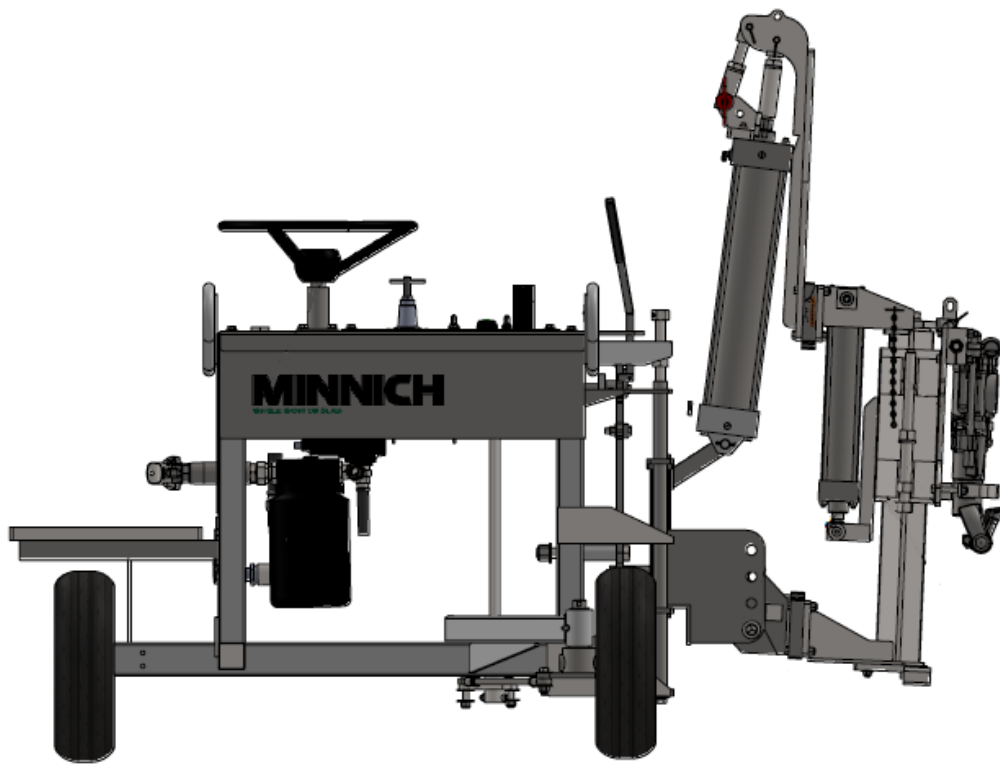


MINNICH

A-1C-36 DOWEL DRILL W/ DUST
OPERATOR/SERVICE MANUAL



MINNICH MANUFACTURING

1444 ST RT 42
Mansfield, OH 44903

CONTACT

Phone: (419)-903-0010
Email: sales@minnich-mfg.com

REVISION DATE: 06/04/2025

Chapter 1-Introduction.....1

General Warnings.....3

 General Safety.....4

 General Specifications.....10

 Safety Decal Location.....12

 Pressure Regulator.....14

 Standard Set-Up.....15

 Drilling Operations.....16

 Troubleshooting.....17

 Recommended Oil.....19

Chapter 2 - Parts Manual.....20

 Hammer Parts.....38

 Notes.....40

 Warranty.....41

 Parts Ordering Online.....42

NOTICE

It is Minnich’s policy to constantly strive to improve our products. The information, specifications, and illustrations in this publication are based on the information in effect at the same time as approval for printing and publishing. Minnich therefore reserves the right to make changes in design and improvements whenever it is believed the efficiency of the machine which has been shipped or curring any obligation to incorporate such improvements in any machine which has been shipped or is in service. It is recommended that users contact Minnich or a Minnich Dealer for latest revisions.

NOTICE

See engine manual for information pertaining to the engine.

NOTICE

If there are any questions regarding the machine or its application which are not covered in this manual or in other literature accompanying this unit, please contact your Minnich Dealer or Minnich Manufacturing at 419-903-0010 or sales@minnich-mfg.com

⚠ WARNING

CALIFORNIA PROPOSITION 65

Engine exhaust and some of its constituents, and some dust created by power sanding, sawing, grinding, drilling and other construction activities contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm. Some examples of these chemicals are:

Lead from lead-based paints.
Crystalline silica from bricks.
Arsenic and chromium from chemically treated lumbar.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: ALWAYS work in a well ventilated area, and work with improved safety equipment, such as dust masks that are specifically designed to filter out microscopic particles.

⚠ WARNING



SILICOSIS WARNING

Grinding/cutting/drilling of masonry, concrete, metal and other materials with silica in their composition may give off dust or mist containing crystalline silica.

Silica is a basic components of sand, quarts, brick clay, granite and numerous other minerals and rocks. Repeated and/or substantial inhalation of airborne crystalline silica can cause serious or fatal respiratory disease, including silicosis. In addition, California and some authorities have listed repairable crystalline silica as a substance known to cause cancer. When cutting such materials, always follow the respiratory precautions mentioned above.

⚠ WARNING

RESPIRATORY HAZARDS



Grinding/cutting/drilling of masonry, concrete, metal and fumes containing chemicals known to cause serious or fatal injury or illness, such as respiratory disease, cancer, birth defects or other reproduction harm, if you are unfamiliar with the risks associated with the particular process and/or material being cut or the composition of the tool being used, review the material safety data sheet and/or consult your employer, the material manufacturer/supplier, governmental agencies such as OSHA and NIOSH and other sources on hazardous materials. California and some other authorities, for instance, have published lists of substances known to cause cancer, reproductive toxicity or other harmful effects.

Control dust, mist and fumes at the source where possible. In this regard use good work practices and follow the recommendations of the manufactures of suppliers, OSHA/NIOSH, and occupational and trade associations. Water should be used for dust suppression when wet cutting is feasible. When the hazards from inhalation of dust, mist and fumes cannot be eliminated, the operator and any bystanders should always wear a respirator approved by OSHA/NIOSH for the materials being used.


GENERAL SAFETY

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.


This operation manual has been developed to provide complete instruction for the safe and efficient operation. Refer to the engine manufactures instructions for data relative to its safe operation. Before using, ensure that the operating individual has read and understood all instructions in the manual. The surrounding environment and you, could be damaged if you do not follow instructions.

SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: DANGER, WARNING, CAUTION or NOTICE.

 **DANGER**

Indicates a hazardous situation which, if not avoided, WILL result in DEATH or SERIOUS INJURY

 **WARNING**

Indicates a hazardous situation which, if not avoided, COULD result in DEATH or SERIOUS INJURY

 **CAUTION**




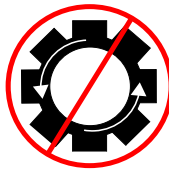
Indicates a hazardous situation which, if not avoided, COULD result in MINOR or MODERATE INJURY

NOTICE

Addresses practices not related to personal injury

SAFETY SYMBOLS

Potential hazards associated with the operation of this equipment will be referenced with hazards symbols witch may appear throughout this manual in conjunction with safety messages.

SYMBOL	SAFETY HAZARD
	Respiratory Hazard
	Explosive fuel hazards
	Burn hazard
	Factory Settings

 **WARNING**

DO NOT USE TOOL IF IT IS IN NEED OF SERVICE!

GENERAL SAFETY

⚠ CAUTION

Δ NEVER operate this equipment without proper protective clothing, shatter proof glasses, respirator protection, hearing protection, steel-toes boots and other protective devices required by the job or city and state regulations.



Δ Never operate this equipment when not feeling well due to fatigue, illness or when under medication.



Δ NEVER operate this equipment under the influence of drugs or alcohol.



Δ ALWAYS check the equipment for loosened threads or bolts before starting.

Δ NEVER operate around corrosive chemicals or water containing toxic substances. These fluids could create serious health and environmental hazards. Contact local authorities for assistance.

Δ DO NOT use the equipment for any purpose other than its intended purpose or applications.

NOTICE

Δ This equipment should only be operated by trained and qualified personnel 18 years of age and older.

Δ This equipment is for industrial use only. Whenever necessary, replace nameplate, operation and safety decals when they become difficult to read.

Δ Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modifications will void all warranties. Any modification which it could lead to change in the original characteristics of the machine should be

made only by the manufacturer who shall confirm that the machine is in comfortability with appropriate safety regulations.

Δ Never use accessories or attachments that are not recommended by Minnich for the equipment. Damage to the equipment and/or injury to user may result.

Δ Always know the location of the nearest fire extinguisher.



Δ ALWAYS know the location of the nearest first aid kit.



Δ ALWAYS know the location of the nearest phone or keep a phone on the job site. Also, know the phone numbers of the nearest ambulance, doctor and fire department. This information will be invaluable in the case of an emergency.



⚠ DANGER

Δ NEVER operate the equipment in an explosive atmosphere, near combustible materials, or near flammable or low flash point fluids. An explosion or fire could result causing severe bodily harm or even death.



⚠ WARNING

Δ NEVER disconnect any emergency or safety devices. These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death. Disconnection of any of these will void all warranties.

Δ NEVER operate equipment with the covers or guards removed. Keep fingers, hands, hair and clothing away from all moving parts to prevent injury. Wear clothing that will not likely become caught in the equipment or snag on any moving parts.

⚠ CAUTION

Δ ALWAYS be sure the operator is familiar with the proper safety precautions and operating techniques before using.

Δ NEVER leave the machine unattended.
Turn off when unattended

GENERAL SAFETY

- Δ DO NOT expose vibrator to rain.
- Δ DO NOT use vibrator motor in damp or wet locations without proper electrical circuits.
- Δ DO NOT immerse the motor part in concrete.
- Δ ALWAYS keep clear of rotating or moving parts while operating.
- Δ NEVER leave the machine unattended while running
- Δ ALWAYS disconnect the motor from the power source when not in use, before servicing, and when changing flexible shafting and vibrator heads.

- Δ Allow the machine to cool before servicing. Contact with hot components can cause serious burns.



- Δ Before Each use, ALWAYS check the motor to make certain that there are no damaged parts and that all parts function properly. If any damage or malfunctioning parts are found, have them repaired or replaced by an authorized service facility.

NOTICE

- Δ ALWAYS secure forms. Make sure the form work is well made and braced to withstand the stresses made by vibration.
- Δ ALWAYS keep vibrator motor clean for better and safer operation.
- Δ ALWAYS store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of reach of children and unauthorized personnel.
- Δ Use only factory authorized replacement parts.
- Δ Store idle vibrator motor. When not in use, motor should be stored in a dry, safe storage area.

ENVIRONMENTAL SAFETY/DECOMMISSIONING

NOTICE

- Δ DO NOT pour waste or oil directly into the ground, down a drain or into any water source.
- Δ Contact you country department of Public Works or recycling agency in your area and arrange for proper disposal of any electrical components, waste or oil associated with this equipment.



- Δ When the life cycle of this equipment is over, remove battery (if equip) and bring to appropriate facility for lead reclamation. Use safety precautions when handling batteries that contain sulfuric acid.
- Δ When the life cycle of this equipment is over, it is recommended that the unit frame and all other metal parts be sent to a recycling center.

Metal recycling involves the collection of metal from discarded products and its transformation into raw materials to use in many Manufacturing a new product.

Recyclers and manufactures alike promote the process of recycling center promotes energy cost savings.

NOTICE

Decommissioning is a controlled process used to safely retire a piece of equipment that is no longer serviceable. If the equipment poses an unacceptable and unrepairable safety risk due to wear or damage or is no longer cost effective to maintain (beyond life-cycle reliability) and is to be decommissioned (demolition and dismantlement), be sure to follow rules below.

- Δ ALWAYS observe all applicable compulsory regulations relevant to environmental protection, especially fuel storage, the handling of hazardous substances, and the wearing of protective clothing and equipment. Instruct the user as a necessary, or, as the user, request this information and training.

GENERAL SAFETY

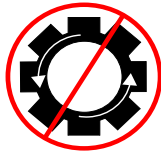
- △ ALWAYS Dispose of hazardous waste properly. Examples of potentially hazardous waste include used motor oil, fuel, and fuel filters.
- △ DO NOT use food or plastic containers to dispose hazardous waste.
- △ DO NOT pour waste or oil directly onto the ground, down or drain or into any waste source.

NOTICE

- △ ALWAYS keep the machine in proper running condition.
- △ ALWAYS become familiar with the components of the machine before operation.
- △ Fix damage to machine and replace any broken parts immediately.
- △ ALWAYS store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.
- △ NEVER lubricate components or attempt service on a running machine

CAUTION

- △ NEVER tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result in operation in speed ranges above the maximum allowability.



BEFORE CONNECTING THE AIR COMPRESSOR:

CAUTION

- △ Install the drill steel and bits into the drill motors and close the latch retainers and rod guides.
- △ Make sure that the air compressor is set at an operating pressure of not more than 120 PSIG (8Bar)
- △ Make sure air line is cleaned out and is of the proper size and pressure rating for the drill unit.
- △ Make sure the lubricator is filled with proper lubricant. See Minnich recommended lubricant below.

- △ Make sure all controls are in the “off” position and the lift lever (if so equipped) is in the “up” position.
- △ Make sure all lock pins are in their locked position.

WARNING

- △ NEVER attempt to loosen any compressed air hose that is pressurized.
- △ KEEP AWAY from all hot or spark generating objects, do not smoke when handling fuel.
- △ So as to facilitate shipment, new or repaired units are not lubricated before delivery to customers.
- △ DO NOT use hydrocarbons and especially do not use fuel oil for lubricating purposes.
- △ DO NOT OPERATE MACHINE WITHOUT GUARDS AND COVERS IN PLACE
- △ ALWAYS disconnect the air supply before changing steel or dismantling the tool for service or repair. For maximum safety we advise the installation of a shut-off valve at the end of the air line.
- △ NEVER operate the engine with heat shields or guards removed.
- △ DO NOT remove the engine oil drain plug while the engine is hot. Hot oil will gush out of the engine crankcase and severely scald any persons in the general area of the machine.



NOTICE

- △ CLEAR AIR SUPPLY LINE: Before connecting vibrator, clear the compressed air supply line of possible impurities, contaminants and water.
- △ LUBRICATE: Every day or every four hours of continuous service, pour a ½ teaspoon of non-detergent oil into the quick release coupling. NOTE: An optional oiler/strainer is available.

CONNECT/START

NOTICE

If the vibration intensity drops, check that the filters are not clogged or that hoses are not kinked.

STORAGE

NOTICE

To properly store unit after use, hang the vibrator with the head up and set the handle (variable control assembly) in the open position to permit the discharge of possible impurities, contaminants and water.

PLACEMENT AND CONSOLIDATION

NOTICE

The force exerted by an internal concrete vibrator is controlled by the weight and the speed at which the eccentric rotates. The centrifugal force exerted can be arrived at by various combinations of weight (size of eccentric weight) and the speed at which the weight rotates. For years the most favorable working speed for a vibrator was considered to be around 10,200 RPM (VPM) and consequently this figure is used in many vibrator comparisons. More recently, the optimum speed for compaction has been accepted as being between 7500 and 9000 RPM.

PERSONAL SAFETY

- △ Stay alert, watch what you are doing, and use common sense when operating the machine.
- △ DO NOT use the tool while tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating power tools may result in serious personal injury or death.
- △ Dress properly. DO NOT wear loose clothing or jewelry. Tie up long hair. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts.
- △ DO NOT overreach. Keep proper footing and balance at all times. Proper footing and balance enables better control in unexpected situations.

SERVICE

- △ Tool service must be preformed only by qualified repair personnel. Service or maintained preformed by unqualified personnel could result in injury or death
- △ When servicing a tool, use only identical replacement parts. Use of unauthorized parts may create a risk of injury or death.

NOTICE

To find the latest revision of this publication, visit our website at: www.minnich-mfg.com

NOTICE

THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.

NOTICE

Specifications and part numbers are subject to change without notice.

GENERAL SAFETY

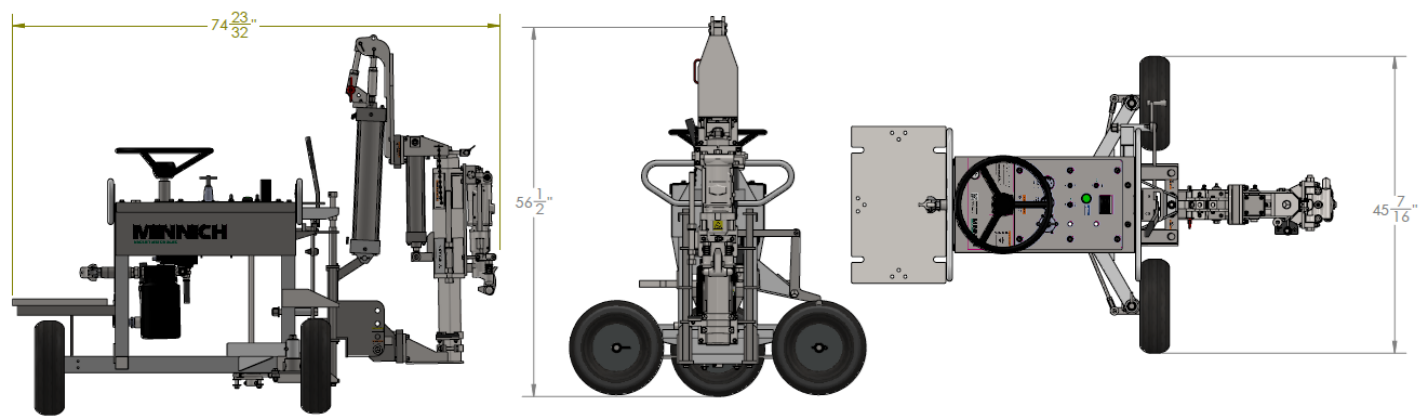
TOOL USE AND CARE

1. Only qualified persons should operate the machine. Make sure you operate and service your machine according to the instructions listed in this manual.
2. When positioning the machine for drilling, always face the drill. DO NOT operate with your back to the machine. Facing the machine during positioning allows the operator to have better control of the machine.
3. DO NOT force the machine. Use the correct machine for your application. The correct machine will do the job better and safer at the rate for which it is designed.
4. DO NOT use the machine if the switch does not turn it on or off. Any machine that cannot be controlled with the switch is dangerous and must be re-paired.
5. Disconnect the machine from the power source before making any adjustments, changing accessories or storing the machine. Such preventative safety measures reduce the risk of starting the machine accidentally.
6. Store machines out of reach of children and other untrained persons. Machines are dangerous in the hands of untrained users.
7. Maintain machines with care and keep them clean. Properly maintained machines are less likely to bind and are easier to control.
8. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the machines operation. If damaged, have the machine serviced before using. Many accidents are caused by poorly maintained tools.
9. Use only accessories that are recommended by the manufacturer for your model. Accessories that may be suitable for one machine may become hazardous when used on another.

SERVICE

1. DO NOT run the drill unit while you make adjustments and repairs unless the procedure is approved.
2. Escaping fluid and air under pressure can have sufficient force to penetrate skin causing serious personal injury.
3. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, tubes and hoses are not damaged.
4. DO NOT use your hand to search for leaks. Instead, use a piece of card-board or wood.
5. Tool service must be performed only by qualified repair personnel. Service or maintenance performed by unqualified personnel could result in injury or death.
6. When servicing a tool, use only identical replacement parts. Use of unauthorized parts increase injury risk.

A-1C-36 SINGLE DRILL, ON SLAB UNIT



THREE POSITION DRILLING WITH 48" UNIT: HORIZONTAL, VERTICAL AND 35° STITCH
URETHANE FILLED TIRES
3-1 SKEW DRILLING STANDARD
ADJUSTABLE DRILL HEIGHT AND DEPTH
DUST COLLECTION IS AVAILABLE

MODEL	A-1C-36
Drill Steel Shank	.875" x 3.25" (2.22cm x 8.26cm)
Drill Steel Length (Under Collar)	12" (30.5cm)
Drill Bit Diameter	.625" - 1.625" (15.9mm - 41.3mm)
Maximum Drill Depth*	10" (25.40cm)
Drill Distance from Top of Slab	1.5" x 11.75" (3.8cm x 29.8cm)
Minimum Cutout	36"
SCFM Required	150
PSIG Required	90 (6.2bar)
Weight	665lbs (290.3kg)

SPECIFICATIONS SHOWN ARE STANDARD. VARIATIONS TO THE STANDARD ARE AVAILABLE.
*BASED ON 2 PIECE STEEL AND BITS. WHIRLYBITS SHOULD BE 1" (2.5CM) LONGER FOR MAXIMUM DRILLING DEPTH.

GENERAL SPECIFICATION

PNEUMATIC CONNECTION:

- An approved air disconnect is required to be installed in accordance to all Local and National Codes.

ENVIRONMENTAL:

- +5°C to +40°C (+41°F to +104°F)
- 50% Rh at +40°C (+104°F), (90% Rh at +20°C (+68°F))
- Altitude – 1000m (3280ft) above mean sea level
- Unit is to be disposed according to all Local and National Regulations

TRANSPORTATION AND STORAGE:

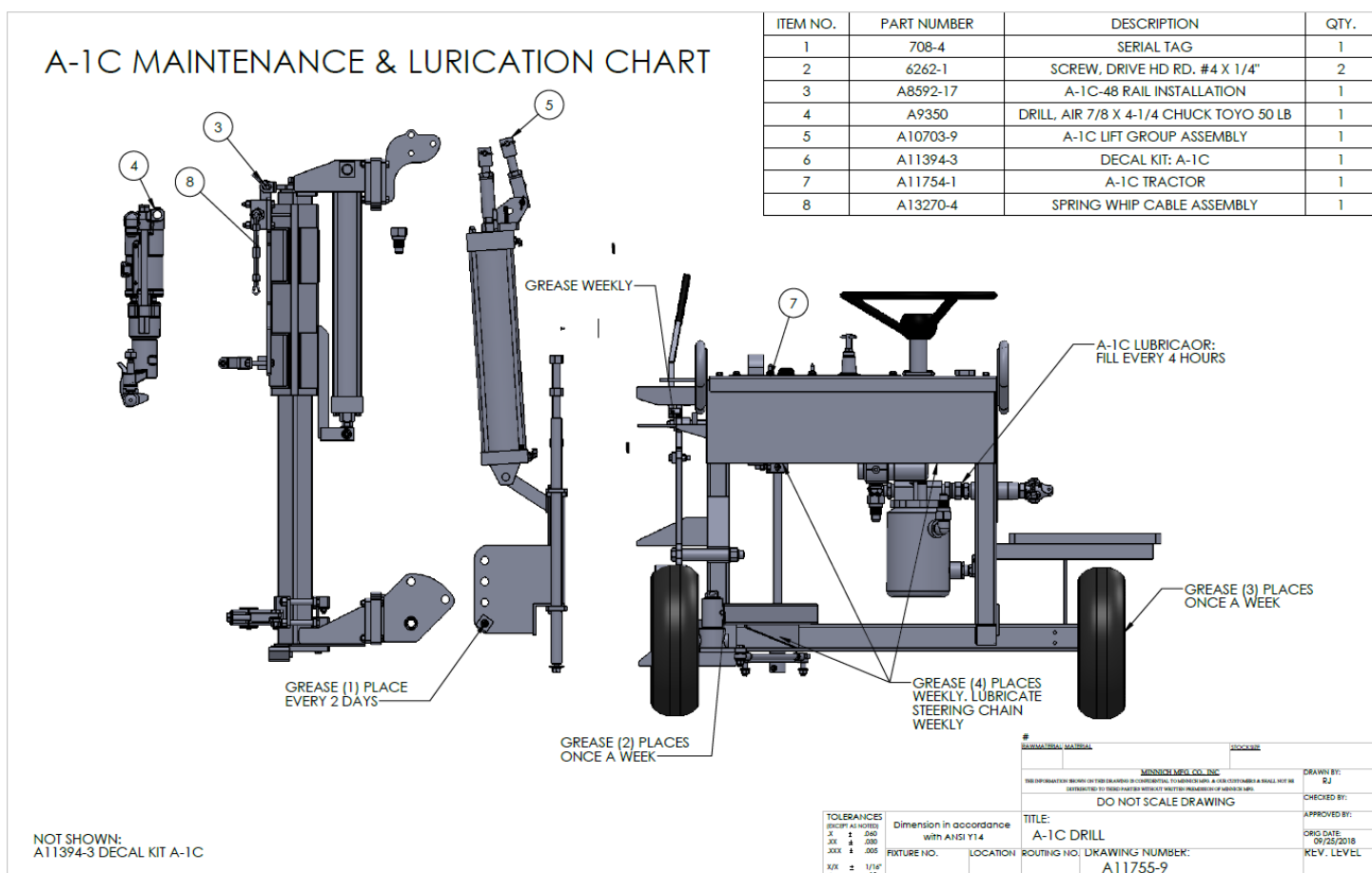
- -25°C to +55°C for 24 hours (-13°F to +131°F)

INGRESS PROTECTION:

- Protection level IP2X is provided

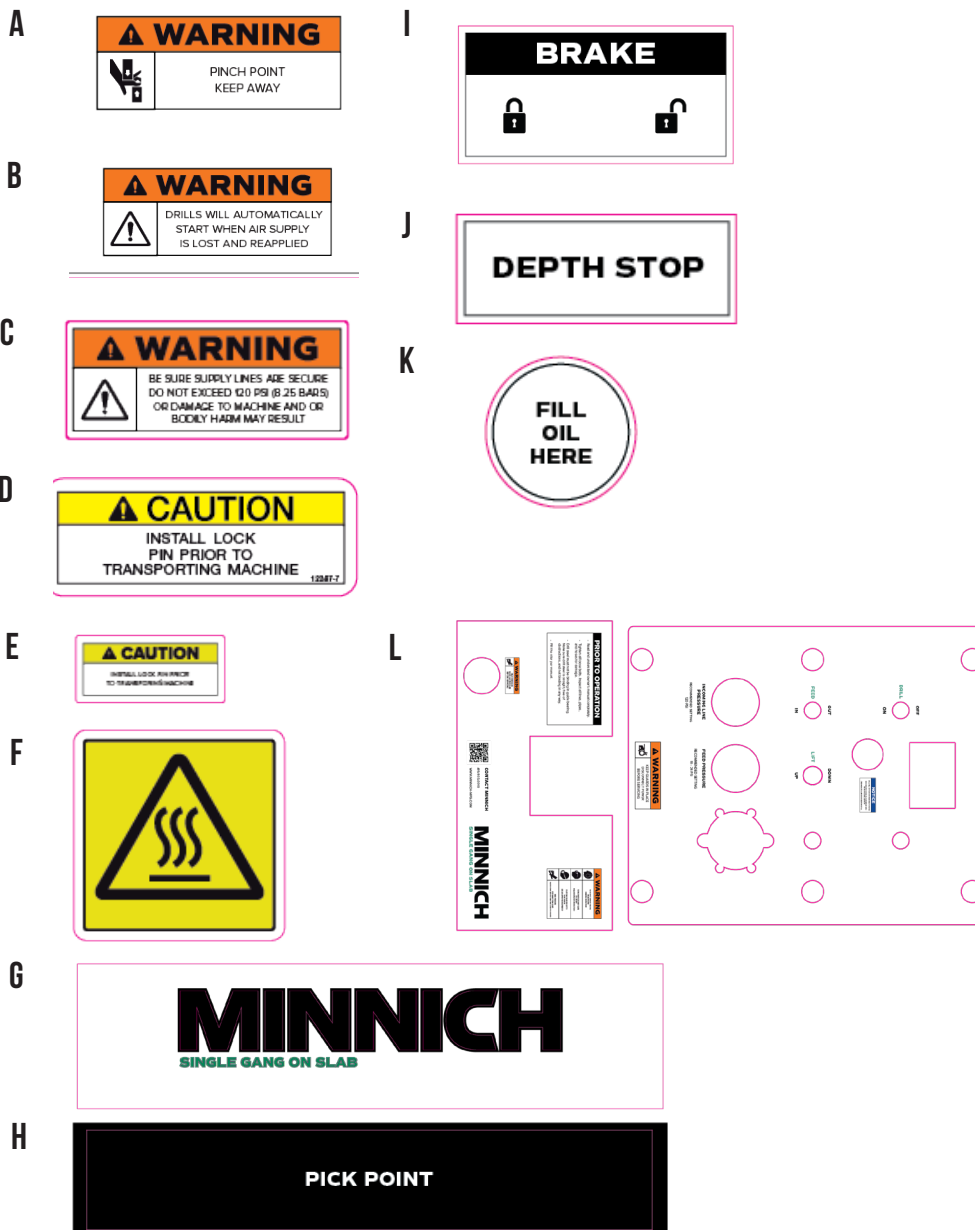
SOUND:

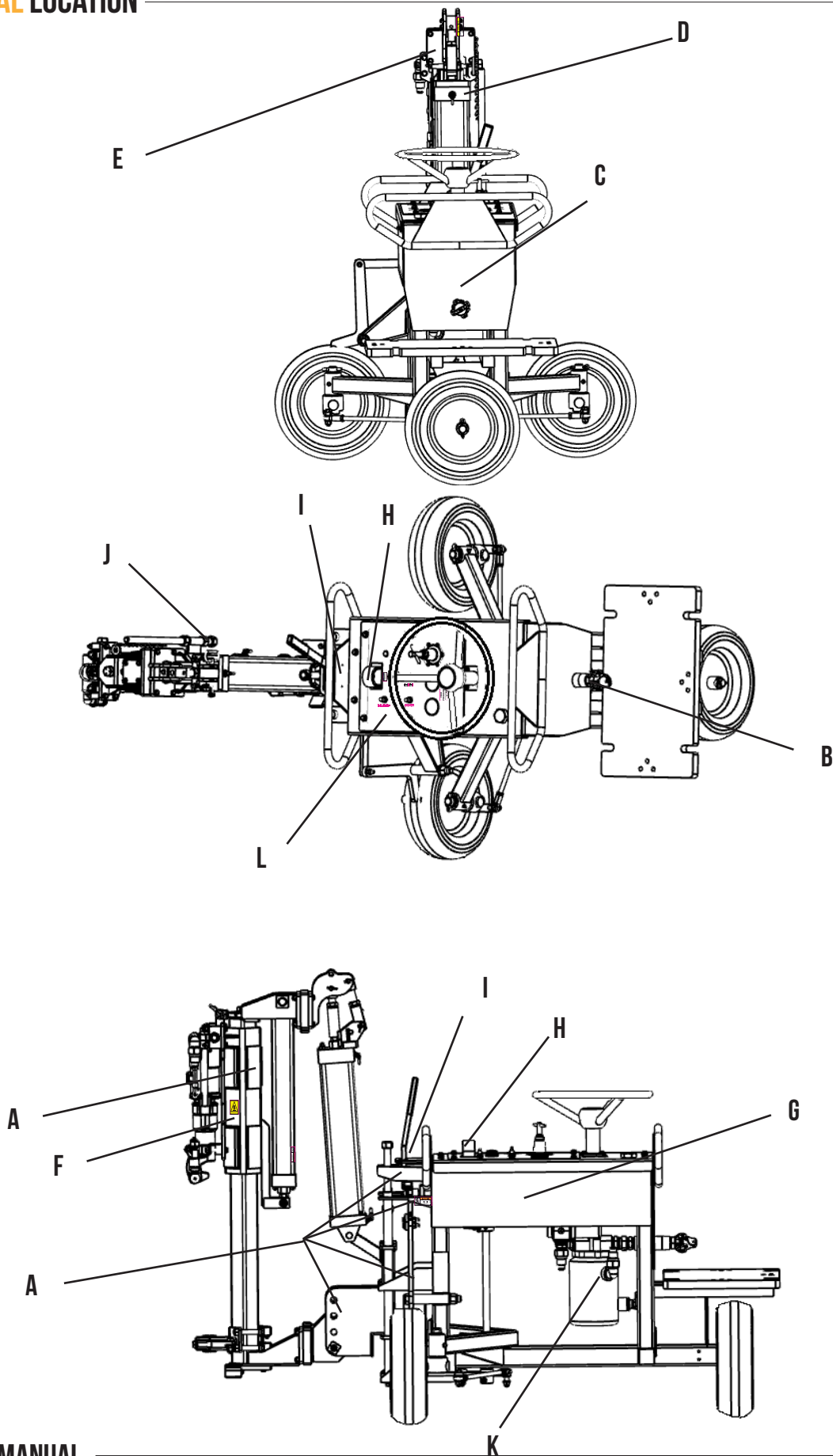
- System operates at sound levels about 85dBA and 85dBC. Hearing protection is required.



NOTICE

All safety labels on Minnich Manufacturing units have been carefully placed so they can be easily seen at all times. There are several different types of labels on the units. Always keep these warnings free of dirt, concrete, or anything else that restricts visibility. Never remove the labels for any reason. If the label on your machine become worn or in any way difficult to read, call our parts department for replacements.





PRESSURE REGULATOR

OPERATION

A regulator is used in a compressed air system to maintain nearly constant outlet pressure despite changes in the inlet air pressure and changes in downstream flow requirements. Outlet pressure is controlled by the adjusting screw (1). clockwise rotation increases and counter-clockwise rotation decreases outlet pressure setting. When the adjustment (1) is rotated fully counter-clockwise, no force is applied to the regulating spring (2), and the valve (6) is held closed by the valve spring (7). clockwise rotation of the adjustment (1) compresses the regulating spring (2) which applies a downward force on top of the diaphragm (4). The diaphragm (4) and valve pin (5) move downward forcing valve (6) off its seat (10) which allows air to flow through the regulator to the downstream system. Outlet pressure increases in the downstream system and sensing chamber (9) and applies an upward force on bottom of the diaphragm (4). The diaphragm (4), valve pin (5); and valve (6) move upward, compressing the regulator spring (2). Upward movement stops when the forces below the diaphragm balance the forces above the diaphragm. When there is no downstream flow demand, the balance of forces occurs with the valve (6) closed. When there is downstream flow demand, the balance of forces occurs when the valve opens sufficiently to compensate for demand, thus maintaining the desired outlet pressure. **RELIEVING TYPE REGULATORS.** With relieving regulators, outlet pressure can be reduced even though the system is deadended. When the adjustment (1) is turned counterclockwise, the force on the regulating spring (2) is reduced, and air pressure in the sensing chamber (9) moves the diaphragm (4) upward. This upward movement opens the relief passage (8) in the diaphragm and allows air to escape from the outlet side of the regulator through the relief passage (8) and vent (3) to atmosphere. As the outlet air pressure decreases to the reduced pressure setting, the diaphragm moves downward and closes the relief passage. The diaphragm will likewise move upward in a response to an increase in outlet pressure above the regulator setting, allowing air to escape to the atmosphere as described above. However, the flow capacity of the relief passage is limited, and depending upon the source of the overpressure condition, the outlet pressure might increase to a point significantly higher than the regulator setting. For this reason, the relief feature of a regulator must not be relied upon as an overpressure safety device. See WARNING note below.

MAINTENANCE

The regulator can be disassembled for servicing without removal from pipe line. to disassemble, shut off the inlet air and reduce pressure in inlet and outlet lines to zero. Turn adjusting screw (1) counterclockwise until all load is removed from regulating spring (7 or 7a): Remove bonnet screws (4), bonnet (3), upper springrest (5), spring (7), and diaphragm assembly (8). The intermediate springrest (6) and compound spring (7a) are used only on 3/4" (19mm) and 1" (25.4mm) models with 5 to 125 PSI (0.34 to 8.62 Bar) adjustment range. Unscrew and remove bottom plug (16), O-ring (15) and valve spring (14). Pull valve assembly (11) together with O-ring (12) out of body. Do not remove valve seat (10) unless replacement is necessary. Remove O-ring (9) using a hook shaped tool, taking care not to damage O-ring seating surfaces or valve seat. Clean parts using warm water and soap. Dry thoroughly. Inspect each part carefully. Replace any parts which are damaged. At reassembly, apply a wipe coat of silicone base grease to O-rings (9, 12, 15), to stem and body of valve assembly (11), and to center bore in bottom plug (16). Apply a light even coat of light grease to full length of threads and tip of adjusting screw (1). Tighten valve seat (10), if previously removed, to 80-100 inch-pounds torque (9-11.3 N-m) (1/4", 3/8" and 1/2" sizes) (6.35mm, 9.53mm, and 12.77mm sizes) or 25-30 foot-pounds torque (33.9-40.7 N-m) (3/4" and 1" sizes) (19mm and 25.4mm sizes). Tighten bottom plug (16) snugly by hand. Tighten bonnet screws (4) to 20-30 inch-pounds torque (2.3-3.4 N-m) (1/4", 3/8" and 1/2" sizes) (6.35mm, 9.53mm, and 12.77mm sizes) or 50-60 inch-pounds torque (5.6-6.8 N-m) (3/4" and 1" sizes) (19mm and 25.4mm sizes).

ADJUSTMENT

1. Before turning on system air pressure, turn regulator adjustment counterclockwise until all load is removed from regulating spring.
2. Turn on system air pressure.
3. Turn regulator adjustment clockwise until the desired outlet pressure is reached.
4. To avoid minor readjustment after making a change in pressure setting, always approach the desired pressure from a lower pressure. When reducing from a higher to a lower setting, first reduce to some pressure less than the desired, then bring up to the desired point.
5. Tighten jam out to lock pressure setting.

⚠ WARNING

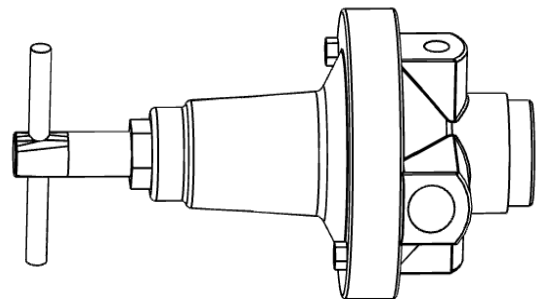
THESE REGULATORS ARE INTENDED FOR USE IN INDUSTRIAL COMPRESSED AIR SYSTEMS ONLY. DO NOT USE THESE REGULATORS WHERE PRESSURE OR TEMPERATURE CAN EXCEED RATED OPERATING CONDITIONS. SEE SPECIFICATIONS.

⚠ WARNING

IF OUTLET PRESSURES IN EXCESS OF THE REGULATOR PRESSURE SETTING COULD CAUSE DOWNSTREAM EQUIPMENT TO RUPTURE OR MALFUNCTION, INSTALL A PRESSURE RELIEF DEVICE DOWNSTREAM OF THE REGULATOR. THE RELIEF PRESSURE AND FLOW CAPACITY OF THE RELIEF DEVICE MUST SATISFY SYSTEM REQUIREMENTS.

⚠ WARNING

BEFORE USING WITH FLUIDS OTHER THAN AIR, FOR NON-INDUSTRIAL APPLICATIONS, OR FOR LIFE SUPPORT SYSTEMS, CONSULT C.A. NOR-GREN CO



STANDARD SETUP

UNLOADING THE UNIT

If you're A-1C unit is on a truck bed or other plat-form and needs to be lifted into position, use the

FILLING LUBRICATOR

WARNING

Prior to filling the lubricator, be sure there is no air pressure in the unit. Failure to relieve air pressure will result in the fill plug exploding from the lubricator, which may result in injury.

Remove fill plug and fill with lubricant until sight gauge is full. Replace fill plug. Lubricator should be filled every two hours of use for an A-1C. See Recommended Lubricants chart on page XX for acceptable lubricants.

MACHINE INSPECTION

CAUTION

Prior to each use, it is imperative to inspect the machine all over to ensure excellent condition for the safety of the operator and to prevent damage to the equipment.

- Check all drill bed bolts and tighten as necessary on a daily basis. Tighten all other bolts at least once weekly. Refer maintenance diagram on page 5-1.
- Grease fittings around drill bed daily. Grease all other fittings at least once a week. Refer maintenance diagram on page 5-1.
- Verify that all lock pins are in their locked position.
- Make sure all controls are in the "off" position and the lift lever is in the "up" position.
- Check that the air line is cleaned out and is the proper size and pressure rating.
- Ensure the air compressor is set at an operating pressure of not more than 120 PSI (8.27bar).
- Install drill steel and bits into the drill motors and close the latch retainers and rod guides.

AIR COMPRESSOR CONNECTION

- Connect the air line to the drill in accordance with hose connection instructions in the compressor manual.
- Start the compressor according to manufacturer's instructions.

POSITION MACHINE FOR DRILLING

- Position the drill unit where the first set of holes is to be drilled, keeping the drill unit back from the edge of the slab slightly. Set the brake.
- With the lift lock still engaged, charge the lift cylinder by toggling the lift lever up and down.
- With the lift valve in the "up" position and after making sure that there are no obstructions in the path of the drill bed, remove the lift lock pin.
- Using the lift lever, lower the drill bed into drilling position.

HEIGHT ADJUSTMENT

To check the drilling height, measure from the top of the slab to the center of the drill steel. If necessary, loosen the locknuts and use the adjusting screws to raise or lower the drill bed into the proper drilling height. After height is properly adjusted, re-tighten the locknuts. Verify the drill bed is parallel with the slab that is to be drilled into. If necessary, loosen the locknut on the lift cylinder and turn the adjusting screw right to raise the bed or left to lower the bed until the bed is parallel with the slab. Re-tighten locknuts after complete.

DEPTH ADJUSTMENT

CAUTION

Physical motion is going to occur, stand clear of the drill unit.

To set the drill depth, remove all of the rail locking pins and feed the drill bit into the face of the slab without turning on the drills by turning on Feed 1 and the feed switch. Repeat for Feed 2, when applicable. Measure the distance between the drill stop rod and the drill stop pad. Adjust the stop bolt so that the distance between the stop pad and the stop bolt equals the drill depth.

DRILL TEST HOLE

Refer to operating instructions to drill the first set of holes. After the first set of holes, measure the height and depth of the hole to ensure proper alignment.

DRILLING OPERATIONS

1. Make sure the lubricator is full. See recommended lubricants on page 3-1. A-1C series units should be filled every two hours.
2. Use a 3/4" (19mm) hose to supply air to the drill unit for A-1C series units.
3. Install the drill steel and bit into the drill.
4. Make sure the air compressor is on.
5. Position the drill where the first hole is to be drilled and set the brake.
6. Remove the rail locking pin.
7. Lower the rail to the horizontal drilling position.
8. Make sure the rub strip is against the slab.
9. Using the feed control valve, feed the bit against the slab.
10. Using the drill control valve, feed the bit against the slab.
11. With the drill valve turned on and the feed switch turned on, the slider and drill will move and the drill will turn on. When the feed switch is turned off, the slider is retracted from the hole and the drill will turn off automatically. If it does not, turn the drill switch off.
12. Once the hole is drilled, disengage the brake and move the unit to the next hole location, en-gage the brake, and repeat steps 8-11 as necessary.
13. There is a low-level oil indicator, this must be "green" in order for the hammers to operate. If the indicator is "red", please fill oil reservoir with proper rock drill oil.

PRIOR TO OPERATION

WARNING

Wear proper safety equipment as the following hazards may be present during operation:

- Flying Debris: During drilling, chips may be ejected.
 - Dust: Concrete dust will be emitted from the hole.
 - Loud Noise: The air compressor and drill unit will create loud noise levels.
 - Pinch Points: Keep clear of all moving parts.
- This is not an all inclusive list. Be aware of your surroundings and use any and all precautionary measures available.

OPERATOR POSITION

WARNING

Failure to follow the instructions below may result in serious injury.

The operator should always stand in a safe location with good visibility where controls can be easily reached. The operator should always stand in a location so he/she is following the machine. Never lead the machine with your back towards it. Refer to the diagram below for proper operating positions.

DRILLING

- Place the feed levers in the "in" position to move the bits against the face of the slab.
- Place the drill levers in the "on" position to turn on the drill motors.
- When drill motors reach the required depth, place the feed lever in the "out" position.
- When the drill steel is clear of the hole, place the drill lever in the "off" position.
- Release the brake, position the drill for the next set of holes, reset the brake, and repeat the process until all holes are drilled.

MOVING THE UNIT

Move the unit by pushing or pulling to the desired position. Be sure the operator is standing in a safe location. See diagram below.

TURNING THE UNIT

Turn the unit by rotating the steering wheel clock-wise or counterclockwise.

PROBLEM: DRILL DOES NOT RUN

CAUSE

REMEDY

DRILL NOT GETTING AIR

1. On Multi Drill units, switch airline with drill that is working properly. If drill now runs check the air control valve. If the valve works, check the drill.
2. Check clave on air compressor and drill unit to be certain they are completely open
3. Check compressor. It should have 100SCFM (47.20m³/sec.) per drill and 110PSI (7.6 BAR) at drill manifold when drilling with large drills.
4. Make certain all fittings are connected properly and not leaking.

COUPLING OR HOSE OBSTRUCTION Remove Obstruction

FAILURE IN THE ELECTRICAL CIRCUIT

Check switches, connections, coils, ground & voltage. If the power unit (backhoes, grader, ETC.) is being jump started, check the AMPS & voltage being jump supplied to coils from the battery, it may be too low.

FAILURE OF DRILL SOLENOID VALVE
(MULTI DRILL UNITS WITH REMOTE
ELECTRICAL CONTROLS)

Check valve - you should be able to feel the solenoid move when it is actuated. Make sure you have current to the solenoid coil. Replace the solenoid if there is no movement.

MECHANICAL FAILURE OF DRILL

Disassemble the drill & inspect for damaged parts.

TROUBLESHOOTING AIR DRILL

PROBLEM: DRILL RUNS SLOW OR DOES NOT DRILL EFFECTIVELY

CAUSE	REMEDY
NOT ENOUGH AIR REACHING DRILL. IT SHOULD HAVE 100SCFM (47.2DM ³ /SEC.) PER DRILL AND 110 PSI (7.6 BAR)	On Multi Drill units. Turn off one or two drills. If the remaining drills pick up speed, check the air compressor.
RESTRICTION IN AIR LINE	A foreign object in the air line or possibly a reduction in the air line caused by a reducer fitting.
TOO SMALL AIR LINE	Following are supply line sizes for drilling: A-1 Single Drill 3/4" (19mm) A-2 Two Drills 1-1/4" (38.75mm) A-3& A-4 Three & four drills 1-1/2" (38.1mm) A-5 Five Drills 2" (50.8mm)
AIR PRESSURE TO CYLINDER "FEED-ING" DRILL INTO CONCRETE NOT ADJUSTED PROPERLY	Excessive pressure can cause drill to "bind up" in the hole. Pressure that is too low will not "feed" the drill into the concrete. The air pressure required varies with the drill model. Horizontal- all units with large drills use 22-26 PSI (1.5-1.8 bar). Drill units using the 15LB (6.8kg) class drill will use 16-20 PSI (1.1-1.4 Bar). Vertical - all drill units use 5-6 PSI (0.34-0.41 Bar). With the correct air pressure, the drill steel should have a slight rattle.
INSUFFICIENT AIR FLOW TO KEEP HOLE BLOWN CLEAN	Check for obstruction in the blow tube in the drill.
LUBRICATOR PUTTING OUT TOO MUCH OIL TO DRILL	If you notice more than a light film of oil on the air deflector on the bottom of the drill adjust the lubricator, make certain you are using the type of oil called for in the operation and maintenance manual.
MECHANICAL BLINDING OF DRILL CARRIER	Make sure the eight bearing pads are adjusted correctly. The square tube that the drill carrier slides on must be free of rust so that the carrier slides freely, drill steel must not be binding in the guide bearing.
BENT DRILL STEEL, WORN DRILL BIT OR DRILLING INTO REBAR	Replace the drill steel or bit. If drilling into rebar, move the drill.
USING 3 1/4" (8.25CM) SHANK DRILL STEEL IN 4 1/4" (10.8CM) SHANK CHUCK DRILL	The drill steel will rotate but it will not allow the drill piston to hammer properly, replace it with the correct 4 1/4" (10.8cm) drill steel.

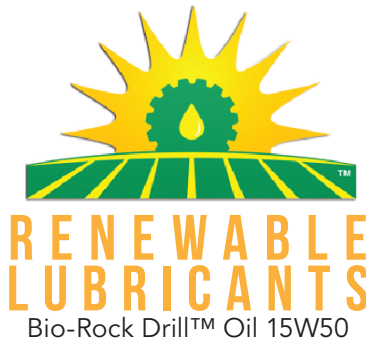
RECOMMENDED OIL

- STEP 1** Be sure lubricator is full. See recommended oils below.
- STEP 2** Make sure slab wheels are square against face of slab.
- STEP 3** Using feed control valve, feed bit against slab.
- STEP 4** Using drill control valve, turn drill on and drill until the drill slider is against the stop clamp, which should be set for the required depth of hole.
- STEP 5** Once drill slider is against the stop clamp, leave the drill on and use the feed control valve to retract the drill from the hole. Note: If bit will not retract from hole, feed drill back into hole and retract drill again.

WARNING

DO NOT hit drill slider to retract the bit from the hole. This will damage the drill slider.

Minnich Mfg. Recommended Rock Drill Oil



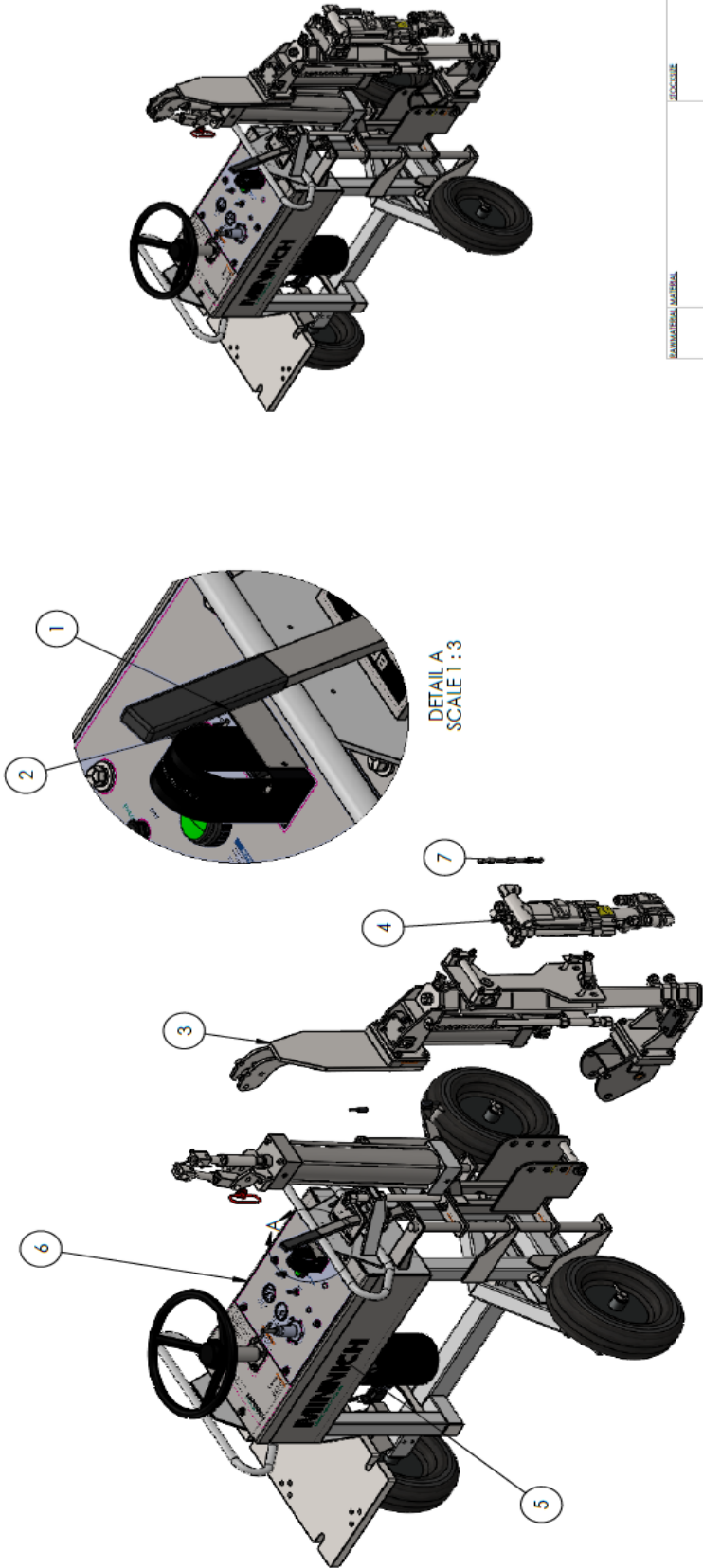
HAMMER SPECIFICATIONS

Net Weight	51lbs. (23kg)
Blows Per Minute	2300
Chuck Size	7/8" x 4 1/4" (22.2mm x 107.9mm)
Air Inlet (NPT)	3/4" (19.1mm)
Air Consumption	92.2cfm (2.6m3/min)

WARNING

Always disconnect the air supply before changing steel or dismantling the tool for service or repair. For maximum safety we advise the installation of a shut-off valve at the end of the air line.

REVISIONS				ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
REV.	DESCRIPTION	DATE	APPROVED				
				1	000708-00004	MODEL & SERIAL # NAME PLATE	1
				2	006262-00001	SCREW, DRIVE HD RD. #4 X 1/4"	2
				3	0A8592-00036	ASSEMBLY, 11.50" X 36" RAIL INSTALLATION	1
				4	0A9350-00000	7/8" X 4-1/4" CHUCK TOYO 50# AIR DRILL	1
				5	A11394-00036	DECAL KIT FOR: A-1C 36	1
				6	A11754-00006	TRACTOR, A-1C 36	1
				7	A13270-00004	ASSEMBLY, SPRING WHIP CABLE	1



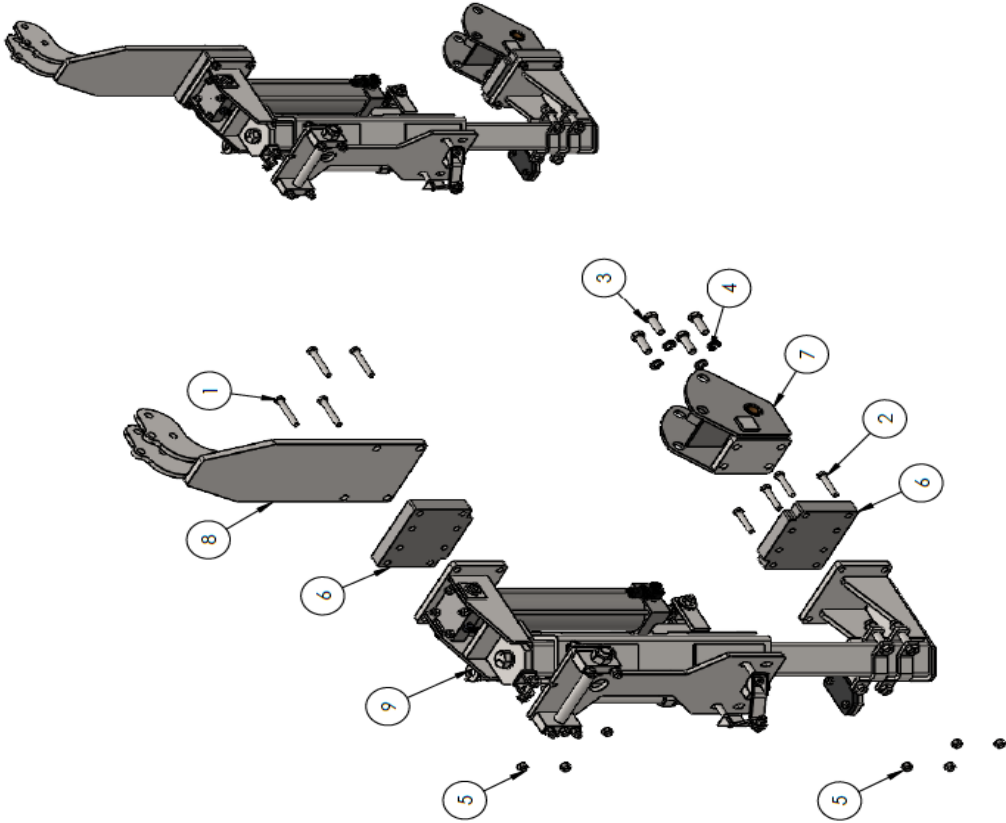
Drilled Hole Size	Tolerance
.0150 (.001)	+0.001 (-0.001)
.0200 (.002)	+0.002 (-0.001)
.0300 (.003)	+0.003 (-0.001)
.0400 (.004)	+0.004 (-0.001)
.0500 (.005)	+0.005 (-0.001)
.0600 (.006)	+0.006 (-0.001)
.0750 (.003)	+0.003 (-0.001)
.1000 (.003)	+0.003 (-0.001)

TOLERANCES (UNLESS OTHERWISE SPECIFIED)	Dimension in accordance with ANSI Y14
XX ± .005	FUTURE NO.
XX ± .010	LOCATION
XX ± .015	

APPROVAL MATERIAL	LOCATOR
MINNICH MFG. CO., INC.	
FOR INFORMATION SEE US FOR A FREE CATALOG OF OUR PRODUCTS AND SERVICES. WE ARE A SMALL BUSINESS.	
DO NOT SCALE DRAWING	
CHECKED BY: AEB	
APPROVED BY: GGG DATE: 1/22/2024	
REV. LEVEL: A11755-00026	

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	006038-2.500	3/8"-16 X 2-1/2" GRADE 5 H.H.C.S.	4
2	006038-2.000	3/8"-16 X 2.00" GRADE 5 H.H.C.S.	4
3	006040-1.500	1/2"-13 X 1-1/2" GRADE 5 H.H.C.S.	4
4	006151-00000	LOCKWASHER, 1/2"	4
5	006404-00000	3/8"-16 NYLOCK LOCKNUT	8
6	012575-00000	SPACER PLATE	2
7	0A9101-00004	WELDMENT, PIVOT BRACKET	1
8	A11738-00016	WELDMENT, ANCHOR A-1 C 36	1
9	A11744-00030	ASSEMBLY, 11.50" X 36" DRILL RAIL	1

REVISIONS			
REV.	DESCRIPTION	DATE	ECR#



#

PARAMETER MATERIAL		LOCKER	
MANUFACTURED BY: MANVILLE UPRR CO., INC.			
THIS INFORMATION IS FOR YOUR INFORMATION ONLY. IT IS NOT TO BE USED FOR ANY OTHER PURPOSES. IT IS NOT TO BE USED FOR ANY OTHER PURPOSES. IT IS NOT TO BE USED FOR ANY OTHER PURPOSES.			
DRAWN BY: RJ		CHECKED BY: AEB	
APPROVED BY: AEB		DATE: 08/18/2023	
TITLE: ASSEMBLY, 11.50" X 36" RAIL INSTALLATION		ROUTING NO. DRAWING NUMBER: 0A8592-00036	
DO NOT SCALE DRAWING			
Dimension in accordance with ANSI Y14			
TOLERANCES (UNLESS OTHERWISE SPECIFIED)			
FRACTIONS ± .005			
DECIMALS ± .005			
ANGLES ± 1/16°			
HOLE SIZE TOLERANCE			
.0015 TO .0025			
.0025 TO .0050			
.0050 TO .0075			
.0075 TO .0100			
.0100 TO .0125			
.0125 TO .0150			
.0150 TO .0175			
.0175 TO .0200			
.0200 TO .0225			
.0225 TO .0250			
.0250 TO .0275			
.0275 TO .0300			
.0300 TO .0325			
.0325 TO .0350			
.0350 TO .0375			
.0375 TO .0400			
.0400 TO .0425			
.0425 TO .0450			
.0450 TO .0475			
.0475 TO .0500			
.0500 TO .0525			
.0525 TO .0550			
.0550 TO .0575			
.0575 TO .0600			
.0600 TO .0625			
.0625 TO .0650			
.0650 TO .0675			
.0675 TO .0700			
.0700 TO .0725			
.0725 TO .0750			
.0750 TO .0775			
.0775 TO .0800			
.0800 TO .0825			
.0825 TO .0850			
.0850 TO .0875			
.0875 TO .0900			
.0900 TO .0925			
.0925 TO .0950			
.0950 TO .0975			
.0975 TO .1000			
.1000 TO .1025			
.1025 TO .1050			
.1050 TO .1075			
.1075 TO .1100			
.1100 TO .1125			
.1125 TO .1150			
.1150 TO .1175			
.1175 TO .1200			
.1200 TO .1225			
.1225 TO .1250			
.1250 TO .1275			
.1275 TO .1300			
.1300 TO .1325			
.1325 TO .1350			
.1350 TO .1375			
.1375 TO .1400			
.1400 TO .1425			
.1425 TO .1450			
.1450 TO .1475			
.1475 TO .1500			
.1500 TO .1525			
.1525 TO .1550			
.1550 TO .1575			
.1575 TO .1600			
.1600 TO .1625			
.1625 TO .1650			
.1650 TO .1675			
.1675 TO .1700			
.1700 TO .1725			
.1725 TO .1750			
.1750 TO .1775			
.1775 TO .1800			
.1800 TO .1825			
.1825 TO .1850			
.1850 TO .1875			
.1875 TO .1900			
.1900 TO .1925			
.1925 TO .1950			
.1950 TO .1975			
.1975 TO .2000			
.2000 TO .2025			
.2025 TO .2050			
.2050 TO .2075			
.2075 TO .2100			
.2100 TO .2125			
.2125 TO .2150			
.2150 TO .2175			
.2175 TO .2200			
.2200 TO .2225			
.2225 TO .2250			
.2250 TO .2275			
.2275 TO .2300			
.2300 TO .2325			
.2325 TO .2350			
.2350 TO .2375			
.2375 TO .2400			
.2400 TO .2425			
.2425 TO .2450			
.2450 TO .2475			
.2475 TO .2500			
.2500 TO .2525			
.2525 TO .2550			
.2550 TO .2575			
.2575 TO .2600			
.2600 TO .2625			
.2625 TO .2650			
.2650 TO .2675			
.2675 TO .2700			
.2700 TO .2725			
.2725 TO .2750			
.2750 TO .2775			
.2775 TO .2800			
.2800 TO .2825			
.2825 TO .2850			
.2850 TO .2875			
.2875 TO .2900			
.2900 TO .2925			
.2925 TO .2950			
.2950 TO .2975			
.2975 TO .3000			
.3000 TO .3025			
.3025 TO .3050			
.3050 TO .3075			
.3075 TO .3100			
.3100 TO .3125			
.3125 TO .3150			
.3150 TO .3175			
.3175 TO .3200			
.3200 TO .3225			
.3225 TO .3250			
.3250 TO .3275			
.3275 TO .3300			
.3300 TO .3325			
.3325 TO .3350			
.3350 TO .3375			
.3375 TO .3400			
.3400 TO .3425			
.3425 TO .3450			
.3450 TO .3475			
.3475 TO .3500			
.3500 TO .3525			
.3525 TO .3550			
.3550 TO .3575			
.3575 TO .3600			
.3600 TO .3625			
.3625 TO .3650			
.3650 TO .3675			
.3675 TO .3700			
.3700 TO .3725			
.3725 TO .3750			
.3750 TO .3775			
.3775 TO .3800			
.3800 TO .3825			
.3825 TO .3850			
.3850 TO .3875			
.3875 TO .3900			
.3900 TO .3925			
.3925 TO .3950			
.3950 TO .3975			
.3975 TO .4000			
.4000 TO .4025			
.4025 TO .4050			
.4050 TO .4075			
.4075 TO .4100			
.4100 TO .4125			
.4125 TO .4150			
.4150 TO .4175			
.4175 TO .4200			
.4200 TO .4225			
.4225 TO .4250			
.4250 TO .4275			
.4275 TO .4300			
.4300 TO .4325			
.4325 TO .4350			
.4350 TO .4375			
.4375 TO .4400			
.4400 TO .4425			
.4425 TO .4450			
.4450 TO .4475			
.4475 TO .4500			
.4500 TO .4525			
.4525 TO .4550			
.4550 TO .4575			
.4575 TO .4600			
.4600 TO .4625			
.4625 TO .4650			
.4650 TO .4675			
.4675 TO .4700			
.4700 TO .4725			
.4725 TO .4750			
.4750 TO .4775			
.4775 TO .4800			
.4800 TO .4825			
.4825 TO .4850			
.4850 TO .4875			
.4875 TO .4900			
.4900 TO .4925			
.4925 TO .4950			
.4950 TO .4975			
.4975 TO .5000			
.5000 TO .5025			
.5025 TO .5050			
.5050 TO .5075			
.5075 TO .5100			
.5100 TO .5125			
.5125 TO .5150			
.5150 TO .5175			
.5175 TO .5200			
.5200 TO .5225			
.5225 TO .5250			
.5250 TO .5275			
.5275 TO .5300			
.5300 TO .5325			
.5325 TO .5350			
.5350 TO .5375			
.5375 TO .5400			
.5400 TO .5425			
.5425 TO .5450			
.5450 TO .5475			
.5475 TO .5500			
.5500 TO .5525			
.5525 TO .5550			
.5550 TO .5575			
.5575 TO .5600			
.5600 TO .5625			
.5625 TO .5650			
.5650 TO .5675			
.5675 TO .5700			
.5700 TO .5725			
.5725 TO .5750			
.5750 TO .5775			
.5775 TO .5800			
.5800 TO .5825			
.5825 TO .5850			
.5850 TO .5875			
.5875 TO .5900			
.5900 TO .5925			
.5925 TO .5950			
.5950 TO .5975			
.5975 TO .6000			
.6000 TO .6025			
.6025 TO .6050			
.6050 TO .6075			
.6075 TO .6100			
.6100 TO .6125			
.6125 TO .6150			
.6150 TO .6175			
.6175 TO .6200			
.6200 TO .6225			
.6225 TO .6250			
.6250 TO .6275			
.6275 TO .6300			
.6300 TO .6325			
.6325 TO .6350			
.6350 TO .6375			
.6375 TO .6400			
.6400 TO .6425			
.6425 TO .6450			
.6450 TO .6475			
.6475 TO .6500			
.6500 TO .6525			
.6525 TO .6550			
.6550 TO .6575			
.6575 TO .6600			
.6600 TO .6625			
.6625 TO .6650			
.6650 TO .6675			
.6675 TO .6700			
.6700 TO .6725			
.6725 TO .6750			
.6750 TO .6775			
.6775 TO .6800			
.6800 TO .6825			
.6825 TO .6850			
.6850 TO .6875			
.6875 TO .6900			
.6900 TO .6925			
.6925 TO .6950			
.6950 TO .6975			
.6975 TO .7000			
.7000 TO .7025			
.7025 TO .7050			
.7050 TO .7075			
.7075 TO .7100			
.7100 TO .7125			
.7125 TO .7150			
.7150 TO .7175			
.7175 TO .7200			
.7200 TO .7225			
.7225 TO .7250			
.7250 TO .7275			
.7275 TO .7300			
.7300 TO .7325			
.7325 TO .7350			
.7350 TO .7375			
.7375 TO .7400			
.7400 TO .7425			
.7425 TO .7450			
.7450 TO .7475			
.7475 TO .7500			
.7500 TO .7525			
.7525 TO .7550			
.7550 TO .7575			
.7575 TO .7600			
.7600 TO .7625			
.7625 TO .7650			
.7650 TO .7675			
.7675 TO .7700			
.7700 TO .7725			
.7725 TO .7750			
.7750 TO .7775			
.7775 TO .7800			
.7800 TO .7825			
.7825 TO .7850			
.7850 TO .7875			
.7875 TO .7900			
.7900 TO .7925			
.7925 TO .7950			
.7950 TO .7975			
.7975 TO .8000			
.8000 TO .8025			
.8025 TO .8050			
.8050 TO .8075			
.8075 TO .8100			
.8100 TO .8125			
.8125 TO .8150			
.8150 TO .8175			
.8175 TO .8200			
.8200 TO .8225			
.8225 TO .8250			
.8250 TO .8275			
.8275 TO .8300			
.8300 TO .8325			
.8325 TO .8350			
.8350 TO .8375			
.8375 TO .8400			
.8400 TO .8425			
.8425 TO .8450			
.8450 TO .8475			
.8475 TO .8500			
.8500 TO .8525			
.8525 TO .8550			
.8550 TO .8575			
.8575 TO .8600			
.8600 TO .8625			
.8625 TO .8650			
.8650 TO .8675			
.8675 TO .8700			

REV.		DESCRIPTION		DATE		APPROVED		ECR#	
<div style="display: flex; justify-content: space-between;"> <div> <p>REVISIONS</p> </div> <div> <p>QTY.</p> </div> </div>									
1	004242-00001	SPRING BUSHING							
2	004242-00002	SPRING BUSHING							
3	004988-00006	CYLINDER END							
4	006038-1.000	HHCS, 3/8-16 x 1 GR.5							
5	006038-2.500	HHCS, 3/8-16 x 2-1/2 GR.5							
6	006038-2.750	HHCS, 3/8-16 x 2-3/4 GR.5							
7	006043-2.000	HHCS, 3/4-10 x 2 GR.5							
8	006106-00000	FLAT WASHER, 5/16 USS							
9	006110-00000	FLAT WASHER, 7/16 USS							
10	006117-00000	FLAT WASHER, 3/4 SAE							
11	006149-00000	LOCKWASHER, 3/8							
12	006155-00000	LOCKWASHER, 3/4							
13	006296-00001	06-04 REDUCER PIPE BUSHING							
14	006404-00000	LOCKNUT, 3/8-16 NYLOCK							
15	007132-00001	COIL STYLE THREAD NUT							
16	007282-00000	#12 SINGLE JACK CHAIN X 7.50"							
17	007667-8.000	3/4"-16 X 8.00" GRADE 8 BOLT							
18	008479-00000	TAB LOCK PIN							
19	010066-00003	DRILL HANDLE BRACKET							
20	010829-00010	MALE ELBOW - 1/4" TUBE TO MALE 1/4" NPT FITTING							
21	010829-00011	MALE ELBOW - 1/4" TUBE TO MALE 3/8" NPT FITTING							
22	011472-00050	BOLT, SOCKET HEAD SHOULDER M12 X 1.50 X 50							
23	011497-00000	M10 NYLON INSERT LOCKNUT							
24	011739-00000	DRILL CARRIER BEARING							
25	011740-11.50	2.50" BORE X 11.50" STROKE DOUBLE ACTING AIR CYLINDER							
26	012300-00000	3/4"-16 TORQUE LOCKNUT							
27	013261-00000	AIR POSITION SENSOR							
28	013262-00000	AIR POSITION SENSOR							
29	0A8399-00039	WELDMENT, DRILL CARRIER (11.50") TOYO/TOKU							
30	0A8422-00010	WELDMENT, ADJUSTMENT BOLT							
31	0A9383-00000	WELDMENT, FRONT MOUNTING CLAMP							
32	A11291-00030	WELDMENT, RAIL TUBE							
33	A11732-00000	WELDMENT, RAIL END							

#

DO NOT SCALE DRAWING

MINUSCULE MET CO., INC.

1000 INDUSTRIAL BLVD. SUITE 100, WILMINGTON, DE 19801

TEL: 302.436.1000 FAX: 302.436.1001

WWW.MINUSCULEMET.COM

DRAWN BY: RJ

CHECKED BY:

APPROVED BY:

DATE: 04/22/2025

REV. LEVEL: 1

TITLE: ASSEMBLY, 11.50" X 36" DRILL RAIL

Dimension in accordance with ANSI Y14

LOCATION: ROUTING NO: DRAWING NUMBER: A11744-000030

TOOLERANCES (EXCEPT AS NOTED)

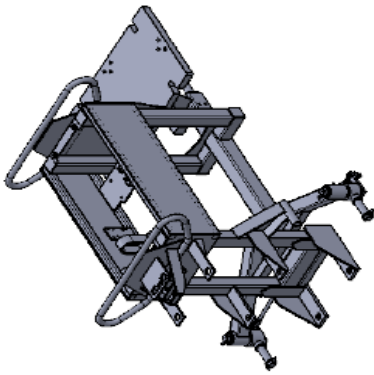
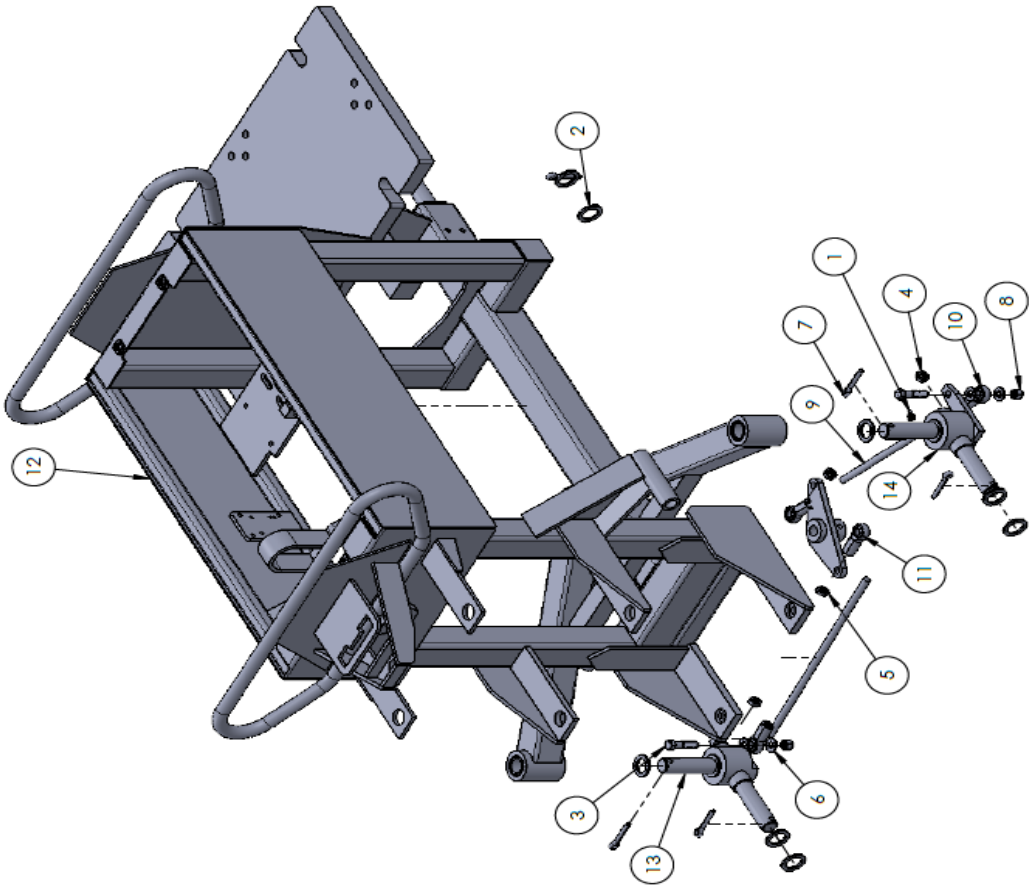
X .000

XX .005

XXX .010

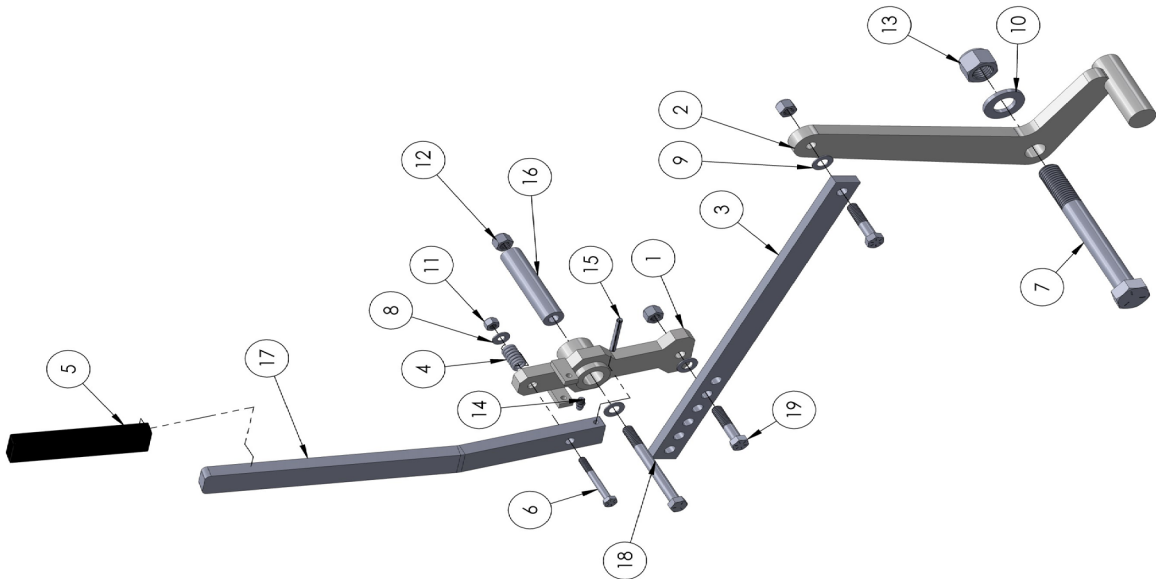
MILS .001

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	798	GREASE FITTING	2
2	4675-1	AXLE WASHER	10
3	6039-1.75	HEX BOLT 7/16-14 X 1.75 GR.5	2
4	6087	7/16-20 HEX NUT	2
5	6087-LH	7/16-20 LH HEX NUT	2
6	6110	FLAT WASHER 7/16"	4
7	6180-1.50	5/16 X 1-1/2 COTTER PIN	5
8	6405	LOCKNUT 7/16-14	2
9	8253	TIE ROD	2
10	8280	SPHERICAL ROD END	2
11	8280-1	ROD EYE	2
12	A11750-2	FRAME WELDMENT	1
13	A13510	RH STEERING KNUCKLE WELDMENT	1
14	A13510-1	LH STEERING KNUCKLE WELDMENT	1



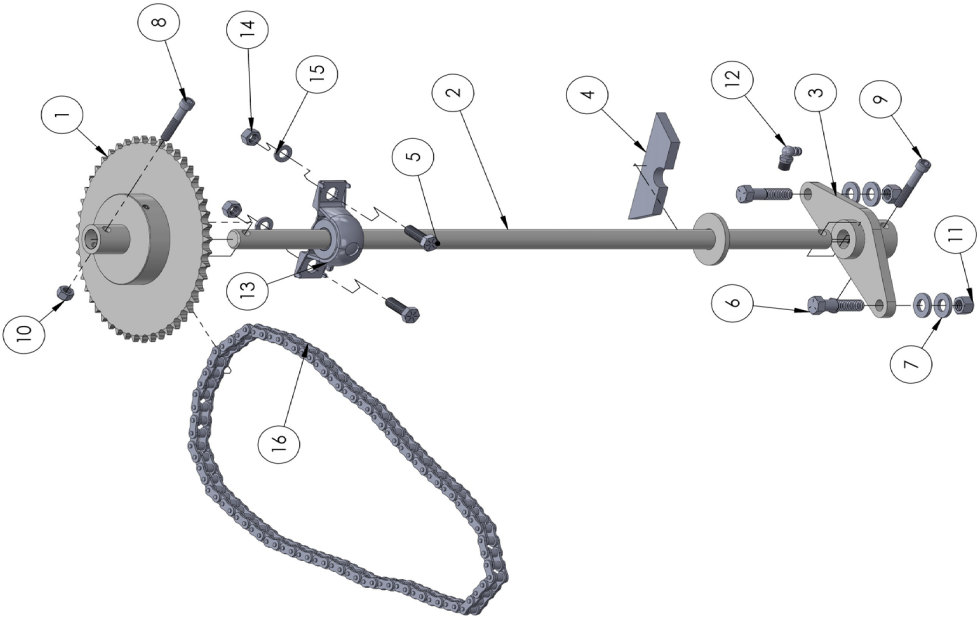
KAWASAKI MATERIAL		REVISION	
MANUFACTURED BY: KAWASAKI		DRAWN BY: KJ	
FOR INFORMATION: KAWASAKI MATERIALS CO. LTD. 1-1-1, KAWASAKI, CHUO-KU, TOKYO 100, JAPAN		CHECKED BY: AB (2/19/20)	
EXPLAINED TO THE CUSTOMER BY THE SALESMAN OF KAWASAKI MATERIALS CO. LTD.		APPROVED BY:	
TITLE: DO NOT SCALE DRAWING		ORIG. DATE: 09/18/2018	
Dimension in accordance with ANSI Y14.5		REV. LEVEL: -	
FUTURE NO. LOCATION		ROUTING NO. DRAWING NUMBER: A11757-2	
TOLERANCES: FRACTIONS: XX ± .000 XXX ± .005 XX ± 1/16" C ± .1"			

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	7245-1	BRAKE ARM WELDMENT	1
2	8366	BRAKE ARM WELDMENT	1
3	12004	BRAKE BAR	1
4	2893	COMPRESSION SPRING	1
5	3016-44-1	HANDLE - GRIP	1
6	6036-2.25	HHCS, 1/4-20 X 2.25 GR.5	1
7	6043-6.50	HHCS, 3/4-10 X 6.50 GR.5	1
8	6104	1/4 USS FLAT WASHER	1
9	6108	3/8" FLAT WASHER	3
10	6117	3/4" FLAT WASHER	1
11	6402	1/4-20" LOCKNUT	1
12	6404	LOCKNUT 3/8"	3
13	6409	LOCKNUT, 3/4-10 NYLOCK	1
14	6483-8	FITTING, LUB 1/4-28 TAPER STRAIGHT	1
15	6534-1.75	PIN, SPRING 3/16 X 1-3/4	1
16	7235-2	MOUNTING SHAFT	1
17	7246	BRAKE HANDLE BAR	1
18	6038-4.00	HHSC, 3/8-16 X 4.00 GR.5	1
19	6038-1.75	H.H.C.S. 3/8"-16 X 1.75	2



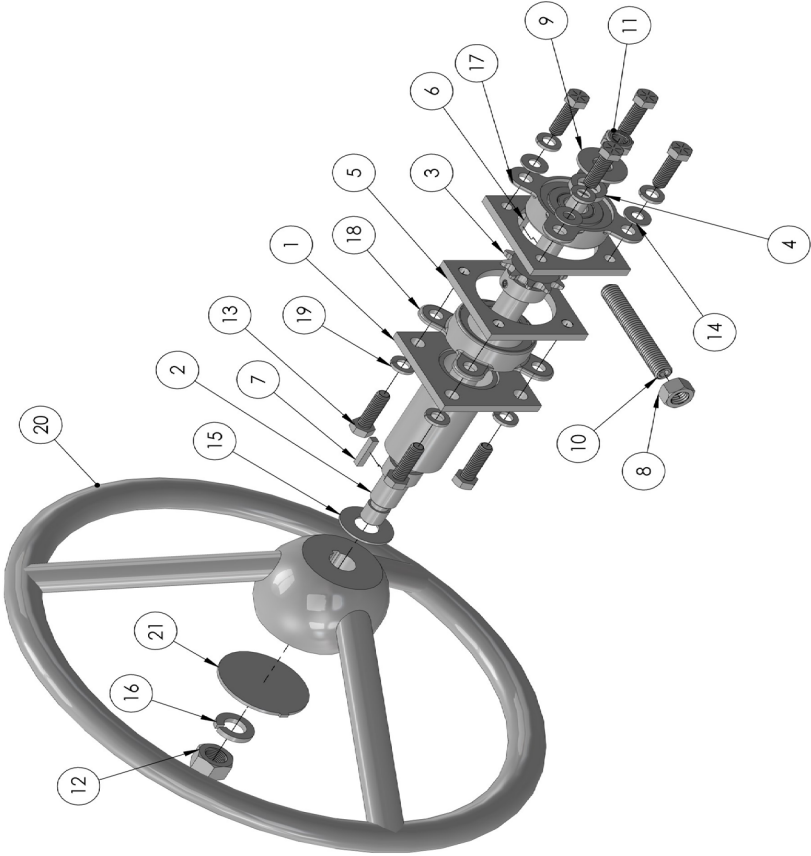
#	RAW MATERIAL	LOCKWIRE
MINISCHMEID CO., INC.		
THE INFORMATION SHOWN ON THIS DRAWING IS THE PROPERTY OF MINISCHMEID CO., INC. AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF MINISCHMEID CO., INC.		
DO NOT SCALE DRAWING		
TITLE:		
BRAKE INSTALLATION ASSEMBLY		
Dimension in accordance with ANSI Y14.14	LOCATION	ROUTING NO. DRAWING NUMBER:
FIXTURE NO.		A12875-1
TOLERANCES		
PERF. FINISHES		
X .000		
.XX ± .030		
.XXX ± .005		
XX ± 1/16"		
< 1"		
DRAWN BY: RJ		
CHECKED BY:		
APPROVED BY:		
ORIG. DATE: 09/17/2018		
REV. LEVEL		

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	11749	SPROCKET WELDMENT	1
2	8322-1	STEERING SHAFT WELDMENT	1
3	8264-1	STEERING WELDMENT LEVER	1
4	8429	STEERING STOP	1
5	6038-1.25	HHCS 3/8" X 1.25" G5	2
6	6039-1.75	HEX BOLT 7/16-14 X 1.75 GR.5	2
7	6110	FLAT WASHER 7/16"	4
8	6215-1.75	SHCS, 5/16-18 X 1-3/4	1
9	6215-2.00	SHCS, 5/16-18 X 2.00	1
10	6403	LOCKNUT 5/16"18	2
11	6405	LOCKNUT 7/16-14	2
12	6483-5	FITTING, LUB 1/8 NPT 90 DEGREE	1
13	8336-1	PILLOW BLOCK BEARING	1
14	6072	HEX NUT 3/8-16 GR 5	2
15	6149	LOCK WASHER 3/8	2
16	5477-1	ROLLER CHAIN	1



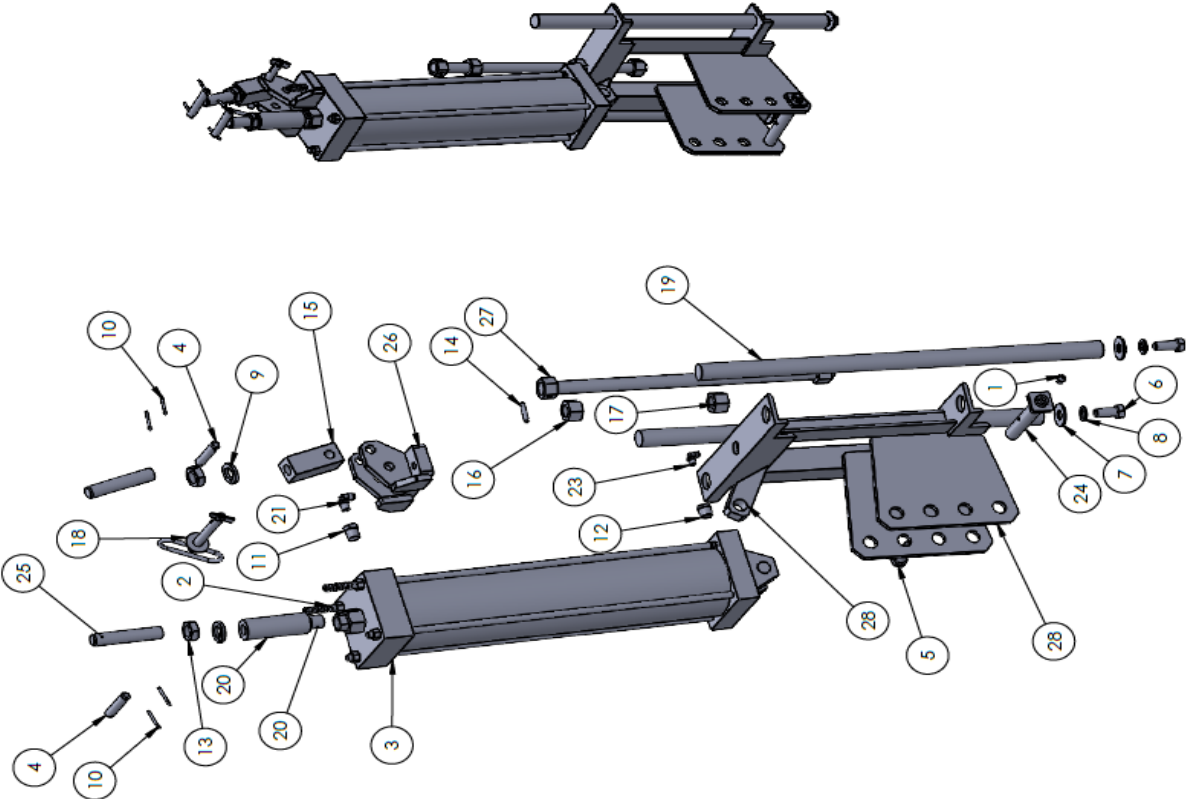
#	RAW MATERIAL	REWORK
MINNICK MFG. CO., INC.		
THE INFORMATION SHOWN ON THIS DRAWING IS CONFIDENTIAL TO MINNICK MFG. & OUR CUSTOMERS & SHALL NOT BE DISSEMINATED TO THIRD PARTIES WITHOUT THE WRITTEN PERMISSION OF MINNICK MFG.		
DO NOT SCALE DRAWING		
TOLERANCES (EXCEPT AS NOTED) .XX ± .005 .XXX ± .005 XX ± 1/16" X ± 1"		
TITLE: STEERING SHAFT ASSEMBLY		
ROUTING NO. LOCATION		
DRAWING NUMBER: A12874-1		
APPROVED BY: DATE: 09/17/2018 REV. LEVEL -		

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	7465	STEERING SHAFT - UPPER BRACKET	1
2	8328	STEERING SHAFT WELDMENT	1
3	5480-1	10 TEETH SPROCKET	1
4	8335-1	SPACER	1
5	8449-1	PLATE STEERING BRACKET	2
6	12804-.875 KEY	12804-.875 SQ. KEY	1
7	12804-1.00 KEY	12804-1.00 SQ. KEY	1
8	6074	1/2"-13 HEX NUT	1
9	6112	FW 9/16 ID 1-3/8 OD	1
10	6325-3.50	SHSS, 1/2-13 X 3.50 CUP POINT	1
11	6392	HALF LOCKNUT 1/2"-13	1
12	6469-7	5/8"-18 HEX NUT	1
13	6038-1.25	HHCS 3/8" X 1.25" G-5	8
14	6106	WASHER 5/16"	4
15	6115	5/8 SAE FLAT WASHER	1
16	6153	5/8 LOCK WASHER	1
17	8337	SIDE MOUNT BEARING	1
18	8337-1	SIDE MOUNT BEARING	1
19	6149	LOCK WASHER 3/8	8
20	10314	STEERING WHEEL	1
21	10315	STEERING WHEEL CAP	1



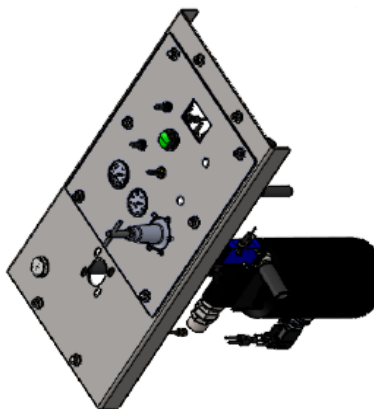
#	RAW MATERIAL	LOCKSHIE
MINISCULMFG CO. INC.		
THE INFORMATION SHOWN ON THIS DRAWING IS FOR INFORMATION PURPOSES ONLY. IT IS NOT TO BE USED FOR THE FABRICATION OF ANY PARTS.		
DO NOT SCALE DRAWING		
TITLE:		
STEERING COLUMN ASSEMBLY		
ROUTING NO. DRAWING NUMBER:		
A12873		
TOLERANCES		
X ± .000		
XX ± .005		
XXX ± .005		
X/X ± 1/16"		
1"		

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	798	GREASE FITTING	1
2	4612-51	STUD	2
3	5664	DOUBLE ACTING AIR CYLINDER	1
4	5775	PIN	2
5	6040-1.00	HHCS, 1/2-13 X 1.00" GR.5	1
6	6040-1.25	HHCS, 1/2-13 X 1-1/4 GR.5	2
7	6112	FW 9/16 ID 1-3/8 OD	3
8	6151	1/2" LOCK WASHER	3
9	6155	3/4" LOCK WASHER	2
10	6174-1.00	COTTER PIN 1/8" X 1"	4
11	6296-1	BUSHING, REDUCER PIPE 06-04	1
12	6296-15	BUSHING, REDUCER PIPE 06-02	1
13	6470-8	NUT, HEX JAM 3/4-10	2
14	6535-1.25	PIN, SPRING 1/4 X 1-1/4	1
15	6824-6	TIE ROD	1
16	7132	NUT, COIL STYLE THREAD	1
17	7132-1	COATED NUT, COIL STYLE THREAD	1
18	7264	PIN, TENSION LOCK TOGGLE	1
19	7489-1	HIGHT ADJUSTMENT SHAFT	2
20	8351-3	ANCHOR TUBE	1
21	10829-10	1/4 NPT PIPE	1
22	10829-11	FITTING, MALE ELBOW 1/4 TUBE TO 3/8 MALE NPT	2
23	10829-5	FITTING, MALE ELBOW 5/32 TUBE TO 1/8" MALE NPT	1
24	A5542-4	HANGER PIN WELDMENT	1
25	A5941-1	ADJUSTMENT SCREW WELDMENT	2
26	A7958-1	RETAINER BAR WELDMENT	1
27	A7960-1	ADJUSTMENT ROD WELDMENT	1
28	A8238-4	LIFT & CYLINDER ANCHOR	1



GENERAL MATERIAL		TECHNICAL	
MATERIALS		MATERIALS	
THIS INFORMATION IS FOR INFORMATIONAL PURPOSES ONLY. IT IS NOT TO BE USED FOR CONSTRUCTION OR REPAIR WORK.		DRAWN BY: RJ	
DO NOT SCALE DRAWING		CHECKED BY: AEB	
TOLERANCES: (UNLESS OTHERWISE SPECIFIED) XX ± .005 XXX ± .005 XXX ± .005		APPROVED BY: AEB	
Dimension in accordance with ANSI Y14		DATE: 10/02/2018	
FIXTURE NO.		REV. LEVEL	
LOCATION		A	
ROUTING NO.		A11753-2	
TITLE:		A-2C LIFT GROUP INSTALLATION	

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	001811-00000	COUPLING - HOSE 2 PRONG/MALE PIPE	1	47	010842-00001	5/32" TUBE TO 5/32" TUBE "Y" FITTING	2
2	003997-00000	3/4" I.D. X 36.00" HOSE	148"	48	010842-00002	1/4" TUBE TO 1/4" TUBE "Y" FITTING	1
3	002880-00000	AIR REGULATOR	1	49	010844-00001	1/4" TO 1/4" MULTIPLE TEE FITTING W/MOUNTING HOLES	1
4	003820-00000	SAFETY PIN & LANYARD	1	50	010861-00000	5/32" NYLON TUBING X 700.00"	688"
5	004955-00000	IN-LINE FILTER	1	51	010863-00000	1/4" NYLON TUBING X 700.00"	688"
6	005856-00000	AIR HOSE COUPLING PLUG	1	52	010872-00001	1/2" EXPANDABLE SLEEVING X 200.00"	188"
7	006007-00019	8-12S 37 DEG. MALE PIPE CONNECTOR	1	53	010917-00000	2 POSITION VALVE TOGGLE	2
8	006007-00021	12-8S 37 DEG. MALE PIPE CONNECTOR	1	54	010920-00000	AIR VALVE - CONTROL DRILL SINGLE	1
9	006007-00026	16-16S 37 DEG. MALE PIPE CONNECTOR	1	55	011163-00010	12-12 SWIVEL NUT ADAPTER	1
10	006019-00024	12-12 90 DEG EXT PIPE/ 37 DEG ELBOW	1	56	011163-00012	16-16 SWIVEL NUT ADAPTER	1
11	006021-00016	8-12S 45 DEG. EXTERNAL PIPE/ 37 DEG. ELBOW	1	57	011198-00000	TOGGLE SWITCH COVER	2
12	006023-00008	12-12S 37 DEG. MALE/FEMALE SWIVEL 90 DEG. ELBOW	1	58	011214-00003	A-1C/A-2C PANEL	1
13	006032-00006	12 37° FEM/SWIVEL BARBED HOSE	6	59	011527-00000	AIR FEED VALVE	1
14	006036-1.000	1/4"-20 X 1 GRADE 5 H.H.C.S.	2	60	011553-00000	PILOTED AIR VALVE	1
15	006036-2.000	1/4"-20 X 2.00" GRADE 5 H.H.C.S.	2	61	011771-00000	UNIVERSAL BUSHING	1
16	006037-1.250	5/16"-18 X 1-1/4" GRADE 5 H.H.C.S.	10	62	012135-00000	1/8" BREATHER VENT	3
17	006104-00000	FLAT WASHER, 1/4 USS	2	63	013089-00000	AIR REGULATOR	1
18	006106-00000	FLAT WASHER, 5/16 USS	10	64	013265-00000	VALVE	1
19	006143-00000	LOCKWASHER, #6	6	65	013594-00000	HORIZONTAL FLOAT VALVE	1
20	006144-00000	LOCKWASHER, #8	2	66	013595-00000	VISUAL PRESSURE INDICATOR	1
21	006147-00000	1/4" LOCKWASHER	1	67	0A7350-00013	WELDMENT, LUBRICATOR	1
22	006148-00000	LOCKWASHER, 5/16	10	68	A13254-00000	WELDMENT, VALVE MOUNT	1
23	006255-2.000	RHMS, #6-32 X 2 SLOTTED	6	69	A13621-00000	WELDMENT, CONTROL PANEL	1
24	006256-1.500	RHMS, #8-32 X 1-1/2 SLOTTED	2				
25	006296-00001	06-04 REDUCER PIPE BUSHING	2				
26	006296-00010	16-12 REDUCER PIPE BUSHING	1				
27	006296-00016	BUSHING, REDUCER PIPE 04-02	1				
28	006402-00000	1/4"-20 NYLON LOCKNUT	2				
29	006471-00004	1/2" HEX SOCKET PIPE PLUG	1				
30	006652-00000	NUT, HEX #6-32 NC THREAD	6				
31	006653-00000	NUT, HEX #8-32 NC THREAD	2				
32	006721-0.750	#12-24 X 3/4" FULLER SLOTTED MACHINE SCREW	4				
33	007059-00000	0-160 PSI AIR PRESSURE GAUGE	1				
34	007059-00001	0-60 PSI AIR PRESSURE GAUGE	1				
35	008972-00000	WHITE PLASTIC PLUG	2				
36	010793-00001	5/16"-20 CAGE NUT (J-TYPE)	6				
37	010825-00003	5/32" TUBE TO MALE 1/8" NPT FITTING	4				
38	010825-00007	1/4" TUBE TO MALE 1/8" NPT FITTING	7				
39	010825-00008	1/4" TUBE TO MALE 1/4" NPT FITTING	2				
40	010829-00005	MALE ELBOW - 5/32" TUBE TO MALE 1/8" NPT FITTING	10				
41	010829-00010	MALE ELBOW - 1/4" TUBE TO MALE 1/4" NPT FITTING	3				
42	010836-00002	STRAIGHT FEMALE CONNECTOR - 5/32" TUBE TO 1/8" NPT FITTING	1				
43	010836-00007	STRAIGHT FEMALE CONNECTOR - 1/4" TUBE TO 1/4" NPT FITTING	2				
44	010839-00001	5/32" TUBE TO 5/32" TUBE UNION FITTING	4				
45	010839-00003	1/4" TUBE TO 1/4" TUBE UNION FITTING	2				
46	010841-00001	5/32" TUBE TO TUBE TEE FITTING	1				



REVISIONS				
REV.	DESCRIPTION	DATE	APPROVED	ECR#

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

CONTROL PANEL ASSEMBLY

TOLERANCES	
EXCEPT AS NOTED	± .005
XX	± .000
XXX	± .005
XXXX	± .010

DIMENSIONS	
1.000 ± .005	1.000 ± .005
1.000 ± .005	1.000 ± .005
1.000 ± .005	1.000 ± .005
1.000 ± .005	1.000 ± .005
1.000 ± .005	1.000 ± .005

GENERAL INFORMATION	
DESIGNER: J. L. BROWN CHECKED BY: R. J. BROWN DATE: 1/25/2024	REV. LEVEL: 1 ROUTING NO.: A11190-00010

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

VALVE ASSEMBLY

LUBRICATOR ASSEMBLY

DO NOT SCALE DRAWING

TITLE: ASSEMBLY, A-1C 36 CONTROL & LUBRICATOR

ROUTING NO: DRAWING NUMBER: A11190-00010

DATE: 1/25/2024

REV. LEVEL: -

CHECKED BY: AEB

APPROVED BY: AEB

DRAWN BY: RJ

MANUFACTURING CO., INC.

THE INFORMATION ON THIS DRAWING IS THE PROPERTY OF MANUFACTURING CO., INC. AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT PERMISSION IN WRITING FROM MANUFACTURING CO., INC.

PARAMETERIAL MATERIAL

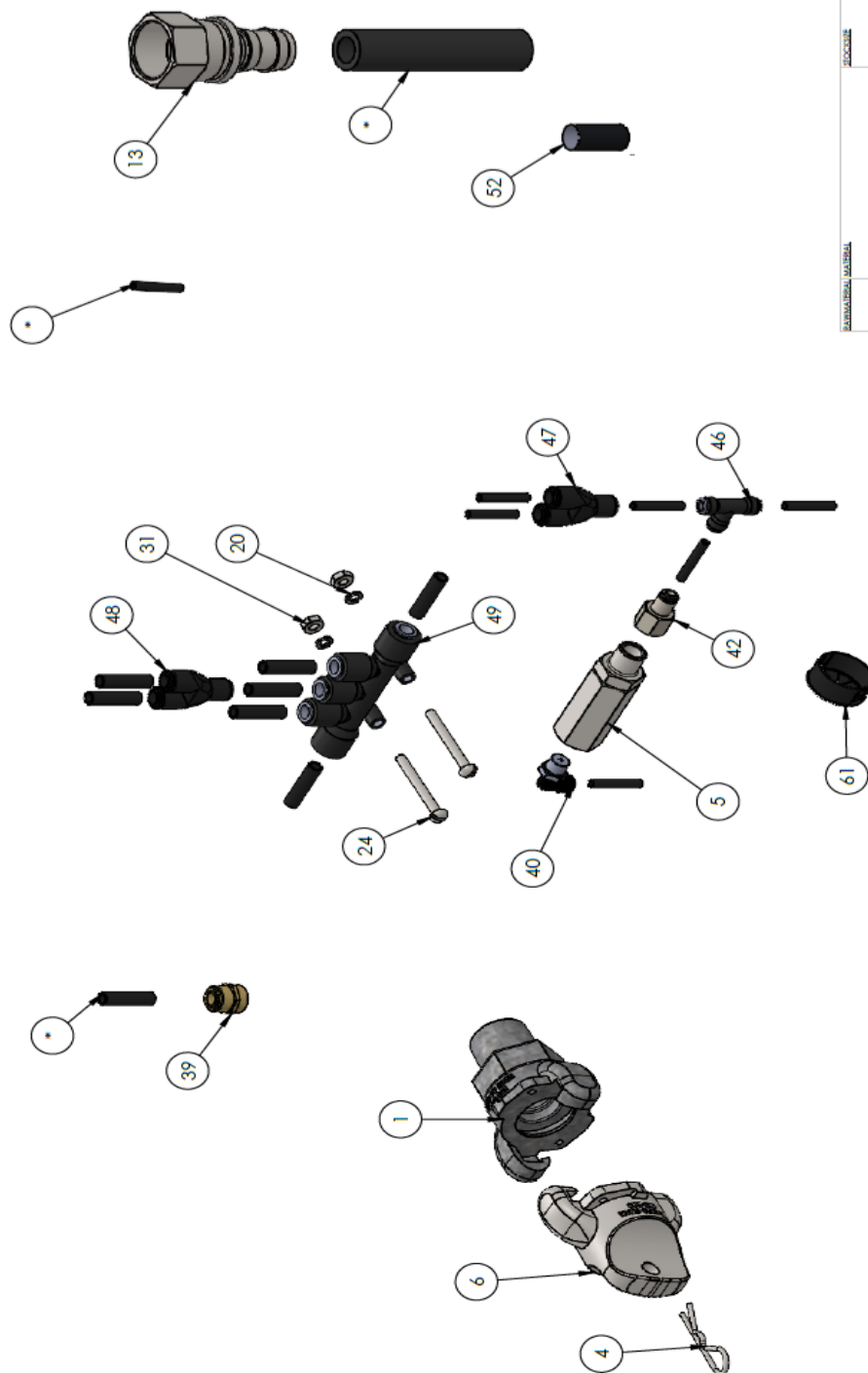
LOCATION

Dimension in accordance with ANSI Y14

FEATURE NO. LOCATION

FEATURE NO.	LOCATION
1	1/16"
2	1/8"
3	1/4"
4	3/8"
5	1/2"
6	3/4"
7	1"
8	1 1/4"
9	1 1/2"
10	1 3/4"
11	2"
12	2 1/4"
13	2 1/2"
14	2 3/4"
15	3"
16	3 1/4"
17	3 1/2"
18	3 3/4"
19	4"
20	4 1/4"
21	4 1/2"
22	4 3/4"
23	5"
24	5 1/4"
25	5 1/2"
26	5 3/4"
27	6"
28	6 1/4"
29	6 1/2"
30	6 3/4"
31	7"
32	7 1/4"
33	7 1/2"
34	7 3/4"
35	8"
36	8 1/4"
37	8 1/2"
38	8 3/4"
39	9"
40	9 1/4"
41	9 1/2"
42	9 3/4"
43	10"
44	10 1/4"
45	10 1/2"
46	10 3/4"
47	11"
48	11 1/4"
49	11 1/2"
50	11 3/4"
51	12"
52	12 1/4"
53	12 1/2"
54	12 3/4"
55	13"
56	13 1/4"
57	13 1/2"
58	13 3/4"
59	14"
60	14 1/4"
61	14 1/2"
62	14 3/4"
63	15"
64	15 1/4"
65	15 1/2"
66	15 3/4"
67	16"
68	16 1/4"
69	16 1/2"
70	16 3/4"
71	17"
72	17 1/4"
73	17 1/2"
74	17 3/4"
75	18"
76	18 1/4"
77	18 1/2"
78	18 3/4"
79	19"
80	19 1/4"
81	19 1/2"
82	19 3/4"
83	20"
84	20 1/4"
85	20 1/2"
86	20 3/4"
87	21"
88	21 1/4"
89	21 1/2"
90	21 3/4"
91	22"
92	22 1/4"
93	22 1/2"
94	22 3/4"
95	23"
96	23 1/4"
97	23 1/2"
98	23 3/4"
99	24"
100	24 1/4"
101	24 1/2"
102	24 3/4"
103	25"
104	25 1/4"
105	25 1/2"
106	25 3/4"
107	26"
108	26 1/4"
109	26 1/2"
110	26 3/4"
111	27"
112	27 1/4"
113	27 1/2"
114	27 3/4"
115	28"
116	28 1/4"
117	28 1/2"
118	28 3/4"
119	29"
120	29 1/4"
121	29 1/2"
122	29 3/4"
123	30"
124	30 1/4"
125	30 1/2"
126	30 3/4"
127	31"
128	31 1/4"
129	31 1/2"
130	31 3/4"
131	32"
132	32 1/4"
133	32 1/2"
134	32 3/4"
135	33"
136	33 1/4"
137	33 1/2"
138	33 3/4"
139	34"
140	34 1/4"
141	34 1/2"
142	34 3/4"
143	35"
144	35 1/4"
145	35 1/2"
146	35 3/4"
147	36"
148	36 1/4"
149	36 1/2"
150	36 3/4"
151	37"
152	37 1/4"
153	37 1/2"
154	37 3/4"
155	38"
156	38 1/4"
157	38 1/2"
158	38 3/4"
159	39"
160	39 1/4"
161	39 1/2"
162	39 3/4"
163	40"
164	40 1/4"
165	40 1/2"
166	40 3/4"
167	41"
168	41 1/4"
169	41 1/2"
170	41 3/4"
171	42"
172	42 1/4"
173	42 1/2"
174	42 3/4"
175	43"
176	43 1/4"
177	43 1/2"
178	43 3/4"
179	44"
180	44 1/4"
181	44 1/2"
182	44 3/4"
183	45"
184	45 1/4"
185	45 1/2"
186	45 3/4"
187	46"
188	46 1/4"
189	46 1/2"
190	46 3/4"
191	47"
192	47 1/4"
193	47 1/2"
194	47 3/4"
195	48"
196	48 1/4"
197	48 1/2"
198	48 3/4"
199	49"
200	49 1/4"
201	49 1/2"
202	49 3/4"
203	50"
204	50 1/4"
205	50 1/2"
206	50 3/4"
207	51"
208	51 1/4"
209	51 1/2"
210	51 3/4"
211	52"
212	52 1/4"
213	52 1/2"
214	52 3/4"
215	53"
216	53 1/4"
217	53 1/2"
218	53 3/4"
219	54"
220	54 1/4"
221	54 1/2"
222	54 3/4"
223	55"
224	55 1/4"
225	55 1/2"
226	55 3/4"
227	56"
228	56 1/4"
229	56 1/2"
230	56 3/4"
231	57"
232	57 1/4"
233	57 1/2"
234	57 3/4"
235	58"
236	58 1/4"
237	58 1/2"
238	58 3/4"
239	59"
240	59 1/4"
241	59 1/2"
242	59 3/4"
243	60"
244	60 1/4"
245	60 1/2"
246	60 3/4"
247	61"
248	61 1/4"
249	61 1/2"
250	61 3/4"
251	62"
252	62 1/4"
253	62 1/2"
254	62 3/4"
255	63"
256	63 1/4"
257	63 1/2"
258	63 3/4"
259	64"
260	64 1/4"
261	64 1/2"
262	64 3/4"
263	65"
264	65 1/4"
265	65 1/2"
266	65 3/4"
267	66"
268	66 1/4"
269	66 1/2"
270	66 3/4"
271	67"
272	67 1/4"
273	67 1/2"
274	67 3/4"
275	68"
276	68 1/4"
277	68 1/2"
278	68 3/4"
279	69"
280	69 1/4"
281	69 1/2"
282	69 3/4"
283	70"
284	70 1/4"
285	70 1/2"
286	70 3/4"
287	71"
288	71 1/4"
289	71 1/2"
290	71 3/4"
291	72"
292	72 1/4"
293	72 1/2"
294	72 3/4"
295	73"
296	73 1/4"
297	73 1/2"
298	73 3/4"
299	74"
300	74 1/4"
301	74 1/2"
302	74 3/4"
303	75"
304	75 1/4"
305	75 1/2"
306	75 3/4"
307	76"
308	76 1/4"
309	76 1/2"
310	76 3/4"
311	77"
312	77 1/4"
313	77 1/2"
314	77 3/4"
315	78"
316	78 1/4"
317	78 1/2"
318	78 3/4"
319	79"
320	79 1/4"
321	79 1/2"
322	79 3/4"
323	80"
324	80 1/4"
325	80 1/2"
326	80 3/4"
327	81"
328	81 1/4"
329	81 1/2"
330	81 3/4"
331	82"
332	82 1/4"
333	82 1/2"
334	82 3/4"
335	83"
336	83 1/4"
337	83 1/2"
338	83 3/4"
339	84"
340	84 1/4"
341	84 1/2"
342	84 3/4"
343	85"
344	85 1/4"
345	85 1/2"
346	85 3/4"
347	86"
348	86 1/4"
349	86 1/2"
350	86 3/4"
351	87"
352	87 1/4"
353	87 1/2"
354	87 3/4"
355	88"
356	88 1/4"
357	88 1/2"
358	88 3/4"
359	89"
360	89 1/4"
361	89 1/2"
362	89 3/4"
363	90"
364	90 1/4"
365	90 1/2"
366	90 3/4"
367	91"
368	91 1/4"
369	91 1/2"
370	91 3/4"
371	92"
372	92 1/4"
373	92 1/2"
374	92 3/4"
375	93"
376	93 1/4"
377	93 1/2"
378	93 3/4"
379	94"
380	94 1/4"
381	94 1/2"
382	94 3/4"
383	95"
384	95 1/4"
385	95 1/2"
386	95 3/4"
387	96"
388	96 1/4"
389	96 1/2"
390	96 3/4"
391	97"
392	97 1/4"
393	97 1/2"
394	97 3/4"
395	98"
396	98 1/4"
397	98 1/2"
398	98 3/4"
399	99"
400	99 1/4"
401	99 1/2"
402	99 3/4"
403	100"
404	100 1/4"
405	100 1/2"
406	100 3/4"
407	101"
408	101 1/4"
409	101 1/2"
410	101 3/4"
411	102"
412	102 1/4"
413	102 1/2"
414	102 3/4"
415	103"
416	103 1/4"
417	103 1/2"
418	103 3/4"
419	104"
420	104 1/4"
421	104 1/2"
422	104 3/4"
423	105"
424	105 1/4"
425	105 1/2"
426	105 3/4"
427	106"
428	106 1/4"
429	106 1/2"
430	106 3/4"
431	107"
432	107 1/4"
433	107 1/2"
434	107 3/4"
435	108"
436	108 1/4"
437	108 1/2"
438	108 3/4"
439	109"
440	109 1/4"
441	109 1/2"
442	109 3/4"
443	110"
444	110 1/4"
445	110 1/2"
446	110 3/4"
447	111"
448	111 1/4"
449	111 1/2"
450	111 3/4"
451	112"
452	112 1/4"
453	112 1/2"
454	112 3/4"
455	113"
456	113 1/4"
457	113 1/2"
458	113 3/4"
459	114"
460	114 1/4"
461	114 1/2"
462	114 3/4"
463	115"
464	115 1/4"
465	115 1/2"
466	115 3/4"
467	116"
468	116 1/4"
469	116 1/2"
470	116 3/4"
471	117"
472	117 1/4"
473	117 1/2"
474	117 3/4"
475	118"
476	118 1/4"
477	118 1/2"
478	118 3/4"
479	119"
480	119 1/4"
481	119 1/2"
482	119 3/4"
483	120"
484	120 1/4"
485	120 1/2"
486	120 3/4"
487	121"
488	121 1/4"
489	121 1/2"
490	121 3/4"
491	122"
492	122 1/4"
493	122 1/2"
494	122 3/4"
495	123"
496	123 1/4"
497	123 1/2"
498	123 3/4"
499	124"
500	124 1/4"
501	124 1/2"
502	124 3/4"
503	125"
504	125 1/4"
505	125 1/2"
506	125 3/4"
507	126"
508	126 1/4"
509	126 1/2"
510	126 3/4"
511	127"
512	127 1/4"
513	127 1/2"
514	127 3/4"
515	128"
516	128 1/4"
517	128 1/2"
518	128 3/4"
519	129"
520	129 1/4"
521	129 1/2"
522	129 3/4"

REVISIONS				
REV.	DESCRIPTION	DATE	APPROVED	ECR#



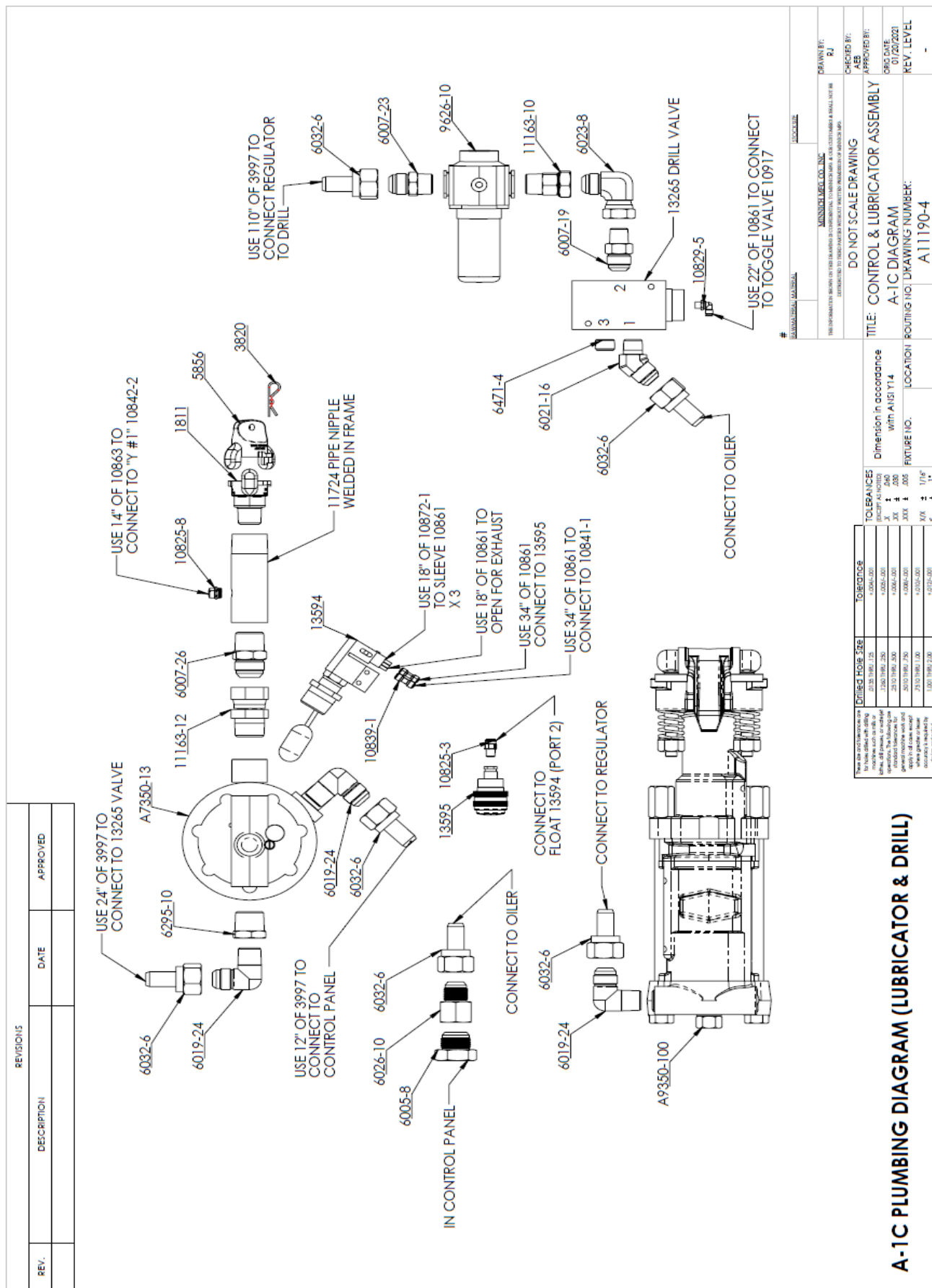
There are two tolerances on the hole size. The first tolerance is for machines drilled with milling machines such as mills or vertical lathe machines. The second tolerance is for standard lathe work or general machine work and applies to all cases except where specific or heat treatment is required.	Drilled Hole Size	Tolerance
	0.015 (1/16) to 0.125	+0.004 -0.001
	0.125 (1/2) to 0.250	+0.003 -0.001
	0.250 (1) to 0.500	+0.004 -0.001
	0.500 (1 1/2) to 0.750	+0.005 -0.001
	0.750 (1 1/2) to 1.000	+0.010 -0.001
	1.000 (1 1/2) to 2.000	+0.015 -0.001

TOLERANCES (EXCEPT AS NOTED)	
X	± .040
XX	± .030
XXX	± .005
4/X	± 1/16"
5	± 1"

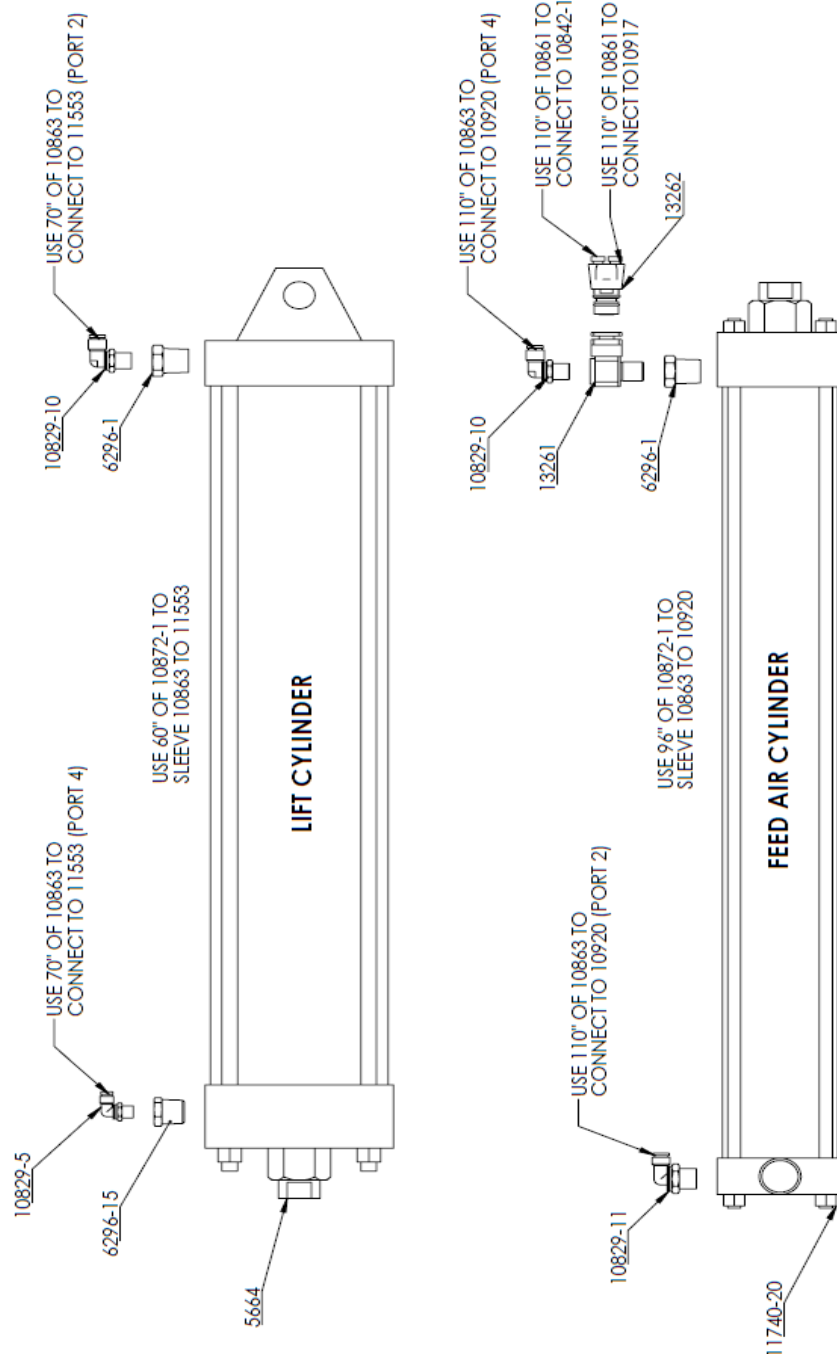
Dimension in accordance with ANSI Y14	LOCATION
---------------------------------------	----------

DRAWING NO. A11190-00010 ROUTING NO. DRAWING NUMBER	REV. LEVEL -	CRG DATE 1/25/2024	APPROVED BY: ABC	CHECKED BY: R1	DRAWN BY: R1
DO NOT SCALE DRAWING					
TITLE: ASSEMBLY, A-1C 36 CONTROL & LUBRICATOR					
MONSIEUR MFG. CO. INC. THE INFORMATION SHOWN ON THIS DRAWING IS CONFIDENTIAL. IT IS TO REMAIN THE PROPERTY OF MONSIEUR MFG. CO. INC. AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF MONSIEUR MFG. CO. INC.					
PROCESS					
MANUFACTURING MATERIAL					

FITTINGS TO LIFT GROUP, DRILLS AND MISC.



REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

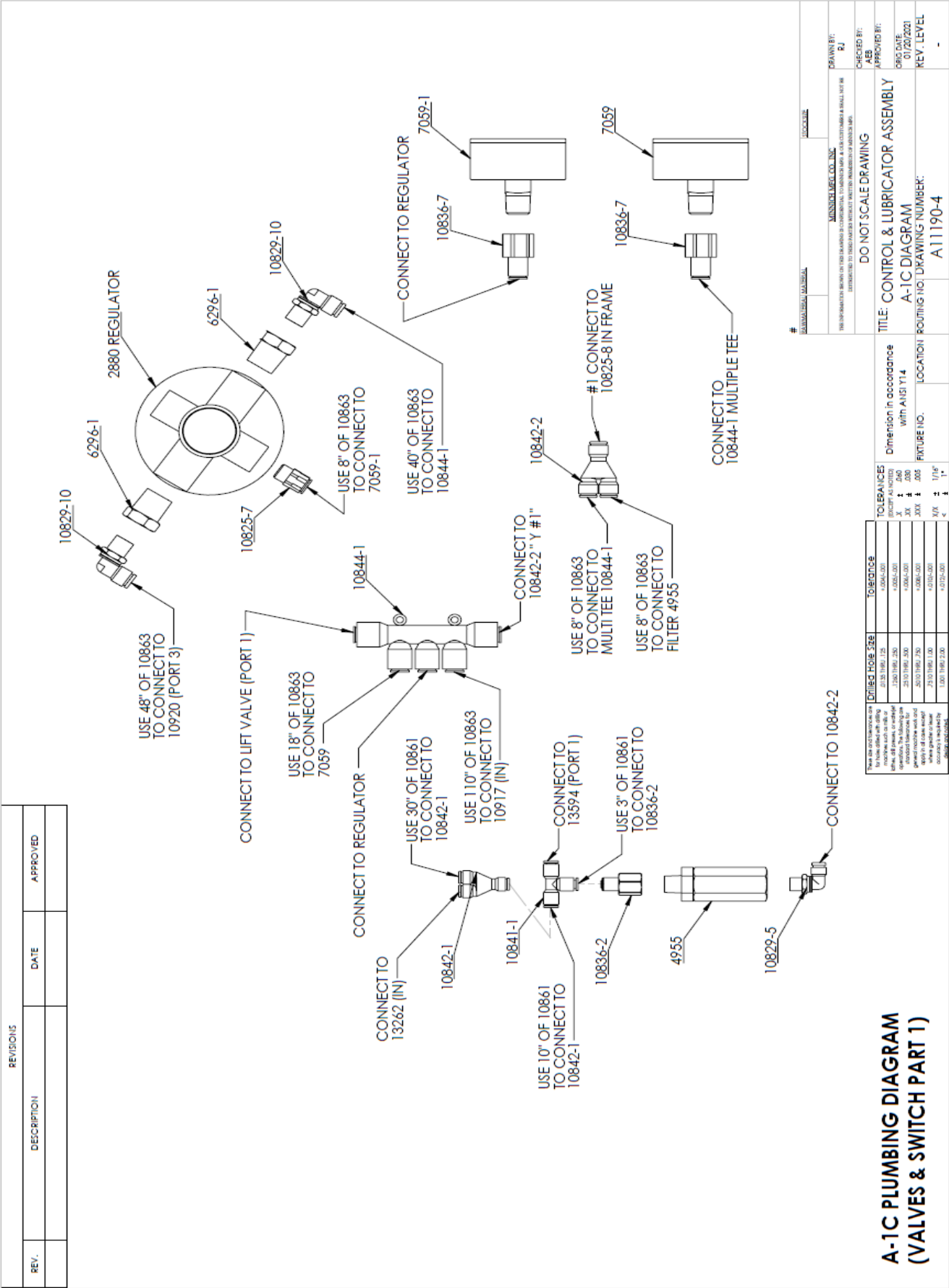


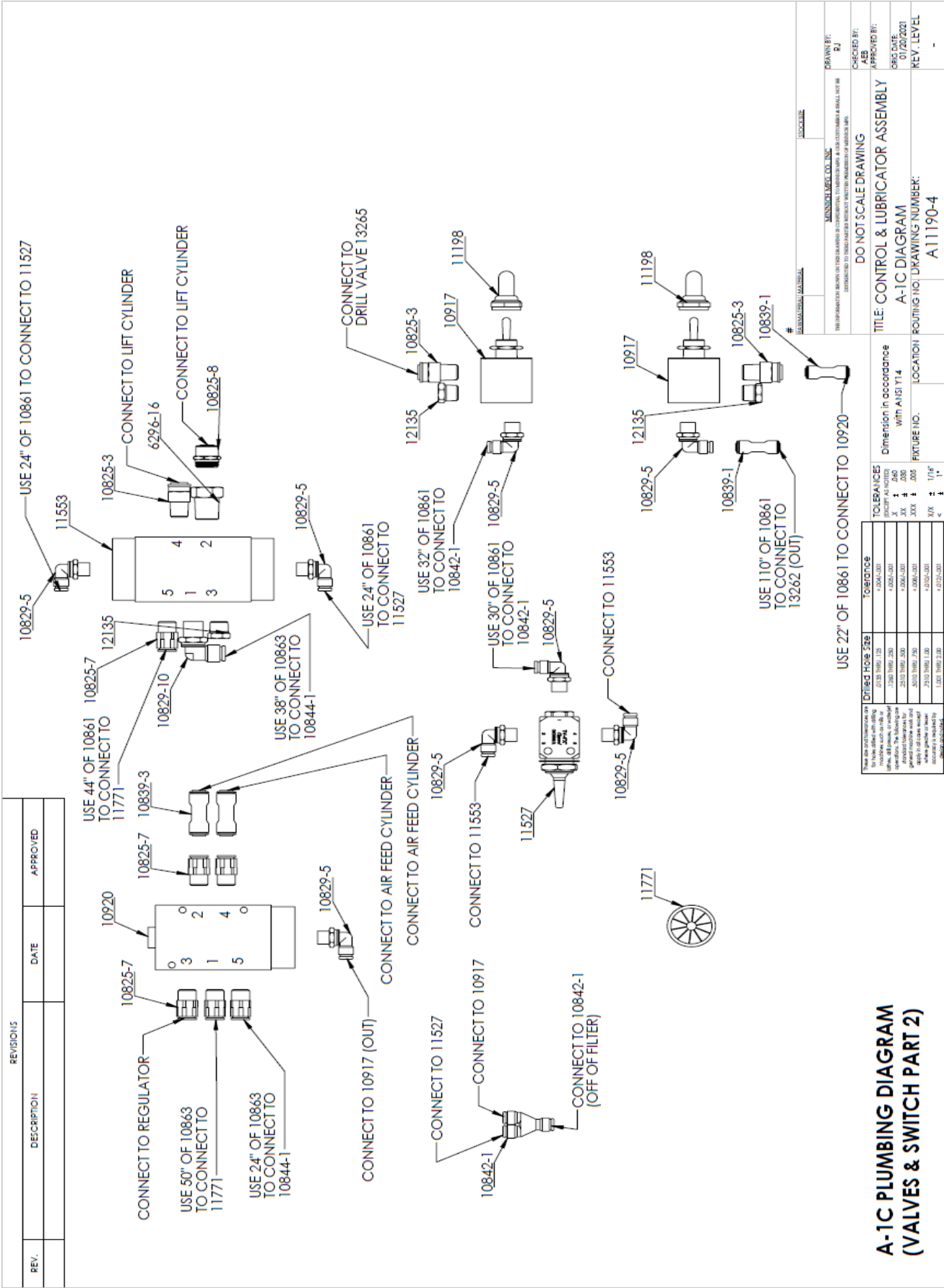
A-1C PLUMBING DIAGRAM (CYLINDERS)

There are two tolerances on for holes drilled with drilling machines, such as mills or drills, that permit, or exclude operations. The following are general machine work and apply in all cases, except where greater or lesser accuracy is required by	Drilled Hole Size	Tolerance
	20 to 28 1/64" .125	±.0004-.001
	29 to 30 1/64" .250	±.0005-.001
	31 to 36 1/64" .500	±.0006-.001
	37 to 43 1/64" .750	±.0008-.001
	44 to 49 1/64" 1.000	±.0010-.001
	50 to 58 1/64" 1.500	±.0015-.001

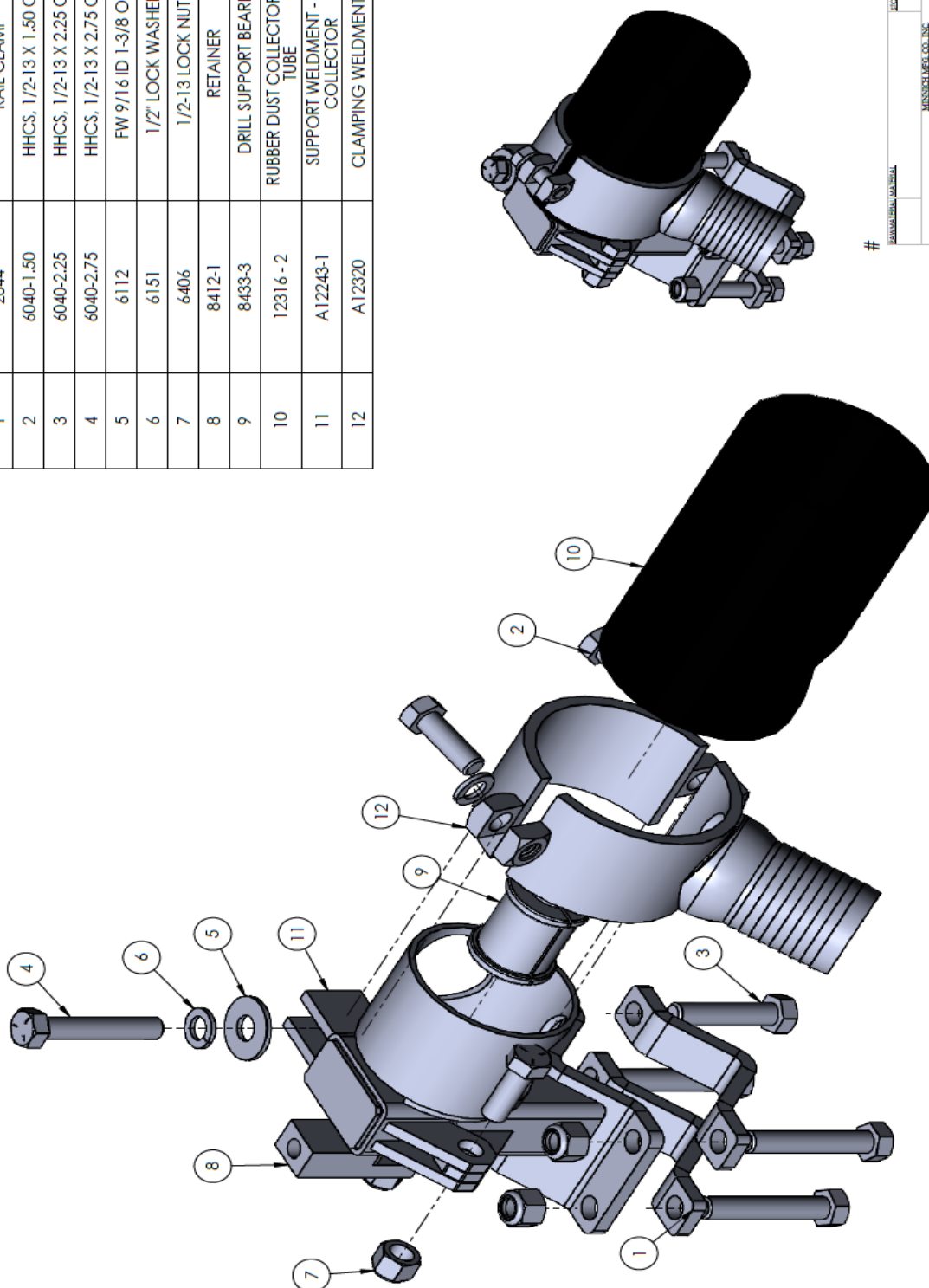
TOLERANCES (EXCEPT AS NOTED)		Dimension in accordance with ANSI Y14	LOCATION
X	± .060		
XX	± .030		
XXX	± .005		
1/X	± 1/16"		

[illegible]





ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2844	RAIL CLAMP	2
2	6040-1.50	HHCS, 1/2-13 X 1.50 GR.5	4
3	6040-2.25	HHCS, 1/2-13 X 2.25 GR.5	1
4	6040-2.75	HHCS, 1/2-13 X 2.75 GR.5	4
5	6112	FW 9/16 ID 1-3/8 OD	1
6	6151	1/2" LOCK WASHER	3
7	6406	1/2-13 LOCK NUT	6
8	8412-1	RETAINER	1
9	8433-3	DRILL SUPPORT BEARING	1
10	12316 - 2	RUBBER DUST COLLECTOR OUTER TUBE	1
11	A12243-1	SUPPORT WELDMENT - DUST COLLECTOR	1
12	A12320	CLAMPING WELDMENT TUBE	1

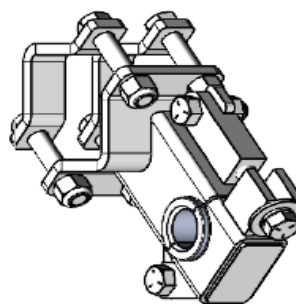
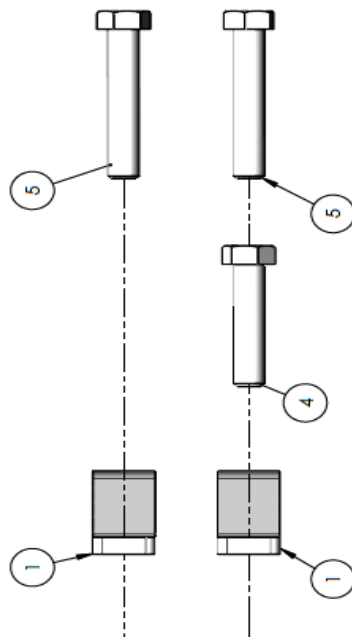
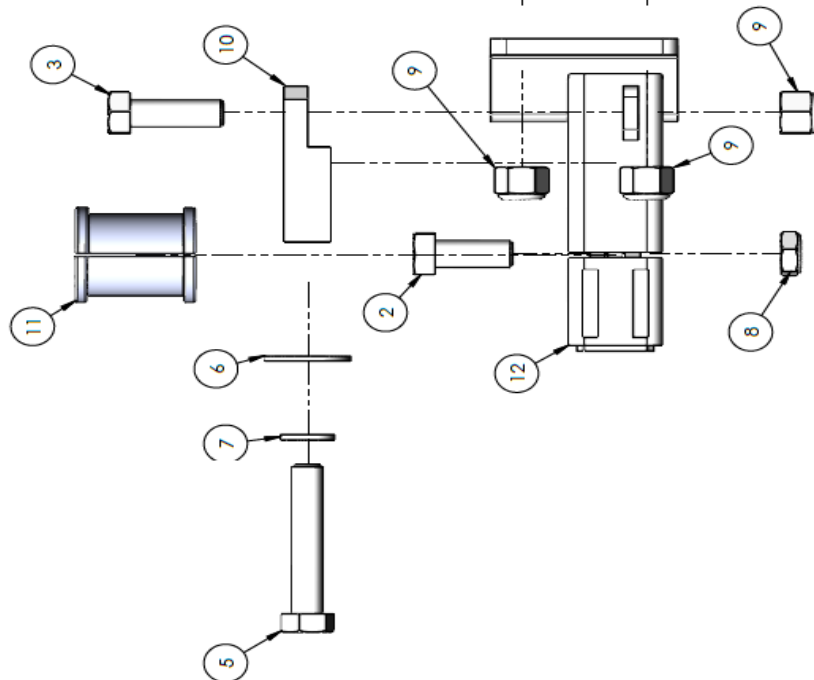


#

TOLERANCES X ± .000 XX ± .005 XXX ± .006		Dimension in accordance with ANSI Y14		TITLE: ROD GUIDE ASSEMBLY		DO NOT SCALE DRAWING		CHECKED BY: ASB		APPROVED BY: 11/14/2018		KEY: LEVEL		ROUTING NO. DRAWING NUMBER: A17248-1		ORIGINAL SIZE: 1/4" X 1/4"		LOCATION:		DRAWN BY: RJ		ALL INFORMATION REMAINS THE PROPERTY OF THE COMPANY AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PERMISSION IN WRITING FROM THE COMPANY.		MONSIEUR JEFF CO., INC.		LOCATION:	
---	--	--	--	------------------------------	--	----------------------	--	--------------------	--	----------------------------	--	------------	--	---	--	----------------------------	--	-----------	--	-----------------	--	---	--	-------------------------	--	-----------	--

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	REMOVED (1) 6040-1.50 AND (1) 6406-1.25 AND (1) 6040-1.25 AND (1) 6392	9/30/2021	AEB

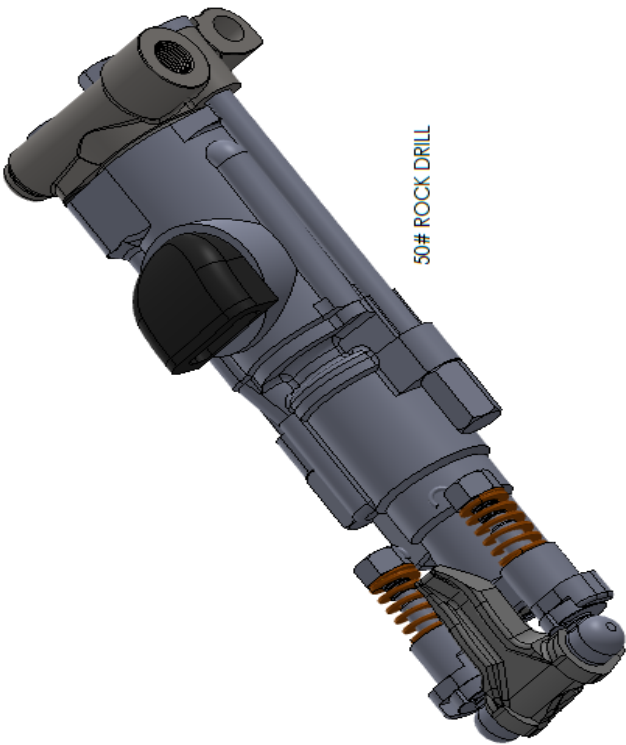
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2844	RAIL CLAMP	2
2	6040-1.25	HHCS, 1/2-13 X 1-1/4 GR.5	1
3	6040-1.50	HHCS, 1/2-13 X 1.50 GR.5	1
4	6040-2.25	HHCS, 1/2-13 X 2.25 GR.5	1
5	6040-2.75	HHCS, 1/2-13 X 2.75 GR.5	4
6	6112	FW 9/16 ID 1-3/8 OD	1
7	6151	1/2" LOCK WASHER	1
8	6392	HALF LOCKNUT 1/2"-13	1
9	006406-00000	1/2-13 LOCK NUT	5
10	8412-1	RETAINER	1
11	8433	BEARING - DRILL SUPPORT	1
12	A9824-9	SUPPORT WELDMT - DRILL ROD	1



0A8458-00000 KIT CONSISTS OF THE FOLLOWING WITH *

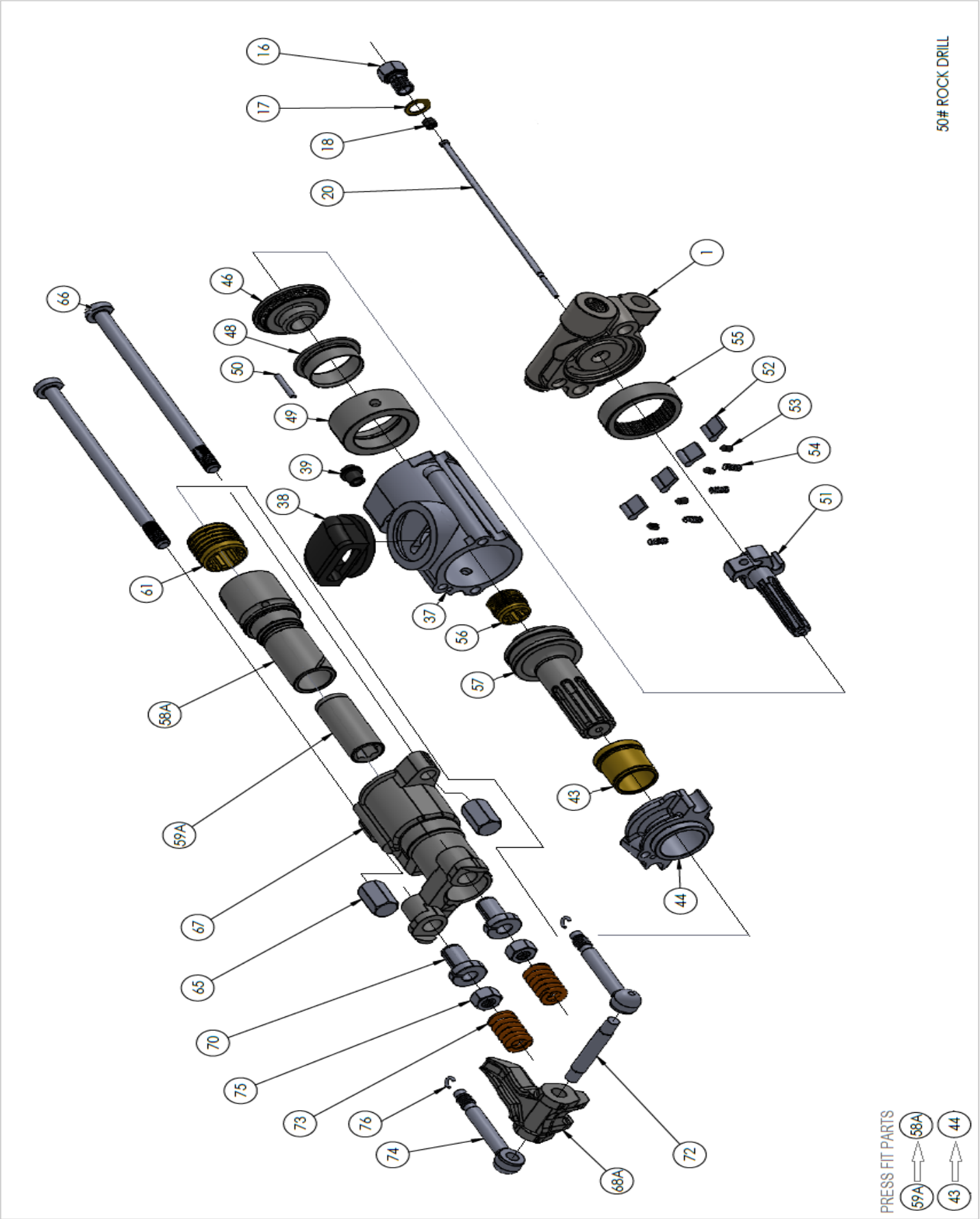
- *008433-00000 SPLIT BEARING - USED FOR ALL BITS 1-1/8" (28.6MM) & LARGER
 *008433-00001 SPLIT BEARING - USED FOR ALL 1" (25.4MM) & 1-1/16" (17.0MM) BITS
 *008433-00002 SPLIT BEARING - USED FOR ALL 7/8" (22.2MM) DIA. BITS
 *008433-00003 SPLIT BEARING - USED FOR ALL 3/4" (19.1MM) DIA. BITS
 *008433-00004 SPLIT BEARING - USED FOR ALL 5/8" (15.9MM) DIA. BITS
 *008433-00005 SPLIT BEARING - USED FOR ALL 1" (25.4MM) HEX STEEL BITS

[illegible]



50# ROCK DRILL

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	009350-00001	BACKHEAD	1
16	009350-00016	BLOW TUBE GLAND	1
17	009350-00017	TUBE GLAND GASKET	1
18	009350-00018	GLAND GASKET	1
20	009350-00020	BLOW TUBE	1
37	009350-00037	CYLINDER	1
38	009350-00038	EXHAUST DEFLECTOR	1
39	009350-00039	CYLINDER GASKET	1
43	009350-00043	BUSHING	1
44	009350-00044	CENTER WASHER	1
46	009350-00046	VALVE CHEST COVER	1
48	009350-00048	AUTOMATIC VALVE	1
49	009350-00049	VALVE CHEST	1
50	009350-00050	VALVE DOWEL PIN	1
51	009350-00051	RIFLE BAR	1
52	009350-00052	ROTATION PAWL	4
53	009350-00053	ROTATION PLUNGER	4
54	009350-00054	PAWL SPRING	4
55	009350-00055	RATCHET RING	1
56	009350-00056	RIFLE NUT	1
57	009350-00057	PISTON	1
58	009350-00058	ROTATION SLEEVE 7/8" X 3-1/4"	1
58A	009350-00058A	ROTATION SLEEVE 7/8" X 4-1/4"	1
59	009350-00059	SLEEVE BUSHING 7/8" X 3-1/4"	1
59A	009350-00059A	SLEEVE BUSHING 7/8" X 4-1/4"	1
61	009350-00061	SLEEVE NUT	1
65	009350-00065	SIDE ROD NUT	2
66	009350-00066	SIDE ROD	2
67	009350-00067	FRONTHEAD	1
68	009350-00068	STEEL RETAINER 7/8" X 3-1/4"	1
68A	009350-00068A	STEEL RETAINER 7/8" X 4-1/4"	1
70	009350-00070	FRONTHEAD BUSHING	2
72	009350-00072	STEEL RETAINER PIN	1
73	009350-00073	STEEL RETAINER SPRING	2
74	009350-00074	STEEL RETAINER BOLT	2
75	009350-00075	STEEL RETAINER NUT	2
76	009350-00076	RETAINER BOLT LOCK CLIP	2



50# ROCK DRILL

Handwriting practice lines with the word MINNICH centered in the middle.

LIMITED WARRANTY, DISCLAIMER AND REMEDIES

Supplier warrants to Customer that the Services shall be provided in a workmanlike manner and that the Goods shall be free from defects in material and workmanship at the date of shipment from Supplier's facility. This warranty shall not run to any person other than Customer.

All claims under this warranty must be made in writing and delivered to Supplier prior to the expiration of one (1) year after the Goods have been delivered (or, if applicable, within one (1) year after the Services have been performed) or be forever barred. Supplier will repair or replace Goods or parts recognized and acknowledged by Supplier as being defective at the time of delivery without charge. However, Supplier will bill Customer for Goods and/or Services not covered by the warranty, including travel expenses incurred while performing warranty service calls. EQUIPMENT, COMPONENTS OR OTHER GOODS FURNISHED THAT ARE NOT MANUFACTURED BY SUPPLIER ARE ONLY COVERED TO THE EXTENT OF THE ORIGINAL MANUFACTURER'S WARRANTY, WHICH MAY VARY FROM THE ABOVE. Further, the above warranty shall not apply to any hardware or software that has been repaired or altered without Supplier's written permission by anyone other than Supplier's personnel. The foregoing states the sole and exclusive remedy for any breach of warranty or for any other claim based on any defect in, or nonperformance of, the Goods or Services, whether based upon contract, warranty, negligence, tort (including strict liability) or otherwise.

NO EXPRESS WARRANTIES AND NO IMPLIED WARRANTIES, WHETHER OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR WEAR CAPACITY, OR OTHERWISE, SHALL APPLY TO THE GOODS AND SERVICES. SUPPLIER SPECIFICALLY DISCLAIMS AND EXCLUDES ALL OTHER EXPRESS AND IMPLIED WARRANTIES. NO WAIVER, ALTERATION, ADDITION OR MODIFICATION OF THE FOREGOING SHALL BE VALID UNLESS MADE IN WRITING AND SIGNED BY AN EXECUTIVE OFFICER OF SUPPLIER. IN NO EVENT WILL SUPPLIER BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

WHAT IS NOT COVERED

This Limited Warranty does not cover any damage, deterioration or malfunction resulting from normal wear or tear, or any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This Limited Warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Minnich to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product.

WHAT IS COVERED

This limited warranty ("Limited Warranty") covers manufacturing defects in materials and workmanship of a product.

WHO IS COVERED:

Only the original purchaser of this product is covered under this Limited Warranty. This Limited Warranty is not transferable to subsequent purchasers or owners of this product. The product must have been purchased directly from Minnich or from an authorized Minnich reseller.

ORDER VIA INTERNET!



Order Online:
<https://www.minnich-mfg.com/login>



- View parts
- Order Parts
- Print specific information
- If you don't have a login give us a call.

ORDER VIA PHONE!



Contact us at:
419-903-0010

SCAN FOR HELPFUL VIDEOS!



WE ACCEPT THE FOLLOWING CARDS!



NON-DEALER AND INTERNATIONAL CUSTOMERS:

Contact Minnich Manufacturing through the following number to locate a dealer near you.
(419-903-0010)

NOTICE

All orders are treated as Standard Orders and will ship the same day if received prior to 3PM EST