Form U-8A15G

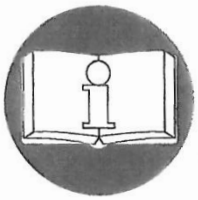
OPERATION AND MAINTENANCE MANUAL

for

AIR WINCH

BU-8A15G Air Winch

1500 lb Capacity (680 kg)



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

⚠WARNING

Do not use this winch for lifting, supporting, or transporting people or lifting or supporting loads over people.

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

Refer all communications to WINTECH International L.L.C.. or your nearest Distributor.

April 2004
Form U-8A15G
Edition 1
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WINTECH BEEBE

SAFETY INFORMATION

This manual provides important information for all personnel involved with the safe installation, operation and proper maintenance of this product. Even if you feel you are familiar with this or similar equipment, you must read and understand this manual before operating the product.

Danger, Warning, Caution and Notice

Throughout this manual there are steps and procedures which, if not followed, may result in a hazard. The following signal words are used to identify the level of potential hazard.

⚠ DANGER Danger is used to indicate the presence of a hazard which *will* cause *severe* personal injury, death, or substantial property damage if the warning is ignored.

⚠ WARNING Warning is used to indicate the presence of a hazard which *can* cause *severe* personal injury, death, or substantial property damage if the warning is ignored.

⚠ CAUTION Caution is used to indicate the presence of a hazard which *will* or *can* cause *minor* personal injury or property damage if the warning is ignored.

NOTICE Notice is used to notify people of installation, operation, or maintenance information which is important but not hazard-related.

Safety Summary

⚠ WARNING

- Do not use this winch for lifting, supporting or transporting people or lifting or supporting loads over people.
- The supporting structures and load-attaching devices used in conjunction with this winch must provide an adequate safety factor to handle the rated load, plus the weight of the winch and attached equipment. This is the customer's responsibility. If in doubt, consult a qualified structural engineer.

The National Safety Council, Accident Prevention Manual for Industrial Operations, Eighth Edition and other recognized safety sources make a common point: Employees who work near cranes or assist in hooking on or arranging a load should be instructed to keep out from under the load. From a safety standpoint, one factor is paramont: conduct all lifting operations in such a manner that if there were an equipment failure, no personnel would be injured. This means keep out from under a raised load and keep out of the line of force of any load.

WINTECH winches are manufactured in accordance with the latest ASME B30.7 standards.

The Occupational Safety and Health Act of 1970 generally places the burden of compliance with the user, not the manufacturer. Many OSHA requirements are not concerned or connected with the manufactured product but are, rather, connected with the final installation: "It is the owner's responsibility and user's responsibility to determine the suitability of a product for any particular use. Check all applicable industry, trade association, federal, state and local regulations. Read all operating instructions and warnings before operation."

Rigging: It is the responsibility of the operator to exercise caution, use common sense and be familiar with proper rigging techniques. See ANSI/ASME B30.9 for rigging information, American National Standards Institute, 1430 Broadway, New York, NY 10018.

This manual has been produced by Wintech to provide dealers, mechanics, operators and company personnel with the information required to install, operate, maintain and repair the products described herein. It is extremely important that mechanics and operators be familiar with the servicing procedures of these products, or like or similar products, and are physically capable of conducting the procedures. These personnel shall have a general working knowledge that includes:

1. Proper and safe use and application of mechanics common hand tools as well as special Wintech or recommended tools.
2. Safety procedures, precautions and work habits established by accepted industry standards.

Wintech can not know of, nor provide all the procedures by which product operations or repairs may be conducted and the hazards and/or results of each method. If operation or maintenance procedures not specifically recommended by the manufacturer are conducted, it must be ensured that product safety is not endangered by the actions taken. If unsure of an operation or maintenance procedure or step, personnel should place the product in a safe condition and contact supervisors and/or the factory for technical assistance.

SAFE OPERATING INSTRUCTIONS

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

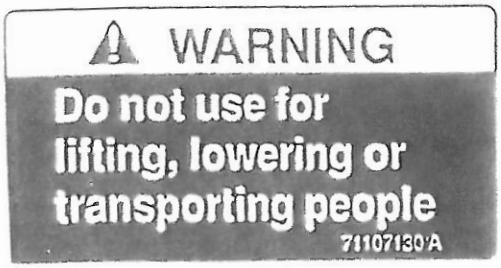
WINTECH recognizes that most companies who use winches have a safety program in force in their plants. In the event that some conflict exists between a rule set forth in this publication and a similar rule already set by an individual company, the more stringent of the two should take precedence.

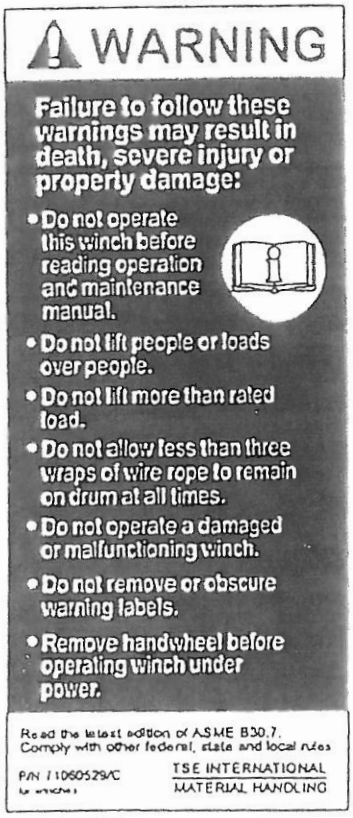
Safe Operating Instructions are provided to make an operator aware of dangerous practices to avoid and are not necessarily limited to the following list. Refer to specific sections in the manual for additional safety information.

1. Only allow qualified personnel (trained in safety and operation) to operate and maintain a 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, do not operate the winch until the sign has been removed by designated personnel.
4. Before each shift, check the winch for wear or damage.
5. Never lift a load greater than the rated capacity of the winch. See warning labels attached to winch.
6. Keep hands, clothing, etc., clear of moving parts.
7. Never place your hand in the throat area of a hook.
8. Always rig loads properly and carefully.
9. Be certain the load is properly seated in the saddle of the hook. Do not tipload the hook as this leads to spreading and eventual failure of the hook.
10. Do not "side pull" or "yard".
11. Make sure everyone is clear of the load path. Do not lift a load over people.
12. Never use the winch for lifting or lowering people, and never allow anyone to stand on a suspended load.
13. Ease the slack out of the wire rope when starting a lift. Do not jerk the load.
14. Do not swing a suspended load.
15. Never suspend a load for an extended period of time.
16. Never leave a suspended load unattended.
17. Pay attention to the load at all times when operating the winch.
18. After use, properly secure winch and all loads.
19. The operator must maintain an unobstructed view of the load at all times.
20. Never use the wire rope as a sling.

WARNING TAG AND LABELS

Each winch is supplied from the factory with the warning tag shown. If the tag is not attached to your unit, order a new tag and install it. Refer to the parts list for the part number. Read and obey all warning and other safety information attached to this winch. Tag shown may not be actual size.





(LBL615.CDR)

SPECIFICATIONS

Model	Linepull 1st Layer	Linespeed 1st Layer	Power Required	Cable Capacity (Feet) 3/16"	1/4"	5/16"	3/8"	Weight
U-8A-10	1000 lbs.	40 FPM	125 CFM @ 90 PSI	650	400	240	165	76 lbs.
U-8A-15	1500 lbs.	40 FPM	125 CFM @ 90 PSI	650	400	240	165	80 lbs.
U-8E-8	800 lbs.	36 FPM	115/1/60	650	400	240	165	120 lbs.
U-8E-12	1200 lbs.	36 FPM	115/1/60	650	400	240	165	134 lbs.

SPECIFICATIONS

Model No.	Drum Length (in)	ANSI Rating 3.5:1				Hoist Duty 5:1				Horsepower
		Line Pull		Line Speed		Line Pull		Line Speed		
		lb	kg	fpm	m/min	lb	kg	fpm	m/min	
U-8A-10	8	1000	450	40	12	1000	454	60	18	3
U-8A-15	8	1500	625	40	12					

* Winch without wire rope

** Based on ANSI standards which require the top layer to be at least 1/2 in. (13 mm) below the drum flange diameter. Capacities shown may vary from those published elsewhere.

Description

The U-8 Air Winch consists of a vane motor bolted to the gear housing which contains a worm gear drive reduction. The output from the vane motor drives the worm gear reduction which in turn powers the wire rope drum. The winch control valve is conveniently mounted on the air vane motor.

INSTALLATION

Prior to installing the winch, carefully inspect it for possible shipping damage.
Winches are supplied fully lubricated from the factory. Before operation check all oil levels and adjust as necessary. Use the proper type of oil as recommended in the "LUBRICATION" section.

⚠ CAUTION

• Owners and users are advised to examine specific, local or other regulations, including American National Standards Institute and/or OSHA Regulations which may apply to a particular type of use of this product before installing or putting winch to use.

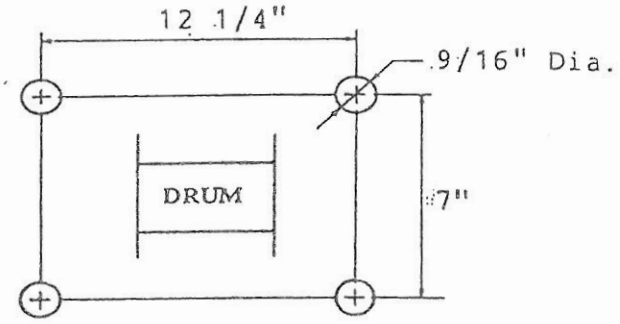
Mounting

Care must be taken when moving, positioning or mounting the winch. Lifting handles have been provided to assist in handling the winch.

Mount the winch so the axis of the drum is horizontal.

1. If the winch is to be mounted in one position be sure the mounting surface is flat and of sufficient strength to handle the rated load and prevent possible winch damage resulting from distortion or twisting of the winch frame.
2. Make sure the mounting surface is flat to within 1/16 inch (2mm). Shim if necessary.
3. Mounting bolts must be 1/2 in. (12mm) Grade 5 or better. Use self-locking nuts or nuts with lockwashers.
4. Tighten mounting bolts evenlly. Torque to 75 lb ft (100 Nm) dry or 55 lb ft (74 Nm) lubricated.
5. Maintain a fleet angle between the sheave and winch of no more than 1-1/2 degrees. The lead sheave must be on a center line with the drum and for every inch (25 mm) of drum lenght, be at least 1.6 feet (0.5 m) from the drum.
6. When a lead sheave is used, it must be aligned with the center of the drum. The diameter of the lead sheave must be at least 18 times the diameter of the wire rope.
7. Do not weld to any part of the winch.
8. Make sure vent plug (15) is located at the higheset position on the gear case (1).

Mounting Bolt Hole Dimensions
(Dwg. MHTPA0124)



Wire Rope

⚠ CAUTION

• Maintain at least 3 wraps of wire rope on the drum at all times.
• Install the wire rope to come off the drum for the correct direction of rotation to suit the control valve operation.

Wire Rope Selection

Consult a reputable wire rope manufacturer or distributor for assistance in selecting the appropriate type and size of wire rope and, where necessary, a protective coating. Use a wire rope which provides an adequate safety factor to handle the actual working load and meets all applicable industry, trade association, federal, state and local regulations.
When considering wire rope requirements the actual working load must include not only the static or dead load but also loads resulting from acceleration, retardation and shock load. Consideration must also be given to the size of the winch wire rope drum, sheaves and method of reeving. The minimum recommended wire rope diameter is 3/16 in. (5 mm). Maximum wire rope diameter is 3/8 in. (10 mm). The maximum wire rope diameter is limited by the size of the wire rope anchor hole.

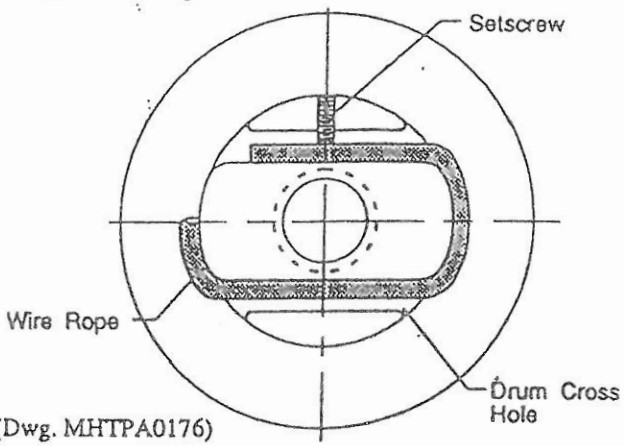
⚠ WARNING

• Check wire rope diameter provides adequate safety factor.

Installing a Wire Rope

(Ref. Dwg. MHTPA0176)

1. Cut wire rope to length and fuse the ends in accordance with the wire rope manufacturers instructions.
2. Feed the end of the wire rope through th drum cross hole and back through the wire rope clamping hole.
3. Position wire rope end just inside of drum barrel surface and tighten set screw.



(Dwg. MHTPA0176)

⚠ CAUTION

• **Make sure the first wrap of wire rope is flush against the drum flange.**

Safe Wire Rope Handling Procedures

1. Always use gloves when handling wire rope.
2. Never use wire rope which is frayed or kinked.
3. Never use wire rope as a sling.
4. Always ensure wire rope is correctly spooled and first layer is tight.

Wire Rope Spooling

To allow for uneven spooling and decrease in line pull capacity as the drum fills up, use as short a wire rope as practical. To rewind wire rope apply tension to eliminate slack. This helps achieve level winding and tight spooling.

Rigging

Make sure all wire rope blocks, tackle and fasteners have sufficient safety margin to handle the required load. Do not allow wire rope to contact sharp edges or make sharp bends which will cause damage to wire rope. Use a sheave. Refer to wire rope manufacturer's handbook for proper sizing, use and care of wire rope.

Safe Installation Procedures

1. Do not use wire rope as a ground (earth) for welding.
2. Do not attach a welding electrode to winch or wire rope.
3. Never run the wire rope over a sharp edge. Use a correctly sized sheave.
4. Always maintain at least threee full wraps of wire rope on the drum.

AIR SUPPLY

The air supply must be clean and free from moisture.

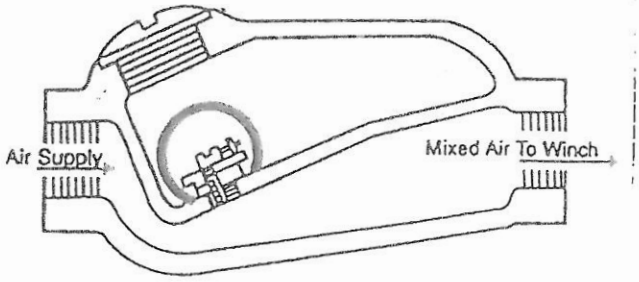
Air Lines

The inside diameter of winch air supply lines must not be smaller than 1 in. (25 mm). Since the diameter of the supply line determines the volume of air which will pass through it, supply lines smaller than those recommended will not permit the motor to develop its maximum power. Where more than one motor is to be operated from a common supply line, the diameter of the main line should be increased to insure that sufficient volume and pressure is available at the motor end of the transmission line.

Before making final connections, all air supply lines should be purged before connecting to system inlet. Supply lines should be short and straight as installation conditions will permit. The motor should be installed as near as possible to the compressor or air receiver. Long transmissions lines and excessive use of fittings, elbows, tees, globe valves etc., cause a reduction in pressure due to restrictions and surface friction in lines.

Air Line Lubricator

Always use an air line lubricator with these motors. The lubricator should be installed so the compressed air will flow in the direction of the arrows (see dwg. MHTPA0175). It is advisable to keep the lubricator as near the winch as possible.



(Dwg. MHTPA0175)

Automatic lubrication is immediately effective once the lubricator is installed in the air line and the pressure is turned on. This pressure backs up through the feeder via the breather line into the oil reservoir where it is equalized. When operation of the winch begins, the pressure momentarily drops, the back pressure in the reservoir forces a fog of oil into the air line. This of oiled air which is suspended in the line provides a perfect lubrication without oil sticking to the hose wall. The lubricator only operates under pressure from the line, so oil is taken into the air line only when the winch is in use.

The lubricator insures lubrication as long as any oil remains in the reservoir. The leak-proof, pressure-proof window reveals oil supply.

The normal setting of the feeder for average summer conditions is 5 when using 10W oil. Increasing the opening may be necessary for lower temperatures. When adjusting the feeder, open until it is at the point where a light film of oil can be felt on the hand when held over the exhaust. This adjustment enables the lubricator to be operated under a variety of climatic conditions. The use of a lubricator assures that the rotary valve and rotary valve bushing will receive adequate lubrication and the oil vapor carried into the motor will help to lubricate the cylinder walls.

⚠ CAUTION

- Lubricator must be located no more than 10 ft. (3 m) from the motor.

The air line lubricator should be replenished daily.

Air Line Filter

It is recommended that an air line strainer/filter be installed close to the motor but before the lubricator to prevent dirt from entering the valve and motor. The strainer/filter should provide 64 micron filtration and include a moisture trap. Clean the strainer/filter periodically to maintain its operating efficiency.

Moisture in Air Lines

Moisture that reaches the air motor through the supply lines is the chief factor in determining the lenght of time between service overhauls. Moisture traps, installed at low points in the transmission lines can help to eliminate moisture and other methods, such as an air receiver which collects moisture before it reaches the motor or an aftercooler at the compressor that cools the air prior to distribution through the supply lines, are also helpful.

Motor

For optimum performance and maximum durability of parts, operate air motor with 90 psig at 125 scfm (6.2 bar/ 620 kpa at 3.5 cu.m/min) air supply. The air motor should be installed as near as possible to the compressor or air receiver.

Compressor and Air Receiver

Motors which are to be operated continuously at maximum horsepower must be obviously be used with a compressor of sufficient capacity to deliver the volume of air required. Ins intemittently at slow speeds and under these conditions a smaller compressor can be used, especially when an air receiver is installed to provide storage for a reserve supply of compressed air.

Intitial Operating Checks

Winches are tested for proper operation prior to leaving the factory. Before the winch is placed into service the folowing intital operating checks should be performed.

a. When first running the motor, some light oil should be injected into the inlet connection to allow good lubrication.
b. When first operating the winch it is recommended that the motor be driven slowly in both directions for a few minutes.

For winches that have been in storage for a period of more than one month the following start-up procedure is required.

1. Pour a small amount of 10W oil in the motor inlet port.
2. Operate the motor for 10 seconds in each direction to flush out any impurities.
3. The winch is now ready to work.

The four most important aspects of winch operation are:

1. Follow all safety instructions when operating the winch.
2. Allow only people instructed in safety and operation of this product to operate the winch.
3. Subject each winch to a regular inspection and maintainance procedure.
4. Be aware of the winch capacity and weight of load at all times.

⚠ CAUTION

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

The spring loaded manual throttle control valve is supplied mounted to the motor. Optional remotely mounted controls are available. The valve provides control over the speed of the motor and the direction of drum rotation.

⚠ WARNING

• The winch is not designed or suitable for lifting, lowering or moving people. Never lift loads over people.

Winch Controls

Winch Mounted Throttle

The spring loaded manual control throttle mounts to the air motor.

When viewed from the air motor end move the control throttle handle to the right (clockwise) to pay out wire rope.

When viewed from the air motor end, move the control throttle handle to the left (counterclockwise) to haul in wire rope.

To ensure smooth operation of the winch sudden movements of the control valve should be avoided.

Remote Pilot Pendant Throttle (optional)

The pendant control throttle is equipped with two separate levers for winch operation. Direction of drum rotation is controlled by whichever lever is depressed.

Run In Period

Maximum efficiency of the worm gear is obtained after a "run-in" period. The length of time required will depend on the load applied and will be two to four hours at rated load and considerable longer at lighter loads. (Overloading will not further decrease the "run-in" time and it may damage the worm gear.)

During "run-in" higher than normal temperatures rise, and lower effieciency and output torque can be expected.

After "run-in" worm gears are designed to operate with a maximum temparture rise of 100 Degrees F(38 Degrees C) in the oil bath of input horsepower, output torque and have the recommended oil level of the proper lubricant.

To ensure continued satisfactory operation of the winch, all points requiring lubrication must be serviced with the correct lubricant at the proper time interval.

The lubrication intervals recommended in this manual are based on intermittent operation of the winch eight hours each day, five days per week. If the winch is operated almost continuously or more than the eight hours each day, more frequent lubrication will be required. Also, the lubricant types and change intervals are based on operation in an environment relatively free of dust, moisture, and corrosive fumes. Use only those lubricants recommended. Other lubricants may affect the performance of the winch. Approval for the use of other lubricants must be obtained from your Wintech distributor. Failure to observe this precaution may result in damage to the winch and/or its associated components.

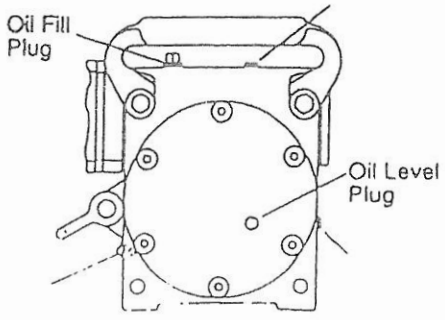
INTERVAL	LUBRICATION CHECKS
Start of each shift	Check flow and level of air line lubricator.
Monthly	Clean air line filter. Check the oil level in the winch gear housing.
6 months	Drain and refill the oil in the winch gear housing.

Gear Housing

The gear housing is filled at the factory and shipped with the proper amount of oil, a non-toxic, rust inhibiting worm gear oil AGMA #7 compound that is suitable for an ambient temperature of 50° F to 125° F (10° C to 52° C).

Before placing the winch in operation, make certain that the vent plug (15) is located at the highest position on the gear housing (1).

Lubrication Points



(Dwg. MHTPA0550)

After the first 10 hours of operation, the oil should be changed. Thereafter it should be changed ever 100 hours of service of every 6 months whichever occurs first. The oil is drained by removing pipe plug (74) located in the side of the gear housing (1). It will be necessary to tilt the winch slightly to remove all of the oil. The oil should be changed, using one of the recommended lubricants or its equivalent.

Lubrication Chart

Temperature Range	Recommended Lubricant
50° to 125° F (10° to 52° C)	AGMA #7 EP
-10° to 50° F (-23° to 10° C)	AGMA #5 EP

Fill gear housing up to the level plug (73) hole in the gear housing (1). changed. The gear housing oil capacity is approximately 1 qt. (0.95 lts.)

Seals, Bearing and Clutch

If the winch is disasssembled, clean all parts throughly and coat bearings, seals and clutch parts with clean grease. Use sufficient grease to provide a good protective coat. For temperatures -20° to 50° F (-29° to 10° C) use a multipurpose lithium-based EP 1 grease. For temperature 30° to 120° F (0° to 49° C) use a multipurpose lithium-based EP 2 grease.

Air Supply

Air supply should have a filter and an air line lubricator. Use SAE 10W oil or equivalent, one pinte every eight hours of operation. The air line lubricator (156) has a 18 cu in. (0.29 lts.) oil capacity.

The strainer should be cleaned occasionally by removing the plug and turning on the air for a few moments to blow out accumulated dirt.

Drain the air receiver at least once a day.

Wire Rope

Refer to wire rope manufacturer's recommendations. At a minimum observe the following:

1. Clean with a brush or steam if there is dirt, rock dust or other foreign material on the surface of the rope.

⚠ CAUTION

- Do not use an acid-based solvent. Only use cleaning fluids specified by the wire rope manufacturer.

2. Apply a wire rope lubricant, SAE 30W oil.
3. Brush, drip or spray lubricant weekly or more

Inspection information is based in part on American National Standards Institute Codes (ASME B30.7).

⚠ WARNING

- All new, altered or modified equipment should be inspected and tested by personnel instructed in safety, operation and maintenance of this equipment to ensure safe operation at rated specification before placing equipment in service.
- Never use a winch that inspection indicated is defective.

Frequent and periodic inspectiosn should be performed on equipment in regular service. Frequent inspections are visual examinations performed by operators or personnel trained in safety and operation of this equipment and included observations made during routine equipment operation. Periodic inspections are throrough inspections conducted by personnel trained in safety, operation and maintenance of this equipment. ASME B30.7 states inspection intervals depend upon the nature of the critical components of the equipment and the severity of usage.

Careful inspection on a regular basis will reveal potentially dangerous condition while still in the early stages, allowing corrective action to be taken before the condition becomes dangerous.
Deficiencies revealed through inspection, or noted during operation, must be reported to designated personnel instructed in safety, operation and maintenance of this equipment. A determination as to whether a condition constitutes a safety hazard must be decided, and the correction of noted safety hazards accomplished and documented by written report before placing the equipment in service.

Records and Reports

Inspection records, listing all points requiring periodic inspection should be maintained for all load bearing equipment. Written reports, based on severity of service, should be made on the condition of critical parts as a method of documenting periodic inspections. These reports should be dated, signed by the person who performed the inspection, and kept on file where they are readily available for review.

Wire Rope Reports

Records should be maintained as part of a long-range wire rope inspection program. Records should include the condition of wire rope removed from service. Accurate records will establish a relationship between visual observations noted during frequent inspections and the actual condition of wire rope as determined by periodic inspections.

Frequent Inspection

On a winch in continuous service, frequent inspection should be made at the beginning of each shift. In addition, visual inspections should be conducted during regular service for any damage or evidence of malfunction.

1. OPERATION. Check for visual or abnormal noises which could indicate a defect. Do not operate a winch unless the wire rope feeds onto the winch drum smoothly. If wire rope binds or jumps, clean and lubricate the wire rope. If problem persists, replace the wire rope. Do not operate the winch until all defects have been corrected.
2. AIR SYSTEM. Check air lines, valves and other components for leakage. Repair if necessary.
3. WIRE ROPE. Wire rope is a consumable item which must be replaced when worn. The following list is a guide to the accepted standards by which wire rope must be judged and is not presented as a substitute for an experienced inspector.
   a. Damage, such as birdcaging, kinking, core protrusion, crushing and main strand displacement.
   b. Corrosion and nicking.
   c. Wear of crown wires. Replace at 1/3 wear of the original diameter of any crown wire.
   d. Broken wires or strands, particularly at connections. Replacement is necessary if one wire is broken at a connection; six wires broken within one lay; three wires broken in one strand within one lay.
   e. Lubrication.

   Replace wire rope if any doubt exists as to wire rope serviceability.
4. WIRE ROPE REEVING. Check reeving and ensure wire rope is properly secured to the drum.
5. LUBRICATION. See "LUBRICATION" section for recommended procedures.
6. CONTROLS. Check that controls function properly and return to neutral when released.

Periodic Inspection

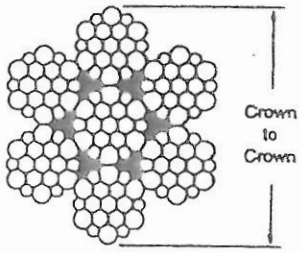
Periodic inspection intervals for winch use under various conditions is listed below:

NORMAL	HEAVY	SEVERE
yearly	yearly	quarterly

Disassembly may be required for HEAVY or SEVERE usage. Keep accumulative records of periodic inspections to provide a basis for continuing evaluation. Inspect all the items in a frequent inspection plus the following:

1 FASTENERS. Check capscrews, nuts, pins and other fasteners on winch and air system. Replace if missing or tighten and secure if loose.

2. ALL COMPONENTS. Inspect for wear, damage, distortion, deformation and cleanliness. If external evidence indicates the need, disassemble. Check gears, shafts, bearings, springs and covers. Replace worn or damaged parts. Clean, lubricate and reassemble.
3. DRUM AND SHEAVES. Check for damage or excessive wear. Replace if necessary.
4. LABELS AND TAGS. Check for presence and legibility. Replace if necessary.
5. WIRE ROPE.
   Besides the items in a frequent inspection, inspect for the following:
   a. Build-up of dirt and corrosion. Clean if necessary.
   b. Loose or damaged end connection. Replace if loose or damaged.
   c. Check wire rope anchor is secure.
   d. Changes in the size of the wire rope diameter. Periodically measure the diameter of the wire rope from crown-to-crown throughout the life of the wire rope. The actual diameter should be recorded when the wire rope is under equivalent loading and in the same operating section. If the actual diameter of the wire rope has decreased more than 1/64 in. (0.4 mm) a through examination of the wire rope should be conducted by an experienced inspector to determine the suitability of the wire rope to remain in service. (Ref. Dwg. MHTPA0056)



(Dwg. MHTPA0056)

6. FOUNDATION. Check for the continued ability to sustain the imposed loads.
7. CONTROL VALVE. It is recommended that the control valve be disassembled yearly for lubrication, cleaning and inspection.

Winches Not in Regular Use

A winch which has been idle for a period of one month or more, but less than six months, shall be given an inspection conforming with the requirements of "Frequent Inspection" before being placed into service.

A winch which has been idle for a period of over six months shall be given a complete inspection conforming with the requirements of "Periodic Inspection".

Standby winches shall be inspected at least semi-annually in accordance with the requirements of "Frequent Inspection". If abnormal operating conditions apply winches may require a more frequent inspection.

This section provides basic troubleshooting information. Determination of specific causes to problems are best identified by thorough inspections performed by personnel instructed in safety, operation and maintenance of this equipment. The chart below provides a brief guide to common winch problems, probable causes and solutions.

PROBLEM	CAUSE	SOLUTION
Winch will not operate.	No air supply to winch.	Check connections and hoses in air supply lines.
	Winch is overloaded.	Reduce load to within rated capacity.
Load continues to move when winch is stopped.	Winch is overloaded.	Reduce load to within rated capacity.
Winch does not provide rated line pull and speed performance.	Motor may be damaged.	Remove and disassemble motor as described in the "MAINTENANCE" section. Examine all parts and replace any that are worn or damaged.
	Insufficient air supply.	Check air supply.
	Improper hose or fitting sizes.	Check fittings, connections and hoses for correct size and length. Replace parts that may cause restricted air flow.
	Motor shaft seal is damaged.	Noticeable air escaping from the gear housing breather plug. Replace motor shaft seal (44).
	Motor out of alignment.	Check motor alignment as described in the "MAINTENANCE" section.
Throttle lever moves but winch does not operate.	Motor may be damaged.	Remove, disassemble and clean motor as described in the "MAINTENANCE" section. Examine all parts and replace any that are worn or damaged.
	Insufficient air supply.	Check air supply. Increase the air pressure to provide 90 psig (6.2 bar/620 kpa).
	Winch is overloaded.	Reduce load to within rated capacity.
Winch runs hot or makes excessive noise during operation.	Low oil level.	Check oil level in the housing and top up if required.
	Improper lubrication.	Check oil is type recommended in the "LUBRICATION" section.

⚠WARNING

- Never perform maintenance on the winch while it is supporting a load.
- Before performing maintenance, tag controls:
  DANGER-DO NOT OPERATE-
  EQUIPMENT BEING REPAIRED.
- Only allow personnel trained in service and repair on winch to perform maintenance.
- After performing any maintenance on the winch, test winch to 110% of its rated capacity before returning to service.
- Turn off air system and depressurize air lines before performing any maintenance.

General Disassembly

The following instructions provide the necessary information to disassemble, inspect, repair, and assemble the winch. Parts drawings of the winch and related components are provided inthe Parts Section.
If the winch is being completely disassembled for any reason, follow the order of the topics as they are presented.

It is recommended that all maintenance work on the winch be performed on a sturdy work bench in a clean dust free work area.
In the process of disassembling the winch, observe the following:

1. Never disassemble the winch any further than is necessary to accomplish the needed repair. A good part can be damaged during the course of disassembly.
2. Never use excessive force when removing parts. Tapping gently around the perimeter of a cover or housing with a soft hammer, for example, is sufficient to break the seal.
3. Do not heat a part with a flame to free it for removal, unless the part being heated is already wornor damaged beyond repair and no additional damage will occur to other parts.

In general, the winch is designed to permit easy disassembly and assembly. The use of heat or excessive force should not be required.

4. Keep the work area as clean as practical, to prevent dirt and other foreign matter from getting into bearings or other moving parts.
5. All seals and 'O' rings should be discarded once they have been removed. New seals and 'O' rings should be used when assembling the winch.
6. When grasping a part in a vise, always use leather-covered or copper-covered vise jaws to protect the surface of the part and help prevent distortion. This is particularly true of threaded members and housings.
7. Do not remove any part which is a press fit in or no a subassembly unles the removal of that part is necessary for repairs or replacement.
8. When removing ball bearings from shafts, it is best to use a bearing puller. When removing bearings from housings, drive out the bearing with a sleeve slightly smaller than the outside diameter of the bearing. The end of the sleeve or pipe which contacts the bearing must be square. Protect bearings from dirt by keeping them wrapped in clean cloths.

Control Valve

(Ref. DwG. MHTPA0195)

The in-line lubricator will help to extend the service life of the control valve. Clean all metal parts with a non-flammable solvent, and wash all rubber parts with soap and water. Rinse thoroughly and blow dry with a low-pressure air jet. When applicable, check the internal pilot ports in the valve body (100) to make sure the passages are open. Replace any parts that are damaged or worn, giving particular attention to the seal rings (114) on the valve spool (107).

Disassemble and reassemble the valve, using dwg. MHTPA0195 as a reference. No special tools are required. When reassembling the valve portion, one new spacer (115) should be installed in the stack of spacers (115) and seal rings (114) to make the necessary compression in the post sockets and assure a tight seal stack. Place the new spacer (115) in the center of the valve body (100), with seal rings (114) and spacers (115) added on each side as assembly of the stack proceeds. Lubricate each seal ring (114) before installing. Tilt the seal rings (114) as they are inserted into the valve body (100) to avoid cutting or damage from sliding over port openings.

Remote Control Assembly

(Ref. Dwg. MHTPA0183)

If movement produced by the controls is opposite of what is desired, interchange the two hoses (162) which go to the relay valves (151).

Preventive Maintenance Tips

In some installations, due to atomospheric conditions or because moisture has not been eliminated in supply lines, fogging or freezing may occur at exhaust ports. Fogging can be corrected by attaching a length of hose or pipe to the valve exhaust port to carry the exhaust air away from the motor. Freezing can generally be eliminated by insuring that the air supply is as dry as possible before it is used by the motor.

Testing

Operational Test

Prior to initial use, all new, altered or repaired winches shall be tested to ensure proper operation.

a. Check oil level in gear housing is correct.
b. If motor is new or has had a major overhaul run winch slowly for several minutes in both directions with no load.
c. Check operation of clutch
d. Check operation of limit switches, and locking or safety devices when provided.
e. Check all tie-downs are secure.
f. Install guards and warning labels.

Load Test

Prior to initial use, all new, extensively repaired, or altered winches shall be load tested by or under the direction of a person trained in service and repair of this winch, and a written reporrt furnished confirming the rating of the winch. Test loads shall not be more than 110% of the rated line pull.

To test the winch at 110% of the rated load apply a load of 1375 lb (624 kg) with the wire rope on the second layer of the drum.

Reference Information Only

For single bearing (old style) motors, first make certain that the worm shaft roller bearings are adjusted properly in the gearbox (end play should not exceed .005 in. (0.13 mm) at 100 lb. (45 kg) axial load), then install motor. Lightly snug up 10-32 screws and 1/4 NC motor mounting bolts. Install control valve, lubricator and filter. Connect to air supply. Run motor at full speed and tap around edge of motor end over until maximum motor rpm is realized. Tighten 1/4 NC motor bolts to 65 in. lbs. (0.75 kg.m) and machine screws to 30 in. lbs. (0.35 kg.m)

PARTS ORDERING INFORMATION

The use of other than Wintech Material Handling replacement parts may invalidate the Company's warranty. For prompt service and geniune Wintech Material Handling parts, provide your nearest Distributor with the following:

1. Complete winch model and serial number.
2. Part number and part description as shown in this manual.
3. Quantity required.

The nameplate provides winch model and serial number information. The nameplate is located on the winch side frame at the clutch end.

For your convenience and future reference, please take a few moments to add the following infomation:

Winch Model Number _____

Winch Serial Number _____

Date Purchased _____

Return Goods Policy

Wintech will not accept any returned goods for warranty or service unless prior arrangements have been made and written authorization has been provided from the location the goods were purchased.

Winches which have been modified without Wintech's approval, mishandled or overloaded, will not be repaired or replaced under warranty. A printed copy of the warranty which applies to this winch is provided inside the back cover of this manual.

NOTICE

• Continuing improvement and advancement of design may cause changes to this winch which are not included in this manual. Manuals are periodically revised to incorporate changes. Always check the manual edition number on the front cover for the latest issue.

When the life of the winch has expired, it is recommended that the winch be disassembled, degreased and parts separated as to materials so that they may be recycled.

For additional information contact:

Wintech
5319 Shreveport-Blanchard Hwy.
Shreveport, LA 71107
Phone: (318) 929-1242
Fax: (318) 929-1245

HOIST AND WINCH LIMITED WARRANTY

WINTECH warrants to the original user its Hoists and Winches (Products) to be free of defects in material and workmanship for a period of one year from the date of purchase.
WINTECH will repair, without cost, any Product found to be defective, including parts and labor charges, or at its option, will replace such Products or refund the purchase price less a reasonable allowance for depreciation, in exchange for the Product. Repairs or replacements are warranted for the remainder of the original warranty period.

If any Product proves defective within its original one year warranty period, it should be returned to any Authorized Hoist and Winch Service Distributor, transportation prepaid with proof of purchase or warranty card.

This warranty does not apply to Products which WINTECH has determined to have been misused or abused, improperly maintained by the user, or where the malfunction or defect can be attributed to the use of non-genuine WINTECH parts.

WINTECH makes no other warranty, and all implied warranties including any warranty of merchantability or fitness for a particular purpose are limited to the duration of the expressed warranty period as set forth above.
WINTECH maximum liability is limited to the purchase price of the Product and in no event shall WINTECH be liable for any consequential, indirect, incidental, or special damages of any nature rising from the sale or use of the Product, whether based on contract, tort, or otherwise.

Note: Some states do not allow limitations on incidental or consequential damages or how long an implied warranty lasts so that the above limitations may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

IMPORTANT NOTICE

It is our policy to promote safe delivery of all orders. This shipment has been thoroughly checked, packed and inspected before leaving our plant and receipt for it in good condition has been received from the carrier. Any loss or damage which occurs to this shipment while enroute is not due to any action or conduct of the manufacturer.

VISIBLE LOSS OR DAMAGE
If any of the goods called for on the bill of lading or express receipt are damaged or the quantity is short, do not accept them until the freight or express agent makes an appropriate notation on your freight bill or express receipt.

CONCEALED LOSS OR DAMAGE
When a shipment has been delivered to you in apparent good condition, but upon opening the crate container, loss or damage has taken place while in transit, notify the carrier's agent immediately.

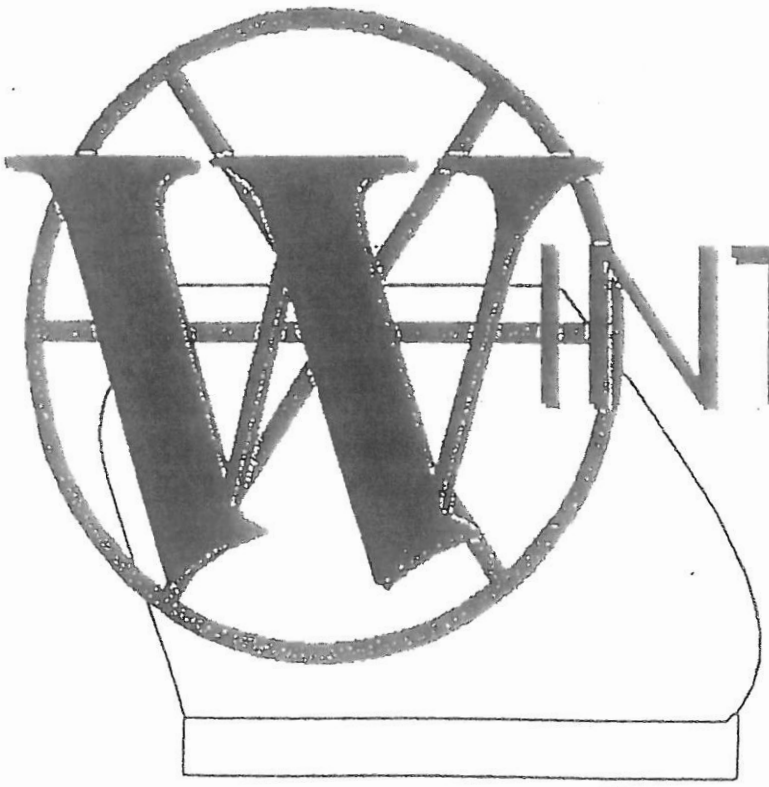
DAMAGE CLAIMS
You must file claims for damage with the carrier. It is the transportation company's responsibility to reimburse you for repair or replacement of goods damaged in shipment. Claims for loss or damage in shipment must not be deducted from the WINTECH invoice, nor should payment of WINTECH invoice be withheld awaiting adjustment of such claims as the carrier guarantees safe delivery.
You may return products damaged in shipment to us for repair, which services will be for your account and form your basis for claim against the carrier.

United States Office Location

For Order Entry, Order Status, and
Technical Support:

WINTECH
5319 Shreveport/Blanchard Hwy.
Shreveport, LA. 71107

Phone: (318) 929-1242
1-888-946-8325
Fax: (318) 929-1245



WINTECH™

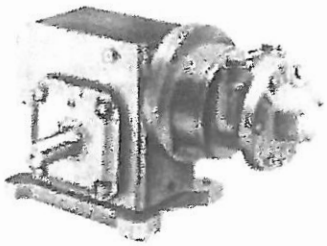
Printed in USA

LUBRICATED AIR MOTORS

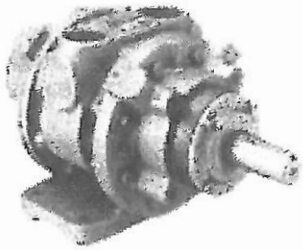
OPERATION & MAINTENANCE MANUAL

Model 2AM Shown

Model 4AM Shown



Model 6AM Shown



Model 16AM Shown

Thank you for purchasing this Gast product. It is manufactured to the highest standards using quality materials. Please follow all recommended maintenance, operational and safety instructions and you will receive years of trouble free service.

IMPORTANT: PLEASE READ THIS MANUAL AND SAVE FOR FUTURE REFERENCE.

General information

- **Clearances:**

Model	Total End Clearance (in/mm)	Top Clearance (in/mm)
1AM/1 UP	0.0020/0.0508	0.0015/0.0381
2AM	0.0025/0.0635	0.0015/0.0381
2AM *	0.0025/0.0635	0.0025/0.0635
4AM	0.0035/0.0889	0.0015/0.0381
4AM *	0.0035/0.0889	0.0025/0.0635
6AM	0.0035/0.0889	0.0015/0.0381
8AM	0.0048/0.1219	0.0015/0.0381
16AM	0.0060/0.1524	0.0015/0.0381

* Models with the last three digits greater than 500 (ie 2AM XXX-501)

- **Vane Life:** Depends upon speed, operating pressure and motor maintenance.
- **Operating Pressure:** 100 psi or below (7 bar)

Product Use Criteria:

- Operate at temperature up to 250°F (121°C).
- Protect unit from dirt and moisture.
- Use ONLY compressed air to drive motor.
- Air lines connected to motor should be the same size or the next size larger than the intake port for efficient output and speed control.
- Protect all surrounding items from exhaust air.
- Bearings are grease packed.
- Use Gast #AD220 or a detergent SAE#10 automotive engine oil for lubricating.

GAST
A Unit of IDEX Corporation

ISO 9001 & 14001 CERTIFIED

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Lubrication

Use Gast #AD220 or a detergent SAE #10 automotive engine oil for lubricating. Lubricating is necessary to prevent rust on all moving parts. Excessive moisture in the air line may cause rust or ice to form in the muffler when air expands as it passes through the motor. Install a moisture separator in the air line and an after cooler between compressor and air receiver to help prevent moisture problems.

Manual Lubrication

Shut the air motor down and oil after every 8 hours of operation. Add 10-20 drops of oil to the air motor intake port.

Automatic Lubrication

Adjust inline oiler to feed 1 drop of oil per minute for high speed or continuous duty usage. Do Not overfeed oil or exhaust air may become contaminated.

Check intake and exhaust filters after first 500 hours of operation. Clean filters and determine how frequently filters should be checked during future operation. This one procedure will help assure the product's performance and service life.

Flushing

Flushing this product to remove excessive dirt, foreign particles, moisture or oil that occurs in the operating environment will help to maintain proper vane performance. Flush the motor if it is operating slowly or inefficiently.

Use only Gast #AH255B Flushing Solvent. DO NOT use kerosene or ANY other combustible solvents to flush this product.

1. Disconnect air line and muffler.
2. Add flushing solvent directly into motor. If using liquid solvent, pour several tablespoons directly into the intake port. If using Gast #AH255B, spray solvent for 5-10 seconds into intake port.
3. Rotate the shaft by hand in both directions for a few minutes.
4. **You must wear eye protection for this step.** Cover exhaust with a cloth and reconnect the air line. Slowly apply pressure until there is no trace of solvent in the exhaust air.
5. Listen for changes in the sound of the motor. If motor sounds smooth, you are finished. If motor does not sound like it is running smoothly, installing a service kit will be required. (See "Service Kit Installation").

Check that all external accessories such as relief valves or gauges are attached and are not damaged before operating product.

Shutdown

It is your responsibility to follow proper shutdown procedures to prevent product damage.

1. Turn off air intake supply.
2. Disconnect plumbing.
3. Remove air motor from connected machinery.
4. **Wear eye protection.** Keep away from air stream.
   Use clean, dry air to remove condensation.
5. Lubricate motor with a small amount of oil in chamber. Rotate shaft by hand several times.
6. Plug or cap each port.
7. Coat output shaft with oil or grease.
8. Store motor in a dry environment.

SERVICE KIT INSTALLATION

Gast will NOT guarantee field-rebuilt product performance. For performance guarantee, the product must be returned to a Gast authorized service facility.

Service kit contents vary. Most contain vanes, end cap gasket, body gasket, bearings and a muffler element or felt.

Major and Minor Rebuilds

Tool kits which include a more in-depth rebuild manual are available through your Gast distributor. These kits include the tools required to remove and reassemble end plates, bearings and shaft seals, and to set the proper end clearance. The rebuild manual also includes step by step instructions, including illustrations, to help achieve a successful rebuild. Gast Manufacturing, Inc. highly recommends using the air motor rebuild manual and tool kit when attempting a minor or major rebuild to your Gast air motor.

Minor Rebuild:

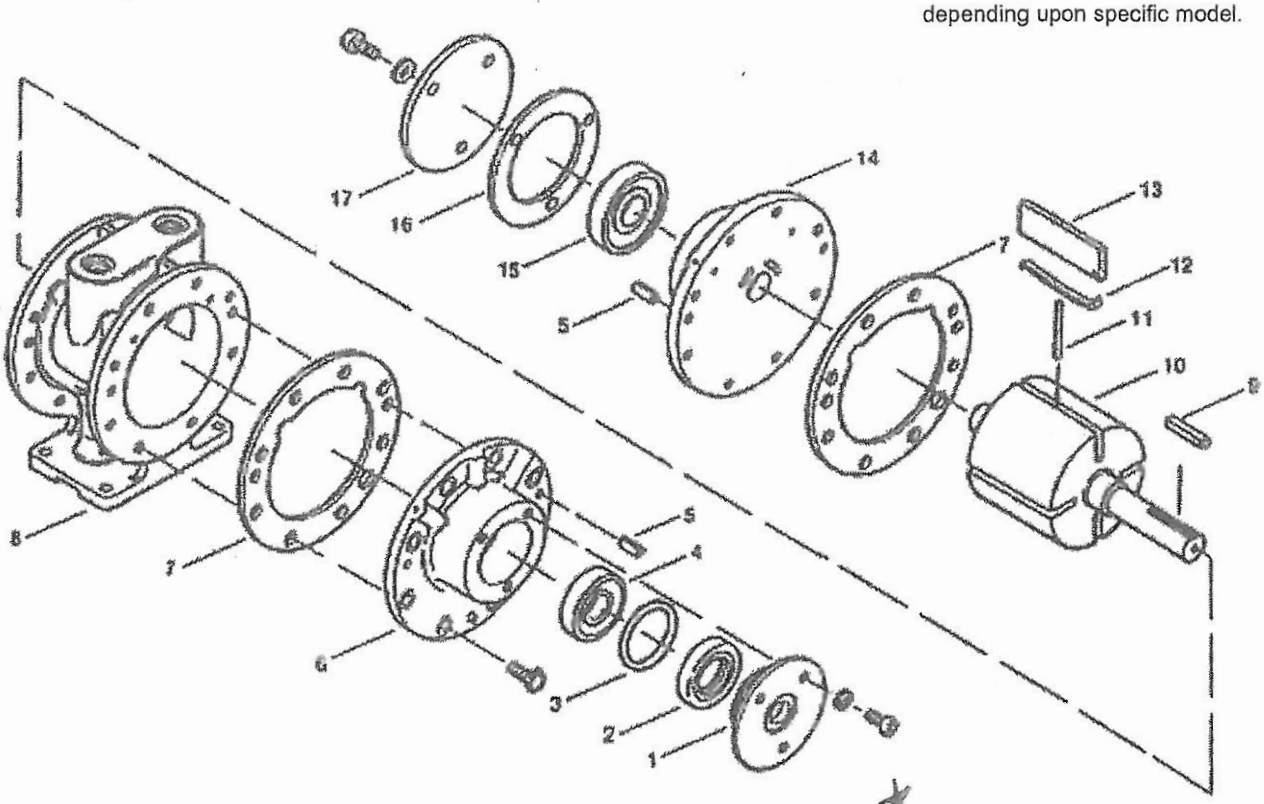
1. Remove the end cap.
2. Remove dead end plate bolts.
3. Remove dead end plate. (Use factory issued tool, do not use screwdriver to remove the end plate.
4. Remove the dowel pins from the body and push back into end plate until flush or just below the machined surface of the end plate.
5. Remove vanes.
6. Clean parts. Check for scoring on the end plate and rotor assembly. If scoring exists, send unit to a Gast authorized service facility.
7. **Lubricated models only:** Lightly oil and reinstall vanes.
8. Place the proper end plate gasket on the end plate. If the original is damaged, replace with a new one supplied in the Service Kit.
9. Place the dead end plate on the body.
10. Press the bearing onto the shaft using a factory supplied bearing pusher.
11. Tap dowel pins into body and install end plate bolts. Tighten bolts to 75-100 in-lbs.
12. Set end clearance as required by model:
    1AM-4AM and NL22-NL52 models - use the bearing taper from kit to lightly tap on inner race of the dead end bearing to free up and center the rotor in the body.
    6AM-8AM models - lightly strike the drive end shaft with a soft hammer to push the rotor away from the drive end plate. The rotor must NOT rub on either end plate.
13. Reattach end cap.
14. **If the air motor is lubricated,** apply a few drops of Gast #AD220 lubricant into ports. Rotate shaft by hand for a few rotations.

Major Rebuild:

1. Remove the end cap.
2. Remove dead end plate bolts.

EXPLODED PRODUCT VIEW, PARTS & ORDERING INFORMATION

Exploded views are shown for reference only. Units may vary depending upon specific model.



8AM SERIES

REF#	DESCRIPTION	QTY	8AM-FRV-2B	8AN-NRV-5B	8AM-NRV-28A	8AM-FRV-30A	8AM-NRV-32A	8AM-NRV-42A	8AM-ARV-70 METRIC	8AM-ARV-71 METRIC
1	DRIVE END CAP	1	AC835A	AC835A	AC988	AC835A	AC988	AC835A	AC988	AC988
2 Δ	SHAFT SEAL	1	AC839	AC839	AB936	AC839	AB936	AC839	AK420	AK420
3 Δ	O-RING	1	AC808	AC808	AC989	AC808	AC989	AC808	AC989	AC989
4 Δ	DRIVE END BEARING	1	AA735B	AA735B	AB927	AA735B	AB927	AA735B	AB927	AB927
5	DOWEL PIN	4	AB162	AB162	AB162	AB162	AB162	AB162	AB162	AB162
6	DRIVE END PLATE	2	AC964	AC963	AC965	AC964	AC965	AC963	AK421	AK421
7 Δ	BODY GASKET	2	AC888	AC888	AC888	AC888	AC888	AC888	AC888	AC888
8	BODY	1	AC877A	AC878C	AC878C	AC877A	AC878C	AC878C	AC878G	AC878G
9	KEY	1	AB136D	AB136D	AB136D	AB136D	AB136D	AB136D	AK668	AK668
10	ROTOR ASSEMBLY	1	AC977	AC977	AC986	AC977A	AC986A	AC977A	AC986D	AC986C
11 Δ	PUSH PIN	2 4	AC879	AC879	AC879	AC879	AC879	AC879	AC879	AC879
12 Δ	VANE SPRING	4 8	AC817	AC817	AC817	AC817	AC817	AC817	AC817	AC817
13 Δ	VANE	4 8	AC816	AC816	AC816	AC816	AC816	AC816	AC816	AC816
14	DEAD END PLATE	1	AC964	AC964	AC964	AC964	AC964	AC964	AC964	AC964
15 Δ	DEAD END BEARING	1	AC894B	AC894B	AC894B	AC894B	AC894B	AC894B	AC894B	AC894B
16 Δ	END CAP GASKET	1	AC837	AC837	AC837	AC837	AC837	AC837	AC837	AC837
17	DEAD END CAP	1	AC836	AC836	AC836	AC836	AC836	AC836	AC836	AC836
***	MUFFLER ASSEMBLY	1	AC990	AC990	AC990	AC990	AC990	AC990	AC990	AC990
***	MUFFLER FELT	1	AC993	AC993	AC993	AC993	AC993	AC993	AC993	AC993
***	SERVICE KIT	1	K210	K210	K211	K283	K282	K283	K282A	K282B

★ GAST 8AM-NRV-32A

*** Item not shown.
Δ Denotes parts included in the Service Kit.
Parts listed are for stock models. For specific OEM models, please consult the factory.
When corresponding or ordering parts, please give complete model and serial numbers.

TROUBLESHOOTING CHART

Problem					
Low Torque	Low Speed	Won't Run	Runs Hot	Runs Well Then Slows Down	Reason & Remedy For Problem.
●	●	●			Dirt or foreign material present. Inspect and clean.
●	●	●			Internal rust. Inspect and clean.
●	●	●	●	●	Vanes misaligned. Realign vanes.
●	●				Low air pressure. Increase pressure.
	●				Air line too small. Install larger line(s).
	●			●	Restricted exhaust. Inspect and repair.
●	●	●		●	Motor is jammed. Disassemble and repair.
	●			●	Air source inadequate. Inspect and repair.
	●			●	Air source too far from motor. Reconfigure setup.

AUTHORIZED SERVICE FACILITIES

Gast Manufacturing Inc.
2550 Meadowbrook Road
Benton Harbor, MI 49022
TEL: 269-926-6171
FAX: 269-925-8288
www.gastmfg.com

Gast Manufacturing Inc.
505 Washington Avenue
Carlstadt, NJ 07072
TEL: 201-933-8484
FAX: 201-933-5545
www.gastmfg.com

Air-Oil Products Corp.
301 30th Street NE 31,#112
Auburn, WA 98002
TEL: 800-282-2672
FAX: 877-808-4601
www.air-oil.com

Brenner Fiedler & Assoc
13824 Bentley Place
Cerritos, CA 90701
TEL: 800-843-5558
TEL: 310-404-2721
FAX: 310-404-7975
www.brenner-fiedler.com

D & F Distributors
1144 Indy Court
Evansville, IN 47725
TEL: 812/867-2441
FAX: 812/867-6822
www.dfdistrib.com

John Henry Foster Co.
4700 Lebourget Drive
St. Louis, MO 63134-0820
TEL: 314-427-0600
TEL: 1-800-444-0522
FAX: 314-427-3502
www.jhf.com

Hydraulic & Pneumatic Sales
11100 Park Charlotte Blvd.
Charlotte NC 28273
TEL: 704-588-3234
FAX: 704-588-1569
www.hpsales.com

James E. Watson & Co.
29 Doran Ave.
Marietta, GA 30060
Ph. 770/422-1154
www.jwatsonco.com

Wainbee Limited
5789 Coopers Avenue
Mississauga, Ontario
Canada L4Z 3S6
TEL: 905-568-1700
FAX: 905-568-0083
http://www.wainbee.ca

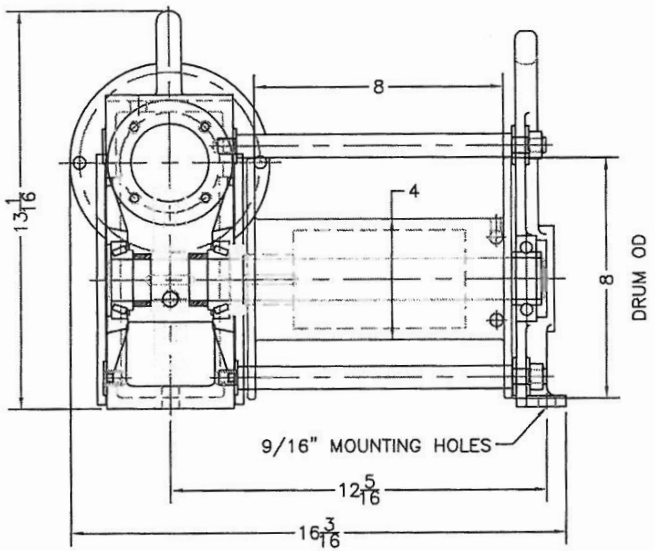
Wainbee Limited
215 boul Brunswick
Pointe Claire, Quebec
Canada H9R 4R7
TEL: 514-697-8810
FAX: 514-697-3070
http://www.wainbee.ca

Gast Manufacturing Co., Ltd.
Beech House
Knaves Beech Business Centre
Loudwater, High Wycombe
Bucks, England HP10 9SD
TEL: 011-44 1628 532600
FAX: 011-44 1628 532470
http://www.gastltd.com

Japan Machinery Co., Ltd
Central PO Box 1451
Tokyo, 100-91 Japan
TEL: 813 3573 5421
FAX: 813 3571 7865
or: 81-3-3571-7896
www.japanmachinery.com

REV	DATE	CHANGE NUMBER	AMENDMENTS	BY	APPD

ALL DIMENSIONS ARE APPROXIMATE



NTS

			<<< BOM CONTINUED >>>		
20	B14–0006	B	Gasket, Cover Plate		2
19	B14–0018	B	Gasket, Air Motor		1
18	B14–0004	X	Tie Bolt, U–8		4
17	B05–0003	B	Radial Bearing, 1.375" (207KLL)		1
16	B05–0008	B	Bearing Seal, 1.688" (16657)		1
15	B05–0007	B	Bearing Cone, 1.375" (LM48548)		2
14	B05–0006	B	Bearing Cup, 1.375" (LM48510)		2
13	B05–0014	B	Bearing Cone, 1.375" (M38549)		2
12	B05–0013	B	Bearing Cup, 1.375" (M38510)		2
11	B06–0018	X	Worm Shaft		1
10	B06–0016	B	Worm Gear, 49 Tooth		1
9	B13–0071	X	Air Motor Rework, GAST		1
8	B14–0002	X	Spacer, 1.375		2
7	B14–0003	X	Shaft assembly, U–8		1
6	B02–0031	X	End Cap		1
5	B02–0020	X	Cover Plate Machining, U–8		1
4	B02–0021	X	Cover Plate Machining, U–8		1
3	B07–0011	X	Drum Machining, U–8		1
2	B02–0016	X	Side Frame Maching, U–8		1
1	B02–0030	X	Gear Housing Machining, U–8		1
ITEM	PART NUMBER	OPER DESC	DESCRIPTION	MATERIAL	UNIT QTY

36	B71049324	B	O–Ring, Parker #2–211		2
35	B50180	B	Capscrew, Soc. Hd. 1/4NC x 1/2" LG		12
34	B11–0022	B	Capscrew, Soc Hd, 5/16" x 2–1/4" LG		5
33	B14–0110	B	O–Ring		2
32	B14–0019	B	Oil, Mobil 630		1 qt
31	B13–0005	B	Muffler, Air		2
30	B13–0012	X	Air Valve Rework		1
29	B13–0069	X	Manifold Block, GAST		1
28	B13–0070	X	Adapter Fitting, 1/2" NPT		2
27	B440105	B	Plug, #8 O–Ring		2
26	B54643	B	Capscrew, soc flt hd Head, 3/8" x 3/4" LG		16
25	B54648	B	Capscrew, Skt Hd, 3/8–16NC x 1" LG		2
24	200006	B	Nut, Hex Lock, 1/2–13NC	gr5	4
23	B14–0001	B	Key, 5/16" x 1 1/2" LG	4140	2
22	B14–0000	B	Key, 5/16" x 1 1/4" LG	4140	2
21	B14–0017	B	Gasket, End Cap		1

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE INCHES
DIMENSIONS IN [ ] ARE MM
–TOLERANCES–

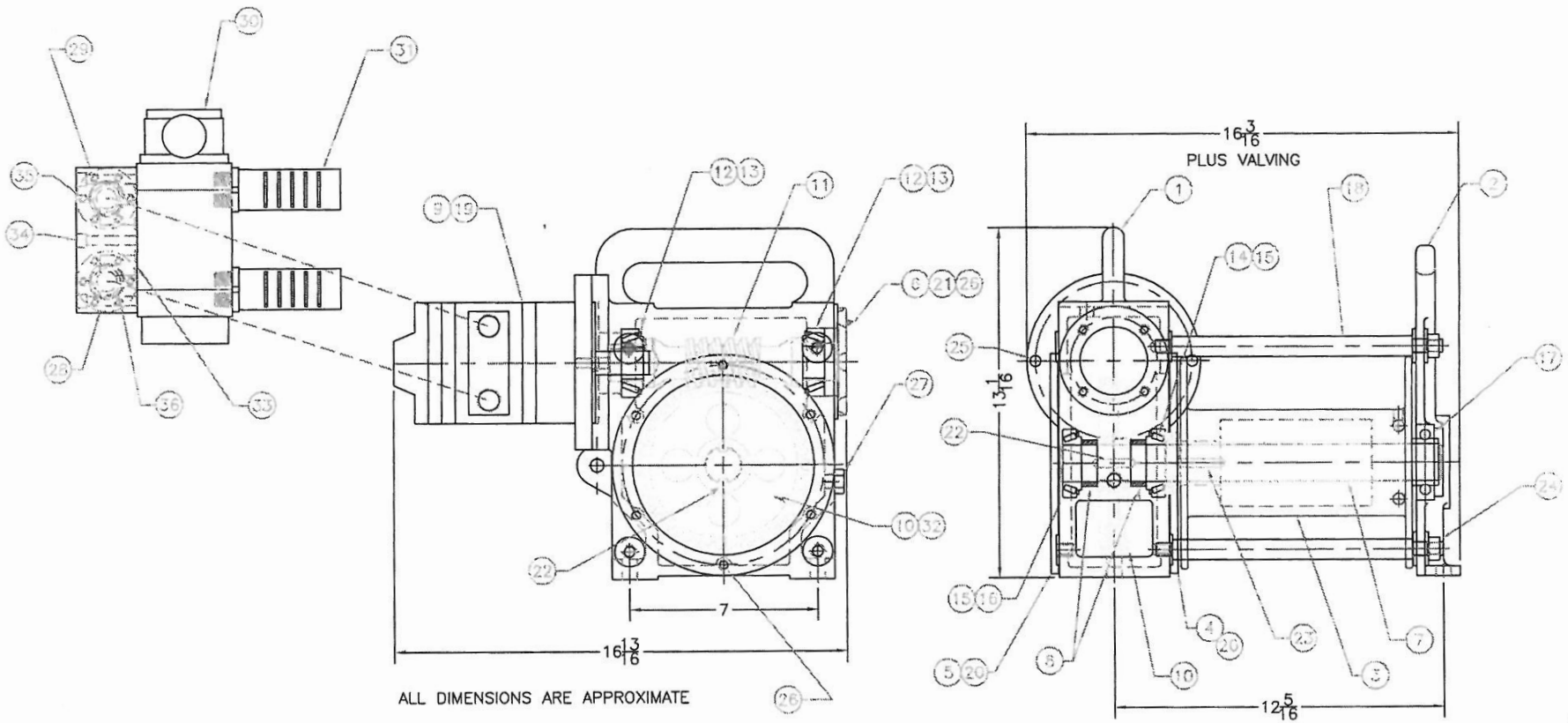
A) ANGULAR ± 1/2°
B) DECIMAL (ONE) .X ± .06
(TWO) .XX ± .02
(THREE) .XXX ± .01
C) FRACTIONAL
1. GENERAL ± 1/32
2. SAWING, FLAME CUTTING, SHEARING & BREAKING ± 1/16
3. WELDING ± 1/8

WINTECH
WINCHING TECHNOLOGY

WINTECH INTERNATIONAL INC
Shreveport, Louisiana, United States of America

MATL CERT N/R	TITLE GENERAL ASSY, U8A15–G		
MATL TEST N/R	NEXT ASSEMBLY	DERIVED FROM B01–0013	
WELD TEST N/R	FIRST USED ON WO 1072	SHEET 1	OF 2
EST LBS N/A	DRAWN BL / CHECKED / APPROVED	B01–0298	REV
ACT LBS N/A	DATE 16MAR04 / SCALE NTS		

REV	DATE	CHANGE NUMBER	AMENDMENTS	BY	APPD



ITEM	PART NUMBER	OPER DESC	DESCRIPTION	MATERIAL	UNIT QTY

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE INCHES
DIMENSIONS IN [ ] ARE MM
-TOLERANCES-

A) ANGULAR		± 1/2°
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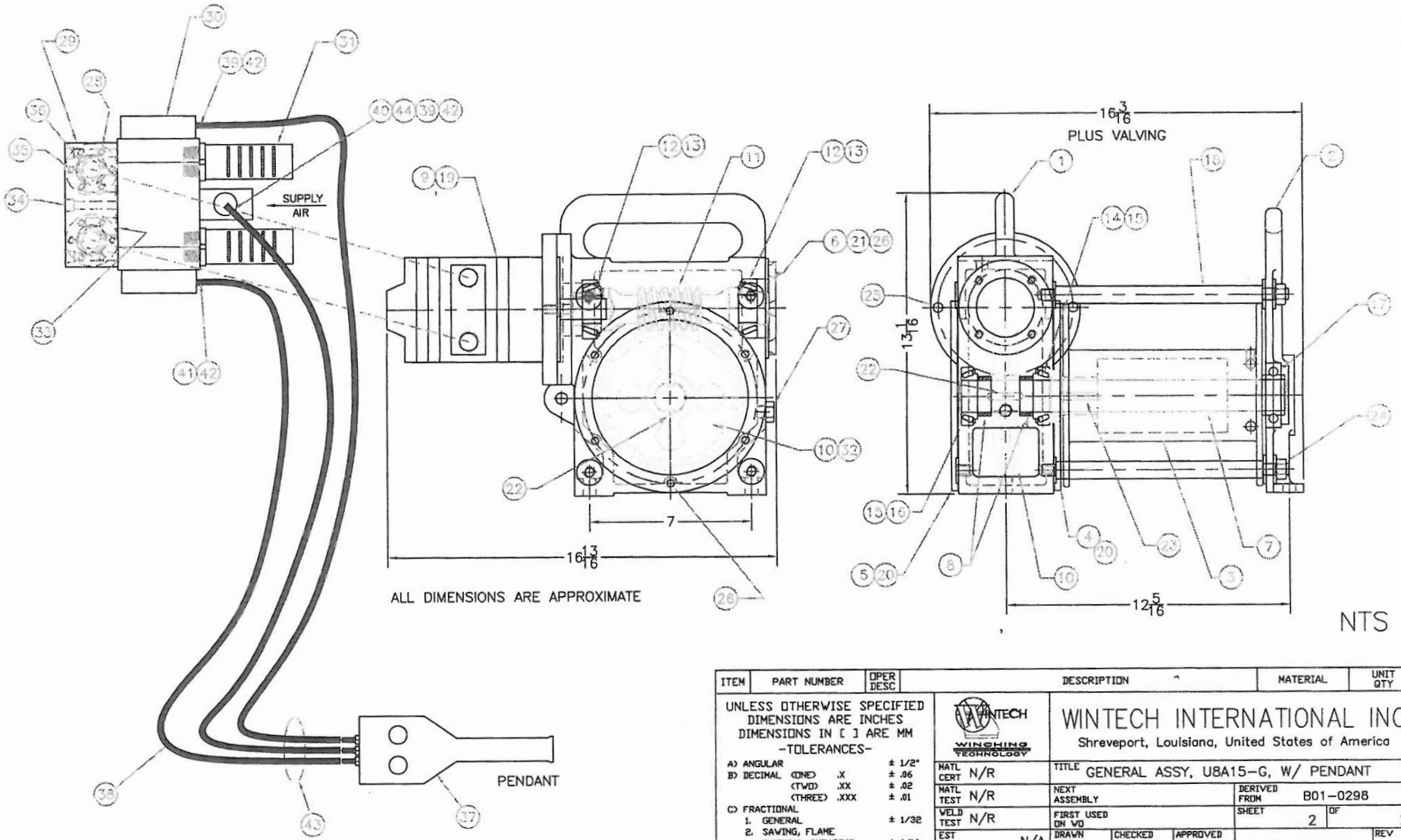
MATL CERT N/R	TITLE GENERAL ASSY, U8A15-G		
MATL TEST N/R	NEXT ASSEMBLY	DERIVED FROM B01-0013	
WELD TEST N/R	FIRST USED ON WO 1072	SHEET 2	OF 2
EST LBS N/A	DRAWN BL / CHECKED / APPROVED	B01-0298	REV
ACT LBS N/A	DATE 16MAR04 / SCALE NTS		

REV	DATE	CHANGE NUMBER	AMENDMENTS	BY	APPD



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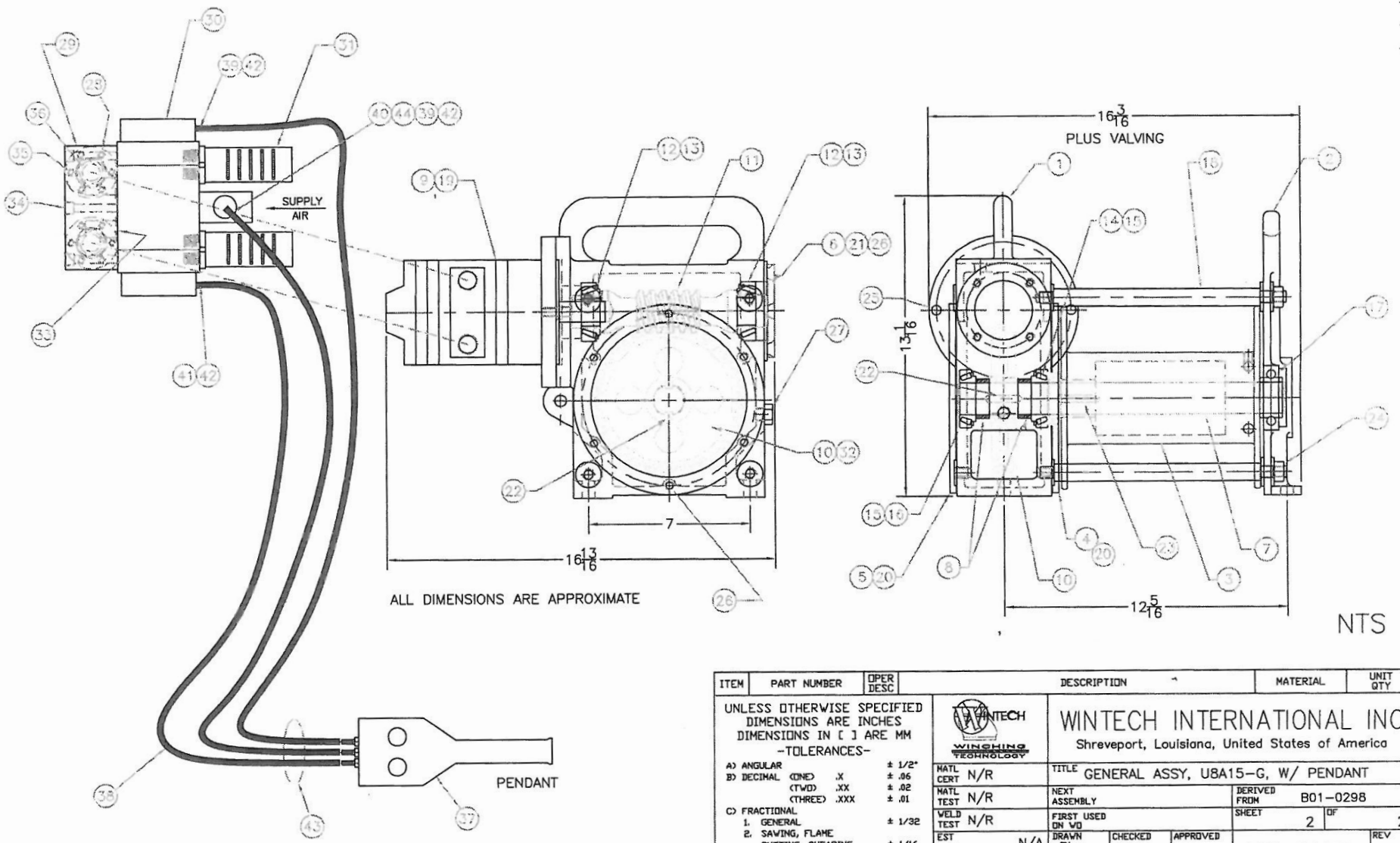
Shreveport, Louisiana, United States of America

MATL CERT N/R	TITLE GENERAL ASSY, U8A15-G, W/ PENDANT		
MATL TEST N/R	NEXT ASSEMBLY	DERIVED FROM B01-0298	
WELD TEST N/R	FIRST USED ON WO	SHEET 2	OF 2
EST LBS N/A	DRAWN BL / CHECKED / APPROVED	B01-0298P	REV
ACT LBS N/A	DATE 10APR07 / SCALE NTS		

REV	DATE	CHANGE NUMBER	AMENDMENTS	BY	APPD



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MATL CERT N/R	TITLE GENERAL ASSY, U8A15-G, W/ PENDANT		
MATL TEST N/R	NEXT ASSEMBLY	DERIVED FROM B01-0298	
WELD TEST N/R	FIRST USED ON WO	SHEET 2	OF 2
EST LBS N/A	DRAWN BL / CHECKED / APPROVED	B01-0298P	REV
ACT LBS N/A	DATE 10APR07 / SCALE NTS		