUMATIC HOSE
3	1	RP-FRL-009	1/2" MALE COUPLER TO 1/2" PUSH LOCK

MSDS

TorcUP Part # RP-FRL-TOOLOIL

Safety Data Sheet
Talon Compressor & Air Tool Lubricant
Revision Date: 6/3/15

Prepared according to Global Harmonized System (GHS) standards

SECTION 1

CHEMICAL PRODUCT IDENTIFICATION

Product Trade Name:

Talon Compressor & Air Tool Lubricant

CAS Number: Mixture
Synonyms/Other: N/A
Part Number(s): Model # 0409877
Recommended Use: Lubricant
Restrictions on Use: Not Determined.
Created Date: 6/3/2015
Preparation/Revision Date: 6/3/2015
Emergency Phone Number: 1-800-424-9300 (CHEMTREC)
SDS CODE: 12159

SECTION 2

HAZARD IDENTIFICATION

Appearance: Clear, Light Yellow
Odor: Petroleum
Classification: Hazardous to the aquatic environment (acute hazard) category 3
Target Organs: Not applicable.
Pictogram(s): None required.
Signal Word: None required.
Hazard Statement: H412 - Harmful to aquatic life with long lasting effects
Other Hazards: Not determined.
Prevention: P273 - Avoid release to the environment
Response: None required.
Storage Procedures: None required.
Disposal: P501 - Dispose of contents and container in accordance with federal, state, and local
Other: See section 11 for complete health hazard information.

SECTION 3

COMPOSITION OF INGREDIENTS

Component	CAS Number	Percentage (by weight)
Zinc alkyldithiophosphate	Proprietary	0.1-1.0%
Butylated phenol	128-39-2	0.1-1.0%
Aryl phosphite	101-02-0	<0.1%

The balance of components do not contribute to the overall classification of the fluid, according to the GHS Standard.

MSDS

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SECTION 4

FIRST AID MEASURES

Eye Contact:	If irritation occurs, cautiously rinse eyes with lukewarm, gently flowing water for 5 minutes, while holding the eyelids open. If eye irritation persists: Get medical advice/attention.
Skin Contact:	Call a doctor if you feel unwell.
Inhalation:	Get medical advice or attention if you feel unwell or are concerned.
Ingestion:	If you feel unwell or concerned: Get medical advice/attention. Rinse mouth. Do NOT induce vomiting. If vomiting occurs naturally, lie on your side, in the recovery position.
Other:	No additional information

SECTION 5

FIRE FIGHTING MEASURES

Flash Point:	Not determined.
Flammable limits:	Not determined.
Extinguishing media:	Use dry chemical, alcohol foam, all purpose AFFF or carbon dioxide to extinguish fire.
Special firefighting procedures:	DO NOT direct a solid stream of water or foam into hot, burning pools of liquid since this may cause frothing and increase fire intensity. Frothing can be violent and possibly endanger any firefighter standing too close to the burning liquid. Use water spray to cool fire exposed containers and structures until fire is out if it can be done with minimal risk. Avoid spreading burning material with water used for cooling purposes. Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA).
Unusual fire & explosion hazards:	Dense smoke may be generated while burning. Toxic fumes, gases or vapors may evolve on burning. High temperatures may create heavy flammable vapors that may settle along ground level and low spots to create an invisible fire hazard.
Byproducts of combustion:	Fires involving this product may release oxides of carbon, phosphorus, nitrogen and sulfur; reactive hydrocarbons and irritating vapors.
Autoignition temperature:	Not determined.
Explosion data:	Not determined. Care should always be exercised in dust/mist areas.
Other:	Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

SECTION 6

ACCIDENTAL RELEASE MEASURES

Spill control procedures (land):	Immediately turn off or isolate any source of ignition (pilot lights, electrical equipment, flames, heaters, etc.). Evacuate area and ventilate. Personnel wearing proper protective equipment should contain spill immediately with inert materials (sand, earth, chemical spill pads of cotton) by forming dikes. Dikes should be placed to contain spill in a manner that will prevent material from entering sewers and waterways. Large spill, once contained, may be picked up using explosion proof, non-sparking vacuum pumps, shovels, or buckets, and disposed of in suitable containers for disposal. Clean up residue with an appropriate solvent. If a large spill occurs notify appropriate authorities. In case of road spill or accident contact Chem-Trec (800-424-9300).
Spill control procedures (water):	Try to contain large spills with floating booms to prevent spill from spreading. Remove from surface by skimming or with suitable adsorbents. If a large spill occurs notify appropriate authorities (normally the National Response Center or Coast Guard at 800-424-8802).
Waste disposal method:	Do not empty into drains. All disposals must comply with federal, state, and local regulations. The material, if spilled or discarded may be a regulated waste. Refer to state and local regulations. Department of Transportation (DOT) regulations may apply for transporting this material when spilled. See Section 14.
Other:	CAUTION - If spilled material is cleaned up using a regulated solvent, the resulting waste mixture will be regulated.

MSDS

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SECTION 7

HANDLING AND STORAGE

Handling procedures: Keep containers closed when not in use. Do not transfer to unmarked containers. Empty containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld, or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse.
Handling temperatures should not exceed 60°C (140°F) to minimize danger of burns. Open containers carefully in a well ventilated area or use appropriate respiratory protection. Wash thoroughly after handling.

Storage procedures: Store containers away from heat, sparks, open flame, or oxidizing materials. Extended storage at excessive temperatures may produce odorous and toxic fumes from product decomposition.

Additional information: No additional information.

SECTION 8

EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product:

	OSHA TWA	OSHA STEL	ACGIH TWA
Contains highly refined petroleum oil	*5 mg/m ³ (PEL)	*10 mg/m ³	*5 mg/m ³ (TLV)

* Exposure limits not defined. Limits used are for, "oil mist".

TWA – Time Weighted Average is the employee's average airborne exposure in any 8-hour work shift of a 40-hour work week which shall not be exceeded.

STEL – Short Term Exposure Limit is the employee's 15-minute time weighted average exposure which shall not be exceeded at any time during a work day unless another time limit is specified.

All base oils, including additive carriers, contain <3.0% DMSO extractable material.

Personal protection: Applicable mainly to persons in repeated contact situations such as packaging of product, service/maintenance, and cleanup/spill control personnel.

Respiratory protection: None required if ventilation is adequate. Otherwise a respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed. Where misting may occur, wear an MSHA/NIOSH approved (or equivalent) half-mask form dust/mist air purifying respirator.

Eye protection: Eye protection is strongly recommended. Wear safety glasses with side shields or vented/splash proof goggles (ANSI Z87.1 or approved equivalent).

Hand protection: Impervious, chemically resistant gloves such as neoprene or nitrile rubber to avoid skin sensitization and absorption.

Other protection: Use of an apron and overboots of chemically impervious materials such as neoprene or nitrile rubber is recommended based on level of activity and exposure. If handling hot material use insulated protective equipment. Launder soiled clothes. Properly dispose of contaminated leather articles and other materials which cannot be decontaminated.

Local control measures: Use adequate ventilation when working with material in an enclosed area. Mechanical methods such as fume hoods or area fans may be used to reduce localized vapor/mist areas. If vapor or mist is generated when the material handled, adequate ventilation in accordance with good engineering practice must be provided to maintain concentrations below the specified exposure. Eyewash stations and showers should be available in areas where this material is used and stored.

Other: Consumption of food and drink should be avoided in work areas where product is present. Always wash hands and face with soap and water before eating, drinking or smoking.

MSDS

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Talon Compressor & Air Tool Lubricant
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SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear, Light Yellow
Odor:	Petroleum
Odor threshold:	Not determined.
pH:	Not applicable.
Melting/Freezing point:	Not determined.
Initial boiling point:	Not determined.
Boiling range:	Not determined.
Flash point:	207°C
Evaporation rate:	Not determined.
Flammability:	Not determined.
Upper flammable limit:	Not determined.
Lower flammable limit:	Not determined.
Vapor pressure:	Not determined.
Vapor density:	Not determined.
Relative density:	0.870 @ 15.6°C
Solubility:	Negligible in water, miscible in most petroleum solvents.
Partition Coefficient:	Not determined.
Auto-ignition temperature:	Not determined.
Decomposition temperature:	Not determined.
Viscosity:	31 cSt @ 40°C
Other	Not applicable.

SECTION 10

STABILITY AND REACTIVITY

Reactivity	
Chemical stability:	Material is chemically stable at room temperatures and pressure.
Hazardous polymerization:	Will not occur.
Conditions to avoid:	Avoid high temperatures and product contamination.
Incompatibility with other materials:	Avoid contact with acids and strong oxidizing materials.
Decomposition products:	Smoke, carbon monoxide, carbon dioxide, and other aldehydes of incomplete combustion. Oxides of carbon, nitrogen, and sulfur; reactive hydrocarbons and irritating vapors.
Other:	Not applicable.

SECTION 11

TOXICOLOGICAL INFORMATION

Acute toxicity (LD50) *See note at the bottom of the section

Oral:	>5000 mg/kg
Dermal:	>5000 mg/kg
Inhalation:	>20.0 mg/l
Skin irritation:	Non-irritant
Eye irritation:	Non-irritant
Dermal sensitization:	Not expected to have a sensitizing effect.
Respiratory sensitization:	Not expected to have a sensitizing effect.

MSDS

Safety Data Sheet
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Aspiration Hazard:	Not applicable
Chronic Toxicity	
Mutagenicity:	Not suspected of causing genetic defects
Carcinogenicity:	Not suspected of causing cancer.
Reproductive toxicity:	Not expected to have adverse effects on reproduction.
STOT-single exposure:	Not expected to have adverse effects.
STOT-repeated exposure:	Not expected to have long term adverse effects.
Other:	*All data in this section is based off calculations from Part 3 of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) utilizing information from the constituent components.

SECTION 12

ECOLOGICAL INFORMATION

Environmental toxicity	
Fish:	> 100 mg/l.
Invertebrates:	> 100 mg/l.
Aquatic plants:	> 100 mg/l.
Microorganism:	> 100 mg/l.
Persistence/Degradability:	This product is not expected to be readily biodegradable.
Bioaccumulation:	Not determined.
Mobility in soil:	Not determined.
Other:	All classifications are based on calculations in Part 4 of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) utilizing information from the constituent components.

SECTION 13

DISPOSAL CONSIDERATIONS

Waste disposal:	This product unadulterated by other materials can be classified as a non-hazardous waste. Depending on use, used product may be regulated. Dispose of in a licensed facility. Do not discharge product in to sewer system. Dispose of containers by crushing or puncturing, so as to prevent unauthorized use of used containers. Waste management should be in full compliance with federal, state, and local laws.
Other	The transportation, storage, treatment and disposal of RCRA waste material must be conducted in compliance with 40 CFR 262, 263, 264, 268 and 270. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this SDS incomplete, inaccurate or otherwise inappropriate.

SECTION 14

TRANSPORT INFORMATION

Land Transport (DOT):	Not Regulated.
Proper Shipping Name:	Not Applicable.
Land Transport (TDG):	Not Regulated.
Proper Shipping Name:	Not Applicable.
Sea Transport (IMDG):	Not Regulated.
Proper Shipping Name:	Not Applicable.
Air Transport (IATA):	Not Regulated.
Proper Shipping Name:	Not Applicable.
Other:	Not Applicable.

MSDS

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SECTION 15

REGULATORY INFORMATION

Federal Regulation

Clean water act/oil:

Under Section 311 of the Clean Water Act (40 CFR 110) and the Oil Pollution Control Act of 1990, this material is considered an oil. Any spill or discharges that produce a visible sheen or film on surface of water, or in waterways, ditches, or sewers leading to surface water must be reported. Contact the National Response Center at 800-424-8802.

TSCA:

All components of this material are listed in the U.S. TSCA Inventory.

Other TSCA:

Not applicable.

SARA title III:

Section 302/304 extremely hazardous substances:

None.

Section 311, 312 hazard categorization:

Acute (immediate health effects): NO

Chronic (delayed health effects): NO

Fire (hazard): NO

Reactivity (hazard): NO

Pressure (sudden release hazard): NO

Section 313 toxic chemicals:

No components present are at or greater than the de minimis (minimum reportable) concentration requirements for reporting.

CERCLA:

For stationary/moving sources – reportable quantity (due to): Not hazardous due to the petroleum exclusion.

State Regulations

Right-to-know

Not determined.

Other:

A release of this product, as supplied, is exempt from reporting under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). However, releases may be reportable to the Nation Response Center under the Clean Water Act, 33 U.S.C. 1321(b)(3) and (5) - see head of Section 15. Failure to report may result in substantial civil and criminal penalties.

Recommend contacting the local authorities in the event of any type of spill to determine local reporting requirements and also to aid in the cleanup.

SECTION 16

OTHER INFORMATION

	NFPA 704	NPCA-HMIS	KEY
HEALTH:	1	1	0 = Minimal
FIRE:	1	1	1 = Slight
REACTIVITY:	0	0	2 = Moderate
SPECIFIC HAZARD:	None	N/A	3 = Serious
PROTECTION INDEX:	N/A	B	4 = Severe

Version: I

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Revisions / Comments: None.

MSDS

JET-LUBE, INC. MATERIAL SAFETY DATA SHEET

Product Name: MARINE MOLY™
Chemical Family: Petroleum based lubricating anti-seize and anti-seize compound
Use: Equipment lubrication and assembly compound.

Manufacturer/Supplier: JET-LUBE, INC.
Address: 4849 Homestead Rd., Ste. #232
Houston, TX, 77028 USA **Phone:** 713-670-5700
Emergency Phone: 713-670-5700 **Fax:** 713-678-4604
Chemtrec 24 hours (USA): 800-424-9300
Outside the USA: 703-527-3887

Hazardous Components	CAS No.	Wt%	OSHA PEL	ACGIH TLV	Other Limits of Exposure
Petroleum oil	64742570/64742525	70-100	Oil mist TWA-5mg/M ³ 10mg/M ³	N/A	STEL: 10mg/M ³
Nonhazardous Blend	1317335/68953582 68411461	20-30		10mg/M ³	UN

Main Hazards-Health Effects

Eyes: May cause irritation. **Inhalation:** Viscous nature may block breathing passages if inhaled. **Ingestion:** May cause diarrhea.
Skin: Possible rash for persons with persensitivity.

Eyes: Flush with water until all residual material is gone. If irritation persists, seek medical help. **Inhalation:** Clear air passage. If respiratory difficulty continues, seek medical help. **Ingestion:** Wash out mouth immediately. Consult physician. **Skin:** Wash thoroughly with hand cleanser, followed by soap & water. Contaminated clothing should be dry cleaned before reuse.

Extinguishing Media: Foam, dry powder, Halon®, carbon dioxide, sand, earth & water mist. **Unsuitable Extinguishing Media:** Water jet.
Protective Equipment for Fire fighting: Self-contained breathing apparatus.

Personal Precautions: Wear gloves & protective overalls. **Environmental Precautions:** Do not allow it to enter drains. **Spillage:** Scrape up bulk, then wipe up remainder with cloth. To prevent walking hazard, pick up remaining residue with diatomaceous earth.

Handling: No special handling precautions necessary. **Storage:** Do not store at elevated temperatures.

Respiratory Protection: None needed. **Hand Protection:** Protective gloves for hypersensitive persons. **Eye Protection:** Glasses, if applied to parts in motion. **Body Protection:** Overalls.

Physical State: Semisolid paste **Color:** Black **Odor:** Petroleum **pH:** Neutral **Boiling Range/Point °F (°C):** >700 (371)
Melting Point °F (°C): None **Flash Point (COC) °F (°C):** 560 (293) **Propellant Flash Point °F (°C):** 76 (-60) **OAR Value:** 5 (aerosol)
Autoignition Temperature °F (°C): >680 (360) **Explosive Properties:** LEL: 0.9% UEL: 7% **Evaporation Rate (Butyl Acetate):** <0.01
Partition Coefficient (Log Pow): N/A **Vapor Pressure (kPa):** <0.01 **Percent Volatiles:** Nil **Density (g/cm³):** 1.06
Flammability: Not flammable at ambient temperatures (aerosol only). **Oxidizing Properties:** None **Water Solubility:** Nil **Vapor Density:** >5

Stability: Chemically stable under normal conditions. No photoreactive agents. **Conditions to Avoid:** Powerful sources of ignition & extreme temps. **Materials to Avoid:** Strong inorganic & organic acids, oxidizing agents. **Hazardous Decomposition Products:** Burning generates smoke, airborne soot, hydrocarbons & oxides of carbon, sulfur & nitrogen. Residue mainly comprised of soot & mineral oxides.

Acute Toxicity: Not known. **Irritancy-Skin:** Very mild. **Skin Sensitization:** Not known. **Subacute/Sub-chronic Toxicity:** Not known.
Genotoxicity: None known. **Chronic Toxicity:** None known. **California Prop 65:** N/A **Carcinogen:** NTP: No IARC: No **OSHA:** No
EC Class (67/548/EEC): No **Allergens:** None known. **LC-50:** >2000mg/kg-(extrapolated from component data) **LD-50:** N/A

Possible Effects: May generate oil fractions that could act as a marine pollutant, but is unlikely.

Behavior: Relatively well behaved. Bioaccumulation potential nil. **Environmental Fate:** Highly unlikely to cause notable contamination.

Product Disposal: Do not incinerate. Contact waste disposal company or local authority for advice.

Container Disposal: Pails without liner—see Product Disposal section above. Pails with plastic liner—pail may only be disposed of via standard waste disposal services, recycled or reused. Liner—see Product Disposal section above.

Not classified as hazardous for transport. **D.O.T.:** Nonhazardous **UN No.:** Nonhazardous

Air Transport (ICAO & IATA): Nonhazardous **Sea Transport (IMO & IMDG):** Nonhazardous

Road & Rail Transport (ADR/RID): Nonhazardous


Labeling Information: None needed **EC Annex 1 Classification:** Not Applicable. **R Phrases:** R22—harmful if swallowed.

S Phrases: None applicable, as known. **Ozone Depleting Chemicals:** Not applicable. **TSCA:** All components are listed.

WHMIS (Canada): Not controlled. **Canadian DSL:** All components listed. **SARA 311/312:** None **TSCA 12B Components:** None

40 CFR Part 372 (SARA Section 313): N/A **CERCLA:** Nonhazardous **RCRA Hazard Class:** Nonhazardous

SDS first issued. SDS data revised. **New Jersey Right To Know:** See Section II

Signature: 
Prepared by: Donald A. Oldiges
Date Issued: September 21, 2009

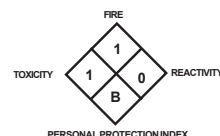
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- III. HAZARDS IDENTIFICATION
- IV. FIRST AID MEASURES
- V. FIRE FIGHTING MEASURES
- VI. ACCIDENTAL RELEASE MEASURES
- VII. HANDLING AND STORAGE
- VIII. EXPOSURE CONTROL/PERSONAL PROTECTION
- IX. PHYSICAL AND CHEMICAL PROPERTIES
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- XI. TOXICOLOGICAL INFORMATION
- XII. ECOLOGICAL INFORMATION
- XIII. WASTE DISPOSAL
- XIV. TRANSPORT INFORMATION
- XV. REGULATORY INFORMATION
- XVI. OTHER INFORMATION

HMIS SYMBOL

HEALTH	1
FLAMMABILITY	1
REACTIVITY	0
PPI	B



SAVE THESE INSTRUCTIONS DO NOT DESTROY

NOTES:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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