Safety instructions specifically pertaining to this unit appear throughout this manual highlighted by these signal words **Warning** and **Caution** to denote different levels of hazard.

**Warning:** denotes practices, which if not carefully followed, could result in property damage, SERIOUS personal injury and/or DEATH

**Caution:** denotes practices which if not carefully followed, could result in minor personal injury or damage to equipment.

**OB-30 Serial Number:**

**STATEMENT OF WARRANTY**

INTERFACE DEVICES, INC. (hereafter, the factory) warrants its products to be free from defects in material and workmanship under normal use and service for a period of one (1) year from date of shipment from the factory. Any defect discovered after the warranty period has expired will be deemed to be outside the above coverage. No goods claimed to be under warranty shall be accepted for return unless authorized by the factory beforehand.

Upon discovery of a defect (other than freight damage) or a shortage of an item received in the original factory container, the purchaser shall, within (10) calendar days, deliver notice of the defect or shortage. Damaged freight claims must be placed with the freight carrier and will not be honored by the factory. If after due investigation of a claim of defect or shortage is found valid, the factory, at its sole discretion, may discharge its entire obligations to the purchaser by either repair or replacement of the defective product or component and for shortages by furnishing a replacement of the missing quantity (FOB, factory).

This express warrantee supersedes and is in lieu of all other remedies and warranties, including the implied warranties of merchantability and fitness for a particular purpose, and liability for negligence. IN NO EVENT SHALL THE FACTORY BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL LOSSES, EXPENSES OR DAMAGES INCLUDING DAMAGES FOR PERSONAL INJURY OR COMMERCIAL LOSS.

July 2008
**WARNING**

Limitation of Liability

There is an inherent risk associated with pressurized oxygen systems. Failure to follow the Manual’s instructions or other safety procedures increases the risk of an ignition source being introduced into the oxygen flow stream that could result in a fire, explosion, property damage, serious personal injury or death. In addition to following the OB-30 safety precautions, remember to take appropriate safety measures with all components in the oxygen system. In no event shall Interface Devices, Inc. be held liable for any property damage, injury or death in the event the OB-30 booster is NOT installed, operated or maintained in strict accordance with this manual and other published oxygen service guidelines.

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1.0 General Description

- 80 psi drive pressure produces 2,200 psi oxygen pressure.
- Shop air powered for use in and around the hanger.

Designed for Maximum Safety:

- Oxygen wetted components are principally brass – the best material for oxygen service far surpassing stainless steel for oxygen service
- Other materials are optimized for oxygen service
- All Oxygen wetted parts have been cleaned per Spec. ARP 1176

Features:

- No inlet air valve, air regulator or air lubricator required.
- Dual 10 micron filters, one each for oxygen in and out.
- Integrated circuit design. No external tubing and fittings to leak.
- Integral cut-in and cut-out pressure switches. Pump will not run if oxygen-in pressure is below 250 psi or oxygen-out pressure is above 2,400 psi.
- Polymeric seals and bearings for long life and high efficiency.
- Totally sparkless operation.
- Twin rod seals
  with vent between to atmosphere prevents air/oxygen migration
- Integral subplate mounted air regulator with pump on/off air toggle switch
- Allows bottle pressure to be used down below 300 psi.
- May be nitrogen powered for remote operation
1.1 Optional equipment available to enhance unit

1) Three bottle Oxygen or Oxygen service cart.
   - Low center of gravity for safe maneuvering.
   - Booster Mount and fire extinguisher are optional.

2) Cart mount and protection guard for Oxygen or Oxygen Booster.
   - Mounts to the front of virtually any cart.

** Warning **

To Avoid Serious Injury, Property Damage or Death

1. **Never** operate the OB-30 unattended
2. **Always** have a properly rated and charged fire extinguisher close at hand
3. **Do not** use on LOW PRESSURE aircraft systems.
   - This is an **UNREGULATED OXYGEN SOURCE** equal to supply bottle pressure.
   - The use of a supply bottle pressure regulator is required with this unit.
4. **Do not** use to boost air or any gas other than Oxygen.
5. **Do not** exceed 2,200 PSIG inlet Pressure.
6. All Components used in the oxygen system or Shop air system shall be clean, dry and free of all contamination. Per Spec. ARP 1176
7. Servicing and/ or maintenance of Oxygen systems shall be done by trained and qualified personnel using approved procedures.
2.0 Specifications / Features

Dimensions: 14” long, 9.4” high and 8.9” wide.
Weight: 42 lbs complete.

Input & Output Hoses required: Stainless steel/Teflon® -4 rated to 3,000 psi.
Booster output Rating = 2,200 psig.
Oxygen Booster Ratio: 30:1.
2.1 Component Description (Refer to Fig. 1a. for component location.)

1. Air or Nitrogen inlet Port (1/2 npt).
2. Air Regulator & Gauge.
   (Sets O2 Boost Pressure: 80 PSIG air in = 2,200 +psi oxygen out).
3. Pump On / Off Air Toggle Switch.
4. Oxygen Out Port –4 JIC Fitting 2,200 psig Max.
5. Oxygen In Port –4 JIC Fitting 2,200 psig Max.
6. Oxygen In (Supercharge) Pressure Gauge.
7. Oxygen Out Pressure Gauge.
8. Cut in/cut out pressure switches (factory preset).
10. Coalescing Inlet Filter (Shipped Loose)

Application: Fill aircraft oxygen system, or similar operations that require high pressure Oxygen.

3.0 Preparation for use

**Caution**
It is mandatory that this instruction manual be read, understood and followed by all persons operating this high-pressure oxygen booster.

3.1 Safety Instructions

3.1.1 General: Information presented in this manual and on various labels, tags and plates on the unit pertains to equipment design, installation, operation maintenance and trouble shooting which should be read, understood and followed for safe and effective use of this equipment.

3.1.2 Safety: The operation, maintenance, and trouble shooting of this high pressure Oxygen Booster requires practices and procedures which ensure personal operator safety and the safety of others. Therefore, this equipment is to be operated and maintained only by qualified persons in accordance with this manual and all applicable local codes.
Safety instructions specifically pertaining to this unit appear throughout this manual highlighted by these signal words **Warning** and Caution ** to denote different levels of hazard.

**Warning:** denotes practices, which if not carefully followed, could result in property damage, SERIOUS personal injury and/or DEATH

**Caution:** denotes practices which if not carefully followed, could result in minor personal injury or damage to this equipment.

3.1.3 Training: Read through this entire manual prior to any Oxygen booster operation. All personnel using this Oxygen Booster should understand and follow this manual and receive training. We encourage our customers to call Interface Devices, Inc to discuss any operating or testing requirements. All operators of the OB-30 should be familiar with high pressure oxygen service per the NFPA-53 publication: “Oxygen System Recommended Practices and Materials”

### 3.2 General Safety Precautions

3.2.1 Pressures: Gasses under pressure are a potential hazard in the form of stored energy. Accidents can occur when this energy is improperly handled. Be sure that all equipment used is compatible and designed to control the pressures encountered.

3.2.2 Velocity: Oxygen flowing at a high velocity in a piping system can propel any foreign material particles with such force that the impact friction can raise the particles temperature to a possible ignition point. It is therefore imperative that a high degree of cleanliness be maintained in the oxygen system at all times and instructions for initializing oxygen flow be closely followed.

3.2.3 Oxygen: Oxygen is an oxidizing gas, chemically stable, and non-flammable but will, combined with other elements support combustion.

**Warning**

High oxygen concentrations can accelerate the combustion of flammable materials up to and including explosion.

It is important to understand that spontaneous combustion of organic materials such as oil can occur in oxygen rich atmospheres.

3.2.4 Lubrication: The use of lubrication in an Oxygen system should be kept to a minimum. The OB-30 itself requires no lubrication. An air line lubricator is not to be used.

**Warning**

Only lubricants compatible with high pressure oxygen systems shall be used.
No lubricant shall be applied in any area that will come into direct contact with Oxygen during normal use.

3.3 Assembly:

3.3.1 Although the Oxygen Booster is inspected prior to shipping, it could be damaged during shipping. Therefore, it should be carefully unpacked and placed on a clean level surface for inspection.

3.3.2 The bottom of the booster is furnished with three ¼-20 by ½” deep tapped holes for mounting to a bracket or cart.

3.3.2 Customer installed parts (Oxygen components must be in accordance with NFPA-53):
   1. Two stainless steel/PTFE –4 hoses rated to 3,000 psi working pressure.
   2. Aircraft pressurization attachment fitting.
   3. Coalescing inlet air filter rated to 125 psi at 40 SCFM (Shipped loose)
   4. Oxygen Shut-off valve (mounted away from the booster)

3.3.3 Remove protective caps from “O2 in” and “O2 out” fittings.

3.3.4 With oxygen supply regulator closed, connect both –4 Hoses to the Oxygen in and out fittings on the booster.

**Caution**
The customer supplied oxygen supply must be complete with shutoff valves, pressure gauges, pressure regulators and Stratoflex® –4 hose. All components must be rated for 3,000 psi working pressure and conform to NFPA-53 Guidelines.

3.3.5 Attach aircraft pressurization fitting to the far end of the -4 hose coming from the oxygen out hose.

3.3.6 Check all components for integrity. If all is well, you are ready to use the OB 30.

4.0 Operation:

**Warning**
Always inspect unit before use, damaged, contaminated or oily equipment should never be used.

4.1 Preparation for Operation

4.1.1 Be sure all valves and controls are in the closed position.
4.1.2 Decrease item 2 (fig 1a) inlet pressure regulator to minimum pressure setting.

4.1.3 Inspect all connections for contaminants before installation and tightening. Remove any foreign materials. Be sure all oxygen components are clean per SAE specifications and comply with NFPA-53 publication: “Oxygen System Recommended Practices and Materials”.

4.1.4 Connect the output of the gas supply bottle to the gas inlet connection of the Oxygen Booster (See figure 1a).

4.1.5 Decrease the gas supply bottle or shop supply gas regulator to the minimum pressure setting.

4.1.6 Connect the oxygen fill line loosely to the aircraft and purge line by SLOWLY cracking open gas supply bottle shutoff valve and adjusting the supply bottle pressure to a low flow setting.

4.1.7 Tighten the O₂ fill line connection at the aircraft.

4.1.8 The high pressure O₂ Booster is ready to charge an aircraft O₂ System.

4.2 Charging the Aircraft Oxygen System

4.2.1 After the oxygen booster has been properly connected, slowly and fully open the O₂ supply bottle shut off valve. Adjust the gas supply bottle pressure regulator to the required Aircraft O₂ system pressure. Wait until the bottle pressure and the aircraft system pressure are equal.

4.2.2 Note: If the bottle pressure is lower than the required aircraft oxygen system pressure, be careful not to over adjust the supply bottle pressure regulator once the maximum supply bottle pressure has been achieved. Increasing the oxygen pressure regulator beyond this point will not increase output, and may damage the regulator spring.

4.2.3 Adjust the booster’s air pressure regulator to attain a pressure slightly lower than the final required O₂ pressure (divide this oxygen pressure by 30 to find the initially required regulated air pressure setting). Example: 2,200 psi final pressure minus 100 psi equals 2,100 psi, divided by 30 equals 70 psi regulated air pressure.

Note: If the ambient temperature at the time of oxygen system recharging is above or below 70 degrees Farenheite, refer to Table 1 to determine the correct final pressure.

4.2.4 Turn on the booster’s “pump run” toggle switch to “on” to further pressurize aircraft oxygen system. Note: Because the Oxygen Booster pump operates at a theoretical ratio, actual boosted
oxygen pressures may vary slightly due to different physical conditions. The oxygen outlet pressure gauge will show the aircraft system pressure developed by the oxygen booster. When the set pressure that has been achieved (i.e.: booster stops pumping), increase the pressure of the air regulator to obtain the required final aircraft system pressure. Turn off the booster’s air toggle switch when the booster has stopped running.

4.3 Disconnecting Oxygen Booster From Aircraft

4.3.1 Close the oxygen bottle shut off valve.

4.3.2 Decrease both the air inlet pressure regulator and the oxygen supply bottle pressure regulator to their respective minimum settings.

4.3.3 Disconnect booster’s air (or nitrogen) supply line.

4.3.4 Slowly loosen, bleed down, and disconnect oxygen hose at the aircraft. Disconnect the supply hose.

4.3.5 Cap both hoses to prevent contamination.

5.0 Maintenance

**Warning**

Maintenance should be undertaken by qualified personnel only.

The operation, maintenance and troubleshooting of this high pressure Oxygen Booster system requires practices and procedures which ensure personal operator safety and the safety of others. Therefore, this equipment is to be operated and maintained only by qualified persons in accordance with this manual and all applicable codes.

5.1 General

5.1.1 All maintenance performed on this high pressure Oxygen Booster shall be conducted in accordance with all applicable codes governing the handling, operation, installation and troubleshooting for high pressure gas operation. Maintenance is to only be done by qualified persons.

5.1.2 All maintenance personnel must be familiar with the cautions and warnings associated with high pressure gas systems as outlined in sections 3.1 and 3.2 of this manual prior to performing any maintenance on this unit.
5.1.3 Air Spool Lubrication. The only preventative maintenance task for the pump is to re-
grease the air spool assembly every 6 months regardless of usage rate. Christo-Lube
MCG-111 grease should be used for this task. Refer to assembly drawing in the
Drawings section of this manual when performing this task.

5.1.4 The oxygen pressure gauges on this unit should be inspected and calibrated annually to
+ 3/2/3 % of span (ASME B40.1 Grade B), to maintain and ensure accuracy.

5.2 Storage

5.2.1 Store the unit in a clean, dry and secure area when not in use.

5.2.2 Be sure all hoses are capped and the unit is covered with a lint free covering for the duration of
unit storage to ensure complete O₂ system cleanliness for future aircraft system recharging.

5.3 Recertification

5.3.1 The OB-30 should be regularly inspected especially after periods of non-use. If after
conducting your OB-30 inspection you believe it may have been compromised with suspect
components or sub optimal operational or maintenance practices it can be returned to for a
complete inspection, cleaning and recertification. Recertification is also strongly
recommended for any OB-30 that has been in service for two years or longer since its last
factory certification.

6.0 Oxygen System Specification Information

For more information concerning specific SAE Aircraft Oxygen Equipment Specification, contact:

Society of Automotive Engineers
400 Commonwealth Drive
Warrendale, PA 15096-0001 USA
Tel: +1 724 776 4841

For more information concerning specific Oxygen System Recommended Practices and Materials
contact:

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169-7471 USA
Tel: +1 617 770-3000
7.0 Trouble Shooting:

**Warning**

Troubleshooting should be undertaken by qualified personnel only.

## Troubleshooting Chart

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Probable Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump will not cycle (Only regulated oxygen Pressure at output.)</td>
<td>No air supply to pump</td>
<td>Look for and fix</td>
</tr>
<tr>
<td></td>
<td>Pump regulator set too low</td>
<td>Increase setting</td>
</tr>
<tr>
<td></td>
<td>Four way air reciprocating valve spool stuck at mid position</td>
<td>Disconnect/ reconnect air supply (resets air spool to end position)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If spool still sticks, manually push spool to far end with probe through hole in “spool stop cap”. If stuck or requires excessive force, disassemble air valve assembly. Inspect for contamination or mechanical bind. Repair or replace, lubricate seals with Christo-Lube MCG-111 grease</td>
</tr>
<tr>
<td>Pump makes one cycle then stops</td>
<td>Faulty “2 way air Valve” (Broken, leaks or contaminated)</td>
<td>Repair or replace</td>
</tr>
<tr>
<td>Pump cycles constantly when Dead Headed</td>
<td>External leak at pump or down stream high pressure circuit</td>
<td>Look for and correct</td>
</tr>
<tr>
<td></td>
<td>Contaminated or stuck open check valve cartridge</td>
<td>Clean or replace</td>
</tr>
<tr>
<td></td>
<td>Internal leak in pump</td>
<td>Check all dynamic and static seals and gaskets</td>
</tr>
</tbody>
</table>

For further assistance, call Interface Devices at 203-878-4648.
Table 1.
Temperature/Pressure Correction

<table>
<thead>
<tr>
<th>At Temperature Degrees F</th>
<th>Fill to Working Pressure x Figure Below</th>
</tr>
</thead>
<tbody>
<tr>
<td>110°</td>
<td>1.1000</td>
</tr>
<tr>
<td>105°</td>
<td>1.0875</td>
</tr>
<tr>
<td>100°</td>
<td>1.0750</td>
</tr>
<tr>
<td>95°</td>
<td>1.0625</td>
</tr>
<tr>
<td>90°</td>
<td>1.0500</td>
</tr>
<tr>
<td>85°</td>
<td>1.0375</td>
</tr>
<tr>
<td>80°</td>
<td>1.0250</td>
</tr>
<tr>
<td>75°</td>
<td>1.0125</td>
</tr>
<tr>
<td>70°</td>
<td>1.0000</td>
</tr>
<tr>
<td>65°</td>
<td>0.9875</td>
</tr>
<tr>
<td>60°</td>
<td>0.9750</td>
</tr>
<tr>
<td>55°</td>
<td>0.9625</td>
</tr>
<tr>
<td>50°</td>
<td>0.9500</td>
</tr>
<tr>
<td>45°</td>
<td>0.9375</td>
</tr>
<tr>
<td>40°</td>
<td>0.9250</td>
</tr>
</tbody>
</table>

**Example:** Ambient Temp. = 90° F, Working pressure is 1800 PSIG

Charge Pressure = 1800 PSIG * 1.0500 = 1890 PSIG
NOTES:

- RECOMMENDED SPARES ITEM: SEAL KIT
- RECOMMENDED SPARES ITEM: OTHER
- LIGHTLY APPLY ITEM 28 "GREASE" TO ALL SEALS AND MATING PARTS AT ASSEMBLY

4 WARNING: SOME COMPONENTS ARE ASSEMBLED IN A "CLEAN" ROOM.
DISASSEMBLY BEYOND WHAT IS SHOWN ON THIS SHEET WILL
CONTAMINATE THE PUMP AND VOID ALL WARRANTIES

ASSEMBLY PART NUMBER: 11631