MCCOY GLOBAL

TECHNICAL MANUAL

# RP5047-6000

**50 HP, 60 Hz**

**Electrically Driven Hydraulic Power Unit**

**SPECIFICATIONS | OPERATION | MAINTENANCE | PARTS**

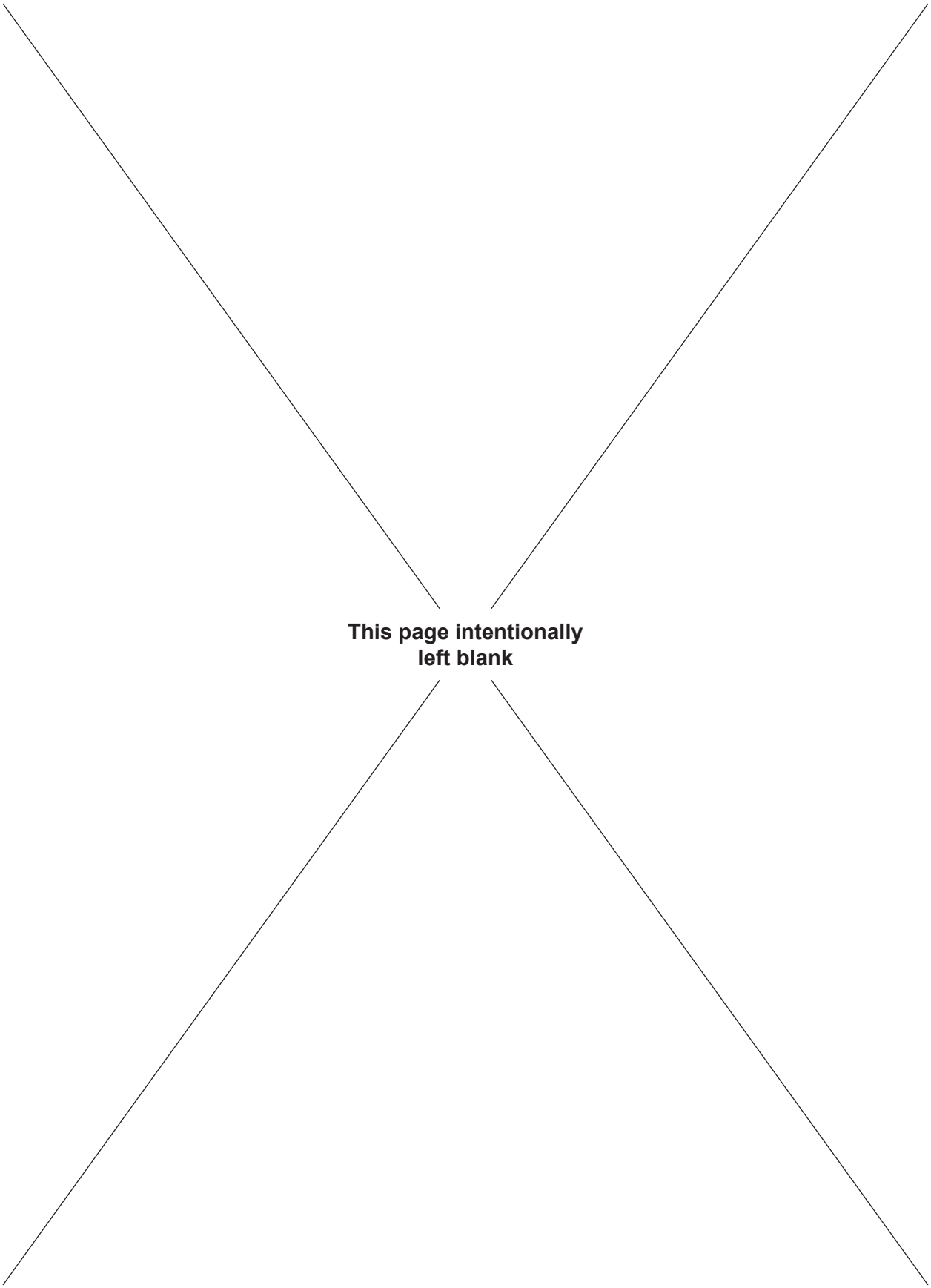
MCCOYGLOBAL.COM

# ORIGINAL INSTRUCTIONS

| THIS TECHNICAL DOCUMENT APPLIES TO THE FOLLOWING MODELS: | | |
|---|---|---|
| **BUCKING UNIT MODEL** | **REV** | **DESCRIPTION** |
| RP5047-6000 | A | 8-bank electrically driven hydraulic power unit / control console |

**McCoy has made an effort ensure that all illustrations are accurate, but please note that some illustrations used in this manual may not exactly visually match your equipment.**

## PATENTED & PATENTS PENDING



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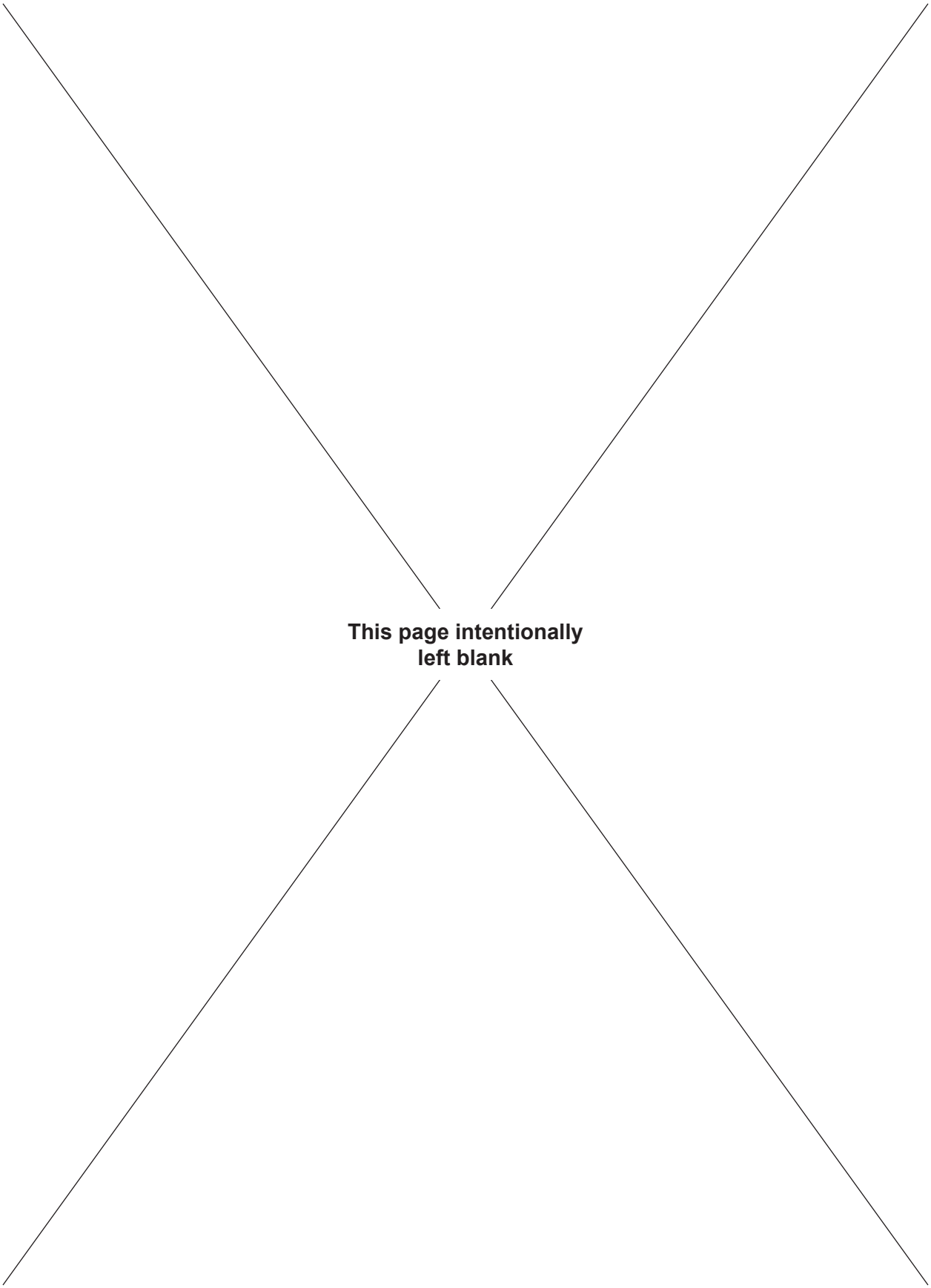
McCoy has made every effort to ensure the information contained in this document is accurate and current. This manual is intended to provide equipment operation and safety instructions for your equipment. However, McCoy does not warrant or guarantee that the information is either complete or accurate in every respect and the user of the manual should consult with its McCoy sales representative for any clarifications and updates.

The user of the manual shall protect, indemnify, and hold harmless McCoy and its directors, officers, employees, and agents from and against all liability for personal injury, death, or property damage resulting directly or indirectly from the use of the information contained in this manual.

Observance of all descriptions, information and instructions set out in this manual is the full responsibility of the user. This manual is intended for guidance and informational purposes and must be used in association with adequate training and on-the-job supervision to provide safe and effective equipment use.

It is the responsibility of the user to conform to all regulations and requirements issued by an authority or agency which may affect the operation, safety or equipment integrity, that may overrule the content of this documentation.

The user will acknowledge and obey any general legal or other mandatory regulation in force relating to accident prevention, safety, and equipment integrity.



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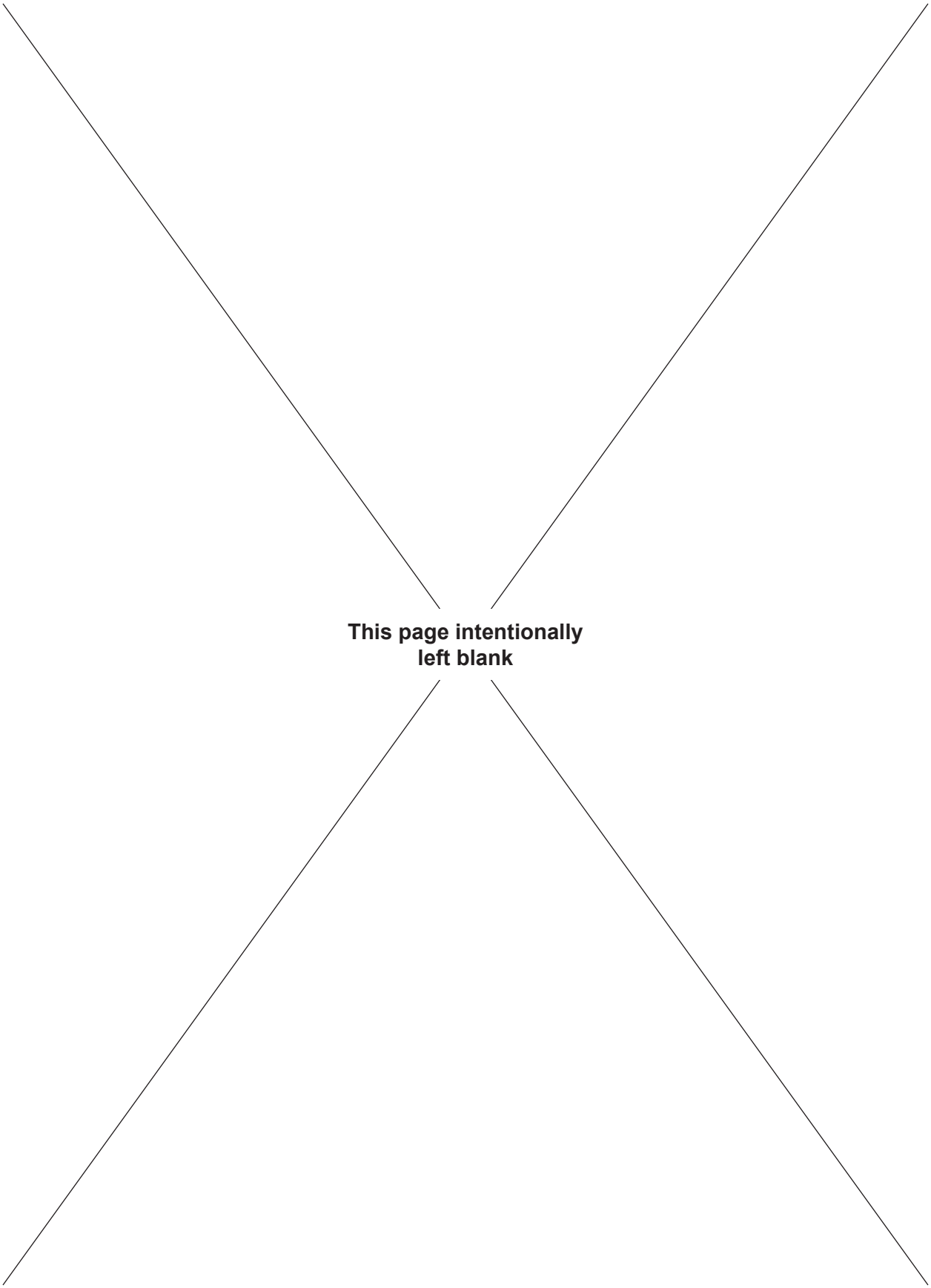
| Summary Of Revisions | |
|---|---|
| **Date** | **Description Of Revision** |
| JAN 2016 | Initial release |



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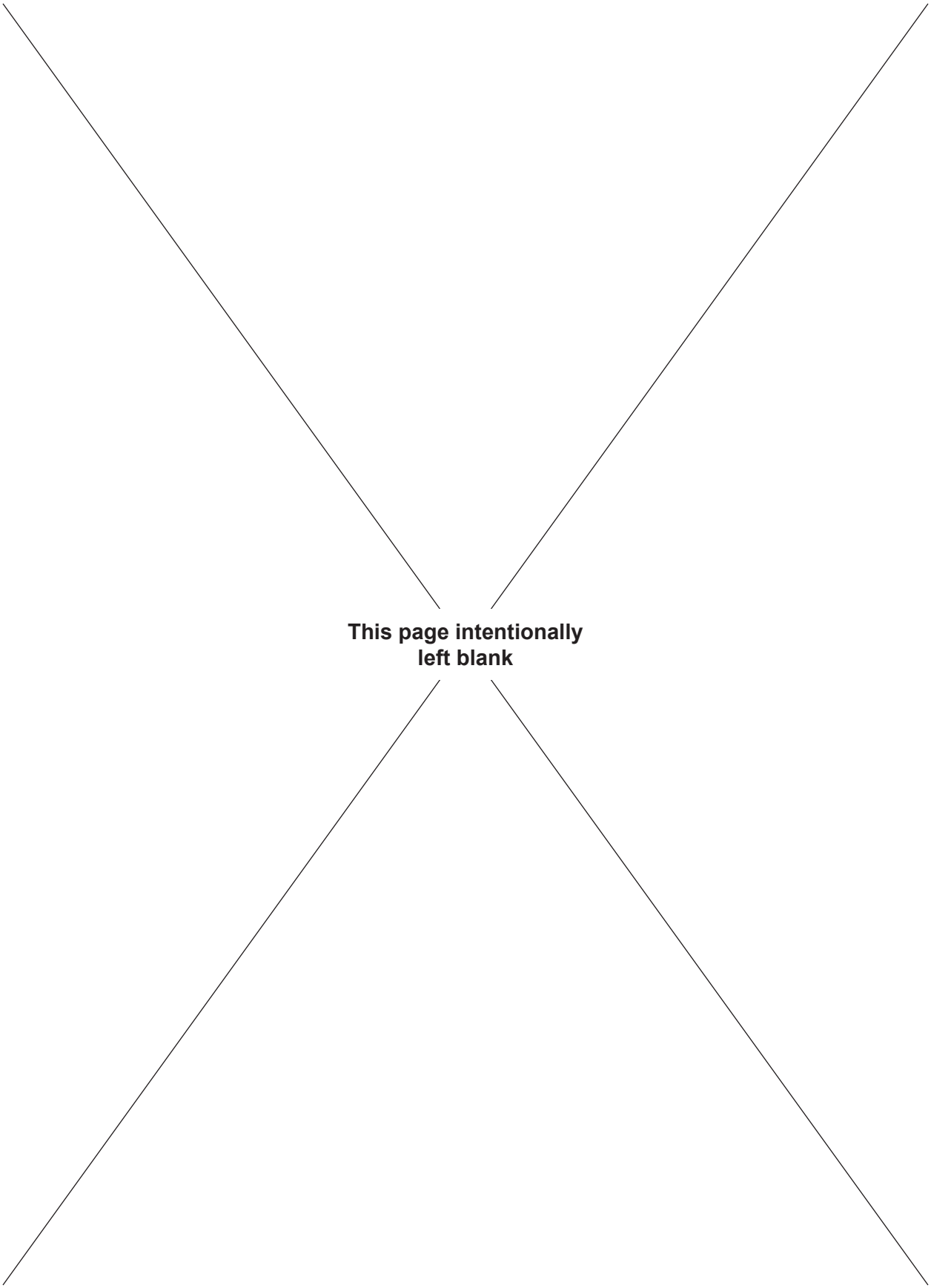
# SECTION 1: INTRODUCTION



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## 1.0 INTRODUCTION & CONTACT INFORMATION

Congratulations, and thank you for purchasing quality tubular connection equipment from McCoy Global. This unit will provide years of outstanding performance. Proper maintenance and care will extend its life and ensure years of excellent performance and reliability. The installation and commissioning, operating, and maintenance instructions in this manual will assist you in giving your equipment the care it requires. Please read the manual before installing and using your equipment. Replacement parts are readily available from McCoy Global. Should you need replacement parts, or should you experience any difficulty not covered in this manual, please contact:


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Standard Terms and Conditions of Sale (including warranty information):

http://www.mccoyglobal.com/tcs.pdf

## 1.1 SCOPE

This technical manual is the main document supplied by McCoy Global for the equipment identified on Page iii of the preamble. The intent of this document is to provide descriptions of the systems, installation, commissioning and operating instructions, maintenance guidelines, spare parts information, and technical drawings and schematics (where applicable).

The OEM-recommended installation, commissioning, operation, maintenance, and troubleshooting instructions are to be regarded as guidelines, and are not intended to be a comprehensive operating guide for user specific application. Due to the wide variety of operating conditions it remains the responsibility of each equipment owner to use these guidelines together with an experienced manager to develop safe operating procedures that conform to American Petroleum Institute (or equivalent) standards, applicable State/Province or local regulations, and any corporate regulations/ operating practices.

## 1.2 GENERAL HEALTH AND SAFETY

# AUTHORIZED USE ONLY!

## READ THIS MANUAL BEFORE USING EQUIPMENT

**Only authorized, trained, and competent personnel shall operate, maintain, and repair this equipment.**

**Fully review this manual and comply with all safety and environmental protection instructions before operating equipment.**

### 1.2.1 Hazard Labels

McCoy Global uses four levels of hazard / notice labels to describe items of four levels of importance:

**DANGER** is represented by a hazard symbol coupled with a "**DANGER**" signal word, and identifies items of the highest level of risk. Failure to heed information identified by a **DANGER** symbol may result in severe bodily injury or death.

**⚠ DANGER**

**THIS IDENTIFIES AN EXTREME HAZARD OF PERSONAL INJURY OR DEATH**

A **WARNING** is represented by a hazard symbol coupled with a bold "**WARNING**" signal word, and identifies items of medium risk. Failure to heed information identified by a **WARNING** symbol may result in significant injury to personnel, catastrophic equipment failure, or harmful environmental contamination.

**⚠ WARNING**

**THIS IDENTIFIES A WARNING REGARDING POTENTIAL INJURY OR CATASTROPHIC EQUIPMENT DAMAGE**

A **CAUTION** is represented by a hazard symbol coupled with a bold "**CAUTION**" signal word, and identifies items of low risk. Failure to heed information identified by a **WARNING** symbol may result in injury to personnel or equipment damage.

**⚠ CAUTION**

**THIS IDENTIFIES A CAUTION REGARDING SAFE OPERATION OR THE POTENTIAL OF EQUIPMENT DAMAGE**

A **NOTICE** highlights information or items of importance unrelated to personal injury that may aid the user during installation, commissioning, assembly, or operation of your equipment.

***NOTICE***

**THIS HIGHLIGHTS ITEMS OF IMPORTANCE UNRELATED TO PERSONAL INJURY**

### 1.2.2 General Safe Operating Guidelines

Only authorized personnel shall operate equipment delivered by McCoy Global. Equipment shall be in a proper technical condition prior to use, and shall be used only for the purpose for which it is intended. Malfunctions or damages must be rectified before operation to ensure personnel safety and avoid equipment damage.

The user is responsible for ensuring the safety of all personnel while operating any McCoy Global product. McCoy Global is not responsible for injuries or equipment damage that arises from improper use of the equipment.

McCoy Global recommends that a hazard assessment of the work area be performed by a designated safety representative before commencing operations. A designated safety representative is responsible for verifying that all operators have adequate equipment and safety training.

**1.2.2 General Safe Operation Guidelines (Continued):**

The area surrounding the equipment operating area must be clutter-free and free from tripping hazards, or protruding objects that may snag hoses or cables. Operating surface or drill floor must be kept free of slipping hazards like grease, oil, water, etc.

Adequate lighting of the work area is required. All warnings, labels, gauges, and signs must be clearly visible.

Equipment components painted green are safe for continuous handling. Areas painted yellow and any other equipment components that rotate or move are designated as hazardous areas. Contact with those areas must be avoided during operation.

**Illustration 1.2.1: Equipment Handling Warnings**

Always wear all personal protective equipment (PPE) specified by established HSE policies. Follow all safety guidelines.

Never attempt to clamp to a tubular using incorrectly sized dies. Operators must always use the correct jaw size equipped with the proper dies. Use of incorrectly size dies poses a hazard to personnel and may damage equipment. Please see Section 3 of this manual for a list of compatible jaw die kits and replacement dies.

**⚠ WARNING**

**NEVER ATTEMPT TO CLAMP ONTO TUBULARS WITH INCORRECTLY SIZED DIES**

**⚠ WARNING**

**BY NATURE, STEEL MACHINERY WITH ROTATING AND MOVING PARTS HAS THE POTENTIAL TO GENERATE IGNITION SOURCES, IE. SPARKS. AS OUTLINED IN THIS MANUAL, SCHEDULED MAINTENANCE, LUBRICATION, TIMELY REPLACEMENT OF WORN COMPONENTS AND MOST IMPORTANTLY, ON-SITE RISK ASSESSMENTS WITH STRINGENT STANDARD OPERATING PROCEDURES ARE ALL REQUIRED TO PREVENT THE POTENTIAL OF SPARK GENERATION.**

**⚠ WARNING**

**FAILURE TO FOLLOW THE EQUIPMENT PLACEMENT/RIG-UP PROCEDURES OUTLINED IN THIS MANUAL MAY LEAVE EQUIPMENT UNGROUNDED AND AT RISK FOR BUILDING A STATIC CHARGE. ASSESSMENT FOR PROPER GROUNDING MUST BE PERFORMED PRIOR TO OPERATION IN ORDER TO MITIGATE THE SPARK RISKS ASSOCIATED WITH STATIC DISCHARGE.**

### 1.2.3 Rigging and Overhead Lifting

McCoy Global recommends following an industry-accepted standard such as OSHA, ASME B30.9-2006, or manufacturer's guidelines when performing any rigging and overhead lifting. Use by untrained persons is hazardous. Improper use will result in serious injury or death. Do not exceed rated capacity. Slings will fail if damaged, abused, misused, overused, or improperly maintained. Never stand beneath a suspended load.

**⚠ DANGER**

**NEVER STAND BENEATH A SUSPENDED LOAD**

### 1.2.4 Maintenance Safety

All personnel are responsible for performing maintenance tasks in a manner that ensures worker, equipment, and environmental safety, and may require taking additional steps that are not identified in this section.

Maintenance of equipment shall be performed only by designated qualified maintenance personnel. Do not begin a maintenance task without the proper tools or materials on hand, or the proper drawings and documentation necessary.

Isolate the location of the maintenance under way to prevent unaware personnel from inadvertently exposing themselves to a hazard. Use tape, rope, or signage to clearly indicate "off-limits" area.

Where applicable ensure electrical circuits within the affected equipment are deactivated or de-energized by an authorized, qualified person and locked out if necessary. Do not disconnect a live electrical circuit unless location is known to be non-hazardous.

**⚠ DANGER**

**ALWAYS MEASURE ELECTRICAL CIRCUITS TO CONFIRM DEACTIVATION BEFORE PROCEEDING WITH MAINTENANCE**

**⚠ WARNING**

**WHEN REPAINTING EQUIPMENT, THE PAINT COAT BEING APPLIED SHOULD NEVER EXCEED 2MM IN THICKNESS. EXCEEDING THIS THICKNESS MAY FACILITATE STATIC CHARGE BUILDUP AND PRESENT A POSSIBLE SPARK RISK ASSOCIATED WITH STATIC DISCHARGE.**

### 1.2.5 Replacement Parts

All consumable and replacement parts must meet or exceed OEM specifications in order to maintain equipment integrity. Do not replace protective equipment such as hydraulic switches, circuit breakers, and fuses without first consulting with McCoy Global. Do not replace electrical or control hardware without consulting with McCoy Global. Using non-OEM replacement parts without the approval of McCoy Global may void equipment warranty.

### 1.2.6 Environmental Impact

McCoy Global equipment uses materials that may be harmful to the environment if improperly disposed of (hydraulic fluid, grease, fuel, electrical components, etc.). Dispose of all materials according to established environmental protection regulations in conjunction with published federal, state, provincial, and civic legislation.

**In all cases observance of the following is the full responsibility of the user:**

- **all descriptions, information and instructions set out in this manual**
- **any regulation or requirement issued by an authority or agency which may influence operation, safety or integrity of the equipment that overrules the content of this document.**
- **any legal or other mandatory regulation in force governing accident prevention or environmental protection.**

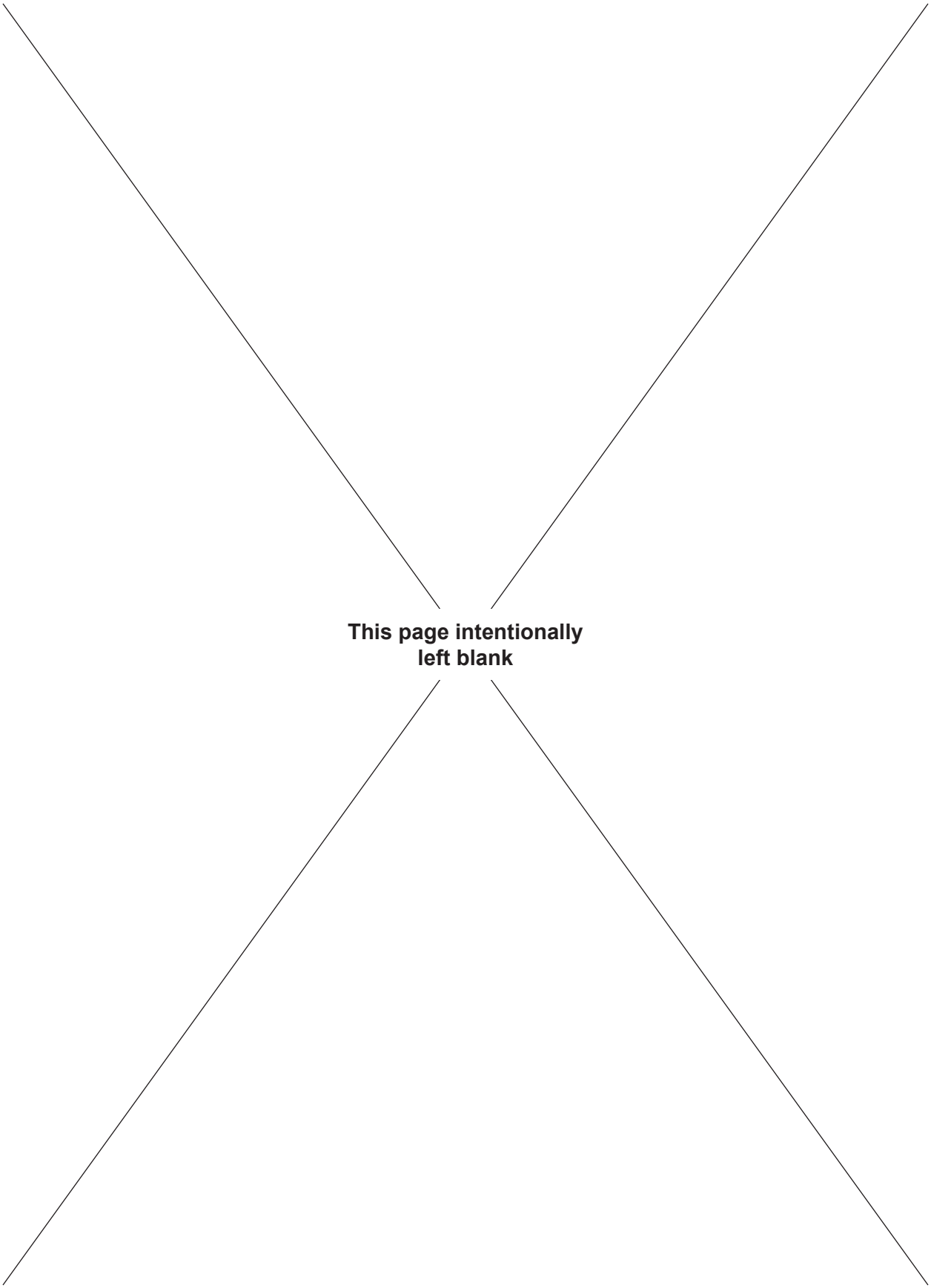
## 1.3 ACRONYMS AND TERMINOLOGY

### 1.3.1 Acronyms and Definitions

| ACRONYM | DEFINITION |
|---|---|
| ANSI | American National Standards Institute |
| API | American Petroleum Institute |
| ASME | American Society of Mechanical Engineers |
| ATEX | Appareils destinés à être utilisés en **AT**mosphères **EX**plosibles |
| BDC | Bottom dead centre |
| CBU | **CLINCHER**®-style backup |
| CE | Conformité Européenne |
| CCW | Counter-clockwise |
| COG | Centre of gravity |
| CW | Clockwise |
| DS | Driller's side |
| EU | European Union |
| HMI | Human-machine interface |
| HPU | Hydraulic power unit |
| HSE | Health, Safety, and Environmental (context: protection) |
| ID | Inside diameter |
| ISO | International Organization for Standardization |
| JDK | Jaw die kit |
| JSA | Job safety assessment |
| LH | Left-hand |
| LJBU | LOCKJAW™ backup |
| MBU | "McCoy style" backup |
| N/A | Not applicable or Not available (context-dependant) |
| NLGI | National Lubricating Grease Institute |
| ODS | Off-driller's side |
| OEM | Original equipment manufacturer |
| OSHA | Occupational Safety and Health Administration |
| OD | Outside diameter |
| PLC | Programmable Logic Controller |
| PPE | Personal Protective Equipment |
| PSI | Pounds per square inch (pressure) |
| RH | Right-hand |
| VAC | Volts, alternating current |
| VDC | Volts, direct current |

### 1.3.2 Terms and Definitions

| TERM | DEFINITION |
|---|---|
| ATEX-certified | Conforms with the EU “ATEX” directive for equipment operated within an explosive atmosphere. |
| Backup | The component of a tong-backup arrangement that mechanically attaches to the stationary side of a tubular connection and provides resistance to the tong when making up or breaking out a joint. |
| Box | The female side of a pipe connection |
| Break Out | Loosening, un-threading, and disconnecting a connection (typically a tubular connection). The term may also apply to a general threaded connection. |
| CE-marked | CE compliant. Conforms with the essential requirements of the applicable Conformité Européenne directives. |
| Clamp | To grasp the stationary side of a pipe joint with a backup. |
| Die | A component of a jaw die kit that provides the mechanical contact between the tong and the tubular. |
| Joint | Also called a “pipe joint”. A threaded tubular connection. |
| Load Cell | A hydraulic device that transmits a proportional signal to a torque gauge for the purpose of measuring connection torque. |
| Make Up | Threading together a connection (typically a tubular connection) and tightening to a specified torque. The term may also apply to a general threaded connection. |
| Pin | The male side of a pipe connection |
| Ring Gear | The rotating component, mechanically coupled to a hydraulic motor through a gear train, which provides rotation to the pin-side of a tubular connection through the use of jaw assemblies |
| Door Switch | A device mechanically connected to the door of a hydraulic power tong that uses hydraulic switching to prevent rotation of the cage plates when the tong door is open. |
| Sling | A rigid or non-rigid device used to hoist a piece of equipment using a crane. |
| Tank | Hydraulic fluid reservoir |
| Tong | The component of a tong-backup arrangement that mechanically attaches to the tubular connection and rotates the tubular to make up or break out a connection |
| Un-clamp | To release the stationary side of a pipe joint with a backup. |
| WINCATT® | Data acquisition and torque/turns management system manufactured by McCoy Global |
| Headstock | The tong assembly on a horizontal bucking unit |
| Tailstock | The backup assembly on a horizontal bucking unit |



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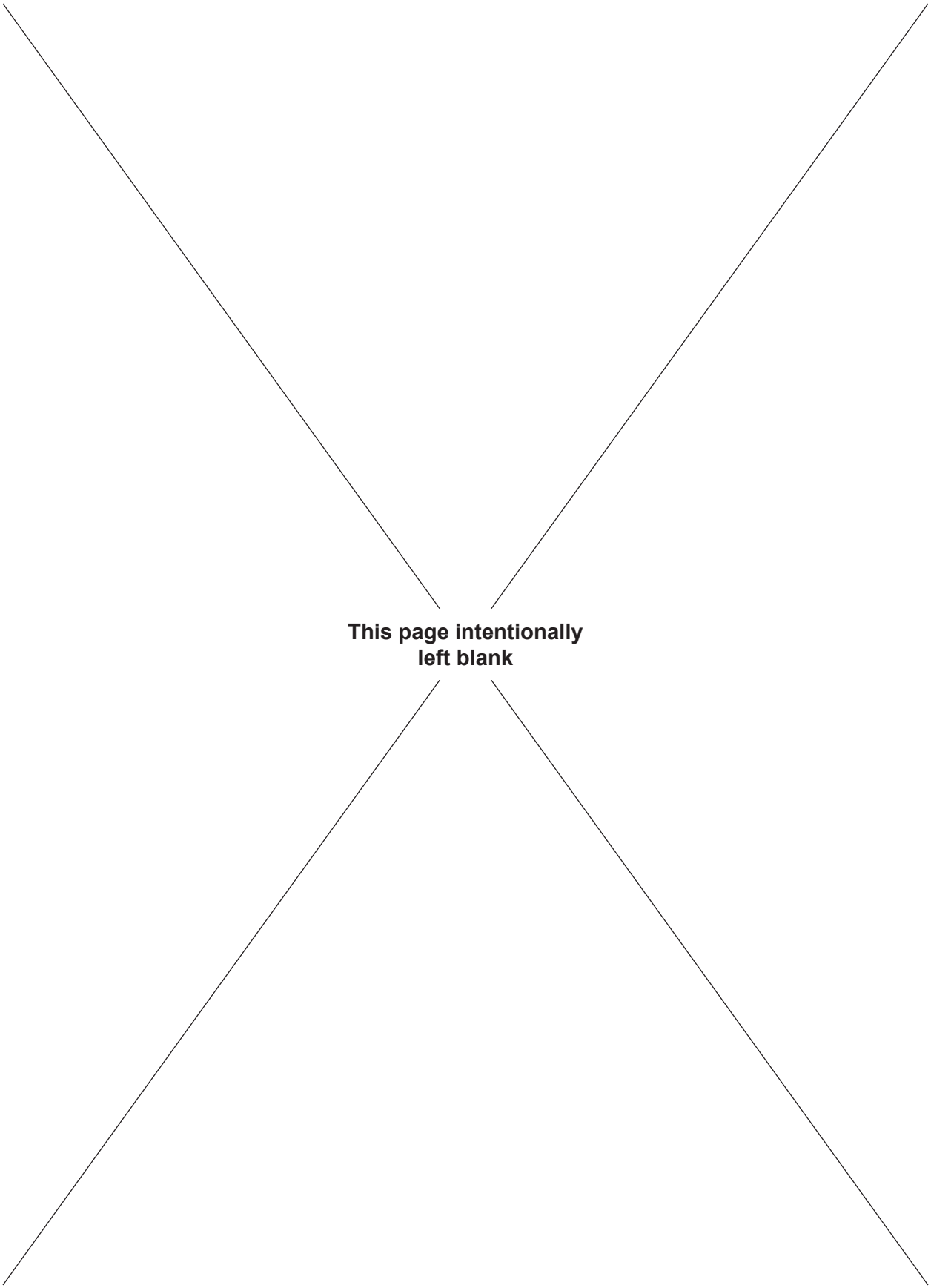
# SECTION 2: EQUIPMENT & LUBRICATION SPECIFICATIONS



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## 2.0 EQUIPMENT DESCRIPTION

This manual provides operational & maintenance instructions as well as spare parts assemblies for the McCoy RP5047-6000 Power Unit / Control Console. The RP5047-6000 is a rugged, self-contained unit designed to be used in conjunction with McCoy RP style bucking units.

Features of the McCoy RP5047-6000 Power Unit / Control Console include:

- E-Stop circuit that will stop the movement of the connected equipment
- Control console with integrated power unit
- Available optional accessories

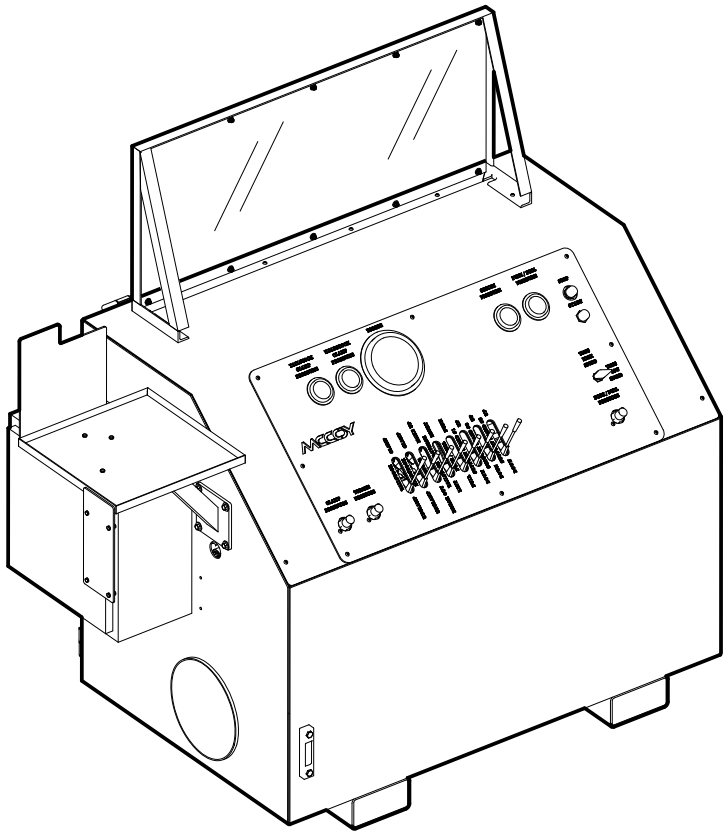


**Illustration 2.0.1: RP5047-6000 Power Unit / Control Console**

## ⚠ WARNING

**ROTATING COMPONENTS OF THIS EQUIPMENT PRESENT SIGNIFICANT HAZARDS WHEN THE EQUIPMENT IS ACTIVE. DO NOT PLACE HANDS NEAR ROTATING COMPONENTS WHILE THE UNIT IS ENERGIZED.**

**THE AREAS HIGHLIGHTED IN YELLOW ON THIS PAGE INDICATE POTENTIAL PINCHING, CRUSHING AND/ OR SNAGGING HAZARDS DURING OPERATION. KEEP CLEAR OF INDICATED AREAS WHEN EQUIPMENT IS ENERGIZED.**

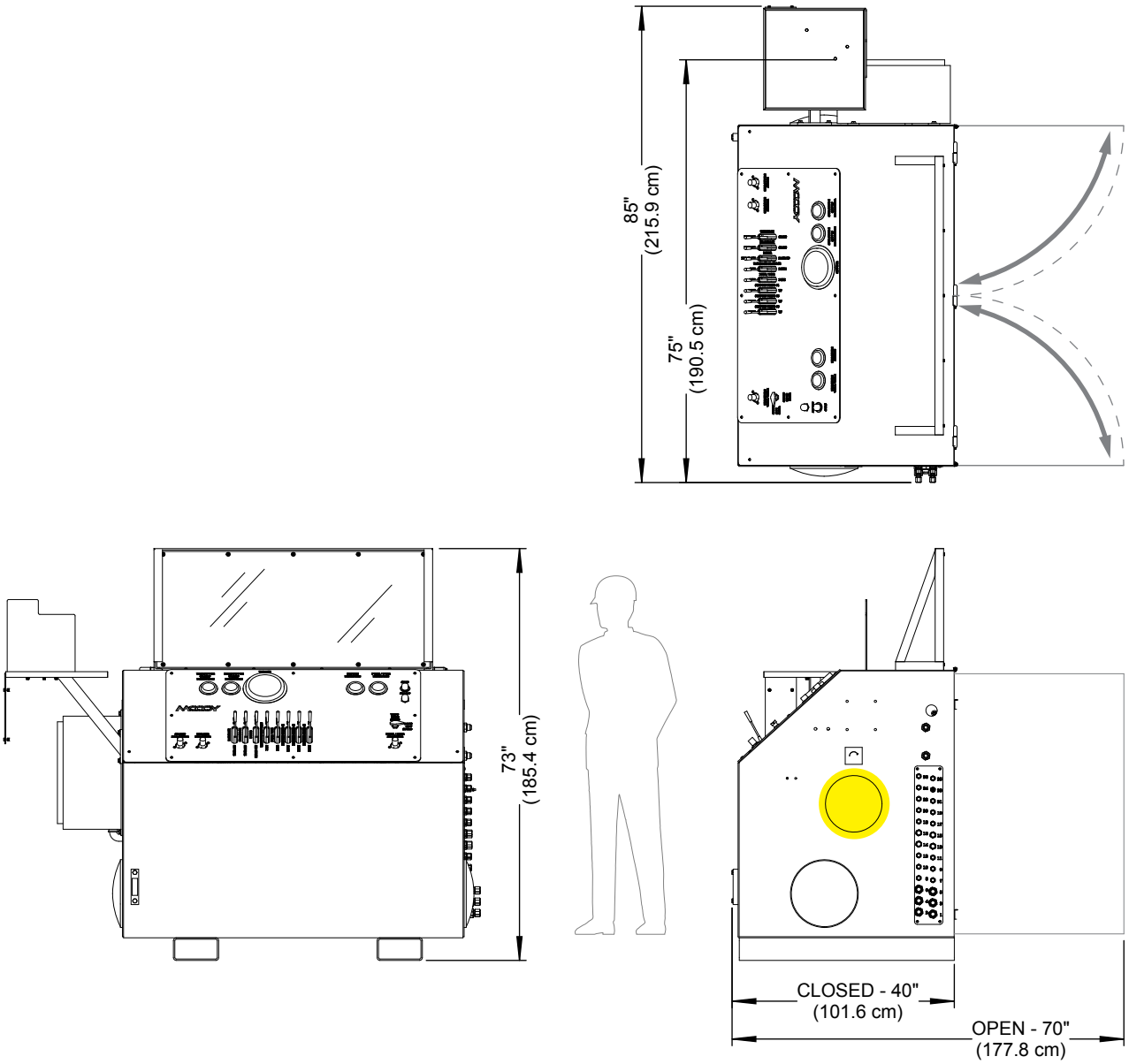
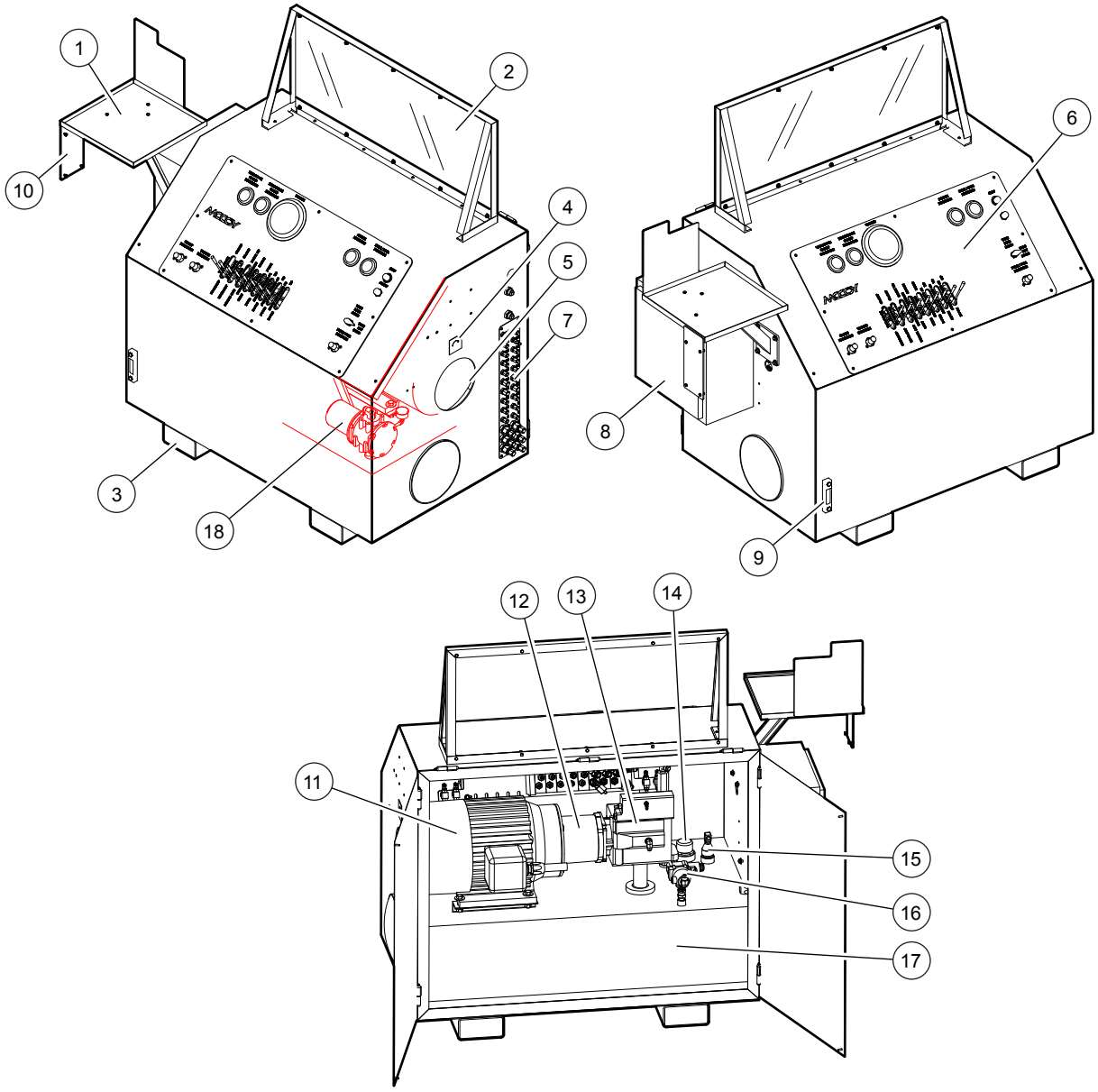



**Illustration 2.0.2: RP5047-6000 Dimensions & Hazard Areas**

## 2.1 MAJOR COMPONENT IDENTIFICATION




| Item | Description | Item | Description |
|---|---|---|---|
| 1 | WINCATT® Torque Turn Computer Tray | 11 | Electric Motor |
| 2 | Protective Shield | 12 | Motor / Pump Coupling |
| 3 | Forklift Tube | 13 | Hydraulic Pump |
| 4 | Motor Rotation Direction Arrow | 14 | Hydraulic Oil Fill Cap |
| 5 | Motor Rotation Observation Window | 15 | Level Switch |
| 6 | Control Panel | 16 | Dump Valve Assembly |
| 7 | Hydraulic Connection Bulkhead | 17 | Hydraulic Oil Reservoir |
| 8 | Electrical Box | 18 | Hydraulic Oil Filter Element |
| 9 | Hydraulic Oil Level Sight Glass | | |
| 10 | Junction Box Mount | | |

**Illustration 2.1.1: RP5047-6000 Component Identification**

## 2.2 EQUIPMENT SPECIFICATIONS

| | |
|---|---|
| **Maximum Hydraulic Flow** | 47 GPM (177.9 LPM) |
| **Maximum Operating Pressure** | 3000 PSI (20.684 MPa) |
| **Dimensions (without accessories)** | See page 2.4 |
| **Power Requirements** | 80 VAC, 3 PH, 60 Hz, TEFC |
| **Electric Motor Output** | 50 HP |
| **Hydraulic Oil Reservoir Capacity** | 90 US Gal. / 340.6 L |
| **Dry Weight (approx. without accessories or oil)** | 3,500 lbs / 1,587 kg |
| **Noise Emissions** | A-weighted (average) 74.4 dB<br>C-weighted (peak) 84.4 dB |

## 2.3 RECOMMENDED LUBRICANT SPECIFICATIONS

### 2.3.1 Hydraulic Fluid

McCoy Global recommends using high-quality hydraulic fluid containing rust & oxidation inhibitors and foam suppressant that meets the following requirements. Operating this equipment using hydraulic fluid that does not meet these requirements greatly accelerates equipment damage due to (but not limited to) premature component wear, premature seal failure, cavitation, and fluid starvation.

**⚠ CAUTION**

**OPERATING THIS EQUIPMENT USING HYDRAULIC FLUID THAT DOES NOT MEET THE LISTED REQUIREMENTS GREATLY ACCELERATES EQUIPMENT DAMAGE.**

| Hydraulic Fluid Standards | |
|---|---|
| **Characteristic** | **Requirement** |
| Maximum viscosity at cold startup | <1000 cSt (<4600 SUS) |
| Operating viscosity range | 100 to 16 cSt (170 to 80 SUS) |
| Minimum viscosity (intermittent periods only) | 10 cSt (60 SUS) |
| Hydraulic fluid operating temperature range | 86 - 140°F (30 - 60°C) - measured in main reservoir |
| Maximum fluid temperature | 180°F (82°C) |
| Fluid cleanliness | Filtered to ISO 4406:1999 (22/18/13) |

Hydraulic fluid should be chosen with due regard to expected climactic conditions and equipment load. Note that this equipment may have been tested using hydraulic fluid that does not meet operational requirements beyond those specified in the above table. Therefore, McCoy recommends purging and flushing the equipment's hydraulic system before connecting to a hydraulic supply.

***NOTICE***

**MCCOY GLOBAL RECOMMENDS PURGING AND FLUSHING THE EQUIPMENT'S HYDRAULIC SYSTEM BEFORE CONNECTING TO A HYDRAULIC SUPPLY.**

### 2.3.2 Gear Fluid

McCoy Global recommends using a high-quality universal gear fluid in gearbox and torque hub assemblies. This equipment is shipped with gear fluid meeting VG150/VG220 or AGMA 4EP/5EP specifications. However, in more extreme operating conditions it may be necessary to fill the gearboxes on the equipment with gear fluid more suitable to the ambient operating environment. Refer to the following table to determine McCoy Global's recommendations for gear fluid selection.

| Gear Fluid Standards | |
|---|---|
| **Operating Condition** | **Requirement** |
| -4°F to 41°F (-20°C to 5°C) | meets ISO VG100 or AGMA 3EP specifications |
| 41°F to 104°F (5°C to 40°C) | meets VG150/VG220 or AGMA 4EP/5EP specifications |
| greater than 104°F (40°C) | meets VG320 or AGMA 6EP specifications |

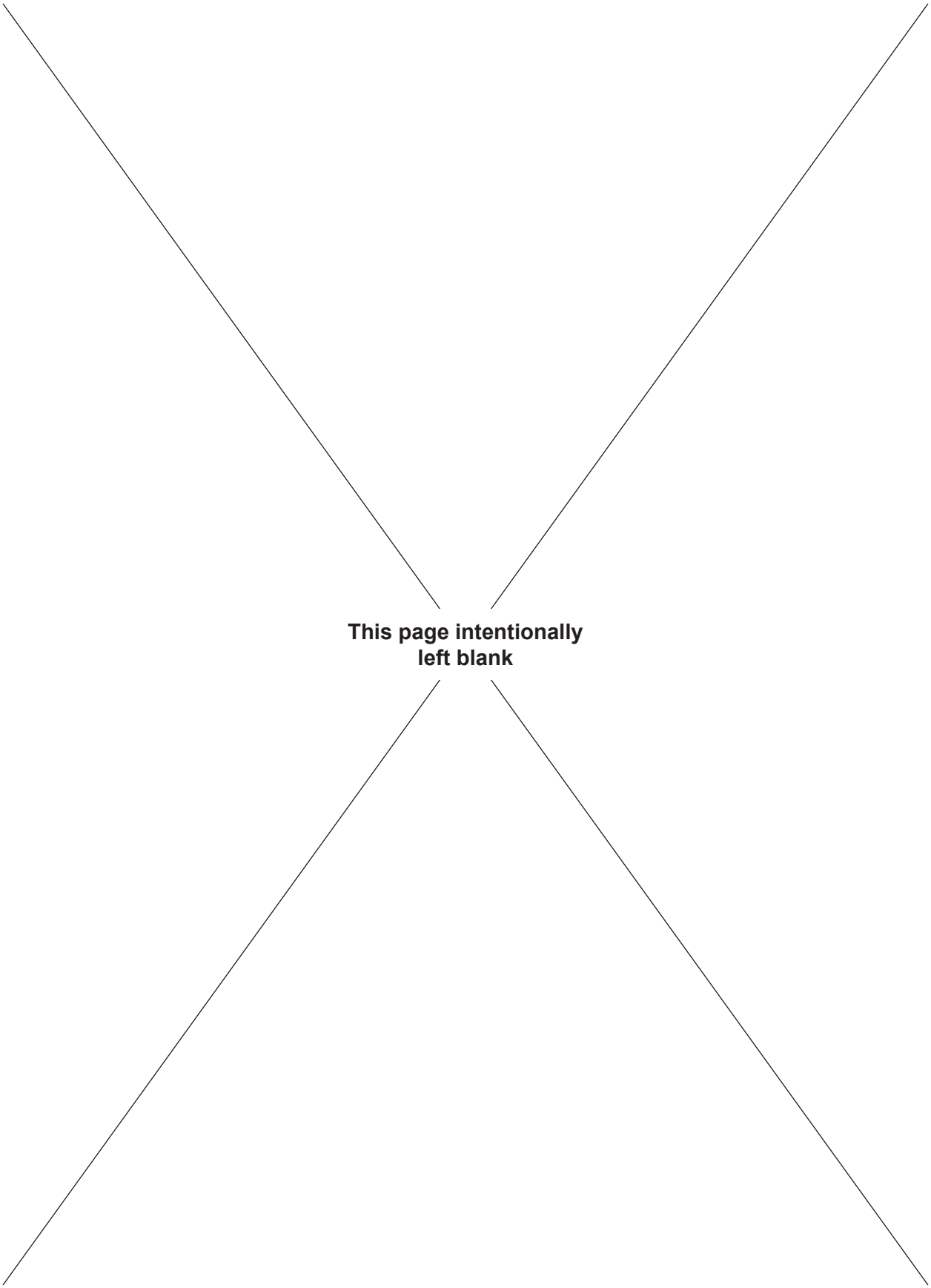
### 2.3.3 Grease

McCoy Global recommends use of a high-quality EP multi-purpose grease with an NLGI consistency grade of "2" and an NLGI performance grade of "GC-LB" for general lubrication of bearings and metal-to-metal contact.

McCoy Global recommends thoroughly greasing the equipment before first use as per the lubrication instructions in Section 5.

**⚠ CAUTION**

**EQUIPMENT IS SHIPPED WITHOUT HYDRAULIC OIL. THE HYDRAULIC OIL RESERVOIR MUST BE FILLED WITH NEW, FILTERED OIL PRIOR TO OPERATION.**



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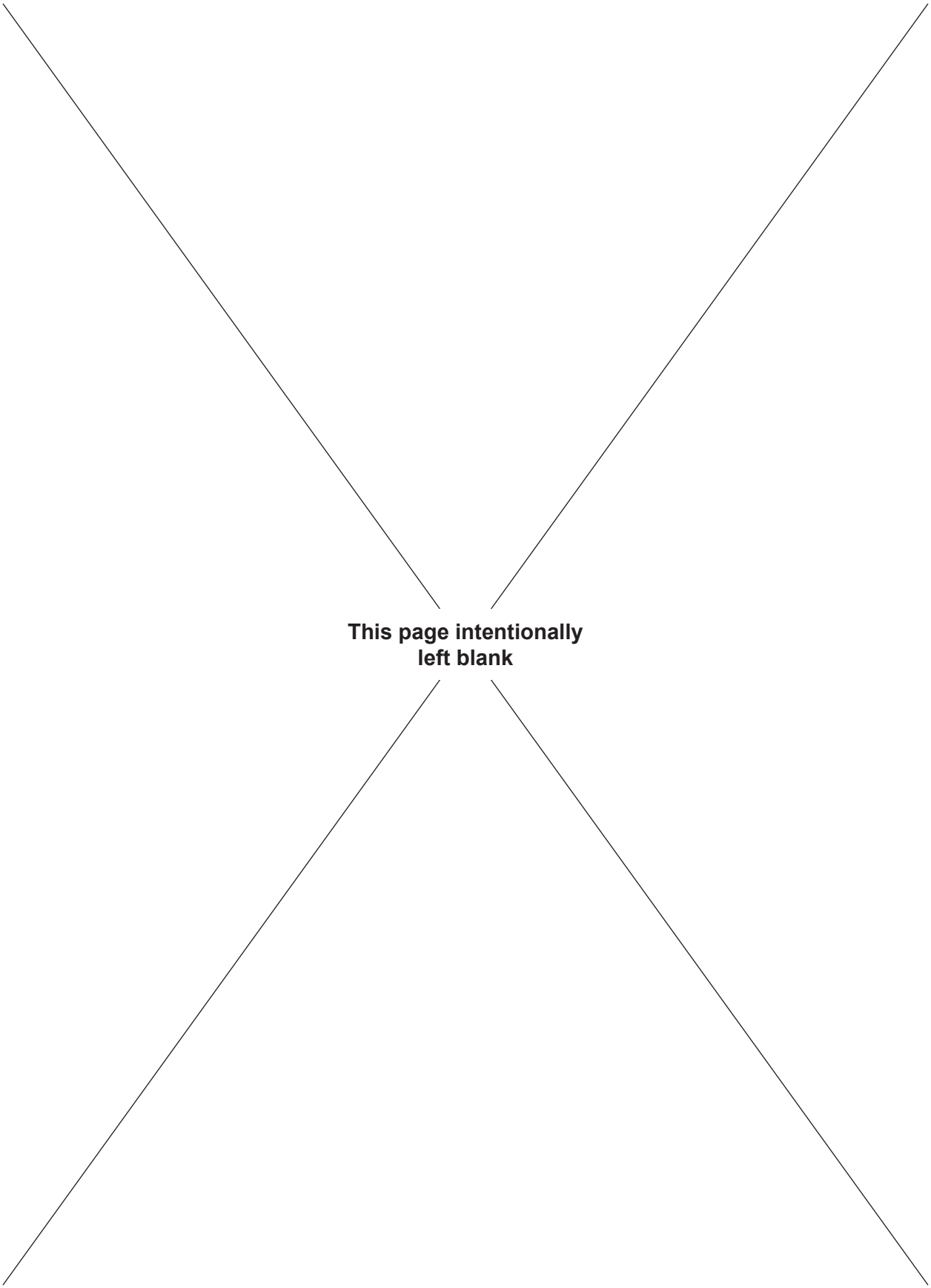
# SECTION 3: INSTALLATION & COMMISSIONING



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Adequate setup and proper hydraulic connections are essential in ensuring reliable operation of McCoy equipment. For best results and long term reliability, read and obey the installation and commissioning instructions in this section.

### 3.0 RECEIPT, INSPECTION, AND HANDLING OF EQUIPMENT

**⚠ CAUTION**

**THIS EQUIPMENT HAS BEEN THOROUGHLY TESTED AND INSPECTED AT THE FACTORY. HOWEVER, MCCOY ADVISES INSPECTING EQUIPMENT FOR SHIPPING DAMAGE UPON RECEIPT AND TESTING EQUIPMENT BEFORE RELEASING TO AN OPERATIONAL ENVIRONMENT.**

Upon receipt inspect packaging materials for shipping damage. Shipping damage may include (but not be limited to) perforation of a crate, misshapen crate, crushed corners, missing hardware, scraped or bent metal, and impact or orientation indicators (like a “tip’n’tell”). Record all shipping damage on the shipping manifest and ensure shipping company and McCoy are immediately contacted.

Remove all protective shipping materials including plastic wrap, desiccant packs, padding, etc and perform a visual inspection of the equipment. Check structural components for bending or buckling indicative of vertical impact. Immediately identify any shipping damage to the shipping company, and correct all damage before connecting equipment to a hydraulic power source.

**⚠ CAUTION**

**EQUIPMENT MAY HAVE SHIPPING COMPONENTS INSTALLED WHICH SERVE TO STABILIZE MOVING COMPONENTS DURING SHIPPING. ALL SHIPPING COMPONENTS MUST BE REMOVED PRIOR TO USE. FAILURE TO DO SO MAY CAUSE EQUIPMENT DAMAGE.**

### 3.0 LIFTING THE EQUIPMENT

Lifting should be performed using a forklift through the forklift lifting tubes on the bottom of the equipment. Assure all hoses and cables are disconnected and any connected accessories are removed prior to lifting.

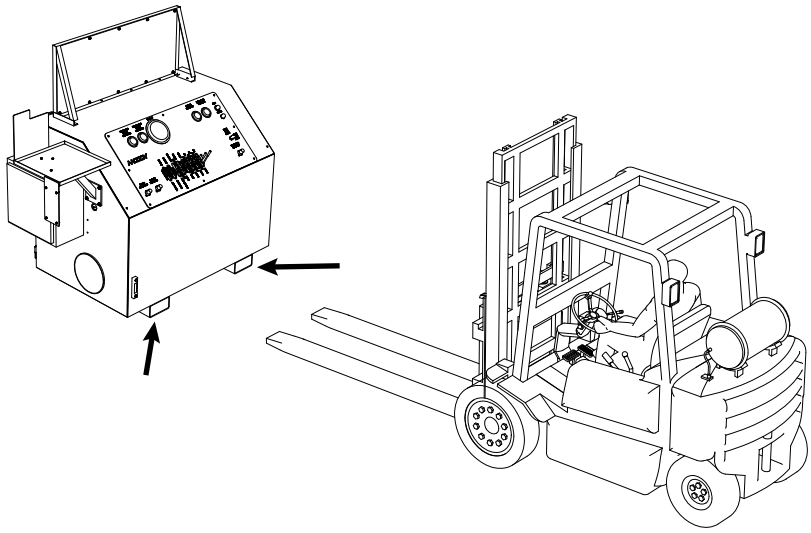
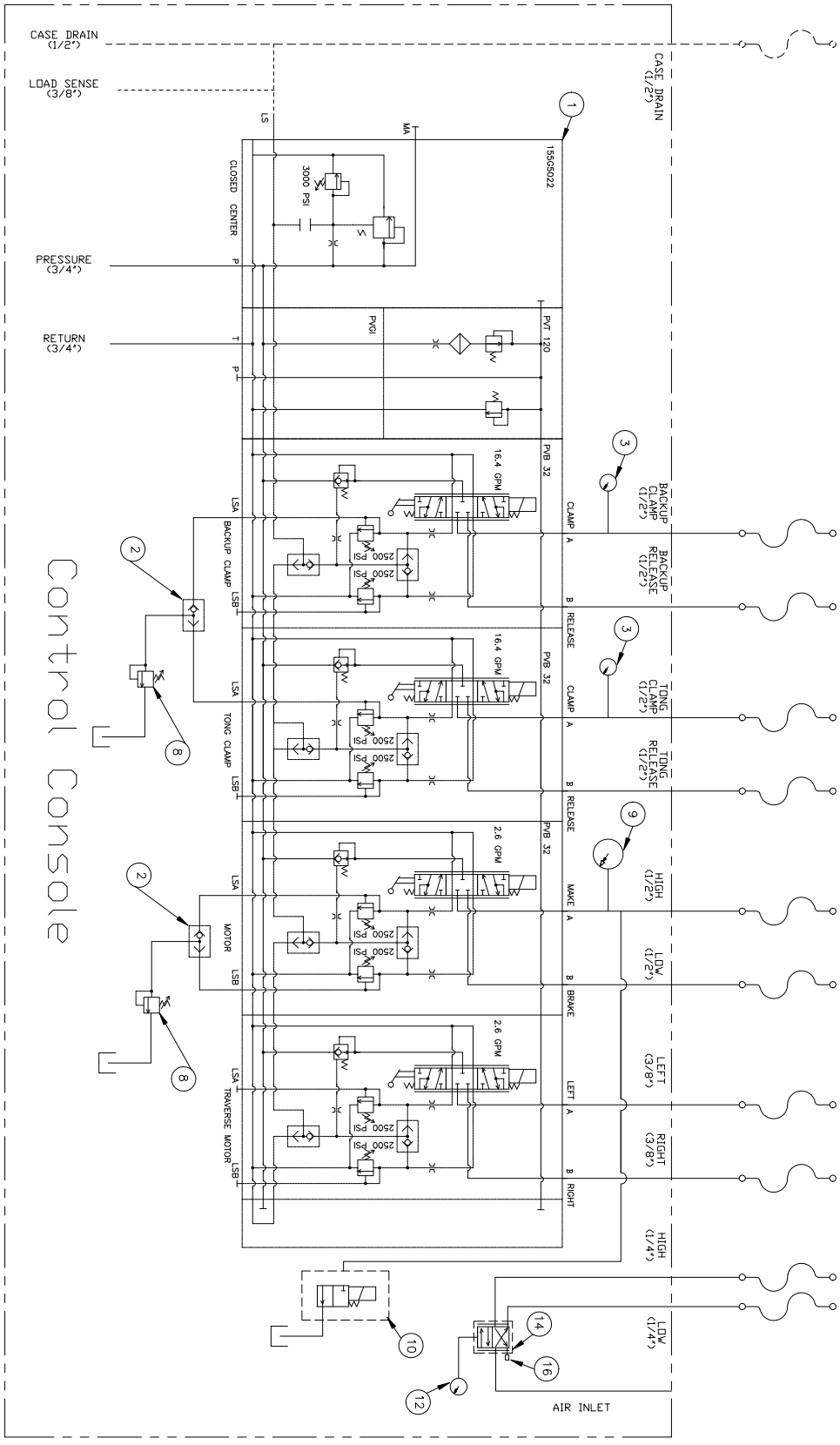


**Illustration 3.0.1: RP5047-6000 Forklift Lifting Procedure**

## 3.1 HYDRAULICS & ELETRONICS

### 3.1.1 Hydraulic Schematic



### 3.1.2 Main Hydraulic Connections

Hydraulic hoses are connected to the console through the hydraulic bulkhead located on the side of the power unit, as well as the bulkhead located on the skid of the bucking unit. When connecting to hydraulic equipment, match the tag numbers attached to hydraulic hoses to the matching connection number on the hydraulic bulkhead.

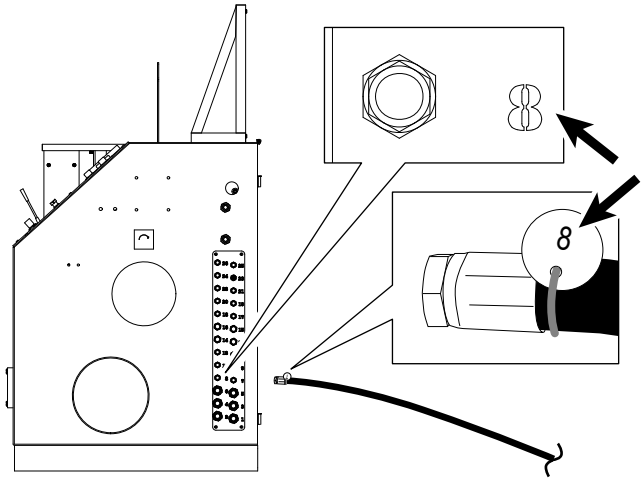



**Illustration 3.1.1: Hydraulic Connection Labels**

Inspect all connectors for damage, debris, or other contaminants before performing hydraulic connections. Clean connectors using compressed air or an approved cleaning solvent and lint-free cloth. Always cover disconnected fittings with clean brass or plastic dust caps, typically attached to each connector with a lightweight chain or flexible line. These caps provide significant protection from dust, dirt, other contaminants, and impact damage.

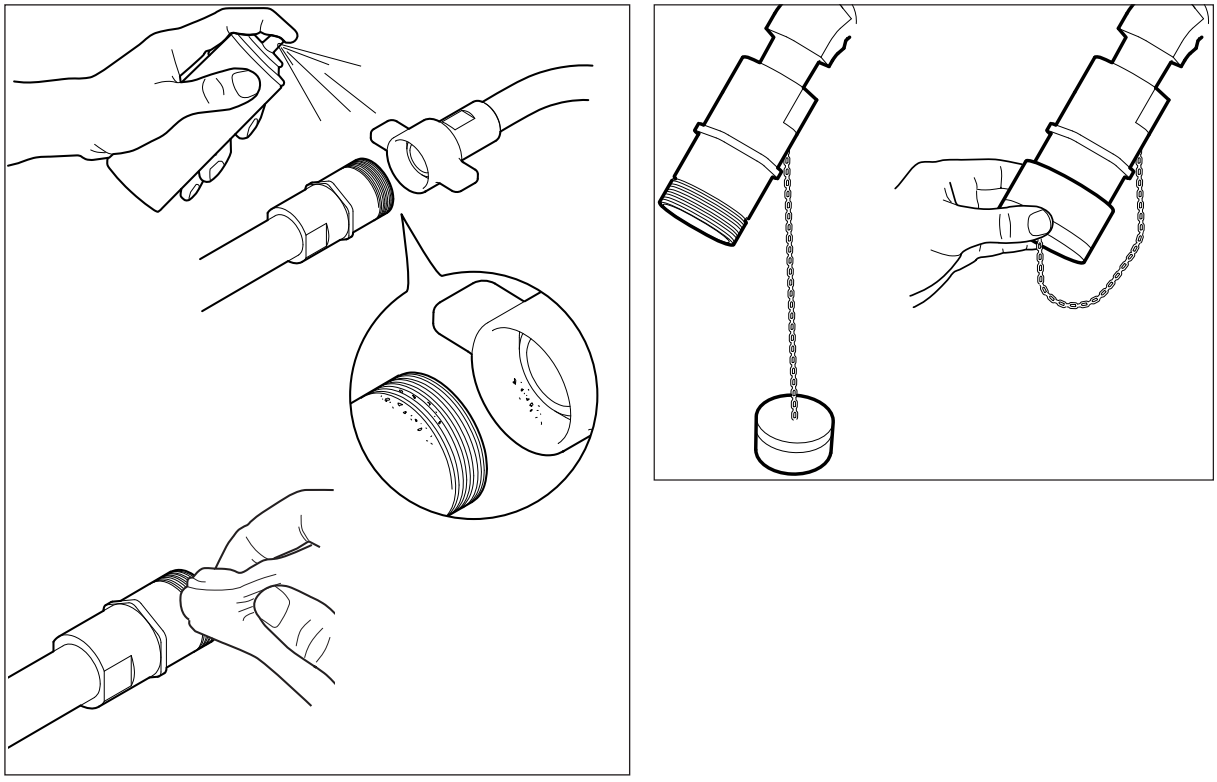


**Illustration 3.1.2: Hydraulic Connection Cleaning / Maintenance**

### 3.1.2 Main Hydraulic Connections (Continued):

Hydraulic connections should only be broken out or made up when the hydraulic system is de-energized.

Hydraulic disconnects should always be fully made up to the “fully engaged” position. Inspect all hydraulic connections before energizing hydraulic power to ensure secure connections have been made. Suppling full hydraulic pressure without ensuring an established return line may result in system damage.

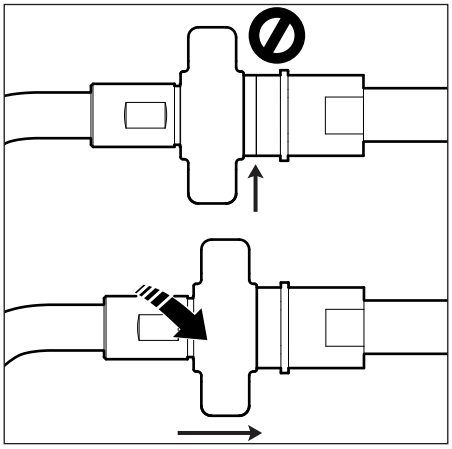


**Illustration 3.1.3: Securing Hydraulic Connections**

Inspect these connections upon activation of the power unit. Leaking components must be repaired before releasing the tong to the operational environment. Deactivate the power unit and depressurize the hydraulic system according to the procedure in Section 4. Disconnect the main hydraulic connections and inspect all four connectors (two male, two female) for damage or debris. If the connectors cannot be cleaned or easily repaired, replace the leaking connector. Note that damage to one of the connectors may have caused damage to its mate.

Turn off power unit and depressurize hydraulic system before disconnecting the main hydraulic lines under normal working conditions. See Section 4 for hydraulic system depressurization. McCoy recommends placing protective caps over the exposed connectors to protect them from water and impact damage.

**⚠ WARNING**

**ALWAYS TURN OFF HYDRAULIC POWER AND DEPRESSURIZE HYDRAULIC SYSTEM BEFORE DISCONNECTING MAIN HYDRAULIC LINES.**

## 3.3 MOUNTING TORQUE TURN SYSTEMS

### 3.3.1 Mounting a WINCATT® Torque Turn Computer

A torque turn computer may be mounted on the attached torque turn computer tray. When installing computers and accessories, assure that they are properly secured in place before connecting for use.

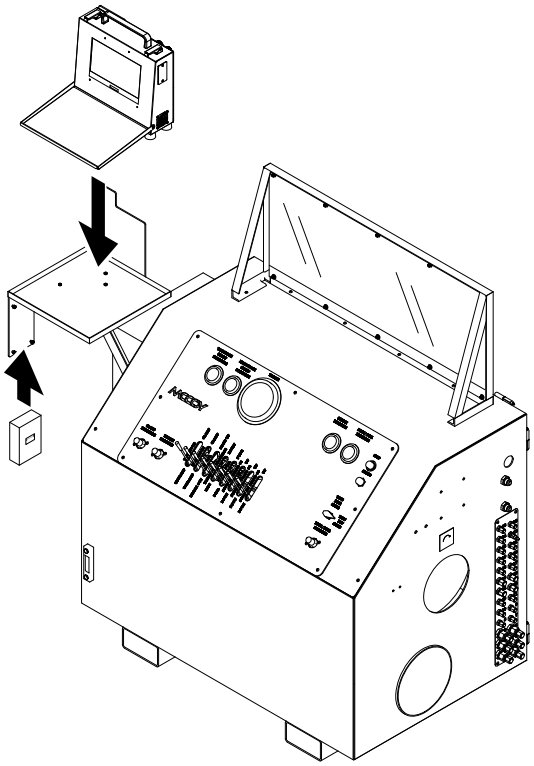


**Illustration 3.3.1: Torque Turn Computer Installation**

## 3.4 UNIT PLACEMENT & SETUP

### 3.4.1 Operational Surface

The Control Console / Power Unit must be placed on a level surface for operation.

### 3.4.2 Component Placement / Ventilation Considerations

When setting up the work area, it is critical to take into account space needed for the following:

- Placement of the Control Console so that the operator has a clear line of sight over all equipment components (and their full range of motion) during operation
- Operators are situated behind Control Console Safety Shield
- A minimum of 3 ft. (91.4 cm) clear space is maintained around the unit to accommodate maintenance efforts
- Any surrounding personnel are a minimum of 3 ft. (91.4 cm) away from equipment and tubular loading areas

**⚠ WARNING**

**THE EQUIPMENT OPERATOR MUST MAINTAIN A CLEAR LINE OF SIGHT OF ALL EQUIPMENT COMPONENTS DURING OPERATION. ALL PERSONNEL MUST STAY CLEAR OF EQUIPMENT DURING OPERATION.**

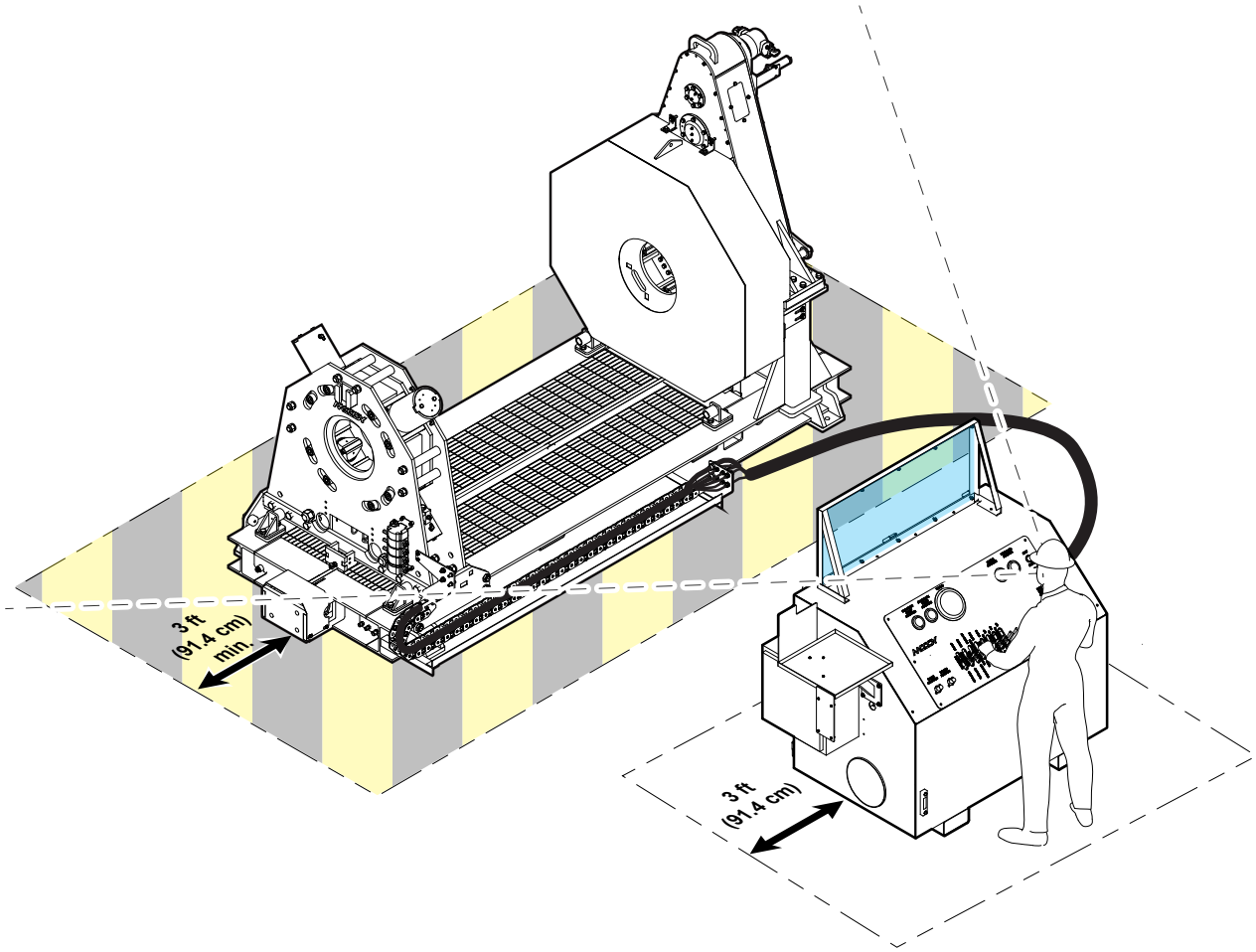



Illustration 3.4.1: Operator Line of Sight & Equipment Placement

### 3.4.3 Adjusting Clamp & Torque Pressure

The Clamp Pressure and Torque Pressure controls regulate pressure in the backup and tong respectively. These valves require occasional adjustment to compensate for wear of the jaw die inserts and for re-setting the pressures to factory specification when new die inserts are installed. Occasional lowering of pressure may be required for thin-walled pipe or tubing, or if the unit is being used in non-marking applications. Ideal pressure must be determined based on the parameters of the connection to be made up.

Use this procedure to check and adjust the clamp/torque pressure:

1. The assembly must be connected to an active hydraulic fluid power source to perform this procedure.
2. Use the Tailstock Clamp / Unclamp lever to fully extend the backup clamp cylinder (see Section 4 for hydraulic operating instructions). When the cylinder is fully extended, do not release the valve lever.
3. Backup clamping pressure is displayed on the Clamp Pressure gauge. Rotating the relief valve clockwise will increase the pressure, rotating the relief valve counter-clockwise will decrease the pressure.

**⚠ CAUTION**

**CLAMP/TORQUE PRESSURE MUST BE DETERMINED ON A PER-CONNECTION BASIS AND MUST TAKE INTO ACCOUNT THE REQUIREMENTS AND STRUCTURAL LIMITATIONS OF THE CONNECTION.**

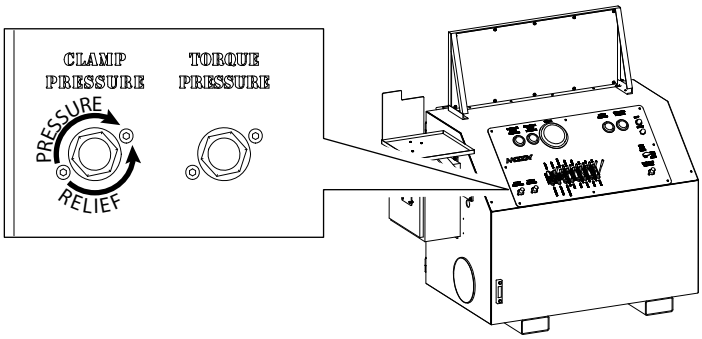



**Illustration 3.4.2: Backup Clamp Pressure Adjustment**

Maximum Clamp/Torque pressure is the system pressure (as displayed on the system pressure indicator on the tong), or 3000 PSI (20.684 MPa), whichever is lower. Never exceed 3000 PSI (20.684 MPa).

**⚠ WARNING**

**CLAMP/TORQUE PRESSURE MUST NEVER EXCEED 3000 PSI (20.684 MPA)**

***NOTICE***

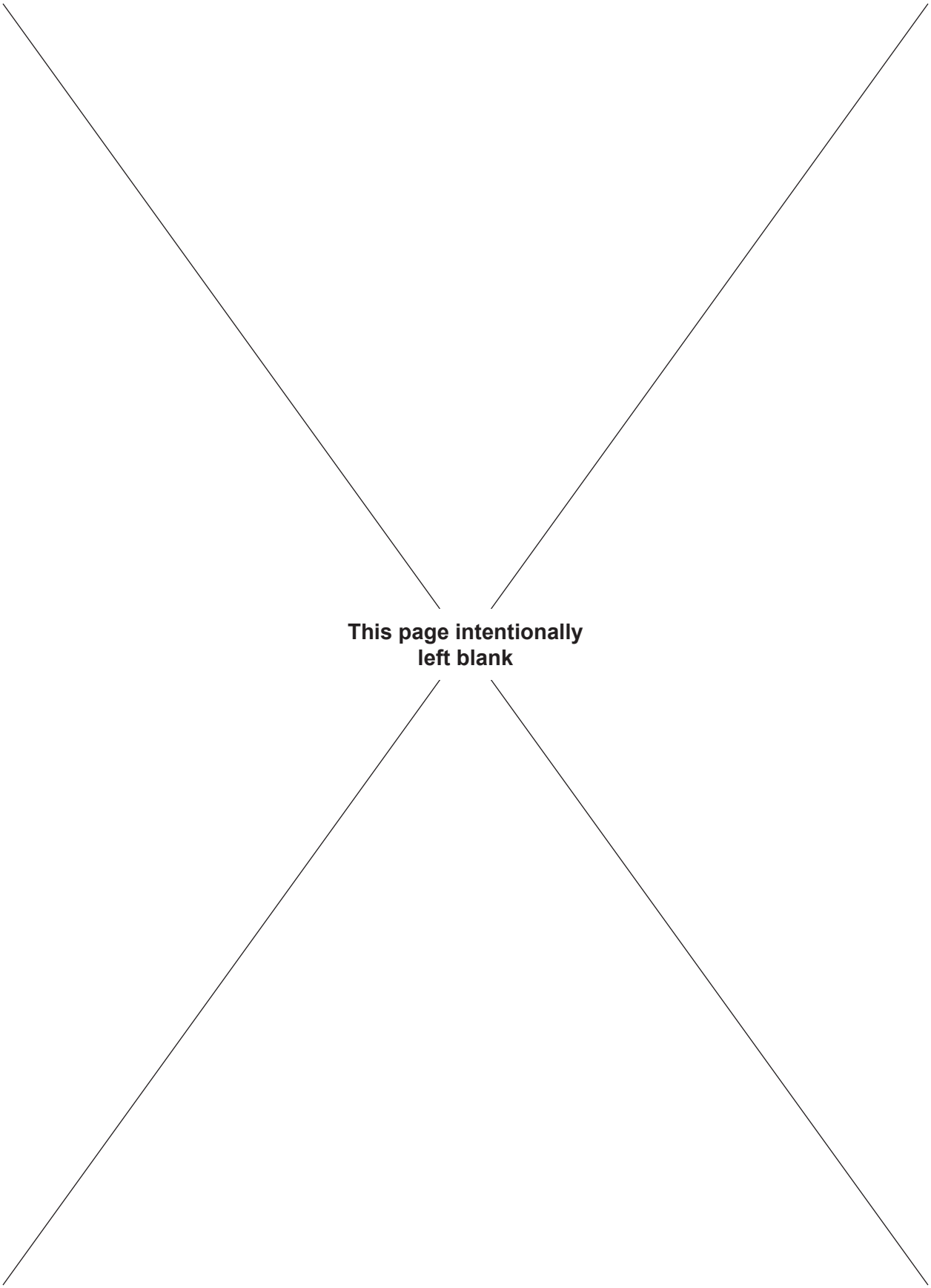
**PRESSURES CANNOT BE MONITORED WHEN THE VALVE LEVERS ARE IN THE NEUTRAL POSITION.**

### 3.4.4 Internal Valve Adjustment

Valves located in the interior of the control console cabinet are set to factory specifications and should never be adjusted without first consulting McCoy. Unauthorized adjustment may result in equipment damage and expose personnel to significant risks.

**⚠ WARNING**

**VALVES LOCATED IN THE INTERIOR OF THE CONTROL CONSOLE CABINET ARE SET TO FACTORY SPECIFICATIONS AND SHOULD NEVER BE ADJUSTED WITHOUT FIRST CONSULTING MCCOY. UNAUTHORIZED ADJUSTMENT MAY RESULT IN EQUIPMENT DAMAGE AND EXPOSE PERSONNEL TO SIGNIFICANT RISKS.**



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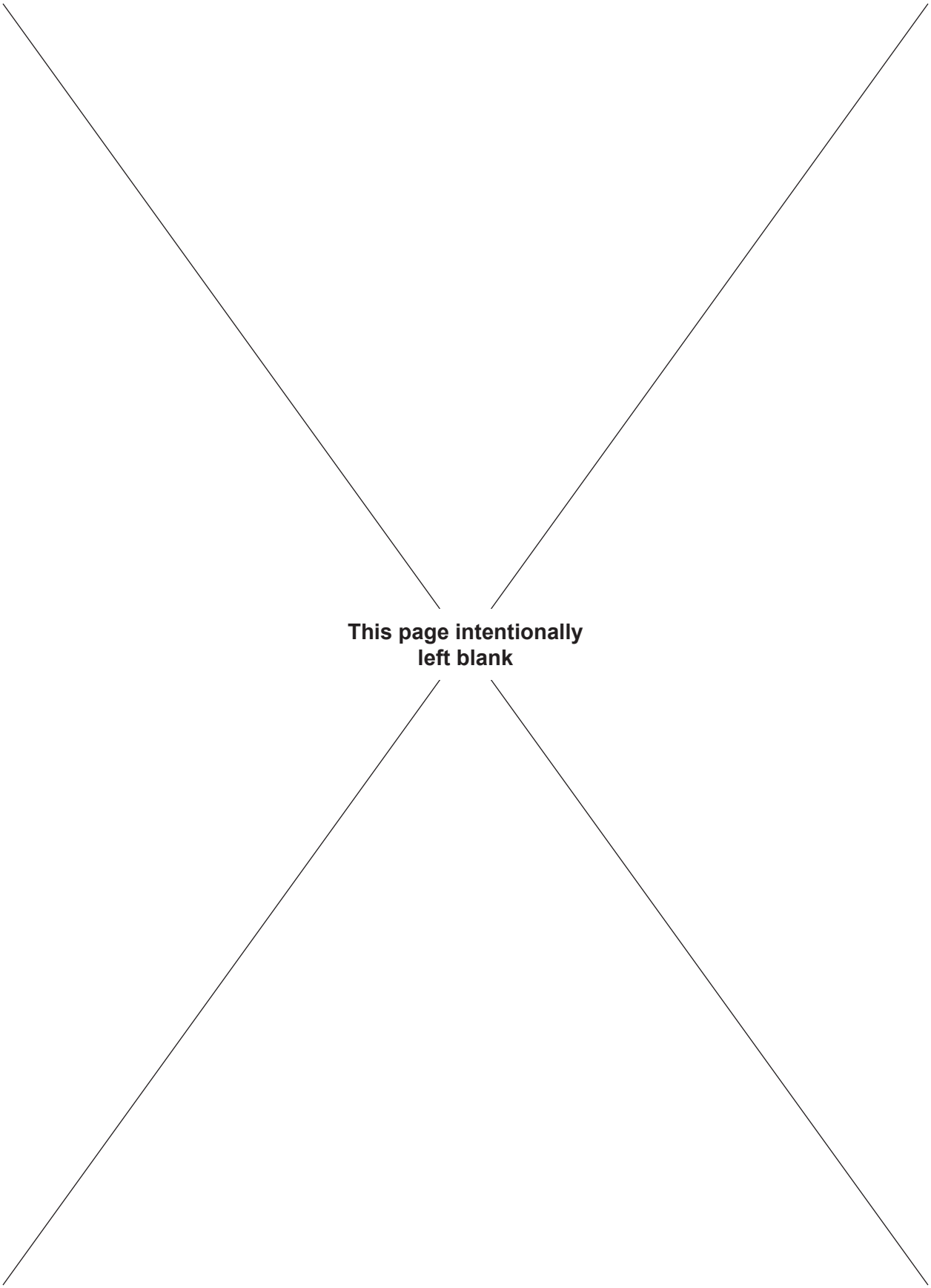
# SECTION 4: OPERATION



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## 4.0 OPERATOR TRAINING

McCoy Global recommends operator training, which typically consists of operation of the equipment under the supervision of a trained equipment operator until a satisfactory level of competence is achieved. Typical operator training should include:

- Introduction to and general description of equipment
- Technical specifications and performance data
- Operating instructions
- Control systems and interlocks
- Operating hazards
- Checks and inspections

## 4.1 OPERATOR SAFETY

McCoy recommends that a hazard assessment of the work area be performed by a designated safety representative before commencing operations. A designated safety representative is responsible for verifying that all operators have adequate equipment and safety training.

The area surrounding the tong operating area must be clutter-free and free from tripping hazards, or protruding objects that may snag hydraulic hoses on the tong, backup, lift cylinder, or torque measurement system. Operating surface or drill floor must be kept free of slipping hazards like grease, oil, water, etc.

Adequate lighting of the work area is required. All warnings, labels, gauges, and signs must be clearly visible

The components of the tong commonly manipulated or requiring control input are painted green, and are safe for continuous handling. Areas painted yellow are designated as hazardous areas, and contact with those areas must be avoided during operation. Always wear all personal protective equipment (PPE) specified by applicable HSE policies and follow all designated safety guidelines.

**⚠ CAUTION**

**ALWAYS WEAR APPROVED PERSONAL PROTECTIVE EQUIPMENT (PPE) WHEN OPERATING HYDRAULICALLY-POWERED EQUIPMENT.**

Ensure hydraulic power is deactivated and tong hydraulics are depressurized before disconnecting the main hydraulic lines. McCoy recommends depressurizing the tong hydraulic system before connecting or disconnecting quick-connect fittings. See page 5.4 for depressurization procedure.

**⚠ WARNING**

**DEPRESSURIZE EQUIPMENT BEFORE DISCONNECTING MAIN HYDRAULIC LINES.**

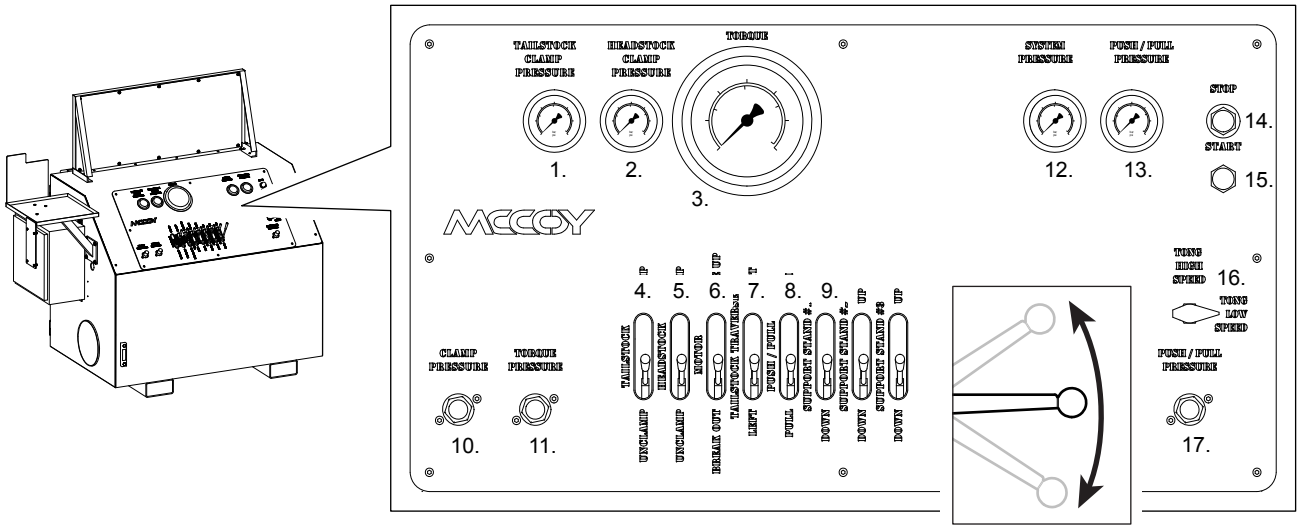



**Illustration 4.2.1: Control Panel Functions & Readouts**

## NOTICE

**THIS INFORMATION IS PROVIDED TO ILLUSTRATE FUNCTIONALITY OF THE BUCKING UNIT. FOR A MORE ACCURATE BREAKDOWN OF THE CONSOLE PAIRED WITH THE BUCKING UNIT, SEE THE SEPARATE CONTROL CONSOLE / POWER UNIT MANUAL PROVIDED.**

### 4.2 CONTROL PANEL OPERATION GUIDE

#### 1. TAILSTOCK CLAMP PRESSURE GAUGE

- Pressure gauge that displays the current hydraulic pressure of the backup clamp cylinders. Displays current pressure only when handle is actuated.

#### 2. HEADSTOCK CLAMP PRESSURE GAUGE

- Pressure gauge that displays the current hydraulic pressure of the tong clamp cylinders. Displays current pressure only when handle is actuated.

#### 3. TORQUE PRESSURE GAUGE

- Pressure gauge that displays current motor pressure

#### 4. TAILSTOCK - CLAMP / UNCLAMP

- **Clamp** - extends and clamps the backup clamping cylinders to the pressure set by utilizing the Clamp Pressure valve
- **Unclamp** - retracts the backup clamping cylinders

#### 5. HEADSTOCK - CLAMP / UNCLAMP

- **Clamp** - extends and clamps the backup clamping cylinders to the pressure set by utilizing the Clamp Pressure valve
- **Unclamp** - retracts the backup clamping cylinders

#### 6. MOTOR - BREAK OUT / MAKE UP

- **Break Out** - rotates the tong vise assembly in a counter-clockwise direction to 'Break Out' a right handed threaded connection
- **Make Up** - rotates the tong vise assembly in a clockwise direction to 'Make Up' a right handed threaded connection

#### 7. TAILSTOCK TRAVERSE - LEFT / RIGHT

- **Left** - moves the backup assembly left (towards the backup) horizontally along the bucking unit skid
- **Right** - moves the backup assembly right (towards the tong) horizontally along the bucking unit skid

#### 8. PUSH / PULL - PULL / PUSH (OPTIONAL)

- **Push** - extends the push/pull cylinder to push tubulars horizontally through the bucking unit
- **Pull** - retracts the push/pull cylinder to pull tubulars horizontally through the bucking unit

#### 9. SUPPORT STAND - UP / DOWN (OPTIONAL)

- **Up** - extends the support stand hydraulic cylinder vertically up
- **Down** - retracts the support stand hydraulic cylinder vertically down

**10. CLAMP PRESSURE**

- **Rotate Clockwise** - increases hydraulic clamping pressure in the backup and tong clamp cylinders
- **Rotate Counter-Clockwise** - lowers hydraulic clamping pressure in the backup and tong clamp cylinders

**11. TORQUE PRESSURE**

- **Rotate Clockwise** - increases hydraulic pressure to the motor for torque
- **Rotate Counter-Clockwise** - lowers hydraulic pressure to the motor for torque

**12. SYSTEM PRESSURE GAUGE**

- Pressure gauge that displays the current hydraulic pressure of the valve on the hydraulic inlet

**13. PUSH/PULL PRESSURE GAUGE (OPTIONAL)**

- Pressure gauge that displays the current hydraulic pressure of the push/pull cylinder

**14. STOP BUTTON**

- When pressed, shuts down the internal power unit. Button must be pulled up in order for the unit to function.

**15. START BUTTON**

- Starts the internal power unit when pressed. Button will not function unless the stop button is pulled to the ready position.

**16. TONG HIGH / LOW SPEED SWITCH**

- **High Speed** - switching to High Speed mode will set the tong gear train to run in a high speed/low torque mode
- **Low Speed** - switching to Low Speed mode will set the tong gear train to run in a low speed/high torque mode

**⚠WARNING**

**NEVER ATTEMPT TO SHIFT SPEEDS WHILE ANY PART OF THE EQUIPMENT IS IN MOTION.**

**17. PUSH / PULL PRESSURE (OPTIONAL)**

- **Rotate Clockwise** - increases hydraulic clamping pressure in the push/pull cylinder
- **Rotate Counter-Clockwise** - lowers hydraulic clamping pressure in the push/pull cylinder

### 4.3 INITIAL STARTUP

1. Perform a visual inspection of all components for damage and leaks. Do not proceed until all leaks are corrected and damaged components are repaired or replaced.
2. Fill hydraulic oil reservoir with new, freshly filtered hydraulic oil as specified on page 2.7. Monitor fluid level through the hydraulic oil sight glass on the front of the control console. Do not overfill.

## NOTICE

**FLUID EXPANSION WILL OCCUR WHEN HYDRAULIC OIL IS HEATED DURING USE. DO NOT OVERFILL.**

3. Connect all required hydraulic connections to the power unit. Ensure connections are fully made up and matched according to hose labels and the labels on the connection bulkhead (see page 3.6).
4. Ensure all control valve levers are in the neutral position.
5. Connect electrical power to the unit as specified on page 2.6.
6. Consult OEM documentation for electrical starter for initial start up and function testing.
7. Ensure the ‘Stop’ button is pulled up. The unit will not function unless the Stop button is pulled out to its ready position.
8. Bump press the ‘Start’ button. Observe the direction of motor rotation through the viewport on the side of the bucking unit. Rotation direction should match the direction of the indicator arrow. If rotation is opposite indicated direction, immediately press the ‘Stop’ button and correct
9. Consult Bucking Unit Manual for further instruction.

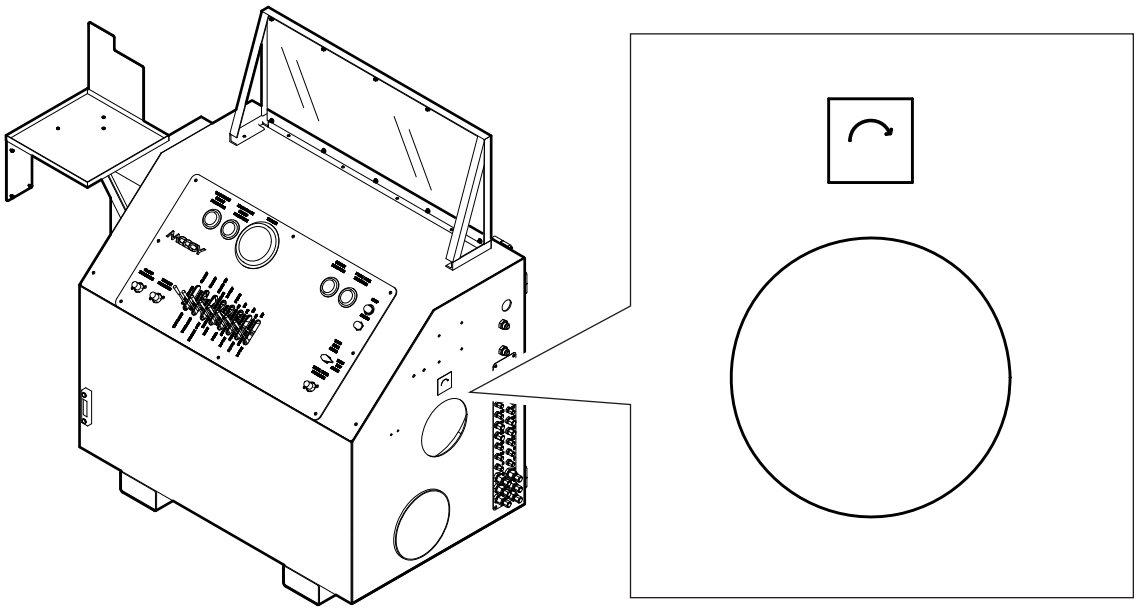
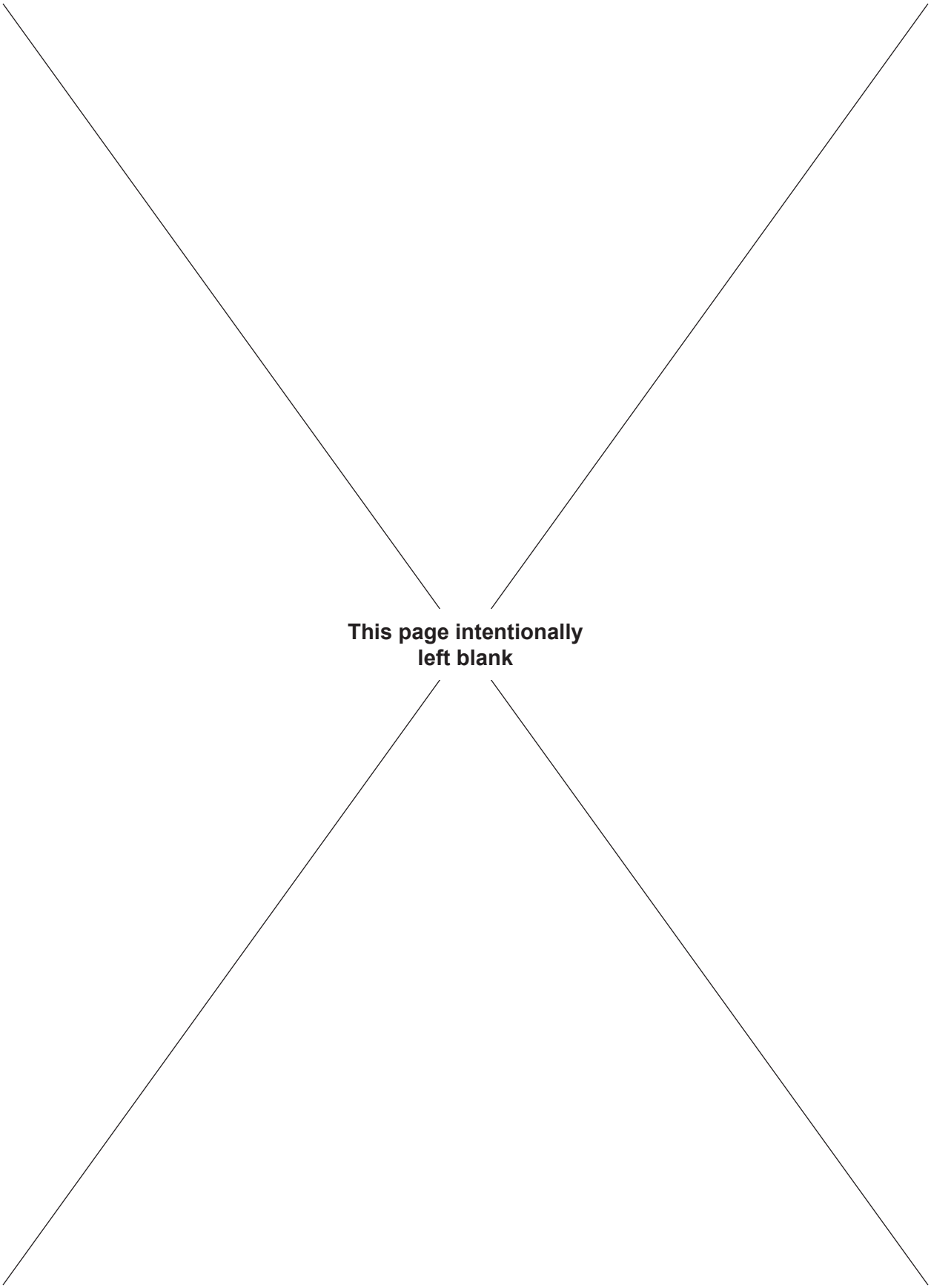


**Illustration 4.4.1: Rotation Direction Indicator Arrow**



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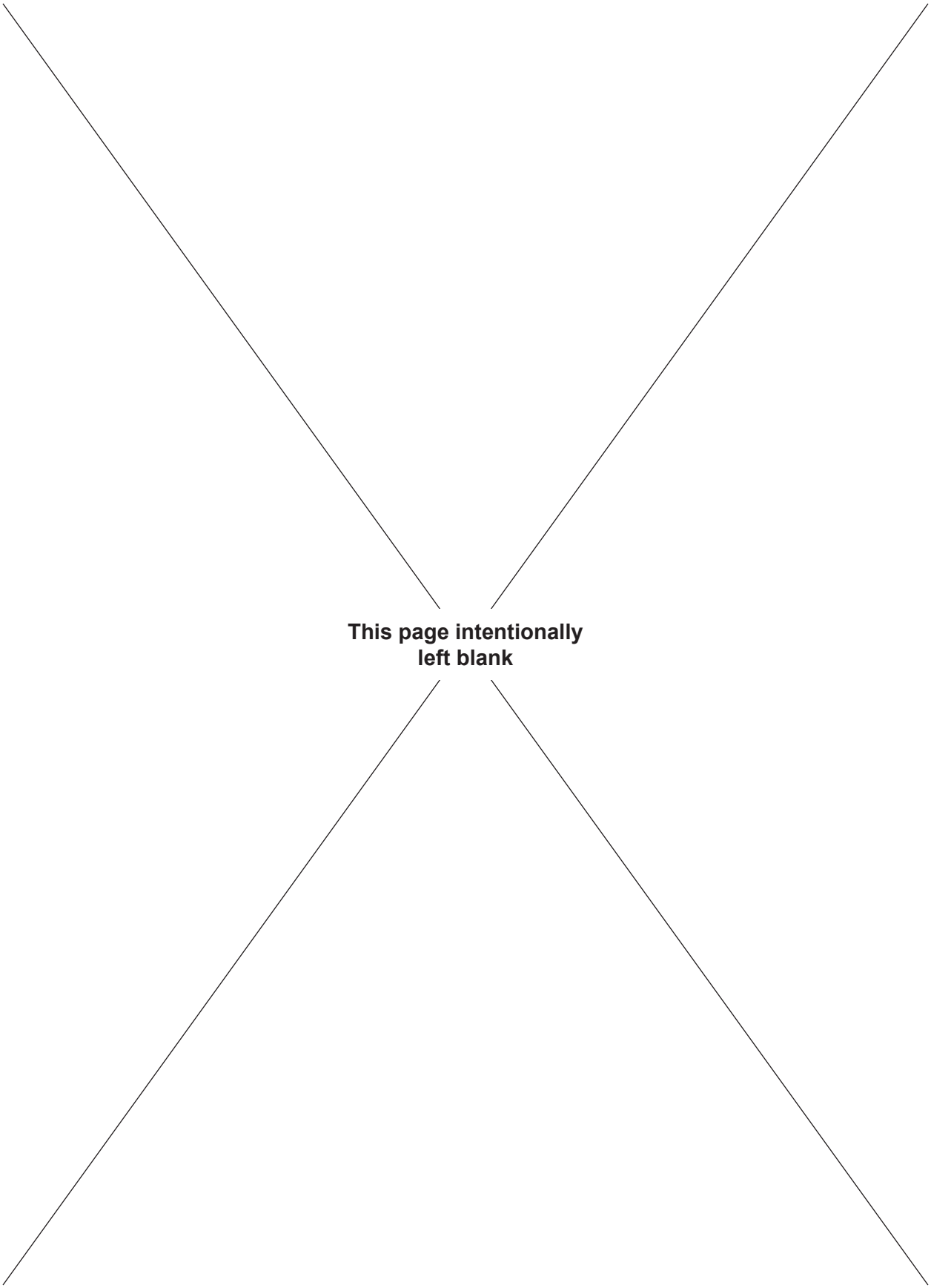
# SECTION 5: MAINTENANCE



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McCoy Global recognizes that minor on-site repairs and modifications are ocassionally required. Examples of minor repairs are:

- Replacement of damaged hydraulic hoses and fittings
- Replacement of malfunctioning pressure gauges and valves
- Replacement of fasteners

Any replaced component must be an identical component supplied by McCoy Global. Replaced fasteners must be Grade 8 or equivalent, unless otherwise specified by McCoy. All repairs must be performed by authorized, skilled personnel. Any attempt to make unauthorized repairs to equipment beyond the minor repairs described above exposes personnel to potential hazards and may cause catastrophic equipment failure. Contact McCoy if any question about the nature of repairs arises.

**⚠ DANGER**

**MAKING UNAUTHORIZED REPAIRS TO YOUR EQUIPMENT EXPOSES PERSONNEL TO POTENTIAL HAZARDS AND MAY CAUSE CATASTROPHIC EQUIPMENT FAILURE.**

## 5.0 GENERAL MAINTENANCE SAFETY PRACTICES

The practices identified here are intended as a guideline. All personnel are responsible for performing their tasks in a manner that ensures worker, equipment, and environmental safety, and may require taking additional steps that are not identified in this section.

Equipment maintenance shall be performed only by designated qualified maintenance personnel. Wear approved eye wear and footwear, and follow all of designated safety guidelines. Do not begin a maintenance task without the proper tools or materials on hand, or the proper drawings and documentation necessary.

Schedule planned maintenance with operators to avoid conflicts, unnecessary downtime, and the danger of accidental equipment activation. Notify operations when maintenance procedures are complete and equipment functionality is restored.

Isolate the location of the maintenance under way to prevent unaware personnel from inadvertently exposing themselves to a hazard. Use tape, rope, or signage to clearly indicate an “off-limits” area.

Replacement of large, heavy individual parts and/or heavy structural components must be performed using an approved lifting device of sufficient lifting capacity. Use care when attaching the lifting device, and safeguard area to avoid endangering personnel or equipment.

All spare parts must meet or exceed OEM specifications in order to maintain equipment integrity, especially protective equipment

Ensure your equipment is isolated from hydraulic power before commencing maintenance operations.

**⚠ WARNING**

**DO NOT PERFORM MAINTENANCE UNTIL TUBULAR CONNECTION EQUIPMENT HAS BEEN COMPLETELY ISOLATED FROM HYDRAULIC POWER**

Your equipment uses materials that may be harmful to the environment if improperly disposed of (hydraulic fluid, grease, etc.). Dispose of all materials according to your company’s proscribed environmental protection regulations.

## 5.1 CLEANING

Clean equipment thoroughly with a petroleum-based cleaning agent after each job, prior to storage. Ensure that cleaning solvents and chemicals are captured to prevent environmental contamination, and dispose of all materials according to environmental protection regulations.

## 5.2 PREVENTIVE MAINTENANCE PRACTICES

Regular maintenance programs are necessary, and must be established to assure safe, dependable operation and to avoid costly breakdown maintenance. The following maintenance procedures provides information required to properly maintain the equipment specified in this manual. The equipment may require more or less maintenance depending upon the frequency of use and the field conditions under which it operates. These maintenance procedures are designed for equipment operating at 10°C to 35°C ambient temperature for 10 hours per day. McCoy recommends that the inspection and maintenance procedures in this section be performed as recommended in the maintenance checklists.

Manufacturers of purchased components included with the equipment (for example: motors, valves, etc.) may specify maintenance tasks and intervals over and above what McCoy recommends as part of their recommended procedures. All OEM maintenance instructions should be observed.

McCoy Global recommends tracking all maintenance activity, including the lubrication schedule and replacement of hydraulic hoses. This may be a simple as keeping a paper log, or using a software-based maintenance tracking utility. A maintenance log is a valuable tool that can be used for easily retrieving maintenance history or identifying trends that require correction.

## 5.3 HYDRAULIC SYSTEM MAINTENANCE

Poor hydraulic fluid maintenance is a leading cause of hydraulic equipment failure. Contaminants are introduced to the hydraulic system through several sources including dirty hydraulic connections, dirty hydraulic cylinder rods, and through the wear of internal components. Failure to remove entrained contaminants through the use of a maintained filtration system will contribute to rapid wear of system components. McCoy recommends filtering to ISO 4406:1999 standards.

Premature fouling of particulate filters within the prime mover or ancillary hydraulic power unit indicates a high level of contaminants, and requires immediate hydraulic fluid laboratory analysis to identify the contaminants. High levels of wear metals in the fluid may be symptomatic of impending failure of a component in a hydraulic system. Early identification of the potential failure enables the user to schedule preventive repairs, preventing costly breakdown maintenance.

Fluid that has been repeatedly and consistently overheated will provide much poorer response and overall performance than fluid in a temperature-managed hydraulic system. McCoy recommends the use of hydraulic heaters and/or coolers to maintain the fluid temperature within the operating temperature range specified in Section 2. Maintaining adequate fluid level in the hydraulic reservoir helps dissipate heat in the hydraulic system. Fluid repeatedly heated to high temperatures (above 80°C) is subject to rapid depletion of the additives that prevent oxidation and water emulsification, leading to the build-up of sludge, gum, and varnish. These contaminants will build up on internal surfaces of the components of the hydraulic system causing “sticky” operation or clogging orifices and small passages. Water entrained in the fluid will react with components in the hydraulic system to produce rust and increase the rate of oxidation of the fluid.

Regularly schedule hydraulic fluid analysis as part of a preventive maintenance routine. Test particulate content using a portable fluid analysis kit, and compare the fluid sample to new hydraulic fluid. Fluid that is discolored or has a foul odor should be sent to a qualified laboratory for detailed analysis. Hydraulic fluid that is no longer capable of operating within the parameters specified by this manual must be replaced, and the hydraulic system flushed.

Fluid that is unused for a long period of time should be tested before circulating through the hydraulic system. Hydraulic systems operated in environments experiencing extreme temperature variances are susceptible to condensation within in the oil reservoir. Over a period of time the condensation will accumulate in the bottom of the reservoir, which should be drawn off at six month intervals, or as required.

## 5.4 HYDRAULIC SYSTEM DEPRESSURIZATION

McCoy Global recommends that the hydraulic system be depressurized prior to maintenance on any hydraulic component. The following procedure is provided assuming this equipment is coupled with a McCoy bucking unit. Always consult any attached equipment’s operation manual before proceeding. Perform the following steps to ensure the dangers posed by hydraulic fluid under pressure are minimized.

**⚠ CAUTION**

**ENSURE ADEQUATE CONTAINMENT IS IN PLACE TO PREVENT ENVIRONMENTAL CONTAMINATION FROM RESIDUAL HYDRAULIC FLUID**

1. Fully Unclamp cylinders on both the tong and backup.
2. De-energize the power unit.
3. Repeatedly actuate motor control valve lever IN BOTH DIRECTIONS to dissipate any residual pressure in the valve and motor.
4. Remove the hydraulic SUPPLY line from the equipment.
5. Repeatedly actuate the remaining control valve levers IN BOTH DIRECTIONS to dissipate any residual pressure in the remainder of the hydraulic control system.

## 5.5 LUBRICATION INSTRUCTIONS

See page 2.7 for lubrication specifications. Ensure selected grease remains within its viscosity range at expected operating temperatures.

McCoy recommends lubricating your equipment before beginning each shift, and immediately following operation prior to storage. This section identifies all necessary lubrication points.

## 5.6 ASSEMBLY PRACTICES

**NOTE ON INSTALLATION PRACTICES: Ensure all bearings are liberally greased before installing over a shaft or into gears or bearing caps. Also ensure all metal-to-metal contact in the gear train is adequately greased. Please refer to the relevant exploded diagrams in Section 7 when assembling components.**

## ⚠ WARNING

**REPLACEMENT FASTENER (BOLTS, NUTS, CAP SCREWS, MACHINE SCREWS, ETC.) USED DURING MAINTENANCE OR OVERHAUL MUST BE GRADE 8 OR EQUIVALENT UNLESS OTHERWISE SPECIFIED.**

| TIGHTENING TORQUE GUIDE (DRY) | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAE GRADE 8 - FINE THREAD | | | | SAE GRADE 8 - COARSE THREAD | | | |
| SIZE | CLAMP LOAD | PLAIN | PLATED | SIZE | CLAMP LOAD | PLAIN | PLATED |
| ¼ - 28 (.250) | 3,263 | 14 ft. lbs. | 10 ft. lbs. | ¼ - 20 (.250) | 2,850 | 12 ft. lbs. | 9 ft. lbs. |
| 5/16- 24 (.3125) | 5,113 | 27 ft. lbs. | 20 ft. lbs. | 5/16- 18 (.3125) | 4,725 | 25 ft. lbs. | 18 ft. lbs. |
| ⅜ - 24 (.375) | 7,875 | 49 ft. lbs. | 37 ft. lbs. | ⅜ - 16 (.375) | 6,975 | 44 ft. lbs. | 33 ft. lbs. |
| 7/16 - 20 (.4375) | 10,650 | 78 ft. lbs. | 58 ft. lbs. | 7/16 - 14 (.4375) | 9,600 | 70 ft. lbs. | 52 ft. lbs. |
| ½ - 20 (.500) | 14,400 | 120 ft. lbs. | 90 ft. lbs. | ½ - 13 (.500) | 12,750 | 106 ft. lbs. | 80 ft. lbs. |
| 9/16 - 18 (.5625) | 18,300 | 172 ft. lbs. | 129 ft. lbs. | 9/16 - 12 (.5625) | 16,350 | 153 ft. lbs. | 115 ft. lbs. |
| ⅝ - 18 (.625) | 23,025 | 240 ft. lbs. | 180 ft. lbs. | ⅝ - 11 (.625) | 20,325 | 212 ft. lbs. | 159 ft. lbs. |
| ¾ - 16 (.750) | 33,600 | 420 ft. lbs. | 315 ft. lbs. | ¾ - 10 (.750) | 30,075 | 376 ft. lbs. | 282 ft. lbs. |
| ⅞ - 14 (.875) | 45,825 | 668 ft. lbs. | 501 ft. lbs. | ⅞ - 9 (.875) | 41,550 | 606 ft. lbs. | 454 ft. lbs. |
| 1 - 12 (1.000) | 59,700 | 995 ft. lbs. | 746 ft. lbs. | 1 - 8 (1.000) | 54,525 | 909 ft. lbs. | 682 ft. lbs. |
| 1 - 14 (1.000) | 61,125 | 1019 ft. lbs. | 764 ft. lbs. | 1-⅛ - 7 (1.125) | 68,700 | 1288 ft. lbs. | 966 ft. lbs. |
| 1-⅛ - 12 (1.125) | 77,025 | 1444 ft. lbs. | 1083 ft. lbs. | 1-¼ - 7 (1.125) | 87,225 | 1817 ft. lbs. | 1363 ft. lbs. |
| 1-¼ - 12 (1.125) | 96,600 | 2012 ft. lbs. | 1509 ft. lbs. | 1-⅜ - 6 (1.375) | 103,950 | 2382 ft. lbs. | 1787 ft. lbs. |
| 1-⅜ - 12 (1.375) | 118,350 | 2712 ft. lbs. | 2034 ft. lbs. | 1-½ - 6 (1.500) | 126,450 | 3161 ft. lbs. | 2371 ft. lbs. |
| 1-½ - 12 (1.500) | 142,275 | 3557 ft. lbs. | 2668 ft. lbs. | | | | |

## *NOTICE*

### IMPORTANT ASSEMBLY INFORMATION

**DO NOT TORQUE NYLOCK NUTS. NYLOCK NUTS ARE NOT USED FOR CLAMPING PURPOSES AND SHOULD ONLY BE TIGHTENED UNTIL METAL-TO-METAL CONTACT IS MADE AND VERTICAL MOTION IS ELIMINATED. OVER-TIGHTENING WILL RESULT IN PREMATURE BUSHING FAILURE AND WILL INHIBIT ROTATION, AND MAY IMPART EXCESS STRESS ON ROTATING COMPONENTS.**

**NYLOCK NUTS ARE A ONE-TIME USE ITEM AND MUST BE DISCARDED & REPLACED AFTER USE.**

### 5.7 INSPECTION & MAINTENANCE CHECKLIST

McCoy recommends that the following inspection and maintenance procedures be performed before each use, and at least once per day when the tong is in steady use, in the order in which they are listed.

**⚠ WARNING**

**DO NOT PERFORM ANY FURTHER ACTIONS OR MAINTENANCE WHILE THE TONG IS CONNECTED TO ANY HYDRAULIC POWER SUPPLY. MCCOY RECOMMENDS THAT ALL HYDRAULIC LINES ARE FULLY DISCONNECTED, AND RESIDUAL HYDRAULIC PRESSURE IS BLED OFF. ENSURE ADEQUATE CONTAINMENT IS IN PLACE TO PREVENT ENVIRONMENTAL CONTAMINATION FROM RESIDUAL HYDRAULIC FLUID.**

1. ☐ **DEPRESSURIZE HYDRAULIC SYSTEM IN PREPARATION FOR MAINTENANCE.**
   Complete Depressurization Procedure outlined on page 5.4 .

**⚠ WARNING**

**HYDRAULIC PRESSURES AS HIGH AS OPERATING PRESSURE MAY REMAIN TRAPPED IN SMALL AREAS OF THE EQUIPMENT. ENSURE ALL MAINTENANCE IS CARRIED OUT BY A QUALIFIED SERVICE TECHNICIAN, AND THAT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT IS USED TO GUARD AGAINST PRESSURE INJURIES**

2. ☐ Wash unit to remove majority of dirt and grease build up to allow for inspection of the overall condition of unit. Ensure adequate containment is in place to prevent environmental contamination from residual hydraulic fluid and dirty grease.
3. ☐ Inspect for major damage or excessive wear. Repair or replace as necessary.
4. ☐ Inspect all hoses for wear. Replace as necessary.
5. ☐ Refer to engine manufacturer's for required engine maintenance procedure.
6. ☐ Follow power unit start up procedure. Test unit under normal work load. Re-inspect all hoses and hydraulic system for leaks. Repair or replace if necessary.
7. ☐ Check condition indicator on return filter elements. Replace as necessary or at 6 month intervals.
8. ☐ Test hydraulic oil for contamination every 6 months under normal operation conditions. Replace with new filtered oil as required.
9. ☐ Refer to third party component manufacturer's maintenance literature and carry out as instructed.

**⚠ WARNING**

**FAILURE TO ENSURE THAT THE SELF-SEALING SUPPLY AND RETURN LINES ARE FULLY MADE UP MAY RESULT IN CATASTROPHIC EQUIPMENT FAILURE.**

## 5.8 TUBULAR CONNECTION EQUIPMENT DECOMMISSIONING & SHIPPING

Perform the following decommissioning procedures when removing tubular connection equipment from service, with the intent of short to long-term storage. These procedures are essential for ensuring proper protection of the equipment from environmental corrosion, and to aid in the quick turnaround when returning the equipment to service.

Store all o-rings, seals, packings, gaskets, etc. in strong, moisture proof airtight containers. Ensure that these items are not crushed or otherwise damaged.

Do not perform any further actions or maintenance while the equipment is connected to any hydraulic power supply. McCoy Global recommends that all hydraulic lines are fully disconnected, and residual hydraulic pressure is bled off. Ensure adequate containment is in place to prevent environmental contamination from residual hydraulic fluid.

**NOTICE**

**IN ORDER TO MAINTAIN THE INTEGRITY OF INSTALLED SEALS, MCCOY RECOMMENDS THAT THE MAXIMUM STORAGE INTERVAL NOT EXCEED ONE YEAR. AT LEAST ONCE PER YEAR ALL TUBULAR CONNECTION EQUIPMENT IN LONG-TERM STORAGE SHOULD BE RECOMMISSIONED AS PER SECTION 5. IF FURTHER STORAGE IS REQUIRED, THE EQUIPMENT SHOULD THEN BE PUT THROUGH ANOTHER DECOMMISSIONING PROCEDURE.**

**DEPRESSURIZE HYDRAULIC SYSTEM IN PREPARATION FOR MAINTENANCE.**

1. ☐ Complete Depressurization Procedure on page 5.4.

   Disconnect all remaining connections from the equipment. Ensure the equipment is completely free of all connections before beginning storage preparations.

**⚠ WARNING**

**HYDRAULIC PRESSURES AS HIGH AS OPERATING PRESSURE MAY REMAIN TRAPPED IN SMALL AREAS OF THE EQUIPMENT. ENSURE ALL MAINTENANCE IS CARRIED OUT BY A QUALIFIED SERVICE TECHNICIAN, AND THAT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT IS USED TO GUARD AGAINST PRESSURE INJURIES**

2. ☐ Perform steps in Inspection & Maintenance Checklist on page 5.6.
3. ☐ Completely drain fluid reservoirs.
4. ☐ Wash the exterior of the equipment to remove the majority of dirt and grease buildup.
5. ☐ Wash the interior of the equipment thoroughly, using either water (do not use a pressure washer), or an appropriate solvent-based grease cutting cleaner. If metal shavings or chips are observed being flushed out of the equipment, an overhaul of the equipment must be performed to eliminate the issue and prevent further damage.
6. ☐ Thoroughly wash the exterior of the equipment using either water (do not use a pressure washer) or an appropriate solvent-based grease cutting cleaner such as Varsol®.
7. ☐ Inspect all paint. Locations in which the paint has been damaged must be repaired prior to storage. Prepare areas to be painted to ensure they are free of grease, dirt, or solvent. Touch up using a solvent-based acrylic paint, and allow sufficient time for paint to dry before proceeding.
8. ☐ Perform a complete lubrication of all externally accessible grease fittings on equipment.
9. ☐ Connect a low-pressure air supply line (10 PSI or less) to the hydraulic supply line, and force a small amount of the remaining hydraulic fluid from the valve assembly. This will allow for thermal expansion of the hydraulic fluid if the equipment is stored or transported in high ambient temperatures. Failure to do this may result in damaged or destroyed seals in the equipment.
10. ☐ Inspect all paint. Locations in which the paint has been damaged must be repaired prior to storage. Prepare areas to be painted to ensure they are free of grease, dirt, or solvent. Touch up using a solvent-based acrylic paint, and allow sufficient time for paint to dry before proceeding.
11. ☐ Refer to engine manual for any decommissioning or long-term storage procedures.

**5.8 TUBULAR CONNECTION EQUIPMENT DE-COMMISSIONING & SHIPPING (CONTINUED):**

12. ☐ Wipe all excess grease from outside of equipment. Use a solvent-based cleaner on rags to wipe all external surfaces to remove residual grease or hydraulic fluid. Once the outside surfaces have been de-greased, wipe all external surfaces with clean water to remove residual solvent.

13. ☐ McCoy recommends that an anti-corrosive agent such as Tectyl® 506 be applied to all external surfaces (including chain slings) EXCEPT cylinder rods. Refer to manufacturer data sheets for proper application and safety information.

14. ☐ Allow the anti-corrosive coating ample time to dry. Refer to manufacturer data sheets for drying times at room temperature.

15. ☐ Wrap entire assembly in 100 gauge (1 mil) corrosion-inhibiting wrap, at least 3 layers thick. Attempt to ensure that the tool is well-sealed within the wrapping, including the bottom.

Store in a sealed, climate controlled environment. If isolated storage is not available, McCoy recommends storing wrapped equipment using silica gel desiccant to reduce the humidity within the wrapping. As a guideline, use 125 g. of desiccant for each cubic meter of space, or 3.5 g. per cubic foot.

**Calculation Of Required Desiccant:**

1) Calculate the trapped air volume by measuring the outside dimensions of the tool to be stored, and treat that as the volume to be stored. For example, the overall external dimensions of this tool are 96.5” x 96.5” x 64.5”, which calculates to an approximate volume of 600640 $in^3$, or 348 $ft^3$ (9.854 $m^3$).

2) Multiply the calculated air volume, in cubic feet, by the recommended amount of desiccant (3.5 g) per cubic foot. Carrying forth the example used in the previous step, the required desiccant charge would be 3.5 g. x 348 $ft^3$, equaling 1218 g. Several manufacturers offer silica gel desiccant in packaged quantities of 125 grams per bag, so ten packages of desiccant distributed throughout the wrapped equipment would be required. Please keep in mind that this is a guideline only - more or less desiccant may be required in extreme environmental conditions.

For best corrosion resistance, the equipment should be removed from storage and exercised on a regular basis, depending on the storage environment. McCoy recommends that for equipment stored in a saltwater maritime or exposed dusty environment, repeat steps 9 through 24 monthly. For equipment stored in isolated storage in a non-maritime environment, repeat steps 9 through 24 quarterly. Replace desiccant packs at this time.

### 5.8.1 Shipping Instructions

Use the following steps to prepare the equipment for shipping.

1. Position the backup at its fully extended position against the bumper stops on the rear of the skid.
2. Fully depressurize the equipment. Disconnect any hoses and cables as necessary.
3. Remove all accessories and attached WINCATT® torque turn computer. See WINCATT® manual for shipping instructions. Wrap power unit accessories and associated fasteners in protective wrap and place in a separate wooden crate.
4. Place the equipment on a pallet rated for the full weight of the equipment. Ensure the pallet is large enough to accommodate the wooden crate containing the tong accessories.
5. Securely strap the equipment in place using metal strapping. Use caution not to entrap any flexible hydraulic hoses beneath the strapping (guide strapping through beneath the hydraulic hoses). Strapping requirements such as strap thickness and number of straps must be determined using a recognized standard, taking into account the full weight of the equipment being secured.
6. Before tightening strapping, place strapping protectors wherever the metal strapping comes into contact with the equipment. Never allow straps to cover components that may easily be bent or broken.
7. Place the wooden crate containing the tong accessories on the crate next to the equipment. Strap the crate to the pallet using appropriate metal strapping. If it is not practical to place larger loose items in a wooden crate, ensure they are also securely strapped to the pallet appropriate metal strapping.
8. Use a large polyethylene shipping bag (sometimes called a pallet cover) to completely enclose the equipment. Seal polyethylene bag to the pallet using 1 mil polyethylene wrap. Use the wrap to conform the plastic cover to the general shape of the equipment, but do not wrap so tight that sharp edges on the equipment perforate the cover.
9. Enclose the equipment in a sturdy shipping crate which is securely fastened to the pallet.

### 5.9 TUBULAR CONNECTION EQUIPMENT RECOMMISSIONING PROCEDURE

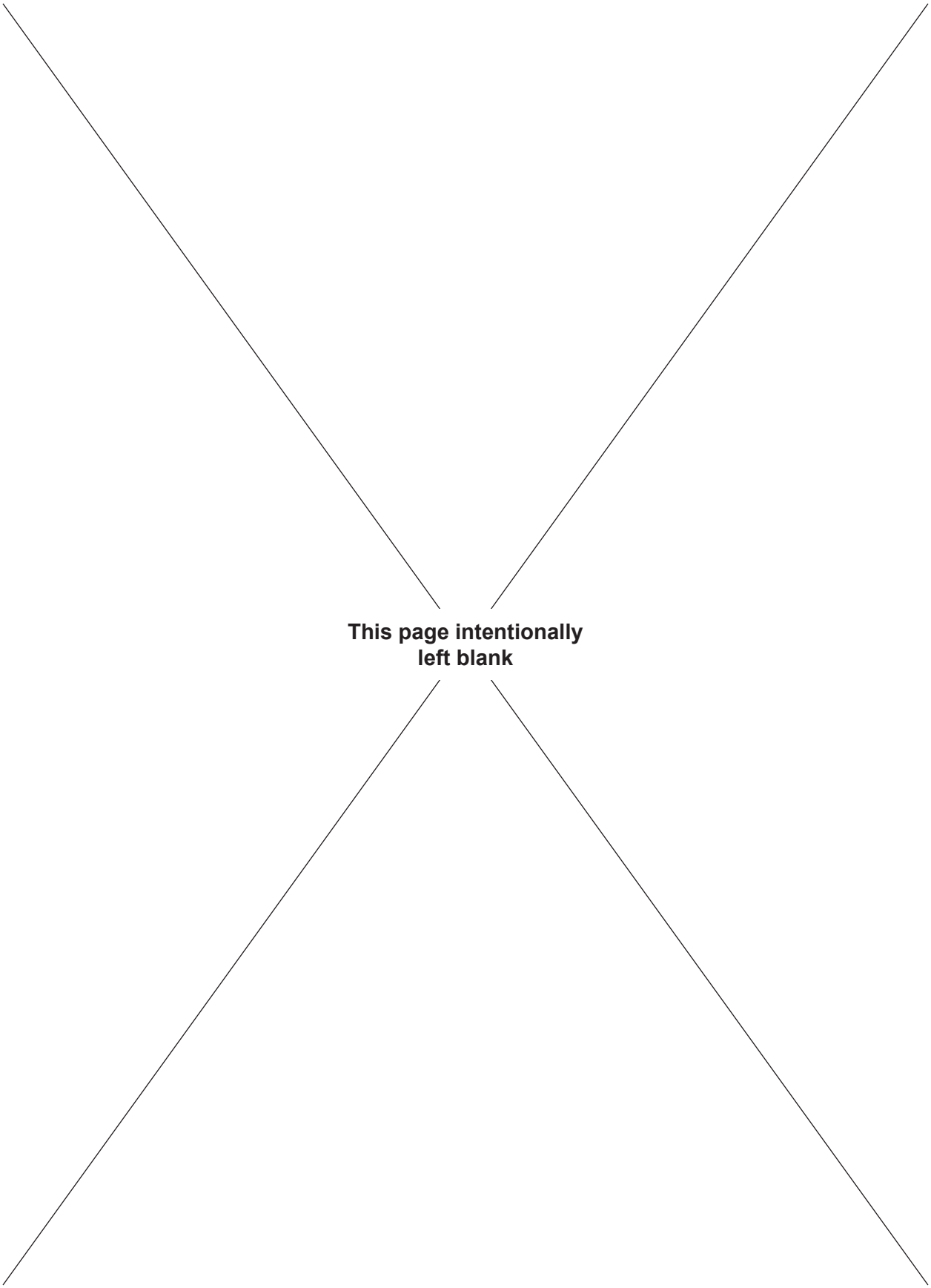
Perform the following recommissioning procedures when removing tubular connection equipment from short or long-term storage back into regular service. These procedures are essential for ensuring proper equipment preparation and operation. The following procedures also assume that the decommissioning and storage procedures recommended by McCoy have been strictly observed.

1. ☐ Remove all protective plastic wrapping and dispose of desiccant packs.
2. ☐ Wipe excess grease or heavy oil from equipment.
3. ☐ Perform a visual inspection of all lifting points. Replace visibly damaged parts before returning the equipment to service. Ensure that the most recent test date falls within the past year. Perform recertification if necessary.
4. ☐ Remove shipping components from the equipment. Store for future use.
5. ☐ Perform a complete lubrication of all externally accessible grease fittings on equipment.
6. ☐ Fill fluid reservoirs to appropriate levels using specified fluids.
7. ☐ Perform the start up procedure to energize the power unit. Ensure all lines are fully made up to prevent equipment damage from excessive back pressure. Do not neglect to connect the motor drain.

**⚠ WARNING**

**FAILURE TO ENSURE THAT THE SELF-SEALING SUPPLY AND RETURN LINES ARE FULLY MADE UP MAY RESULT IN CATASTROPHIC EQUIPMENT FAILURE.**

8. ☐ Assure pressure and temperature are nominal.
9. ☐ Ensure that supply pressure is at or above the equipment's specified operating pressure, and that the return pressure is less than 350 psi.
10. ☐ Perform a thorough inspection of pressurized hydraulic lines and fittings. Leaking hydraulic fluid lines or fittings must be replaced before returning the equipment to service.
11. ☐ Perform a thorough inspection of all seals. Any seal that is leaking must be replaced before returning the equipment to service.
12. ☐ Run power unit under normal work load to ensure proper functionality.
13. ☐ When all of the previous steps are completed, the equipment may be returned to service.



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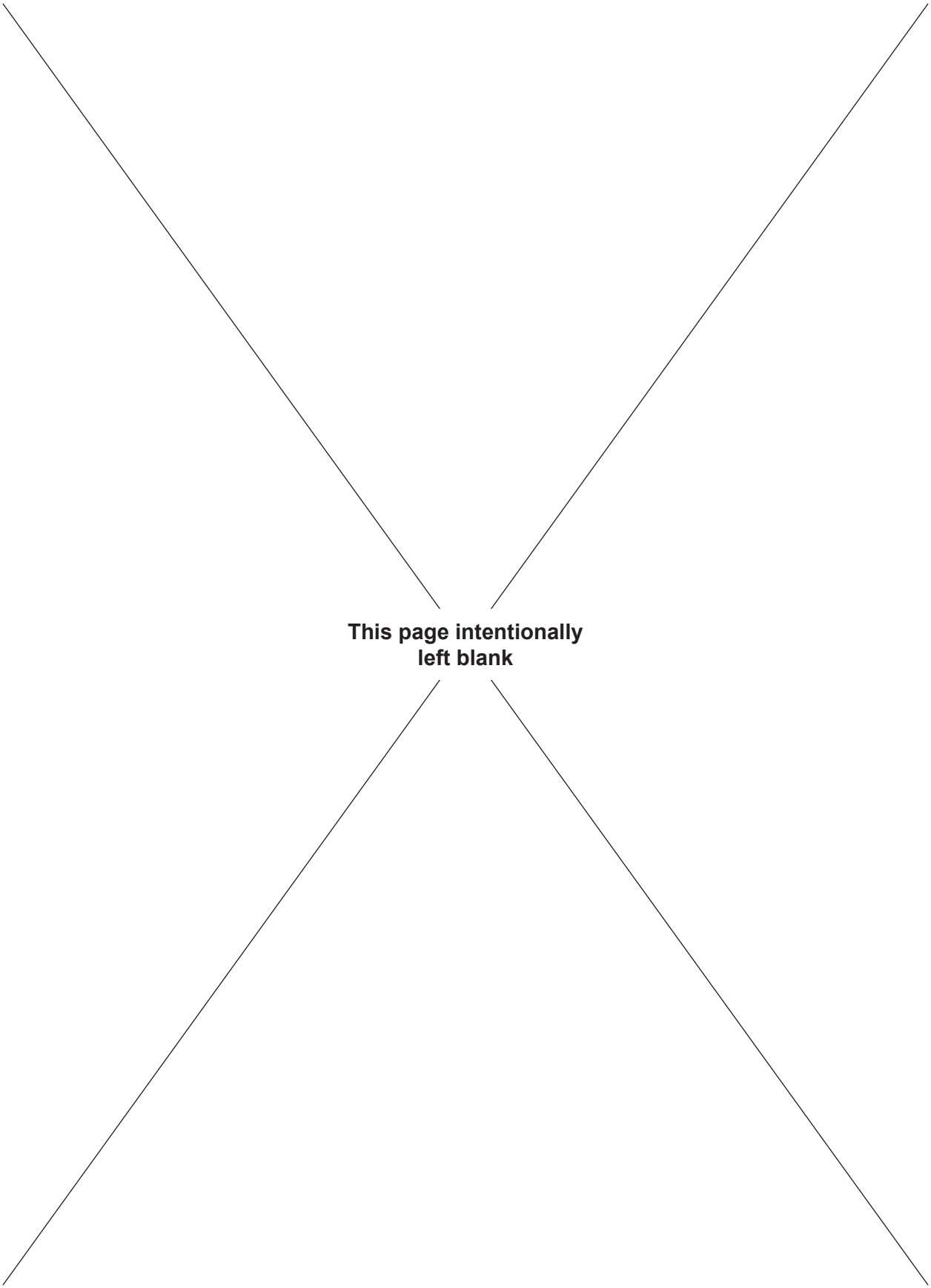
# SECTION 6: TROUBLESHOOTING



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Adequate maintenance and proper fluid selection is essential for minimizing hydraulic-related failures. All troubleshooting must be performed by a technician trained in hydraulics who is also familiar with the equipment design, assembly, and operation.

The following troubleshooting instructions are intended to be guidelines only. Any faults not solved through the use of this guide should be referred to our engineering department for their evaluation and recommendations.

### 6.0 HYDRAULIC PUMP MAKING EXCESSIVE NOISE

| | POSSIBLE PROBLEM | SOLUTION(S) |
|---|---|---|
| **1** | Restricted or clogged intake line | Clean intake line and check for fluid contamination |
| **2** | Contaminated fluid | Flush hydraulic system and replace with new filtered fluid. See page 2.7 for hydraulic fluid specifications. |
| **3** | Restricted vent | Clean or replace air vent |
| **4** | Air in fluid | Check for leaks and assure fluid suction in reservoir tank is well below hydraulic fluid level |
| **5** | Fluid viscosity is not appropriate (too high or too low) | Ensure hydraulic fluid being used is the viscosity recommended by McCoy Global. Power unit pump may not prime if fluid is too heavy, and the hydraulic system will overheat if fluid is too light. Replace with proper viscosity fluid |
| | | Hydraulic fluid viscosity is affected by environmental conditions. Ensure the fluid being used is suitable for high or low temperatures. Replace with proper viscosity fluid for the operating conditions if necessary |
| **6** | Damaged or worn parts | Repair or replace damaged parts, check fluid for contamination |
| **7** | Excessive RPM | Check PTO, gears, and assure pump is running at nominal speed |
| **8** | Increased friction | Assure pump has been installed using correct torque values |
| **9** | Damaged/restricted valves | Check all valves for damage and replace as necessary. Check hydraulic fluid for contamination. |
| **10** | Restricted discharge | Check to make sure relief valve is set to correct pressure setting. |

### 6.1 EXCESSIVE WEAR TO HYDRAULIC COMPONENTS

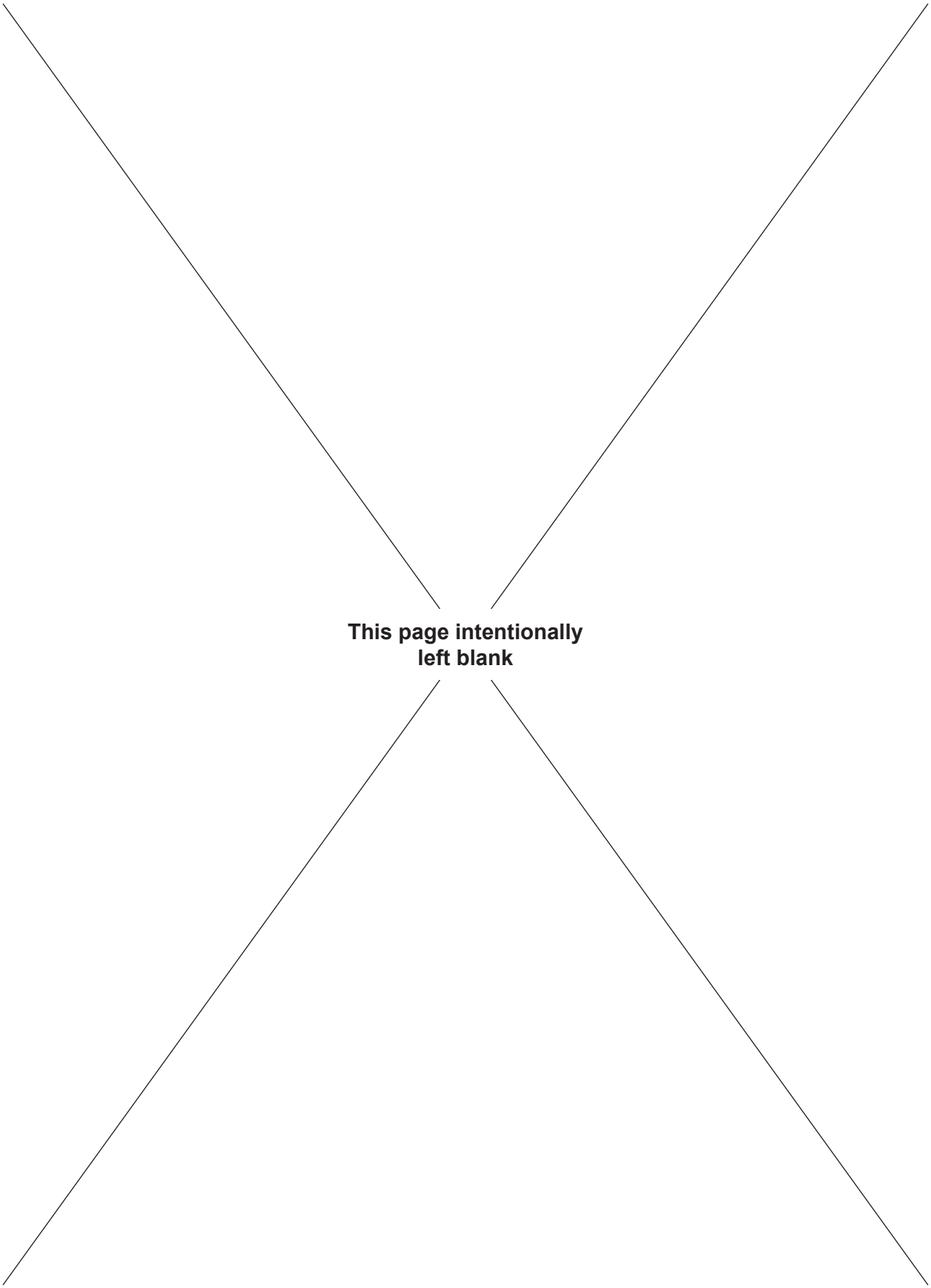
| | POSSIBLE PROBLEM | SOLUTION(S) |
|---|---|---|
| **1** | Fluid contamination | Flush hydraulic fluid system, replace with new filtered fluid as outlined on page 2.7 |
| **2** | Components misaligned | Inspect and realign |
| **3** | High operating pressures | Gauge and set to correct pressure |
| **4** | Exhausted hydraulic fluid | Flush hydraulic fluid system, replace with new filtered fluid as outlined on page 2.7 |
| **5** | Air in fluid | Check for leaks and assure fluid suction in reservoir tank is well below hydraulic fluid level |
| **6** | Shortened bearing life | Check alignment, insure proper lubrication of non-sealed bearings |

### 6.2 GENERAL COMMENTS

The following factors generally contribute to poor hydraulic operation and premature wear of equipment:

1. Contaminated hydraulic fluid due to overuse, overheating, or inadequate fluid filtration.
2. Unsuitable hydraulic fluid, especially in extreme climatic conditions.
3. Defective packing or seals in components of the hydraulic system.
4. Poor or incomplete hydraulic system training. Users must be fully qualified to operate the equipment, and have complete understanding of the hydraulic system.

If your hydraulic troubleshooting procedures involve flow and pressure tests at the power unit, use of a test rig that can easily be connected to the main suction and discharge ports of the power unit is recommended.



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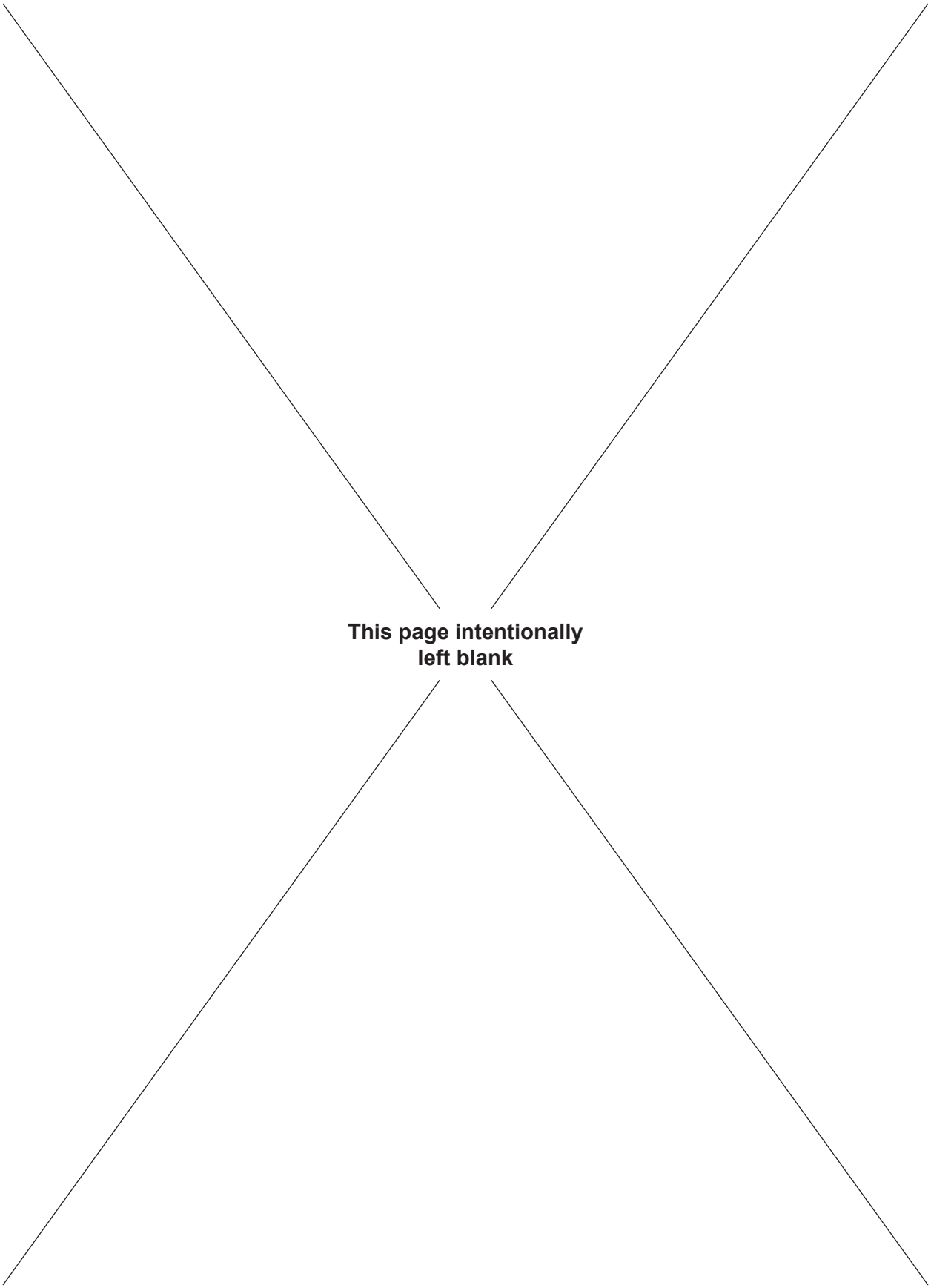
# SECTION 7: PARTS & ASSEMBLIES



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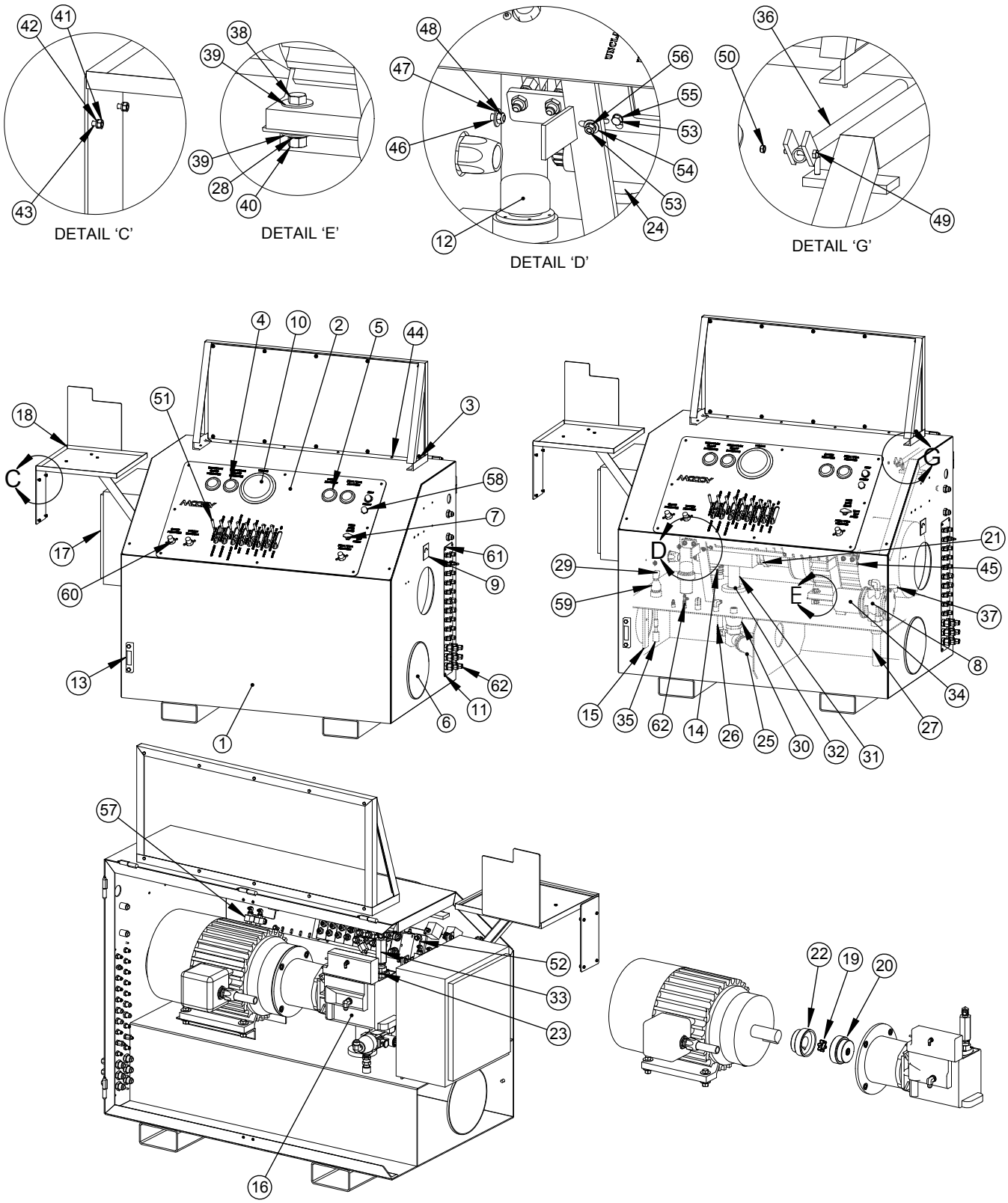



**Illustration 7.1: RP5047-6000 Control Console Power Unit Assembly**

| ITEM NO. | QTY. | PART NUMBER | DESCRIPTION |
|---|---|---|---|
| 1 | 1 | 100-6500-7 | CONSOLE/HPU WELDMENT |
| 2 | 1 | 6000-08 | 8 BANK CONSOLE OVERLAY |
| 3 | 1 | CBCS500 | CONSOLE SHIELD ASSEMBLY |
| 4 | 3 | 133-6500 | 2-1/2" 0-3000 PSI GAUGE |
| 5 | 1 | 135-6500 | 2-1/2" 0-5000 PSI GAUGE |
| 6 | 2 | SEC-12 | CLEANOUT COVER |
| 7 | 1 | 73028 | 4-WAY BALL VALVE |
| 8 | 1 | P563268 | FILTER HEAD W/ 1 1/4" FNPT PORTS |
| 9 | 1 | RPTAG1 | CLOCKWISE ROTATIONAL STICKER |
| 10 | 1 | 134-6500 | 6" 0-5000 PSI GAUGE |
| 11 | 24 | SST-08 | 1/4"-20 X 3/4" BHCS SOCKET STAINLESS STEEL |
| 12 | 1 | PU4060-S30 | FILLER CAP |
| 13 | 1 | PU4060-S31 | SIGHT LEVEL GAUGE |
| 14 | 1 | RPDV5047-3501 | DUMP VALVE ASSEMBLY |
| 15 | 2 | 12002000 | HATCH COVER MOUNTING BAR |
| 16 | 1 | 7003638 | HYDRAULIC PUMP 75cc, LS JRRO75C-LS-21-20-NN-N-3-S1N2 -A2N-NNN-NNN-NNN |
| 17 | 1 | RP480-A202010LP | ELECTRICAL BOX F/ 380V TO 480V INCLUDES CONTACTOR, 120V GFI REC. |
| 18 | 1 | CLEBU1210-03 | COMPUTER TRAY W/ BRACKETS |
| 19 | 1 | 570H | INSERT SPIDER |
| 20 | 1 | PU2500-H18 | PUMP SHAFT COUPLING 14T, 12/24 SPLINE MfgNo : M500A1412C |
| 21 | 1 | PU2500-H6 | Pump/ Motor Mounting Adapter SAE C 4 bolt x 7.62" long |
| 22 | 1 | PU4060-s6 | MOTOR SHAFT COUPLING |
| 23 | 1 | W43-16-16 U | FLANGE KIT 1" |
| 24 | 1 | W43-32-32U | FLANGE KIT 2" FNPT |
| 25 | 1 | 2STRAINER | 2" SUCTION STRAINER |
| 26 | 2 | 1404-B | 3/4" X 7.5" PIPE NIPPLE (SCH. 80) |
| 27 | 1 | PN20-7500 | 1 1/4" X 4 1/2" PIPE NIPPLE SCH. 80 |
| 28 | 8 | 1151 | LOCKWASHER 5/8" GR8 |
| 29 | 1 | EBWOO 1R3004A20A120 | 3P 10A FEM RCPT |
| 30 | 1 | RP04-200 | 2" SWING CHECK VALVE (FLAPPER VALVE) |
| 31 | 1 | PN32-10000 | PIPE NIPPLE 2 IN X 10 IN LONG |
| 32 | 1 | D2375 | ROD WIPER 2 1/2"ID 3"OD 3/8"HGT. 1/4"BASE THK. * |
| 33 | 1 | CVH05-0750N | 3/4 CHECK VALVE |
| 34 | 1 | P165875 | FILTER ELEMENT |
| 35 | 1 | PU 4060-S33 | FLOAT SWITCH 1/4" MNPT |
| 36 | 2 | 173-6500 | UPRIGHT TUBE |
| 37 | 1 | LFT-134-2 | GAUGE FILTER 2 IN FACE 60 PSI .125 NPT |
| 38 | 4 | 202 | HHCS 5/8"-11 X 2 1/2" GR8 |
| 39 | 8 | 195-A | 5/8" FLATWASHER |
| 40 | 4 | 194 | HEX NUT 5/8"-11 GR8 |
| 41 | 7 | 100 | HEX NUT 1/4"-20 GR8 |
| 42 | 7 | 101 | LOCKWASHER 1/4" GR8 |
| 43 | 7 | 104 | HHCS 1/4"-20 X 3/4" GR8 |
| 44 | 6 | SST-18 | BHCS 1/4"-20 X 1" SOCKET STAINLESS STEEL |
| 45 | 14 | 1737 | NYLOCK NUT 1/4"-20 S/S |
| 46 | 8 | 1048 | HHCS 3/8"-16 X 1 1/4" GR8 |
| 47 | 16 | 1025 | FLATWASHER 3/8" GR8 |
| 48 | 8 | 213 | NYLOCK NUT 3/8"-16 GR8 |
| 49 | 2 | 108 | HHCS 1/4"-20 X 1 3/4" GR8 |
| 50 | 2 | 212 | NYLOCK NUT 1/4"-20 GR8 |
| 51 | 1 | RPV5047-6000 | 8 BANK PVG32 VALVE |
| 52 | 1 | 108-6500-02 | PVG 32 VALVE MOUNTING PLATE |
| 53 | 8 | 124 | HHCS 5/16"-18 X 1 1/2" GR8 |
| 54 | 8 | 119 | 5/16" FLATWASHER |
| 55 | 8 | 1023-B | LOCKWASHER 5/16" GR8 |
| 56 | 4 | 1023-A | HEX NUT 5/16"-18 GRADE 8 |
| 57 | 4 | LSV1-6T-N | SHUTTLE VALVE |
| 58 | 1 | KITRPEM-01 | 50 HP ELECTRIC MOTOR KIT |
| 59 | 1 | KITFIT-RPEPU | LEVEL SWITCH FOR EPU |
| 60 | 3 | CRSS20009-01 | REMOTE OPERATED RELIEF VALVE PANEL MOUNT-S/S |
| 61 | 1 | 152-6500 | SIDE OVERLAY (BULKHEAD) |
| 62 | 1 | KITFIT-RP5047-6000 | RP6000 FITTING KIT |

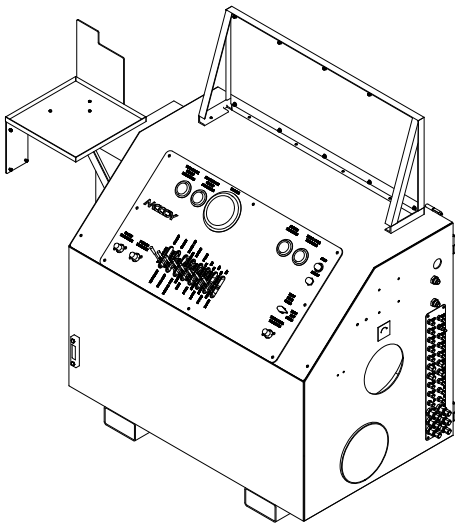
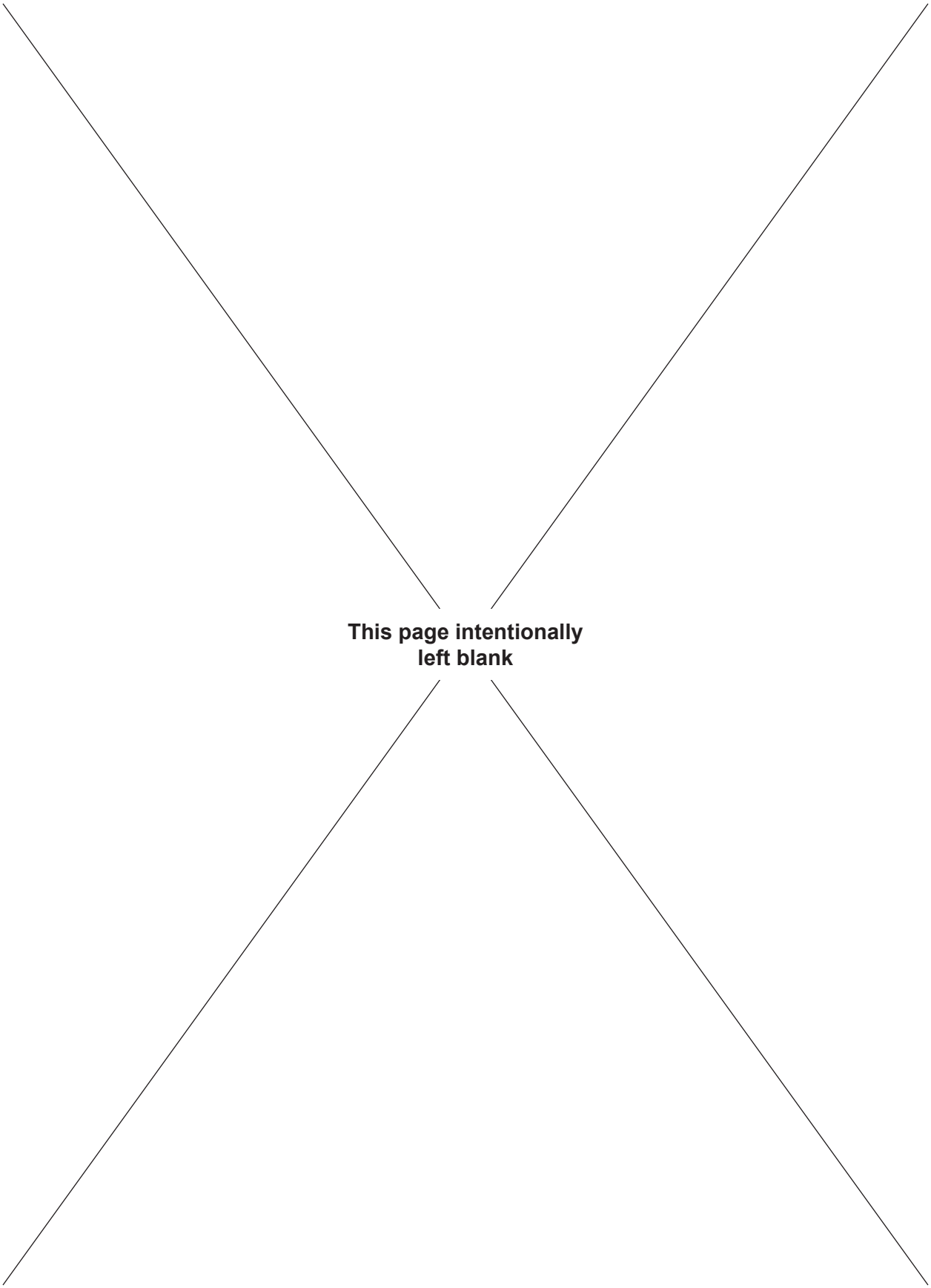


**Illustration 7.2: RP5047-6000 Control Console Power Unit Assembly BOM**



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# SECTION 8: OEM DOCUMENTATION

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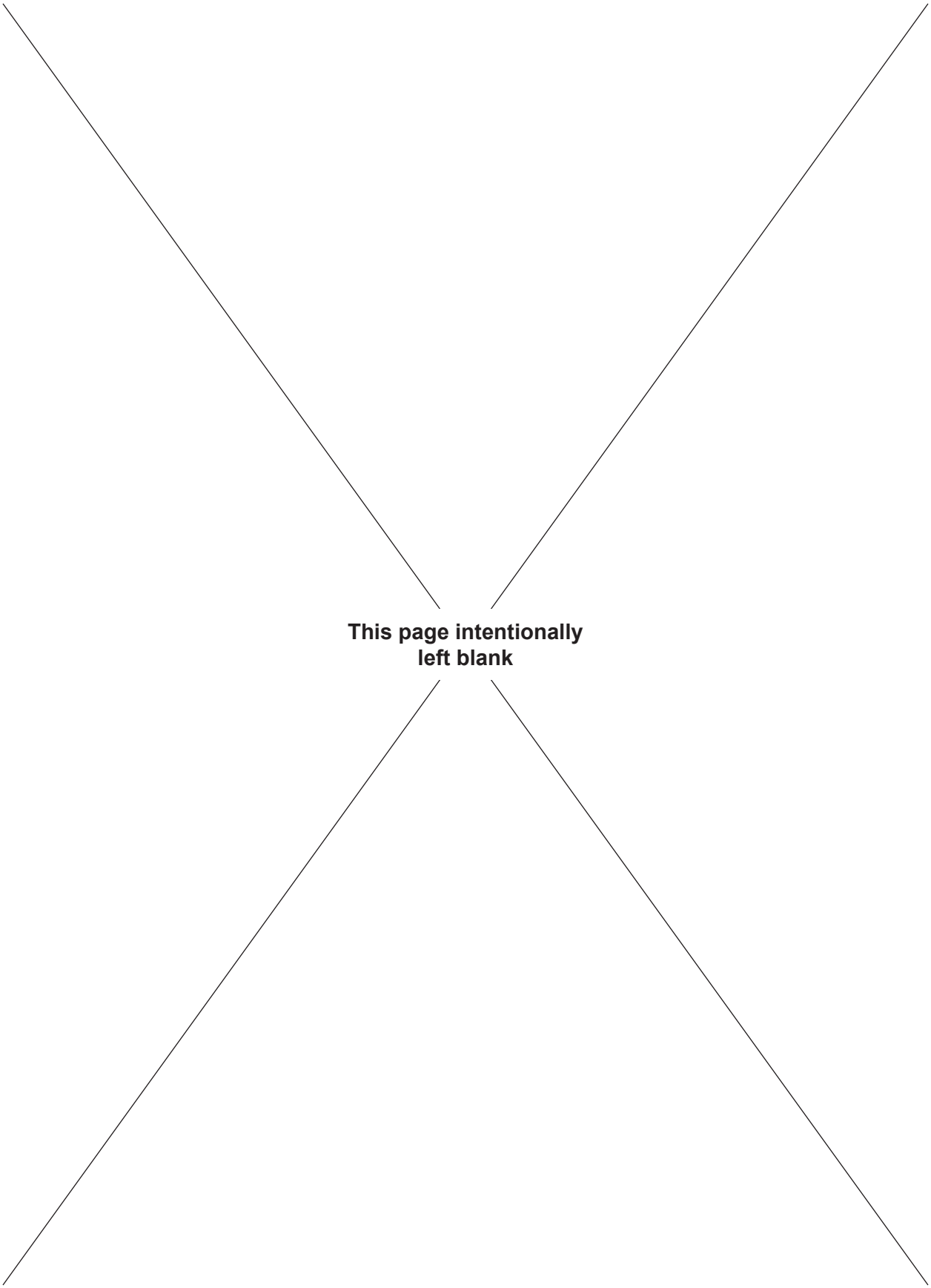

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8.0 OEM DOCUMENTATION LINKS

## Electric Motor:

http://www.weg.net/ca/Products-Services/Electric-Motors/Industrial-Electric-Motors