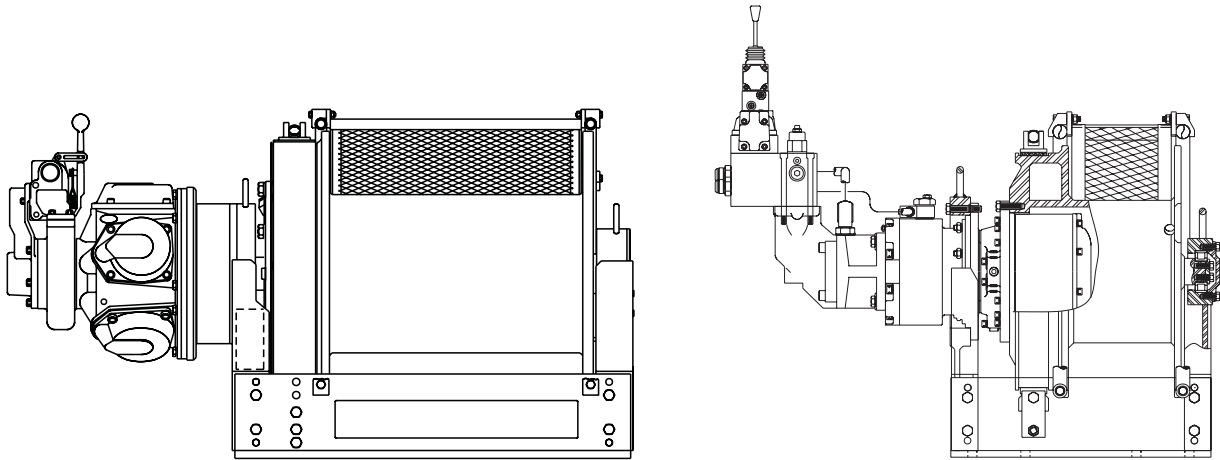


force **5**TM **WINCHES**

MAN RIDER[®] MODELS

FA2, FH2, FA2.5 AND FH2.5

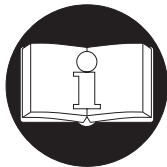


(Dwg. MHP1536)

MANUAL SUPPLEMENT*

* This supplement should be used in conjunction with the Model FA2 and FA2.5 Winch Parts, Operation and Maintenance Manual Form MHD56040 or FH2 Winch Parts, Operation and Maintenance Manual Form MHD56182.

These instructions apply only to Ingersoll-Rand winches that are identified for personnel-lifting by a permanent nameplate attached to the winch at the factory.



READ THIS MANUAL BEFORE USING THESE PRODUCTS. This manual contains important safety, installation, and maintenance information. Make this manual available to all persons responsible for the operation, installation and maintenance of these products.

Always operate, inspect and maintain this winch in accordance with American National Standards Institute Safety Code (ASME B30.7) and all other applicable safety codes and regulations.

GENERAL

Ingersoll-Rand offers, in its winch product line, a limited number of models referred to as **Man Rider®** which are designed and manufactured to standards and specifications based on the recommendations of various regulatory bodies for the purpose of lifting people.

Man Rider® winches are type-approved and/or certified to meet the requirements of the Offshore Oil Industry by one or more of the following regulatory bodies:

American Bureau of Shipping (ABS), Lloyd's Register of Shipping (LRS) or Det Norske Veritas (DNV) to comply with the UK Health and Safety Executive (HSE), UK Department of Energy (DEn), the Norwegian Maritime Directorate (NMD) or the Norwegian Petroleum Directorate (NPD).

In furnishing customers **Man Rider®** winches, **Ingersoll-Rand** does not warrant the suitability of these winches for any particular use. It is the owner's and user's responsibility to determine the suitability of a **Man Rider®** winch for a particular application. Further, it is the owner's and user's responsibility to check and satisfy all local, state, federal and country requirements pertaining to the lifting and lowering of persons.

⚠ WARNING

• Many agencies require on winches additional redundant safety devices that **Ingersoll-Rand** does not furnish. Additional devices are often required to bring the system up to elevator code standards.

Man Rider® winches manufactured by **Ingersoll-Rand** to ABS, LRS and/or DNV requirements are furnished with limitations; approval for use in personnel-lifting applications automatically terminates for any of the following reasons:

1. Winch does not meet other applicable codes or standards.
2. Winch is not part of an approved system.
3. Winch is not properly maintained in an "as new" condition with all parts intact and properly adjusted.

4. Winch is used in applications not approved by codes and regulations, or is used in applications inconsistent with manufacturer's operation and maintenance manual.
5. Changes in any of the standards or regulations after **Ingersoll-Rand's** initial shipment of the product.
6. More than one winch is used to attach to a common load.

⚠ WARNING

• Before using a **Man Rider®** winch, be sure to check all regulations: local, state, federal and country, that may apply to the use of a winch or winch system for lifting and lowering people.

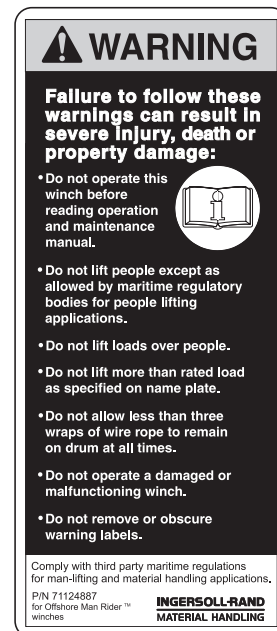
7. The personnel platform shall be designed by a registered engineer competent in this area.

NOTICE

• Lifting personnel with this winch is **STRICTLY LIMITED** to off-shore marine applications specifically approved by maritime regulatory bodies. Suitable use is determined by regulatory bodies, not the manufacturer. **DO NOT USE FOR personnel lifting applications not specifically approved by regulatory bodies.**

Traceability

Load-bearing parts are documented to provide traceability. The documentation includes chemical and physical properties of the raw material, heat treating, hardening, tensile and charpy tests as required for the part. Units with M2 or M3 in the model code have traceable load-bearing components. Components with part numbers ending in CH are charpy parts for use under extreme cold conditions. Traceability requirements must be stated when reordering these parts for continued certification.



GUIDELINES

With reference to the ABS, LRS, DNV, HSE, DEn, NMD and NPD, **Ingersoll-Rand** has developed the following requirements for its **Man Rider®** Winches. It is the responsibility of owners and operators to comply with rules and guidelines required by other local regulatory agencies.

DESCRIPTION	GUIDELINE
Wire rope to drum ratio	18:1
Wire rope design factor at Man Rider® rating	Minimum of 8:1
Winch design factor at Man Rider® rating	Minimum of 8:1
Throttle control	Spring return to neutral
Brakes (two)	One automatic brake required
	One manual or second automatic brake also required
Special Man Rider® label	Required
Wire rope fleet angle	Not to exceed 1-1/2° (1-1/2 degrees)
Disengaging clutch	Not Allowed
Drum guard	Required
Overload protection	Optional, required to meet CE (Community Europe) directives
Travel limit switch	Optional (owner's responsibility)
Emergency lowering	Not required (Refer to "EMERGENCY LOWERING" section)
Design approval by regulatory or certifying authority	Required
Witness tests at time of manufacture	Required for some applications
Minimum clear drum flange	2.5 times wire rope diameter
Emergency stop device	Optional, required to meet CE (Community Europe) directives
Wire rope winding device	Owner's responsibility
Data book	Provided on request

INSPECTION AND TESTING

Records and Reports

An approved test and inspection record should be maintained for each winch, listing all points requiring test and inspection. These reports should be dated, signed by the person who performed the test or inspection, and kept on file where they are readily available to authorized personnel.

1. Winches that are used to raise, lower or suspend personnel platforms shall be inspected by a qualified person at the beginning of each shift and prior to hoisting employees on the personnel platform after the winch has been used for any material handling operation.
2. A test lift shall be made for each work location and at the beginning of each shift to ensure that all systems and controls are functioning properly.
3. The winch shall not be used for hoisting personnel if the test shows instability, erratic operation or causes permanent deformation of any component.
4. A visual inspection of the winch, personnel platform and rigging shall be conducted immediately after the test lift.

SPECIFICATIONS

Air System

Model FA2MR

Rated operating pressure is 90 psi (630 kPa/6.3 bar) at 335 scfm (9.5 cu.m/min).

Model FA2.5MR

Rated operating pressure is 90 psi (630 kPa/6.3 bar) at 700 scfm (20 cu.m/min).

Hydraulic System

Model FH2MR

Rated operating pressure is 1900 psi (12929 kPa/129 bar) at 13 gpm (49 l/m).

Model FH2.5MR

Rated operating pressure is 1710 psi (11800 kPa/118 bar) at 25 gpm (95 l/m).

Rated Performance

Model FA2MR and FH2MR

Man Rider® operating specifications.

FA2MR Winch (18:1 wire rope to drum ratio)

Max. SWL (Safe Working Load) for lifting personnel with full drum 3,180 lb. (1445 kg).

Mid drum line speed up 64 fpm (20 m/min).

Mid drum line speed down 125 fpm (38 m/min).

Model FA2.5MR and FH2.5MR

Man Rider® operating specifications.

FA2.5MR Winch (18:1 wire rope to drum ratio)

Max. SWL (Safe Working Load) for lifting personnel with full drum 3,180 lb. (1445 kg).

Mid drum line speed up 118 fpm (36 m/min).

Mid drum line speed down 155 fpm (47 m/min).

Drum Wire Rope Storage Capacity * ft. (m)

FA2MR, FH2MR, FA2.5MR and FH2.5MR Winches with a 10.75 in. (273 mm) barrel diameter and 19 in. (483 mm) diameter drum flange.

Drum Length (in)	Wire Rope Dia.	
	1/2 in.	13 mm
8	258 ft.	77 m
12	396	118
16	435	159
24	809	242

*Based on U.K. DEn standards which require the top layer to be 2-1/2 times the wire rope diameter below the drum flange diameter using 1/2 in. (13 mm) dia. EIPS 6 X 19 IWRC with a minimum breaking strength of 26,600 lb. (12,091 kg). Wire rope construction which provides a low rotation or anti-spin characteristic is recommended.

SAFE OPERATING INSTRUCTIONS

Man Rider® Operating Instructions

⚠ WARNING

• Failure to follow these instructions may result in termination of all applicable warranties. Ingersoll-Rand assumes no liability for any loss or damage resulting from operation of *Man Rider*® winches if these operating instructions are not followed.

- Winch operator must maintain visual or audio contact with personnel being lifted or lowered at all times.
- Personnel operating the winch or being transferred are to have sufficient instruction/training concerning that operation before any movement takes place.
- The winch installation must be arranged to conform to the statutory regulations covering personnel handling.
- Prior to any personnel movement, the winch shall be inspected to ensure safe operation.
- The lifting apparatus (basket, etc.) shall be inspected and certified for personnel-lifting prior to use.
- The winch shall not be overloaded.
- Do not operate without testing. (Refer to "Inspection and Testing" procedures.)
- Do not operate winch in a damaged condition.
- Do not operate a winch that has not been properly maintained or equipped.

- Do not attach winch to an unsafe foundation. Refer to "INSTALLATION" section in the Model FA2 and 2.5 Winch Operation and Maintenance Manual Form MHD56040 or Model FH2 Winch Parts, Operation and Maintenance Manual Form MHD56182.
- Do not operate winch with any personnel near the line of force or where they are likely to come into contact with moving parts.
- All signs and warning notices must be posted permanently on the winch.
- Always maintain four or more wraps of wire rope on the drum.
- Never leave a suspended load unattended.
- Wire rope must be spooled off drum from the top, away from the operator.

General Operating Instructions

The following warnings and operating instructions have been adapted in part from American National (Safety) Standard ASME B30.7 and are intended to avoid unsafe operating practices which might lead to injury or property damage.

Ingersoll-Rand recognizes that most companies who use winches have a safety program in force at their facilities. In the event that some conflict exists between a rule set forth in this publication and a similar rule already set by an individual company, the more stringent of the two should take precedence.

Safe Operating Instructions are provided to make an operator aware of dangerous practices to avoid and are not necessarily limited to the following list. Refer to specific sections in the manual for additional safety information.

1. Only allow people trained in safety and operation of this product to operate and maintain this winch.
2. Only operate a winch if you are physically fit to do so.
3. When a “**DO NOT OPERATE**” sign is placed on the winch, or controls, do not operate the winch until the sign has been removed by designated personnel.
4. Before each shift, the operator should inspect the winch for wear and damage. Never use a winch that inspection indicates is worn or damaged.
5. Never lift a load greater than the rated capacity of the winch. See nameplate attached to winch or refer to “SPECIFICATIONS” section.
6. Keep hands, clothing, etc. clear of moving parts.
7. Never place your hand in the throat area of a hook or near wire rope spooling onto or off the winch drum.
8. Always rig loads properly and carefully.
9. Be certain the load is properly seated in the saddle of the hook. Do not support the load on the tip of the hook.
10. Do not “side pull” or “yard”.
11. Always ensure that you, and all other people, are clear of the path of the load. Do not lift a load over people.
12. Ease the slack out of the wire rope when starting to lift or pull. Do not jerk the load.
13. Do not swing a suspended load.
14. Do not leave a suspended load unattended.
15. Never operate a winch with twisted, kinked or damaged wire rope.
16. Pay attention to the load at all times when operating the winch.
17. Never use the wire rope as a sling.
18. After use, or when in a non-operational mode, the winch should be secured against unauthorized and unwarranted use.

WINCH REPLACEMENT PARTS

Refer to appropriate parts section in the Model FA2 and 2.5 Winch Operation and Maintenance Manual Form MHD56040 or Model FH2 Winch Parts, Operation and Maintenance Manual Form MHD56182.

For *Man Rider*® winches, item number 88 Nameplate, part number 71106967 is replaced by a *Man Rider*® Nameplate part number 71108849.

On FA2.5MR winches a 1-1/4 in. to 3/4 in. NPT pipe reducer part number 53857 must be used in the supply air inlet port on the control valve.

FA2.5MR winches must use the 410 size valve assembly part number 20992 when winch is operated with remote pilot control or a limit switch.

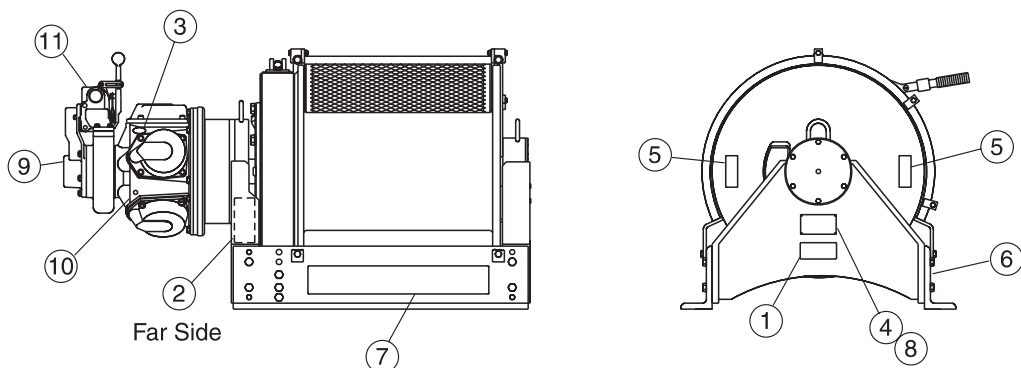
WARNING

• **The user and owner are cautioned to be sure to check all appropriate and applicable regulations regarding the lifting or handling of people before putting this winch to such use.**

Refer all communications to the nearest **Ingersoll-Rand** Material Handling Office or Distributor.

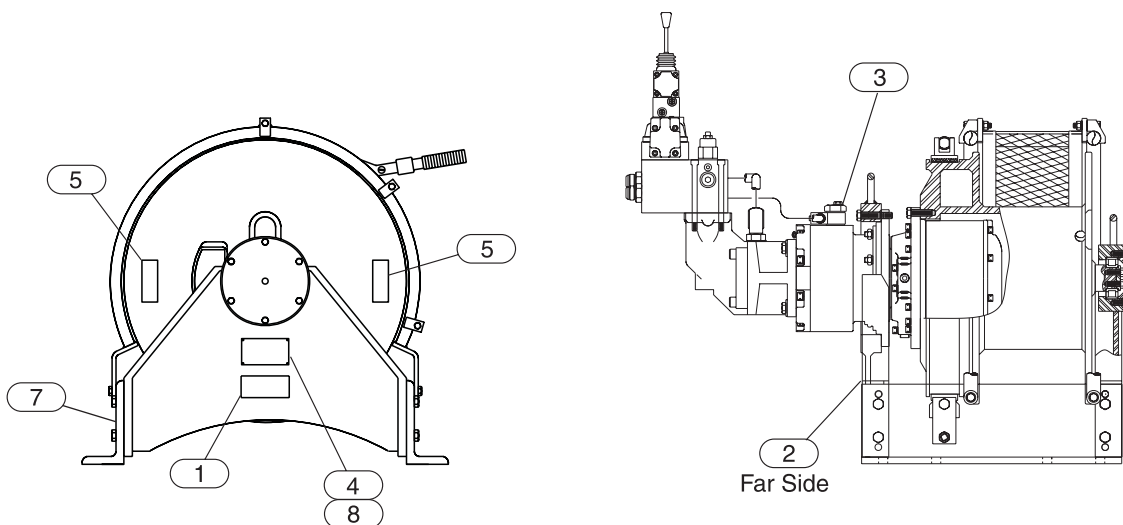
WINCH LABEL/TAG LOCATION AND PART NUMBER REFERENCE DRAWING

Air Winch Labels



(Dwg. MHP1500)

Hydraulic Winch Labels



(Dwg. MHP1532)

ITEM NO.	DESCRIPTION OF PART	AIR	HYD.	TOTAL QTY.	PART NUMBER		
					8-12 Long Drum	16-20 Long Drum	24-30 Long Drum
	Label Kit	✓	---	1	Contact Factory		
	Label Kit	---	✓				
1	Label: <i>Man Rider</i> ®		✓	1	71108856 (shown on Page 2)		
2	Label: Warning		✓	1	71124887 (shown on Page 2)		
3	Tag: Check Oil		✓	1	71107148		
4	Nameplate		✓	1	71108849		
5	Label: Winding		✓	2	71109516		
6	Label: I-R Logo		✓	1	71106256	71106272	71109102
7	Label: <i>Man Rider</i> ® Logo		✓	1	71111793	71111785	71116438
8	Drive Rivet		✓	4	71028849		
9	Label: Exhaust	✓	---	1	71042196		
10	Label: Oil Level	✓	---	1	71043616		
11	Label: Air Supply	✓	---	1	71046395		

CERTIFIED UNITS

For cold weather certified units adding a “CH” to the part number (example; item 101, pin 4303-S will be 4303-SCH) of the following parts will ensure certification is retained. Refer to appropriate parts section in the Model FA2 and FA2.5 Winch Parts, Operation and Maintenance Manual Form MHD56040 or Model FH2 Winch Parts, Operation and Maintenance Manual Form MHD56182.

It is recommended to use only genuine **Ingersoll-Rand** replacement parts for unit repairs.

Item No.	Description of Part	Air	Hydraulic	Item No.	Description of Part	Air	Hydraulic
19	Splined Hub	✓	---	84	Outboard, Upright	✓	✓
35	Shaft	✓	---	101	Pin	✓	✓
41	Drum Shaft	✓	---	103	Link Stud	✓	✓
42	Inboard, Upright	✓	✓	104	Brake Handle	✓	✓
47	Gear Carrier	✓	---	121	Pin	✓	✓
69	Sun Gear	✓	---	122	Pivot Bracket	✓	✓
80	Drum	✓	✓	124	Arm	✓	✓
82	Side Rail	✓	✓	125	Connecting Link	✓	✓
83	Side Rail	✓	✓	128	Brake Band	✓	✓

OPERATION

It is recommended that the user and owner check all appropriate and applicable regulations before placing this product into use.

The four most important aspects of winch operation are:

1. Follow all safety instructions when operating the winch.
2. Only allow people trained in safety and the operation of the winch to operate this equipment.
3. Subject each winch to a regular inspection and maintenance procedure.
4. Be aware of the winch capacity and weight of load at all times.

WARNING

• **To avoid damage to the rigging, the structure supporting the rigging and the winch, do not “two-block”* the end of the wire rope.**

* “Two blocking” occurs when the winch wire rope is multi-reeved using two separate sheave blocks which are allowed to come into contact with each other during winch operation. When this occurs extreme forces are exerted on the wire rope and sheave blocks which may result in equipment and/or rigging failure.

Operators must be physically competent. Operators must have no health condition which might affect their ability to act. They must have good hearing, vision and depth perception. The winch operator must be carefully instructed in his duties and must understand the operation of the winch, including a study of the manufacturer’s literature. The operator must thoroughly understand proper methods of hitching loads and must have a good attitude regarding safety. It is the operator’s responsibility to refuse to operate the winch under unsafe conditions.

1. Lifting and lowering speeds shall be operator-controlled and be as slow as practical. **Ingersoll-Rand** recommends that they do not exceed 100 feet (30 m) per minute. Any applicable codes and standards should be followed.

2. Personnel shall keep all parts of the body inside the platform during raising, lowering and positioning.
3. If the personnel platform is not landed on a solid surface, it shall be tied to the structure before personnel get off or on.
4. Tag lines shall be used where practical.
5. The winch operator shall remain at the controls at all times when handling personnel.
6. Handling of personnel shall be discontinued upon indication of any impending danger.

WARNING

• **Maintain at least 4 wraps of wire rope on the drum at all times.**

7. The platform shall be raised 1 ft (30 cm) and inspected to ensure that it is secure and properly balanced before personnel are allowed to occupy the platform. Before elevating or lowering personnel, the following conditions shall exist:
 - a. Hoist ropes shall be free of kinks.
 - b. Multiple part lines shall not be twisted around each other.
 - c. The primary point of wire rope attachment shall be centered over the platform so that the platform will not tilt when lifted, but remain level.
 - d. If there is a slack wire rope condition, the hoisting mechanisms shall be inspected to ensure all wire ropes are properly seated on drums and in sheaves, before resuming winch operation.
8. When personnel are suspended, a signal man must be provided unless voice communication equipment is utilized. Signals must be visible or audible to operator at all times.
9. Personnel occupying the lifting platform shall wear a body belt with lanyard appropriately attached to the load block or to a structural member of the required strength within the platform.
10. Bridles and associated hardware for the personnel platform shall not be used for any other service.

11. Warning or limiting devices shall be installed to prevent “two-blocking,” unless audible communication has been provided and one of the persons being lifted has been specifically assigned the task of warning of the approach of a “two-block” condition.

Training

Program

The employer shall provide and implement a training program for all supervisors and employees engaged in the operation of raising, lowering or suspending personnel platforms from a winch load line so that they are familiar with the requirements of the hoisting system and are able to recognize the associated hazards and take appropriate measures. Records of training programs shall be maintained.

Planning Meeting

A meeting attended by the winch operator, signal man, persons to be lifted and the person in charge of the task to be performed shall be held to plan and review the procedures to be followed, including procedures for entering and leaving the personnel platform, the points at which personnel will enter and leave the platform, the use of safety equipment, signals and the lift chart information.

NOTICE

• **This meeting shall be held prior to the beginning of personnel-hoisting operations at each new work location and thereafter for any new employees assigned to the operation.**

During this meeting it is recommended that a comprehensive plan to cover emergency procedures be worked out prior to exercising the *Man Rider*® capabilities of this winch.

EMERGENCY LOWERING

The following information is provided to allow for emergency lowering of the basket if air/hydraulic operating power is lost to the winch. These procedures should only be used if no other method of safely lowering personnel is available.

Winch Brake Configuration

Man Rider® winches are supplied with a manual or automatic drum brake and a disc brake.

If your winch has a manual drum brake, it can be used to regulate the speed of descent of the basket when one of the options listed below is used.

When system operating air pressure is lost, air winch disc brakes and automatic drum brakes are engaged.

When system operating hydraulic pressure is lost, hydraulic winch disc brakes and automatic drum brakes are engaged.

Emergency Lowering Precautions

1. Emergency lowering operations must be performed by a minimum of two personnel trained in the operation of the winch.
2. Communication must be established between personnel in the basket and winch operator. Operator should be able to visually monitor the basket through its full range of travel.

Air Winches

The winch should be isolated from the supply air system during emergency lowering operations.

Hydraulic Winches

The winch should be isolated from the supply hydraulic system during emergency lowering operations.

Emergency Lowering Procedure

The following options can be used for lowering the *Man Rider*® basket in an emergency.

1. Have one operator stationed at the manual drum brake (if equipped) to slowly release the brake and regulate basket lowering speed when the air or hydraulic disc brake is released.

Air Winches

1. Release the automatic disc and automatic band brake (if equipped). This can be accomplished by attaching an air supply of 40-50 psig (2.8-3.4 bar) and energizing the brake(s). Remove the dump valve from automatic brake and attach the air supply directly to the brake release port on the brake housing and/or air cylinder. Apply air pressure until brake(s) is released.
2. If basket fails to lower, refer to 'Alternative Measures'.

Hydraulic Winches

1. Slowly loosen either end fitting on the 1/4 inch brake line.
2. Locate the hex nut and socket head adjustment screw on the counterbalance cartridge valve at the top of the manifold, next to throttle valve. Turn adjustment screw **clockwise** until screw bottoms out and cannot be turned further.
3. Attach a manually operated hydraulic hand pump to the 1/4 inch brake line. Manually pressurize brake to 290-350 psi (2000-2400 kPa/20-24 bar), or until basket begins to lower. Do NOT exceed 1,000 psi (6900 kPa/69 bar) oil pressure.
4. If basket fails to lower, refer to 'Alternative Measures'.

Alternative Measures

If the air or hydraulic brake release methods listed above do not allow the basket to lower, there may not be enough weight in the basket to overcome the natural mechanical resistance of the winch gearbox and motor.

1. If the motor will not backdrive, attach a line from another winch to the basket support and pull down the *Man Rider*® basket.

CAUTION

• **The line used to pull down the basket should be attached in such a manner as to NOT damage or deform the basket or cause basket to tip.**

2. Alternatively, send additional weight to personnel in the basket using another line. This weight must be carefully and evenly distributed in the *Man Rider*® basket. Ensure that this extra weight does NOT exceed the capacity of the basket or cause the basket to tilt.

CAUTION

• **This weight should be sent in small, easily handled bundles and only enough to cause basket to lower. When lowering basket in this manner the brake(s) can be used to control lowering by releasing air or hydraulic pressure or applying the band brake.**

Lowering Air Winch with Two Automatic Brakes

In one of the air supply lines, install a valve capable of releasing the energizing air pressure. This will allow the operator to release air pressure, causing the brake to actuate. In this manner the operator can slow or stop the lowering of the *Man Rider*® basket at any time during this emergency procedure.

Ingersoll-Rand has available kits for emergency lowering. Contact technical sales for further information.

SERVICE NOTES

SERVICE NOTES

United States Office Locations

Technical Support

**Ingersoll-Rand
Material Handling**
P.O. Box 24046
2724 Sixth Avenue South
Seattle, WA 98124-0046
Phone: (206) 624-0466
Fax: (206) 624-6265

For Order Entry, Order Status

**Ingersoll-Rand
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Fax: (630) 530-3891

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Farmington Hills, MI 48335
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Fax: (248) 476-6670

Houston, TX
450 Gears Road
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Houston, TX 77067-4516
Phone: (281) 872-6800
Fax: (281) 872-6807

Los Angeles, CA
11909 E. Telegraph Road
Santa Fe Springs, CA 90670-0525
Phone: (562) 948-4189
Fax: (562) 948-1828

Philadelphia, PA
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900 E. 8th Ave., Suite 103
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Fax: (610) 337-5912

International Office Locations

Offices and distributors in principal cities throughout the world. Contact the nearest **Ingersoll-Rand** office for the name and address of the distributor in your country or write/fax to:

**Ingersoll-Rand
Material Handling**
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2724 Sixth Avenue South
Seattle, WA 98124-0046
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Fax: (206) 624-6265

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Toronto, Ontario**
51 Worcester Road
Rexdale, Ontario
M9W 4K2
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Fax: (416) 213-4510
Order Desk
Fax: (416) 213-4506

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Fax: (403) 437-3145

Montreal, Quebec
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Kirkland, Quebec
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