



OPERATING INSTRUCTIONS

To help you get the best possible performance from your new Airbor 2 Magnetic Drilling Machine, this guide contains simple, sensible pointers for the safe, effective and long term use of the equipment.

- Please read it carefully, together with the motor manual and the Guide to Good Drilling, **BEFORE** using the machine, taking especial notice of the sections relating to the Air Motor.
- **ENSURE** that you have observed all the general, local and specific safety procedures, **PARTICULARLY** those relating to the environment in which you will be using the machine.



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EDITION**

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OPERATING INSTRUCTIONS

The Airbor 2 requires clean, dry lubricated air at a maximum pressure of 6.2 bar (620kPa/90 psi).

The air supply should always be turned off and disconnected before installing or removing any accessory on this machine.

Connect the chosen coolant delivery system to the arbor.

To commence drilling, place the machine in the correct drilling position. To activate the magnet, extend the telescopic magnet handle for more leverage, and pull it to the left.



Re-check the unit is correctly positioned for the hole to be cut, and close the magnet handle extension.



To start the motor, disengage the motor lever locking pin by pulling the handle on motor actuating lever, then move the handle to the left. The motor will start.

While the motor is running, the magnet cannot be disengaged.

When the cut is complete, stop the motor by moving the lever to the right

ROTARY AIR MOTORS

Special Conditions for incorporating into a machine for use in Potentially Explosive Atmospheres

The EC Declaration of Incorporation in this manual states that these Air Motor model have been reviewed as components for compliance with European Community Directive 94/9/EC for equipment intended for use in potentially explosive atmospheres, commonly referred to as the ATEX Directive.

These Air Motors were reviewed for conformance to ATEX designation:

 II 2 GD c IIB 95°C X

These ATEX designations define the applications, the type and duration of the potentially explosive atmospheres, the type of protection and the maximum surface temperature.

The 'X' indicates that additional special conditions are required for safe application, installation, operation and/or maintenance when used in potentially explosive atmospheres.

The explosive hazard assessment of the complete machine into which this air motor will be incorporated will determine the final ATEX marking and conditions. Because this air motor's final machine incorporation is not known, it has not been marked with the ATEX Directive symbols.

NOTICE

- All Special Conditions must be followed for this component to conform to the ATEX Directive and for the ATEX Declaration of Incorporation to be valid.

Special Conditions for Safe Application, Installation, Operation and Maintenance

WARNING

- Non-compliance with any of these Special Conditions could result in ignition of explosive atmospheres.
- Rubbing and friction can cause sparks or elevated temperatures that may be a source of ignition of an explosive atmosphere.

Application & Installation

Bearing overload will cause premature bearing malfunctions that may result in rubbing and friction.

Comply with the following to prevent bearing overload.

1. Do not exceed factory recommendation for maximum allowable shaft radial load versus speed.
2. Refer to catalog data and/or an IR Technical Specialist for specific technical information & recommendations.
3. Driven loads should be balanced to eliminate abnormal loading of the air motor bearings due to radial vibration.

Ensure that motor shaft and driven rotating or

oscillating components do not come in contact with other components.

1. Enclose or guard moving parts.
2. Mount air motor securely. A loose motor will cause abnormal operation or may drop from mounting.
3. Guard air motor from impact that may result in a spark.

Motor Operation Conditions

Elevated surface temperature, an indication of overload or potential failure of bearings or other mechanical components, may create an ignition source.

1. The maximum expected surface temperature (T_{max}) of the entire machine, into which the motor is incorporated, should be measured and stated for the ATEX Directive Marking Requirement and Certificate of Conformance.
2. Maximum bearing temperatures should not exceed WC for an extended length of time.
3. Monitor air motor bearings and housing temperatures during motor operation for unusually high operating temperatures.

"Special Conditions" (Continued)

NOTICE

The air motor's maximum surface temperature measured 71°C with an ambient temperature of 21°C. These measurements were taken with the air motor running at free speed and with air pressure at the inlet at 6.2 bar (620 kPa/90 psig).

Elevated vibration levels of the air motor, an indication of imbalance or potential failure of bearings or other mechanical components, may create an ignition source.

1. Measure and state normal acceptable vibration levels during operation for the completed machine.
2. Monitor air motor shaft and housing vibration for abnormal conditions.

Operation

Always use clean, dry, lubricated air at 6.2 bar (620 kPa/90 psig) maximum air pressure at the inlet. Higher pressure may result in hazardous situations including excessive speed, or incorrect output torque or force resulting in premature failure of bearings or other components.

1. Refer to manufacturer's specification supplied with the air motor for proper airline lubrication.

Maintenance

Follow all lubrication and maintenance recommendations as found in the manual supplied with the air motor.

1. Do not perform maintenance or repairs in an area where hazardous atmospheres are present.
2. Do not clean or lubricate air motor with flammable or volatile liquids, such as kerosene, diesel or jet fuel, which create a potentially explosive atmosphere.

NOTICE

• Place the recommendations given in these special conditions, and any similar recommendations identified by the explosive hazard assessment of the complete machine, in the accompanying literature of the machine into which the air motor is incorporated.

• To safely use this product and conform with the provisions of the Machinery Directive all instructions given in the accompanying literature, in addition to all conditions, notices and warnings given herein, must be followed.

• The EC Declaration of Incorporation in this manual states that the air motor used in this machine has been reviewed for compliance to European Community Directive 94/9/EC for equipment for use in potentially explosive atmospheres.

Air motors are intended to be integrated or incorporated into a larger machine. The motor manufacturer cannot foresee all of the ways that this component may be applied and, therefore, cannot provide all of the safety aspects of the larger, completed machine.

It remains, therefore, the responsibility of the user to ensure that all of the safety requirements for application, installation, operation, inspection and maintenance of the machine are met, in accordance with all applicable standards and regulations (local, state, country, federal, etc.).

Explanation of ATEX and Declaration of Incorporation

1. Assess their products to prevent creation of an explosive atmosphere or a source of ignition of an explosive atmosphere.

2. Certify that when the products are properly installed, maintained and used for their intended purpose, they do not endanger the health and safety of persons, animals or property.

The ATEX Directive recognizes that the probability of a serious event occurring varies with:

- the explosive properties of the atmosphere
- the probability of the atmosphere being present
- the probability of the machinery causing an explosive atmosphere
- the probability of the machinery causing an ignition source

The ATEX Directive recognizes the need for special conditions of installation, operation and maintenance that must be followed to reduce or eliminate this potential for a serious event.

The ATEX Directive requires a completed machine be marked to indicate that the completed machine has been certified for use in potentially explosive atmospheres and to inform users of limits and special conditions of use.

ATEX Directive Markings

 II 2 GD c IIB Tmax X

serves as an example of an ATEX Directive marking on a complete machine, where the following symbol indicates:

1. Ex Mark:



signifies certification for use in an explosive atmosphere, followed by other symbols indicating the details of that certified use.

2. Equipment Group:

- II - Equipment Group II - Non-Mine use.

3. Equipment Category:

- 2 - Group II Equipment Category 2 - Equipment in Category 2 is intended for use in places classified as zone 1 or 21 (defined in standard EN 1127-1) in which explosive atmospheres are only likely to occur. Protection is ensured during normal use and in the event of frequently

occurring disturbances or normal equipment faults. Category 2 equipment can also be used where Category 3 equipment is required.

4. Type of Explosive Atmosphere:

- G - Evaluation for explosive atmospheres caused by gases, vapors or mists.
- D - Evaluation for explosive atmospheres caused by dust.

5. Protection Method (Optional marking):

- C - Type of explosion protection per standard EN 13463-5 in which constructional measures are applied so as to provide safety against the possibility of ignition.

6. Gas Group (Optional marking):

Gases are grouped by their MESG (Maximum Experimental Safe Gap) and MIC (Maximum Ignition Current), with Group A being least explosive and Group C being most explosive.

Gas Groups are defined in standard EN 50014.

- IIB - Certification for use in Group B which covers gases with an MIC ratio of 0.45 to 0.8 and MESG value of 0.55 to 0.9 mm. If certified for Group B it would be safe in Group A, which covers gases with MIC ratio above 0.8 and MESG above 0.9 mm.

7. Maximum Expected Surface Temperature

-Tmax-The maximum surface temperature in degrees Centigrade calculated from the measured maximum temperature with corrections for ambient and a factor of safety.

8. **Special conditions required** for safe application, installation, operation and maintenance (Optional marking).

- X - Indicates that there are special conditions that MUST be followed for the certification to apply.



DECLARATION OF INCORPORATION

(F) DECLARATION D' INCORPORATION _ (D) ERKLÄRUNG HÜBER DEN EINBAU IN MASCHINEN _ (I) DICHIARAZIONE DI INCORPORAZION
 (E) DECLARACION DE INCORPORACION _ (NL) FABRIKANTENVERKLARING _ (DK) INTEGRERINGSERKLÆRING _ (S) FÖRSÄKRAN OM INBYGGNAD
 (N) INTEGRERINGSERKLÆRING _ (FIN) VAKUUTUS RAKENNEKOKONAISSUDESTA

Supplier's Name: **Ingersoll-Rand**

(F) nom du fournisseur: (D) Name des Herstellers: (I) nome del fornitore:
 (E) nombre del proveedor: (NL) naam leverancier: (DK) naam leverancier:
 (S) leverantörens namn: (N) leverandørens navn: (FIN) Toimittajan nimi:

(F) adresse _ (DK) adresse _ (D) Adresse
 (S) adresse _ (I) indirizzo _ (N) adresse
 (E) domicilio _ (FIN) osoite _ (NL) adres

Declare under our sole responsibility that the product, Model: MRV []; 3800 []; 3840 []; 4800 []; 4840 []; M002 []; M004 []; M007 []; MVA []; 202MA []; 202ME []; 2202MA []; 2202ME []; 3MA []; 3ME []; 728 []

(F) déclarons sous notre entière responsabilité que le produit, modèle:
 (D) erklären hiermit, daß das Produkt, Modell:
 (I) dichiariamo sotto la nostra e unica responsabilità che il prodotto, modello:
 (E) declaramos bajo nuestra sola responsabilidad que el producto, modelo:
 (NL) verklaren onder volle aansprakelijkheid dat het product, model:
 (DK) erklærer under vores eget ansvar, at produktet, Model:
 (S) försäkrar under odelat ansvar att produkten, Modell:
 (N) erklærer som eneansvarlig at følgende produkt; Modell
 (FIN) vakuutamme omavastuullisesti, että tuote Malli:

Serial Number Range: **SP03G → XXXXX**

(F) numéro(s) de série: (D) Seriennummer: (I) numero(i) di serie: (E) numero(s) de serie: (NL) serienummer(s): (DK) Seriennummer(re):
 (S) Seriennummer: (N) Serie nummer(re): (FIN) Sarjanumero(t)

To which this declaration relates, is in compliance with the following standard(s) or other normative document(s): **EN 292, EN 1127-1, EN 13463-1, EN 13463-5, EN 50014**

(F) objet de ce certificat, est conforme à là/aux norme(s) ou autres documents suivants:
 (D) auf das sich diese Erklärung bezieht, der folgenden Normen und Richtlinien entspricht:
 (I) a cui si riferisce la presente dichiarazione è conforme ai seguenti standard o ad altri documenti normativi:
 (E) a que se refiere esta declaración está conforme a la(s) norma(s) siguiente(s) u otro(s) documento(s) normativo(s):
 (NL) waarop deze schriftelijke verklaring betrekking heeft, voldoet aan de hierna volgende standaard(s) of ander(e) bindend(e) document(en):
 (DK) hvormod denne erklæring drejer sig, er i overensstemmelse med følgende standard(er) samt andre normative dokumenter:
 (S) som denna försäkran hänföer sig till, överensstämmer med följande standard(er) eller andra normativa dokument:
 (N) som denne erklæringen vedrører, er i samsvar med følgende standard(er) eller andre retningsgivende dokument(er):
 (FIN) jota tämätodistus koskee, on seuraavan standardin (standardien) ja muiden normiasiakirjojen mukainen:

Product must not be put in service before the machinery in which it will be incorporated is declared in conformity with the provisions of Directives: **98/37/EC (Machinery), 94/9/EC (ATEX)**

(F) et qu' il ne devra être mis en service avant que la machine dans laquelle il sera incorporé ne soit déclarée conforme aux prescriptions des Directives: (D) Das Produkt kann nicht in Betrieb genommen werden, bevor erklärt wird, daß die Maschine, in die es aufgenommen wird, die Bedingungen der Vorschriften erfüllt: (I) Il prodotto non può entrare in servizio prima che il macchinario nel quale verrà incorporato sia dichiarato conforme ai provvedimenti delle Direttive: (E) El producto no podrá ser puesto en servicio antes de que se declare que la maquinaria en la que será incorporado cumple con las disposiciones de las a las Directivas: (NL) Het product mag niet in bedrijf worden genomen voordat vastgesteld is dat de machine waarin het wordt ingebouwd, voldoet aan de voorschriften van richtlijnen: (DK) Produktet kan ikke tages i brug, før maskinen, hvori det vil blive integreret, erklæres at være i overensstemmelse med bestemmelserne i følgende direktiver: (S) Produkten får inte tas i bruk förrän försäkran om överensstämmelse har utfärdats för maskinen som produkten skall byggas in i, enligt bestämmelserna i direktiven: (N) Produktet kan ikke tas i bruk før maskineriet, som produktet skal brukes sammen med, er erklært i samsvar med bestemmelsene i direktivene: (FIN) Tuotetta ei saa ottaa käyttöön ennen kuin se rakennekokonaisuus, jossa tuote tulee olemaan kiinteänä osana, on yhdenmukainen direktiivien säännösten kanssa:

Date: **July, 2003**

(F) Date: Juillet, 2003: (D) Datum: Juli, 2003: (I) Data: Luglio, 2003: (E) Fecha: Julio, 2003: (NL) Datum: Juli, 2003: (DK) Dato: Juli, 2003:
 (S) Datum: Juli, 2003: (N) Dato: Juli, 2003: (FIN) Päiväys: Heinäkuu, 2003:

Authorized signatures:

(F) Authorized signatures: (D) Unterschrift: (I) Firma autorizzata: (E) Firma autorizada: (NL) Handtekening gevolmachtigde:
 (DK) Autoriseret underskrift (S) Auktoriserad namnteckning: (N) Autorisert signatur: (FIN) Valtuutettu allekirjoittaja

D. Vose

D. R. Hicks