AIRWORKS COMPRESSORS CORP

- A division of Airworks Compressors and Mobile Equipment Corp -

TWISTER

E60

INSTALLATION

&

OPERATION MANUAL

REVISED 09/18

Unit Serial Number _____

Motor SN_____

Compressor SN _____

Battery Box SN _____

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BASIC TWISTER INSTALLATION AND OPERATION

Important: Read and understand operation manual before installation.

1. a) Trace base size and mount hole locations onto cardboard and use as a temple to drill holes to mount compressor in suitable location. Use caution when drilling; check below for obstacles. See drawing #4261 for dimensions.
   b) Allow for proper fitting, hose, wire routing. Allow for proper ventilation and service access. See drawing
2. Mount compressor to chosen location. Securely fasten. Use locking fasteners.
3. Run battery cable from Twister to battery pack. Size cable gauge properly for length of run. Protect from rubbing and damage, welding cable should be used **not** battery cable.
4. Mount Twister control panel in accessible location (if applicable)
5. Operating unit without adequate cooling air flow may cause damage not covered by warranty.

Installation Notes

Restrictions in the air line such as 45 degree and 90 degree fittings should be limited to 3 or less. Too many direction changes or elbows will lead to loss of air flow. Size fittings at least the same size as Twister air outlet or larger.

When installing the Twister in a confined location, direction of airflow through the unit should be considered. A source of fresh air in and a place to vent the warm air is critical to the compressor and motor operation. Do not allow or cause warm air to recirculate back into compressor hosing.

When connecting the cables to the twister, it is recommended to use proper sized cables.

Contact Airworks Compressors Corp. with any questions regarding installation and or changes to supplied cable length.

Safety Precautions

Observe the Following General Safety Rules

a) Read and understand operation manual and all related safety materials, before operating machine. Installer to ensure manual and all safety decals are delivered with unit on completion of product installation.
b) Follow safe work practices and wear the appropriate safety equipment when operating air-power equipment.
c) Avoid contact with the drive system. Do not operate with panels removed.
d) Avoid skin contact with pressurized air. Injury or death may result.
e) Make sure the air entering the compressor is free of flammable vapours that could cause an explosion.
f) Vaporized oil propelled by high pressure air is an explosive mixture.
g) Do not breathe the compressor air. Vaporized oil is a respiratory hazard.
h) Components are hot during and following operation; use caution.
i) Disconnect all power before servicing.
j) Do not attempt to service compressor while under pressure; remove fill cap and filters slowly, drain reservoir, before opening system.

When operating the compressor

a) Do not bypass any of the products safety devices.
b) Do not expose the unit to extreme heat.
c) Do not repair or service a pressurized system.
d) Maintenance and repair are to be performed by qualified personnel only.
e) Do not tamper with pressure relief valve (PSV).
f) Do not attempt to modify any component.
g) Do not operate with cover or doors removed.
h) Compressor may start automatically disconnect power before removing any panels or performing service work.

Safety Features

a) 200 psi relief valve (PSV)
b) Temperature safety shut down on motor and compressor
c) Rapid blow down valve to discharge system pressure on compressor side of system after unit is shut down
d) Outer enclosure prevents contact with hot and moving parts
e) Main battery disconnect switch
f) Key switch
g) Over load protection

Lubrication and Filters

a) Use only Airworks certified and approved compressor oils and filters
b) Compressor may be under pressure; ensure pressure is released and unit is switched off and unloaded before servicing, remove fill cap slowly – stop if pressure is present
c) Oil filters are spin-on type
d) Air filters are paper element replaceable
e) Spin on coalescing separator element

Operating Principals

The system uses a flooded lobe, rotary screw compressor. The oil filled compressor contains two synchronous rotors turning at a variable speed.

When air atmospheric pressure is introduced into the housing, it is trapped between the rotors allowing for compression.

A lubricated pitch line provides sealing. As the lobes on the rotors mesh, they reduce the volume of air, compressing it to the desired pressure.

Oil separation occurs in two stages:

1. Mechanical; where the air/oil is first separated through a series of baffles
2. The coalescing filter

A liquid to air cooling system is used to maintain compressor oil temperature. This system uses a tube and fin cooler to act as a heat sink for heat transfer and a thermostatically controlled fan.

Rotary screw compressors are machined to close tolerances and ingestion of foreign objects into the system will rapidly damage or shorten the life expectancy of the unit.

DC motor drive is efficient, powerful and contains dual sealed bearings, adjustable timing brush set, axial flux solid core armature and over temp protection.

Important

Driving while your unit is running may cause damage to be incurred. Shut your unit off prior to moving your vehicle to prevent this. Warranty may not cover damage of this type. An optional park brake interface is available, contact Airworks for more info.

Routine Maintenance

You must follow the maintenance schedule and use only Airworks genuine replacement parts to maintain your system and warranty.

The most critical aspect of maintenance is proper air filtration and clean oil. If any particulate matter enters the compressor through the air inlet, they can contaminate roller bearing, gears and rotors in the compressor. Contamination will cause severe and rapid damage to components.

Ensure compressor is switched off and completely unloaded before servicing. Clean areas around and filters before removing. Remove oil cap slowly, ensure no pressure present.

Maintenance Schedule

The following maintenance schedule should be observed to assure good performance and long service life. The hours indicated are displayed on the unit's hour meter.

For replacement parts please order the indicated part numbers from an authorized dealer.

Twister E60, service - Every 250 HOURS or once per year, whichever occurs first.

ATSE25 - Includes compressor oil, air filter, air filter coalescing filter. Check Coupler assembly with every service.

Replace coupler insert every 500 hrs or sooner if wear noted.

Every Service:

- Inspect all components for loose or rubbing parts.
- Inspect all items for wear, include drive coupler.
- Check for fluid and air leaks.
- Check air pressure and motor speed settings.
- Check cable connections are clean, secure and all fastened tight.
- Check all cables for signs of abrasion and damage.

Twister E60 Starting Procedure

Electric Motor

- Turn the key to the right start position. Compressor switch on, motor starts compressor pressurizes tank or hose to set pressure, enters unloaded stage and then shuts down after reaching unloaded setting, system is now armed and ready to work.
- System is now ready for use.

Twister E60 Shutdown Procedure

- Do not shut down while compressor is under load, producing air.
- Switch compressor button off.
- Compressor will shut down and bleed off pressure.
- Turn the key to off position.

Adjusting the System

If insufficient airflow is developed under high demand conditions, check the motor RPM (3300 RPM minimum). If low, check battery voltage (48 vdc)

The motor speed is preset for maximum delivery by the system at all airflow demands within the unit's abilities.

The cut out and cut in pressure of the compressor can be adjusted on the pressure switch. Consult your Airworks dealer before attempting adjustment.

Airflow and system pressure are related. As the cfm (air volume) requirements increase, the pressure produced, as with any air system, diminishes. The Twister is designed to efficiently run instruments requiring air at 90 psi or less (manufacturer's standard psi rating) if you must set up a system without knowing the demands on the system, you can make adjustments by using an orifice in the outlet to simulate tool use. A system testing tool is available from Airworks (ATT01).

Trouble Shooting the System

Quick accurate diagnosis of the problems will help to effect repairs in a timely fashion and should involve the following:

a) Understand the operational characteristics of the system to better determine the problem.
b) Run the system, if possible, to determine the problem.
c) Do not perform test procedures that are harmful to people or equipment.
d) Perform repairs using the correct parts and procedures.
e) Consult your local dealer or Airworks Compressors Corp.

Symptom:

Compressor does not produce adequate air

Check and correct the following:

a) Battery pack is charged Voltage _____
b) Air filter is clean
c) Compressor oil level is correct
d) Coupling between engine and compressor is intact
e) Motor RPM is set to spec RPM _____
f) Pressure switch is operational, contacts clean PSI _____

Symptom:

Frequent over-temperature shut downs

Check and correct the following:

a) Check compressor oil level.
b) Cooler fan is operating when unit is warm.
c) Check compressor hose for kinks, air leaks. Repair.
d) Check motor and compressor over temp shut down temp switch operation.
e) Check for adequate air circulation around unit, hot air shall not be drawn into unit.
f) Check oil filter not plugged.
g) Cooler is clean; coil is free of oil, dirt and debris. Fan operates when hot.

Symptom:

Excessive Air Pressure

Check and correct the following:

a) Check pressure switch for correct operation/setting (135 PSI max).
b) Inlet valve functioning and no oil in the compressor air filter.

Symptom:

Motor stalls when compressor load increases or starts

Check and correct the following:

a) Battery requires Charging Voltage _____
b) Loose or Corroded battery terminals/connections. Clean or repair.
c) Air compressor is under pressure – allow to unload. Ensure compressor is unloading when it stops.
d) Operating speed is too low RPM _____
e) Unloader valve, check properly unloading when shutdown

Symptom:

Low air pressure

Check and correct the following:

a) Air flow capacity exceeded – reduced load demand on compressor. Check for leak/worn equipment.
b) Motor speed too low – check battery pack is charged. Voltage _____
c) Pressure regulator/switch not operating properly – adjust or replace as required.
d) Check for kinked or collapsed hose, ice blockage in hose fittings.

Symptom:

Excessive oil in the air produced

Check and correct the following:

a) Check compressor oil level – ensure correct level
b) Check oil scavenging line is clear – clear and inspect
c) Check coalescing filter – replace as required

Symptom:

Oil blows out of compressor air filter on shut down

Check and correct the following:

a) Unit shut down while compressor still under load.
b) Check inlet control valve seal – repair as require

Caring for your Twister

Your Twister is designed to provide thousands of hours of working life. By following the listed procedures you will ensure this happens to protect your investment up time and warranty.

Every 25 Hours

- Check fluid levels
- Check for loose or rubbing components, leaks, air and fluid
- Cable connections secure

Every 100 Hours

- As above plus
- Check air filter element condition

Every 250 Hours

- As above plus
- Service compressor oil and filters
- Inspect coupler on motor and compressor, replace if required
- Check hoses for rubbing and/or wear
- Clean cooler fins, check fan operation

Every 500 Hours

- As above plus
- Check motor brush wear, replace if required (contact dealer for procedure)
- Service oil and filters
- Clean the cooler fins, check fan is operation

Warranty Policy

General Provisions and Limitations

1. Airworks Compressor Corp. warrants to each original retail purchaser (here after the buyer) of its new air compressor system from Airworks or its authorized dealers that such products are free from manufacturer's defects in material and workmanship.

2. **No warranty is made with respect to:**
    a) Any products which in Airworks judgment have been subject to negligence, accident or improper storage, installation, application, operation or maintenance, or have been altered or repaired in such a way that effects the product adversely.
    b) Operation of unit with low coolant level will cause damage not covered by warranty.
    c) Components or accessories manufactured, warranted and serviced by other than authorized dealer.
    d) Consequential damage(s) caused by Products failure.
    e) Any product(s) if other than Airworks genuine components are used in the Product and/or installation
    f) Normal wear and tear
    g) Paint and cosmetic items
    h) Any modifications whatsoever, including operation without body panels

3. The warranty period will commence upon installation of the product. The returned warranty registration form marks the date of installation. If the warranty registration form has not been received by Airworks within 2 months from the date of purchase then the warranty period will be deemed to commence 30 days from date of shipment from Airworks.

4. a) T40/T60 Air end has a limited life time warranty providing original service schedule and parts are utilized.

    b) The units are warranted for two (2) years or two thousand (2000) hours, whichever occurs first, against manufactures defects in materials and workmanship.

5. Replacement parts, electrical components and cosmetic items (at Airworks discretion) shall be warranted for a period of six (6) months or three hundred (300) hours, whichever occurs first.

6. **Airworks Obligation**
    a) Airworks obligation is limited to repairing or at Airworks option, replacing; during normal business hours at an authorized service facility of Airworks, any component, which in Airworks judgment is proven to be defective as warranted.
    b) Airworks obligation is limited to Product(s) proven to be warranted. No liability is accepted for any consequential damages, injuries or expenses directly or indirectly related to the Products failure.
    c) Airworks is not responsible for any costs incurred due to lost time, travel or lost revenue related to warranty issues.
    d) Airworks is not responsible for time required to service or repair product due to mounting location.
    e) Airworks is not responsible for return shipping to Airworks of failed components.
    f) Airworks will be responsible for ground shipment or replacement of validated warranty parts.
    g) Airworks is to be contacted prior to any possible warranty repairs are undertaken for warranty consideration.

Buyers Obligations

a) You, the buyer, are obligated to notify your dealer within 10 days of any defect and return defective part within 30 days of notification.
b) The buyer must prepay all the costs associated with the warranty claim and submit receipts/invoices to your dealer for evaluation.
c) The buyer must return components returned under this agreement to your dealer, designated by Airworks, for evaluation, to establish a claim under this warranty.
d) Buyer shall maintain and service Airworks products in accordance with this manual.

Warranty Registration Validations

* A warranty registration is supplied to the buyer with the product that must be returned to Airworks at time of installation.

Disclaimer and Warranty Service

a) Any labour costs incurred in excess of Airworks set labour rates are not covered.
b) Any travel time or labour costs incurred by unauthorized personnel are not covered by this warranty.
c) Any related serviced/repair costs incurred due to mounting location and accessibility are not covered by this warranty.
d) This warranty is in lieu of all other warranties expressed or implied.
e) All warranty claims must be pre-authorised by Airworks and components returned prepaid using the assigned RGA number.
f) A rush shipping of replacement parts is not covered by this warranty.