KALAMAZOO INDUSTRIES, INC.

# Instruction Manual

# K10WBT 10" Enclosed Bench Top Metallurgical Wet Saw

Kalamazoo Industries, Inc.
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Kalamazoo, Michigan

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# 1. Introduction

Thank you for choosing the Kalamazoo Industries K10WBT 10-Inch Enclosed Bench Top Metallurgical Wet Saw. This industrial-grade wet sectioning machine is designed to deliver efficient, clean cuts of metal samples for metallographic sample preparation and metallurgical analysis.

The K10WBT features a robust 2HP three-phase TEFC motor delivering a spindle speed of 3,450 RPM, a fully enclosed all-steel construction, and a heavy-duty recirculating coolant system with a 6-gallon capacity tank. The wet cutting process minimizes heat damage and preserves sample integrity, making this machine ideal for material inspection, weld testing, and precision sectioning tasks.

Please read this manual thoroughly before operating the equipment. Proper understanding of the machine's features, safety requirements, and maintenance procedures will ensure optimal performance and longevity.

## 1.1 Intended Use

The K10WBT is specifically designed for wet cutting of ferrous metals and materials for metallurgical analysis, including:

- Low-carbon steel (bar stock, angle iron, flat stock)
- Structural steel and alloys
- Cast iron
- Rebar
- Mild steel pipe
- Weld samples for inspection and testing
- Ceramic materials

# 2. Safety Information

**⚠ WARNING: TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN, LIQUID, OR MOISTURE BEYOND THE DESIGNED COOLANT SYSTEM.**

Read all safety instructions before operating this equipment. Failure to follow safety guidelines may result in serious injury or death.

## 2.1 General Safety Precautions

1. Always wear appropriate personal protective equipment (PPE) including safety glasses, hearing protection, and work gloves.
2. Keep the work area clean and well-lit. Cluttered or dark areas invite accidents.
3. Do not operate the saw under the influence of drugs, alcohol, or medication that may impair judgment.
4. Keep bystanders at a safe distance from the operating machine.
5. Never leave the machine running unattended.
6. Ensure the enclosed door is properly closed during operation.
7. Disconnect power before changing wheels or performing maintenance.
8. Securely clamp all workpieces in the vises before cutting.
9. Use only water-soluble coolant with a rust inhibitor in the coolant system.

## 2.2 Electrical Safety

- Ensure proper grounding of the machine before operation.
- Verify voltage requirements match your facility’s electrical supply (230V or 460V three phase).
- Use only qualified electricians for electrical connections and repairs.
- Do not operate with damaged wiring or electrical components.

## 2.3 Abrasive Wheel Safety

- Use only 10" abrasive cutoff wheels rated for 3,450 RPM or higher.
- Inspect wheels for cracks, damage, or excessive wear before each use.
- Replace damaged or worn wheels immediately.
- Allow the wheel to reach full speed before beginning a cut.
- Select the appropriate wheel type for your specific material.

## 2.4 Coolant System Safety

- Monitor coolant level regularly during operation. Never operate without adequate coolant.
- Use only recommended water-soluble coolant with rust inhibitor.
- Clean and replace coolant regularly to prevent bacterial growth and maintain cutting performance.
- Ensure coolant nozzles are properly directed at the cutting zone before starting.

# 3. Technical Specifications

## 3.1 Motor and Performance

| Specification | Value |
|---|---|
| **Motor Power** | 2 HP TEFC |
| **Phase** | 3 Phase |
| **Voltage Options** | 230V or 460V |
| **3PH FLA (230V)** | 5.2 amps |
| **3PH FLA (460V)** | 2.6 amps |
| **Pump FLA (115V)** | 2.4 amps |
| **Spindle Speed** | 3,450 RPM |
| **Spindle Arbor** | 5/8" LH (optional: 1.250" or 32mm) |
| **Blade Diameter** | 10" abrasive cutoff wheel (not included) |

## 3.2 Cutting Capacity

| Material Type | Maximum Capacity |
|---|---|
| **Solid Round (Mild Steel)** | 1-1/2 inches |
| **Pipe (Mild Steel)** | 2-1/2 inches |

## 3.3 Coolant System

| Component | Specification |
|---|---|
| **Pump Type** | Heavy-duty recirculating pump |
| **Coolant Tank** | Metal, 6-gallon capacity |
| **Coolant Nozzles** | Adjustable dual flare nozzles with flow control ball valve |
| **Wash Down** | Integrated wash down hose |
| **Recommended Coolant** | Water-soluble coolant with rust inhibitor |

## 3.4 Construction

| Component | Material/Type |
|---|---|
| **Enclosure** | Fully enclosed all-steel construction |
| **Access Panel** | Removable 5" left side panel for long parts |
| **Motor Access** | Removable rear access panel |
| **Controls** | Magnetic controls with 24V on/off push/pull buttons |
| **Lighting** | Internal light |
| **Vise System** | Two robust replaceable 2-7/16" toolmakers vises |
| **Work Table** | T-Slot table |
| **Wheel Guard** | Integrated enclosed wheel guard |

## 3.5 Dimensions and Weight

| Dimension | Measurement |
|---|---|
| **Shipping Length (without stand)** | 47 inches |
| **Shipping Width (without stand)** | 37 inches |
| **Shipping Height (without stand)** | 40 inches |
| **Shipping Weight (without stand)** | 500 lbs (crated) |
| **Shipping Length (with stand)** | 48 inches |
| **Shipping Width (with stand)** | 37 inches |
| **Shipping Height (with stand)** | 69 inches |
| **Shipping Weight (with stand)** | 700 lbs (crated) |

*Note: Shipping weights and dimensions are subject to change.*

# 4. Features and Components

## 4.1 Key Features

The K10WBT incorporates several features designed for industrial metallurgical performance and operator convenience:

### Fully Enclosed All-Steel Construction

The fully enclosed design contains coolant splash and debris, maintaining a clean work environment while protecting the operator. All-steel construction ensures long-lasting durability and reliability.

### Heavy-Duty Recirculating Coolant System

The integrated coolant system features a heavy-duty recirculating pump and a 6-gallon metal coolant tank for continuous wet cutting operation. Adjustable dual coolant flare nozzles with flow control ball valve provide precise coolant delivery to the cutting zone.

### Magnetic Controls

Magnetic controls with 24V on/off push/pull buttons provide safe, reliable machine operation. The magnetic starter prevents automatic restart after a power interruption.

### Toolmakers Vises

Two robust, replaceable 2-7/16" toolmakers vises provide secure, precise clamping for metallurgical sample preparation.

### T-Slot Table

The T-slot work table allows flexible workpiece positioning and accommodates custom fixturing for specialized cutting applications.

### Internal Lighting

Built-in internal lighting provides clear visibility of the cutting area through the enclosed viewing window.

### Removable Side Access Panel

A removable 5" left side access panel accommodates long parts that extend beyond the enclosure.

### Wash Down Hose

An integrated wash down hose simplifies cleaning of the cutting chamber and coolant tank.

## 4.2 Available Options

- 710-052 Door safety interlocks
- Alternative spindle arbor: 1.25" or 32mm
- Steel Stand (Model 12-WBT): Provides a stable, ergonomic working height

# 5. Installation and Setup

## 5.1 Unpacking and Inspection

1. Carefully remove all packing materials and inspect the machine for shipping damage.
2. Verify all components are present according to the packing list.
3. Report any damage or missing items to Kalamazoo Industries immediately.
4. Remove any protective coatings from machined surfaces.

## 5.2 Location Requirements

- Place the machine on a level, stable surface capable of supporting the machine weight.
- Ensure adequate clearance around all sides for operation, maintenance, and door opening.
- Provide adequate lighting and ventilation.
- Position the machine near a floor drain or use drip trays for coolant management.

## 5.3 Electrical Connection

**CAUTION:** Electrical connections must be performed by a qualified electrician in accordance with local electrical codes.

1. Verify the voltage requirements match your facility's power supply (230V or 460V three phase).
2. Connect to an appropriately rated circuit with proper overcurrent protection.
3. Ensure proper grounding according to electrical code requirements.
4. Check motor rotation direction before operating. The wheel should rotate down and toward the workpiece.

## 5.4 Coolant System Setup

1. Fill the coolant tank with water-soluble coolant mixed with rust inhibitor per the coolant manufacturer's recommendations.
2. Prime the recirculating pump by turning on the coolant system and verifying flow.
3. Adjust the dual flare nozzles to direct coolant flow to both sides of the cutting zone.
4. Set the flow control ball valve to the desired coolant volume.

## 5.5 Abrasive Wheel Installation

1. Disconnect power from the machine.
2. Verify the wheel is rated for at least 3,450 RPM and is designed for the material you will be cutting.
3. Install the wheel on the 5/8" LH spindle arbor.
4. Secure with the flange and arbor nut, tightening snugly with wrench only.
5. Reconnect power and verify proper wheel rotation.

# 6. Operation Instructions

## 6.1 Pre-Operation Checklist

- Inspect the abrasive wheel for damage, cracks, or excessive wear.
- Verify the wheel is properly secured and rated for 3,450 RPM.
- Check coolant level in the tank and top off if necessary.
- Verify coolant nozzles are properly aimed at the cutting zone.
- Ensure the work area is clean and free of obstructions.
- Put on required personal protective equipment.

## 6.2 Cutting Procedure

1. Position the material in the toolmakers vise, ensuring it is square to the wheel.
2. Secure the workpiece firmly in the vise.
3. Close the enclosure door.
4. Turn on the coolant system and verify flow to the cutting area.
5. Turn on the machine using the magnetic control push button.
6. Allow the wheel to reach full operating speed (3,450 RPM).
7. Lower the saw arm smoothly and steadily, applying consistent pressure.
8. Complete the cut and raise the saw arm to the full up position.
9. Turn off the machine and wait for the wheel to stop completely.
10. Turn off the coolant pump.
11. Open the enclosure door and remove the workpiece.

## 6.3 Cutting Tips for Best Results

- Use consistent, moderate feed pressure; let the wheel do the work.
- Ensure adequate coolant flow throughout the entire cut to minimize heat damage.
- Select the appropriate wheel type for your material.
- Support long materials adequately using the side access panel if needed.
- Allow the wheel to clear debris naturally; do not force cuts.
- For metallographic samples, use a slower feed rate to produce cleaner cut surfaces.

# 7. Maintenance

## 7.1 Daily Maintenance

- Clean metal shavings, dust, and debris from the cutting chamber after each use.
- Inspect the abrasive wheel for damage or wear.
- Check vise operation and tighten if necessary.
- Verify coolant level and condition; top off as needed.
- Use the wash down hose to clean the interior of the enclosure.

## 7.2 Weekly Maintenance

- Inspect V-belt for wear, cracks, or proper tension.
- Check all fasteners for tightness.
- Clean coolant nozzles to ensure unobstructed flow.
- Inspect the coolant tank for sediment buildup.

## 7.3 Monthly Maintenance

- Inspect bearings for noise or rough operation.
- Clean motor housing to prevent dust accumulation and overheating.
- Check wiring and electrical connections for wear or loose contacts.
- Verify motor mounting hardware is secure.
- Drain, clean, and refill the coolant tank with fresh coolant solution.
- Inspect and clean the recirculating pump and intake screen.

## 7.4 Wheel Replacement

Replace wheels when they show signs of wear (reduced diameter), visible damage, cracks, or chips. Follow the wheel installation procedure in Section 5.5.

# 8. Troubleshooting

| Problem | Possible Cause / Solution |
|---|---|
| **Motor will not start** | Check power supply and connections; verify magnetic starter is engaged; replace switch if faulty |
| **Excessive vibration** | Check arbor nut tightness; replace damaged wheel; replace worn spindle bearings |
| **Poor cut quality** | Replace worn wheel; select appropriate wheel for material; reduce feed pressure; increase coolant flow |
| **Wheel overheating** | Reduce feed rate; increase coolant flow; verify nozzle aim; select wheel rated for material |
| **Material slipping** | Increase vise clamping pressure; replace worn vise jaws |
| **Belt slippage** | Replace worn V-belt; adjust belt tension |
| **Coolant not flowing** | Check pump operation; verify tank level; clean nozzles and intake screen; check flow control valve |
| **Coolant leaking** | Inspect door seals; check tank and hose connections; verify drain plug is secure |
| **Internal light not working** | Replace bulb; check wiring connections |

# 9. Replacement Parts

Genuine Kalamazoo Industries replacement parts are kept in stock and shipped from Kalamazoo, Michigan. Using genuine parts ensures optimal machine performance and maintains warranty coverage.

## 9.1 Recommended Spare Parts

We recommend keeping the following parts on hand to minimize downtime:

| Part Number | Description |
|---|---|
| **292-047** | Spindle with Tight Flange |
| **292-008** | Loose Flange |
| **702-002** | Spindle Assembly |
| **710-052** | Door Safety Interlocks (optional) |

## 9.2 Ordering Parts

To order replacement parts, contact Kalamazoo Industries directly or visit the online parts store at www.kalamazooind.com. Have your machine model number (K10WBT) ready when ordering.

# 10. Warranty Information

## 10.1 Warranty Coverage

Parts warranty is guaranteed for one year from the original date of purchase by the original purchaser, covering defects in material or workmanship under normal use. This warranty covers the replacement of defective parts. Some exclusions may apply.

## 10.2 Warranty Exclusions

This warranty does not cover:

- Normal wear items including abrasive wheels, belts, and bearings
- Damage resulting from misuse, abuse, or improper maintenance
- Damage from cutting inappropriate materials
- Modifications or alterations to the machine
- Damage from improper electrical connection
- Coolant system damage due to use of non-recommended coolant

## 10.3 Return Authorization

Obtain written authorization before returning any merchandise by contacting Customer Service at (269) 382-2050. Unauthorized returns may not be accepted.

# 11. Contact Information

**KALAMAZOO INDUSTRIES, INC.**
Kalamazoo, Michigan

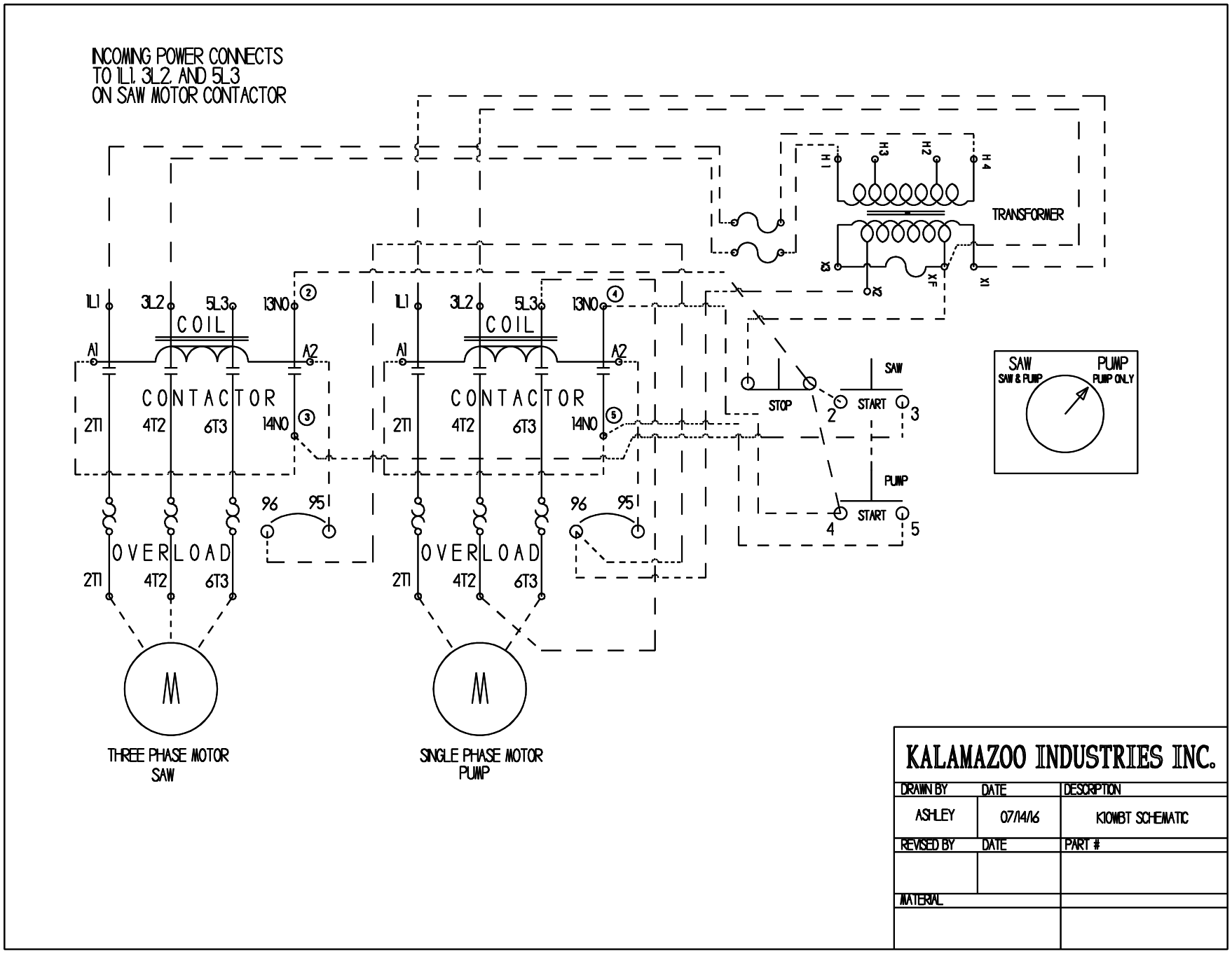
**Toll-Free: 1-800-592-2050**
Local: (269) 382-2050
Website: www.kalamazooind.com
Office Hours: Monday – Friday, 8:00 AM – 4:30 PM EST

### Online Resources

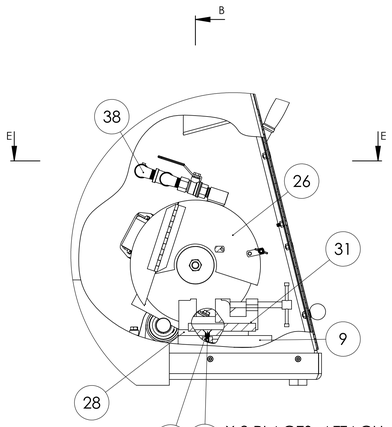
- Product Registration: www.kalamazooind.com/product-registration
- Parts Orders: www.kalamazooind.com/parts-by-category
- Technical Videos: www.kalamazooind.com/videos
- Contact Form: www.kalamazooind.com/contact-us

***Thank you for choosing Kalamazoo Industries!***

**Made in the USA**

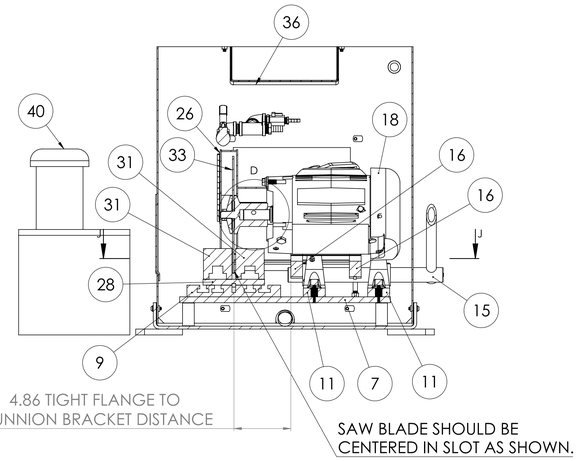

INCOMING POWER CONNECTS
TO 1L1, 3L2, AND 5L3
ON SAW MOTOR CONTACTOR
H1
H3
H2
H4
TRANSFORMER
X2
X1
XF
1L1
3L2
5L3
13NO
COIL
A1
A2
CONTACTOR
2T1
4T2
6T3
14NO
96
95
OVERLOAD
M
THREE PHASE MOTOR
SAW
SINGLE PHASE MOTOR
PUMP
SAW
STOP
START
PUMP
SAW & PUMP
PUMP ONLY
KALAMAZOO INDUSTRIES INC.
DRAWN BY
DATE
DESCRIPTION
ASHLEY
07/14/16
K10MBT SCHEMATIC
REVISED BY
DATE
PART #
MATERIAL
Y
X
inch

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | 050-052 | BASE FOR K10WBT | 1 |
| 2 | 124-008-REV1 | CABINET, HOOD FOR K10WBT-REV1 | 1 |
| 3 | UFWZ037 | 3/8 USS F/W Z | 2 |
| 4 | SLWZ037 | 3/8 SPLIT L/W Z | 2 |
| 5 | BSCA025012 | 1/4-20 X 3/4 BSHCS | 8 |
| 6 | SLWZ025 | 1/4 SPLIT L/W Z | 10 |
| 7 | 556-129 | PLATE, TOP FOR K10WBT | 1 |
| 8 | FSCA037020 | 3/8-16 X 1-1/4 FSHCS | 4 |
| 9 | TS-10 | T-SLOT TABLE FOR K10WBT | 1 |
| 10 | SHCA037016 | 3/8-16 X 1 SHCS | 4 |
| 11 | 044-032 | UCP207-20 1-1/4" PILLOW BLOCK BEARING FOR K10WBT AND KVF-3 | 2 |
| 12 | SHCA050024 | 1/2-13 X 1-1/2 SHCS | 4 |
| 13 | SFWZ050 | 1/2 SAE F/W Z | 4 |
| 14 | SLWZ050 | 1/2 SPLIT L/W Z | 4 |
| 15 | 562-046 | TRUNNION PIN FOR K10WBT | 1 |
| 16 | 041-085 | TRUNNION BRACKET FOR K10WBT (2 REQ) | 2 |
| 17 | SHCA037040 | 3/8-16 X 2-1/2 SHCS | 2 |
| 18 | 486-063 | MOTOR FOR K10WBT | 1 |
| 19 | UFWZ031 | 5/16 USS F/W Z | 4 |
| 20 | SLWZ031 | 5/16 SPLIT L/W Z | 4 |
| 21 | HHC5031016 | 5/16-18 X 1 HHCS GR5 Z | 4 |
| 22 | 292-047 | TIGHT FLANGE SPINDLE COMBO FOR K10WBT | 1 |
| 23 | SSDA031012 | 5/16-18 X 3/4 SOC SET FULL DOG | 3 |
| 24 | 292-008 | LOOSE FLANGE FOR K10B AND 2SK7 | 1 |
| 25 | 537-025 | SPINDLE NUT FOR K10 SERIES SAWS | 1 |
| 26 | 342-107 | WHEEL GUARD FOR K10WBT | 1 |
| 27 | HHC5037016 | 3/8-16 X 1 HHCS GR5 Z | 2 |
| 28 | 556-130 | VISE PLATE FOR K10WBT | 1 |
| 29 | 73154312 | T-NUT FOR T-SLOT TABLE 3/8-16 TAPPED THRU T SLOT NUT 1/2" X 7/8 X 9/32 | 2 |
| 30 | FSCA037016 | 3/8-16 X 1 FSHCS | 2 |
| 31 | 912-034 | VISE | 2 |
| 32 | SHCA025020 | 1/4-20 X 1-1/4 SHCS | 4 |
| 33 | 10 INCH ABRASIVE WHEEL | | 1 |
| 34 | HHC5037032 | 3/8-16 X 2 HHCS GR5 Z | 2 |
| 35 | FHN5037 | 3/8-16 FHN GR5 Z | 2 |
| 36 | 041-125 | K10WBT INTERLOCK SWITCH BRACKET | 1 |
| 37 | 381-008 | SOLID HANDLE WITH GRIP FOR K10WBT | 1 |
| 38 | 389-021 | COOLANT HOSE MOUNTING BRACKET ASSEMBLY W FLEX HOSE AND FITTINGS FOR K10WBT | 1 |
| 39 | HHC5025008 | 1/4-20 X 1/2 HHCS GR5 Z | 2 |
| 40 | 577-007 | 5 GALLON PUMP SYSTEM FOR K10WBT | 1 |
| 41 | 381-017 | DOOR KNOB HANDLE FOR K10WBT | 2 |
| 42 | SSSA037008 | 3/8-16 X 1/2 SOC SET CUP PT | 1 |



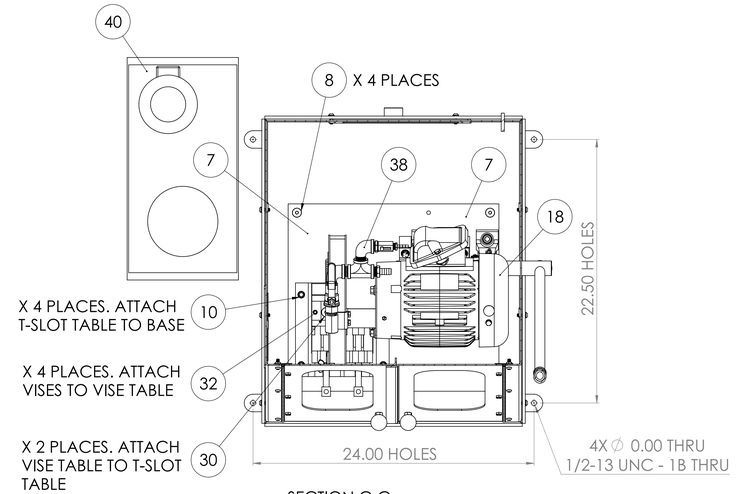

X 2 PLACES. ATTACH VISE TABLE TO T-SLOT TABLE

DETAIL A

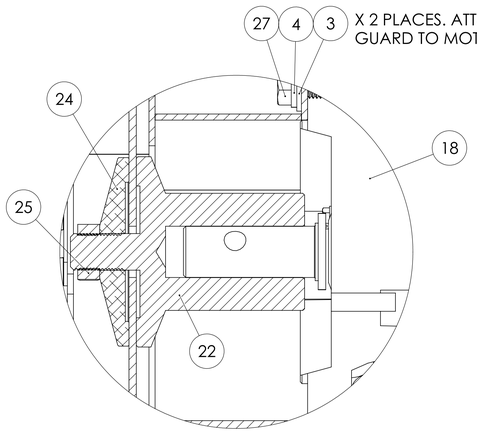



SAW BLADE SHOULD BE CENTERED IN SLOT AS SHOWN.

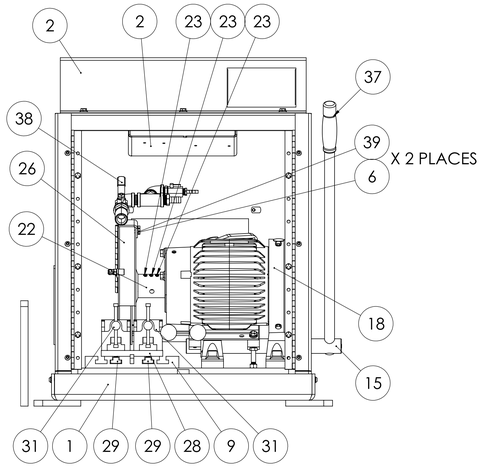
SECTION B-B



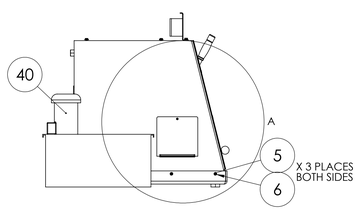

SECTION C-C



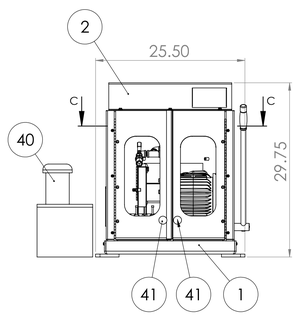

DETAIL D
SCALE 1 : 1



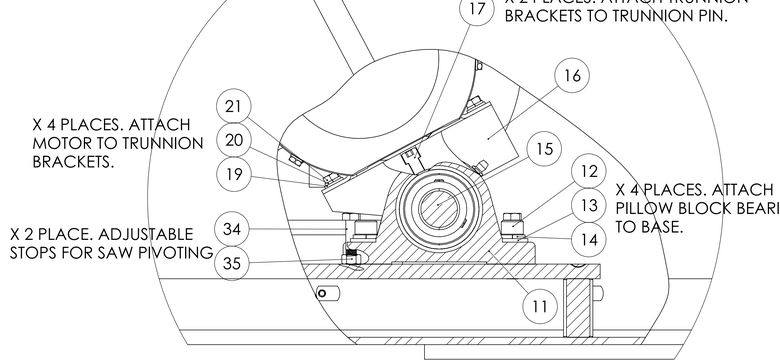

TIGHT FLANGE DETAIL



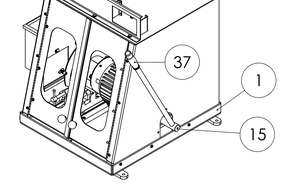

LEFT SIDE VIEW
SCALE 1 : 10



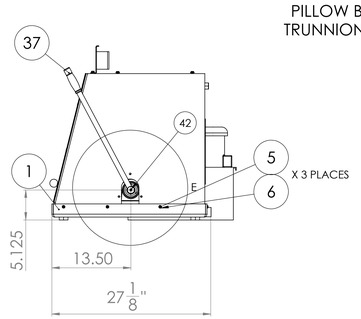

FRONT VIEW
SCALE 1 : 10



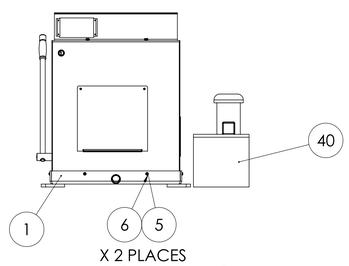

DETAIL E
SCALE 1 : 2




PILLOW BRACKETS AND TRUNNION COMPONENTS




RIGHT SIDE VIEW
SCALE 1 : 10




X 2 PLACES
FRONT AND BACK

BACK VIEW
SCALE 1 : 10



UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL
FINISH
NEXT ASSY | USED ON
APPLICATION | DO NOT SCALE DRAWING

| | NAME | DATE |
|---|---|---|
| DRAWN | | |
| CHECKED | | |
| ENG APPR. | | |
| MFG APPR. | | |
| Q.A. | | |
| COMMENTS: | | |

KALAMAZOO INDUSTRIES, INC.

TITLE: K10WBT BENCH TOP ASSEMBLY

SIZE E | DWG. NO. K10WBT-BENCHTOP | REV

SCALE: 1:5 | WEIGHT: | SHEET 1 OF 1