



Patent Number

7,975,835 B2

8,272,502 B2

MODEL NUMBER

EGD-250-48

SERIAL NUMBER

MOTOR MODEL NUMBER

9320

MOTOR SERIAL NUMBER



11/1/2014

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LIMITED WARRANTY

Pax Products Inc. (the "Company") warrants to the original purchaser of each Pax Conveyor that the conveyor will be free from defects in material and workmanship, under normal and proper installation, use and maintenance in accordance with the Company's instructions, for a period of 1 year after the date of shipment from the Company's plant.

Purchaser's exclusive remedy and the Company's sole liability under the above warranty or in connection with any other claim relating to the Pax Conveyor shall be limited to repair, or at the Company's option, the replacement or refund of the purchase price, of any Conveyor or part or component thereof which is returned to the Company freight prepaid and which is defective in material or workmanship. Defective Conveyors or parts or components thereof which the Company replaces become the property of the company. All Conveyors or parts or components thereof which are returned to the purchaser will be returned freight collect.

EXCEPT AS EXPRESSLY STATED ABOVE, THE COMPANY MAKES NO WARRANTY, EXPRESSED OR IMPLIED, WHETHER OF MERCANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR USE OR OTHERWISE ON ANY CONVEYOR OR ANY PARTS OR LABOR FURNISHED DURING THE SALE, DELIVERY, OR SERVICING OF ANY CONVEYOR.

IN NO EVENT SHALL THE COMPANY BE LIABLE TO ANY PURCHASER OR PERSON CLAIMING THROUGH ANY PURCHASER FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS A RESULT OF THE SALE, DELIVERY, NONDELIVERY, SERVICING, USE, OR LOSS OF USE OF ANY PAX CONVEYOR OR PART THEREOF OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT THE COMPANY'S WRITTEN CONSENT EVEN THOUGH THE COMPANY HAS BEEN NEGLIGENT. IN NO EVENT SHALL THE COMPANY'S LIABILITY UNDER ANY CLAIM MADE BY ANY PURCHASER OR PERSON CLAIMING THROUGH ANY PURCHASER EXCEED THE PURCHASE PRICE OF THE PAX CONVEYOR OR PART OF COMPONENT THEREOF IN RESPECT OF WHICH DAMAGES ARE CLAIMED.

Purchaser shall promptly inspect each conveyor upon receipt. Claims under the above warranty shall be made by contacting the Company at P.O. Box 257, 5097 Monroe Rd. Celina, OH 45822. Attn: Service Department (1-800-733-6930) or (419) 586-6948. No claim under the above warranty will be allowed unless made 10 days after the date of the warranty period on which the defect is or should have been discovered by the purchaser.



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DESIGN CHANGES

Consistent with sound engineering principals and recognized practices, Pax Products Inc. reserves the right to discontinue or change specifications, designs, and materials at any time without notice.

Design differences or changes that exist between the conveyor received and the conveyor illustrated in the manual are the result of design improvements or special arrangements contracted for at the time of purchase. Every effort is made to keep the manual consistent with the majority of the systems supplied.

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SAFETY

UNDER NO CIRCUMSTANCES SHOULD THE PAX CONVEYOR OR ANY COMPONENT BE PLACED IN SUCH A MANNER THAT COULD CAUSE POSSIBLE PERSONAL INJURY OR DAMAGE TO ANY EQUIPMENT.

DO NOT OPERATE CONVEYOR WITHOUT ALL COVERS IN PLACE.

CONVEYOR MUST BE INSTALLED AND OPERATED WITHOUT OBSTRUCTIONS TO THE MOVEMENT. SPECIFICALLY, THE OPERATOR MUST BE AWARE AND AVOID THE PINCH POINTS ASSOCIATED WITH THE NORMAL OPERATION OF THE CONVEYOR.

WHEN CONNECTING AND DISCONNECTING POWER TO THE UNIT, THE UNIT SHOULD BE TURNED OFF PRIOR TO UNPLUGGING/PLUGGING THE UNIT INTO THE SPECIFIED POWER SOURCE.

KEEP HANDS, LOOSE CLOTHING, JEWELRY ETC., AWAY FROM DISCHARGE END OF CONVEYOR AT ALL TIMES.

DUE TO POSSIBLE REMOTE PAX CONVEYOR CONTROLS, CONVEYOR MAY START OR STOP WITHOUT WARNING.

MAKE SURE POWER IS DISCONNECTED BEFORE SERVICING, TROUBLESHOOTING OR MOVING ANY PAX CONVEYOR.

NEVER REACH BETWEEN THE CONVEYOR AND THE DIE WHILE THE CONVEYOR OR THE PRESS IS IN OPERATION.

CONVEYORS SHOULD BE PLACED SO THAT NO COMPONENT OR COMBINATION OF COMPONENTS INTERFERE WITH THE NORMAL OPERATION OF ANY MACHINE.

VERIFY ALL CONNECTIONS AND BOLTS ARE SECURED. TIGHTEN ANY FASTENERS THAT MAY BE LOOSE BEFORE OPERATING

INSPECT TEE SLOT OR FLUSH MOUNTING BRACKETS FOR LOOSE FASTENERS. A SECURED MOUNTING BRACKET IS NECESSARY FOR SAFE OPERATION.

TRAYS SHOULD BE IN GOOD WORKING CONDITION. MAKE SURE ANY AND ALL BRACKETS ARE IN PLACE AND TIGHT. ANY QUICK CONNECT MOUNTING BRACKETS SHOULD FIT TIGHTLY ONTO THE SHAKER ARM. TRAYS SHOULD BE FREE OF SHARP EDGES AND MOVE FREELY IN THE SET-UP.

EGD CONVEYOR INSTALLATION

SECTION 1: PHYSICAL PLACEMENT

The Pax Elliptical Gear Drive, EGD, Conveyor was designed for under die material removal. The EGD-250-48 conveyor drive unit may be mounted via the T-slot or bolted to the bolster, depending on the choice of mounting brackets. Quick connect trays are placed between the bolster and the lower die section and between parallels. The quick connect trays are secured to the EGD shaker arm tubes by pressing down on the tray until the tray is seated firmly over the tube.

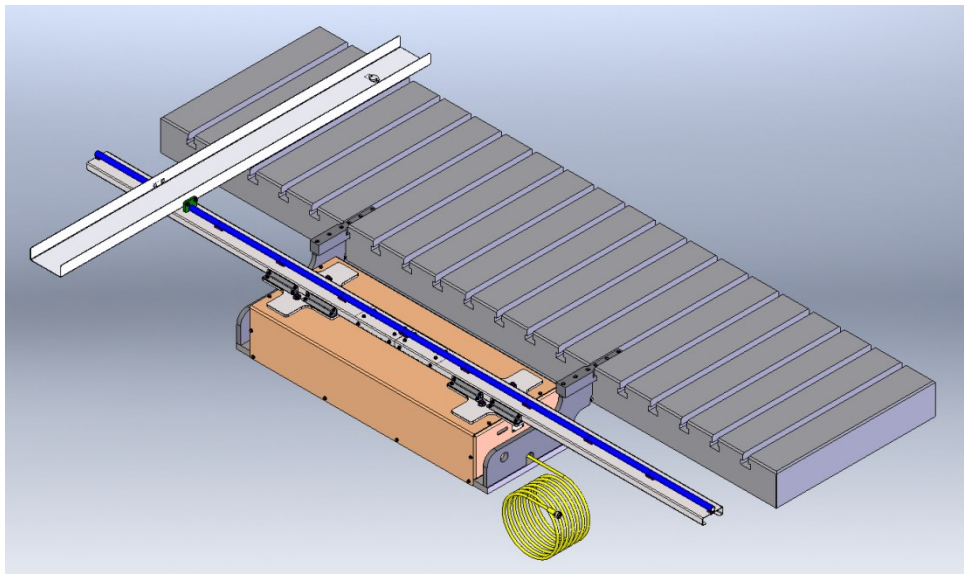


Figure 1: EGD-250-48 MOUNTED TO T-SLOTTED TABLE

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SECTION 2: ELECTRICAL REQUIREMENTS

Each Pax EGD-250-48 Conveyor comes standard equipped with a Variable Frequency Drive, VFD, and a power cord for 120 or 240 VAC single phase power source. Use of a power source other than that listed may cause damage to the conveyor motor and will void the warranty. Alternative VFD options are available for 240 VAC 3 phase and 480 VAC 3 phase inputs.

The Pax EGD-250-48 Conveyor is configured from the factory to operate using a local start command. The conveyor unit can be operated as a stand-alone unit by using the push button switch to manually turn the unit on and off.

Additionally, the conveyor unit can be tied to the press controls so that the press operation dictates whether the conveyor is on/off allowing reduced energy consumption and un-necessary wear on the conveyor drive when the press is not in operation. This is done by connecting to the VFD remote start command via a dry-contact. Pax Products strongly recommends the use of a time delayed relay contact to avoid excessive starts and stops when using the press controls to turn the conveyor unit on/off.

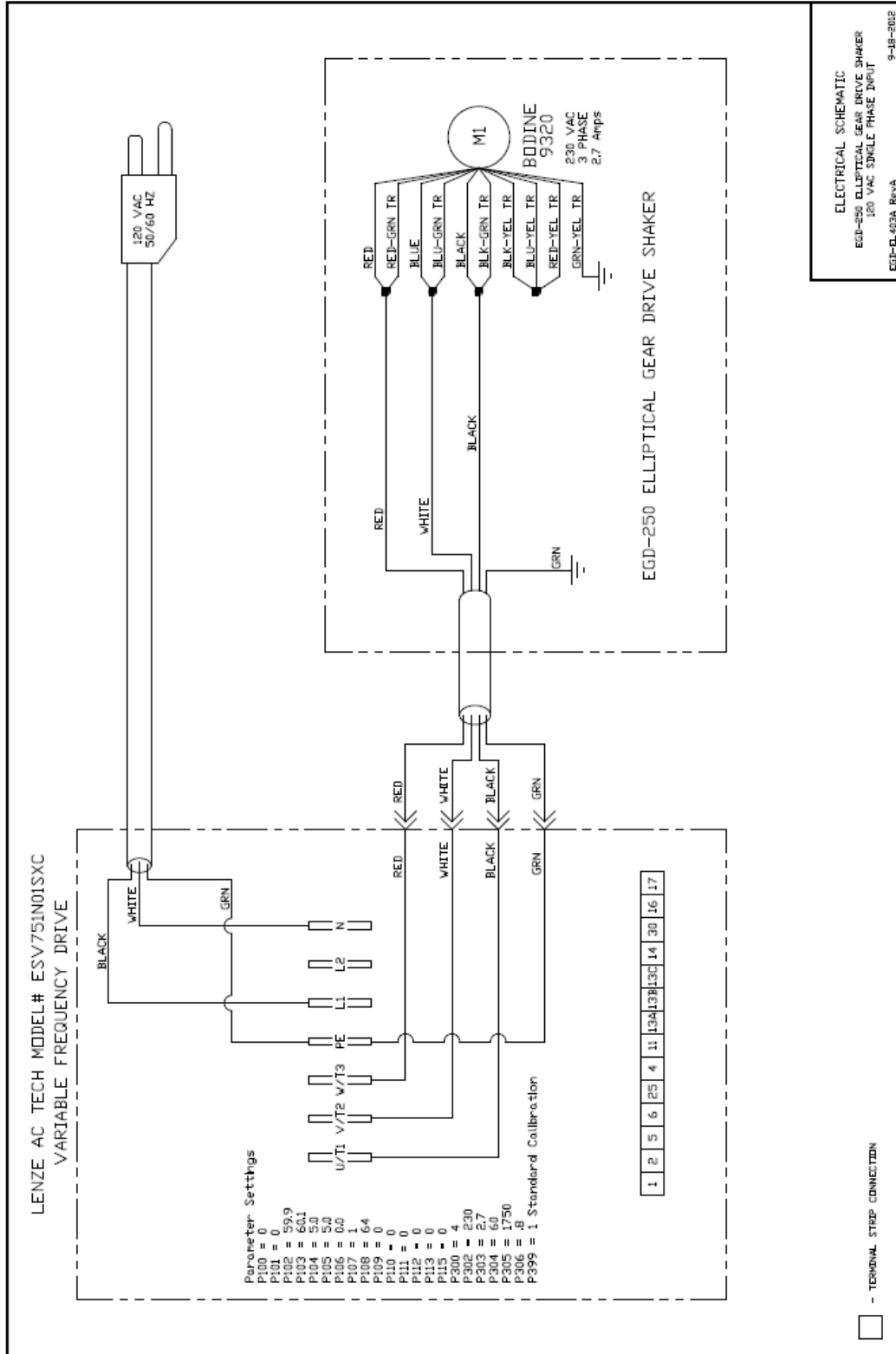


Figure 2: EGD-250, 50/60 Hz WITH LOCAL START WIRING DIAGRAM

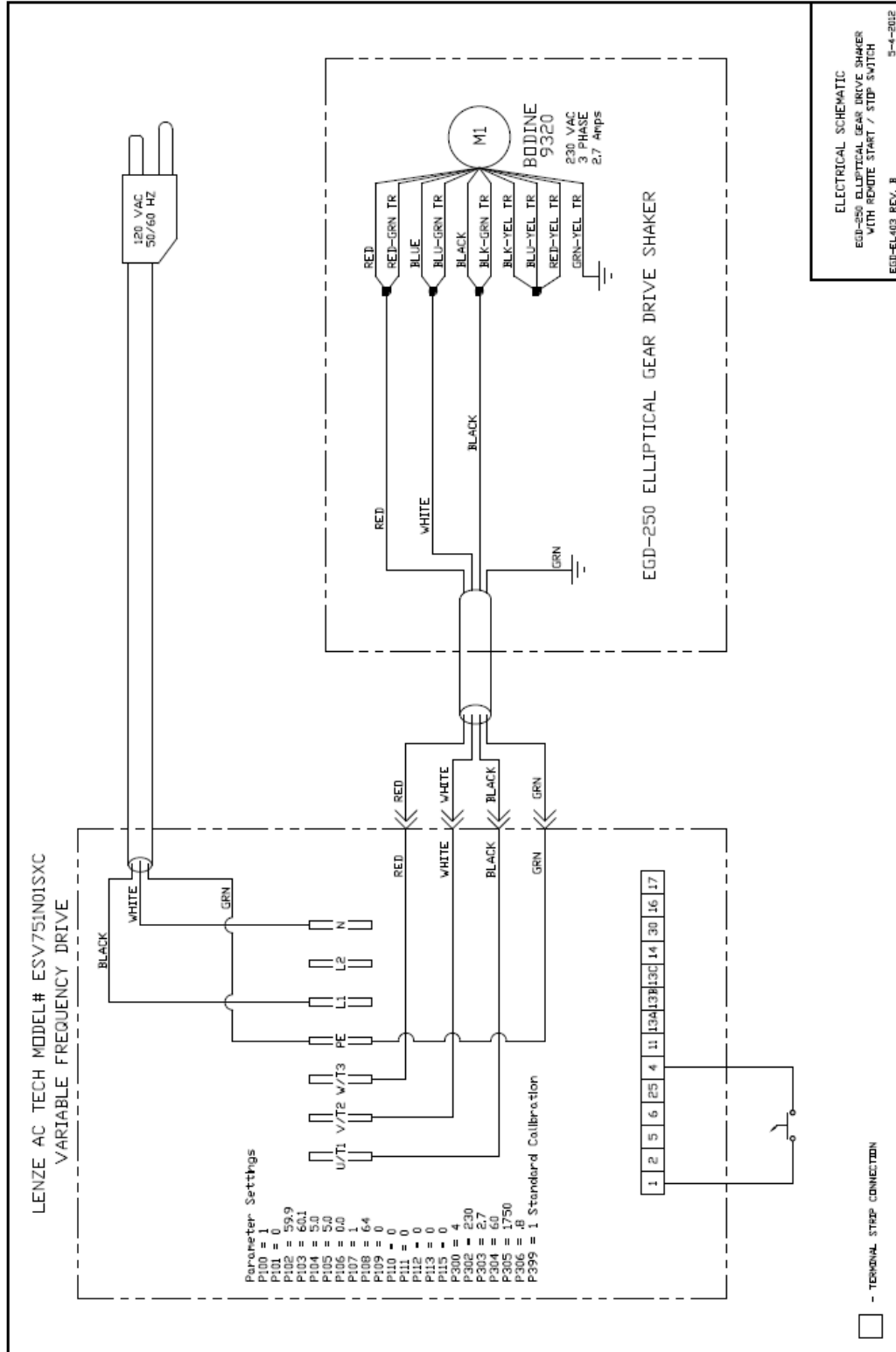


Figure 3: EGD-250, 50/60 Hz REMOTE START WIRING DIAGRAM



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CONVEYOR OPERATION

SECTION 1: CONVEYOR OPERATION

The primary function of the Pax EGD-250-48 Conveyor is to remove material from under the die and is specially designed for the stamping environment. The rugged construction will tolerate the abuse commonly found in press rooms. The rugged design of the shaker arm allows for quick attachment of trays that may be ordered through Pax. Custom dimensioned, textured trays with our quick connect brackets and wear pad may be ordered for your specific application.

The Pax EGD Conveyor product line uses a patented design to attain the unique motion presented in these machines. A set of elliptical gears are used to transfer constant rotary motion from the gearmotor into a smooth, constantly varying output speed. This unique output motion enhances the natural behavior of the slider-crank mechanism found in the EGD Conveyors.

Setting the VFD at the desired frequency output, 60 Hz, the conveyor operates at approximately 90 cycles per minute with part conveyance speeds up to 25 feet per minute, depending on the type of part being conveyed and the type and cleanliness of the tray.

The EGD-250-48 Conveyor moves material in a single direction. In order to change the direction the material moves, the EGD-250-48 drive unit can be turned 180 degrees on its mounting brackets by removing and reinstalling 6 bolts.

The elliptical gears transmit power from the gearmotor to the gearbox output crank. The output crank from the gearbox acts as a crank to a rocker-crank mechanism. The rocker linkage is connected to two drive blocks creating slider crank mechanisms at either end of the drive unit. The drive blocks connect to the adapter plates and transmit the linear motion to the shaker arm. The shaker arm is mounted to the adapter plates which transmits the shaking motion to the trays.

All Pax EGD Conveyors have a capacity rating based on the tray weight. The EGD-250-48 unit has a maximum tray capacity of 250 lbs (113.6 kgs) and no more than 75% of the tray load can be evenly distributed on either side of the unit. The EGD-250-48 unit supports a maximum shaker arm length of 144 inches (3658 mm). Additional consideration should be given to off-center loading or unbalanced loading of the conveyor. Questions on your particular application and setup can be directed to a Pax sales representative or call the factory direct and ask for technical assistance at 1-800-733-6930 or (419) 586-6948.

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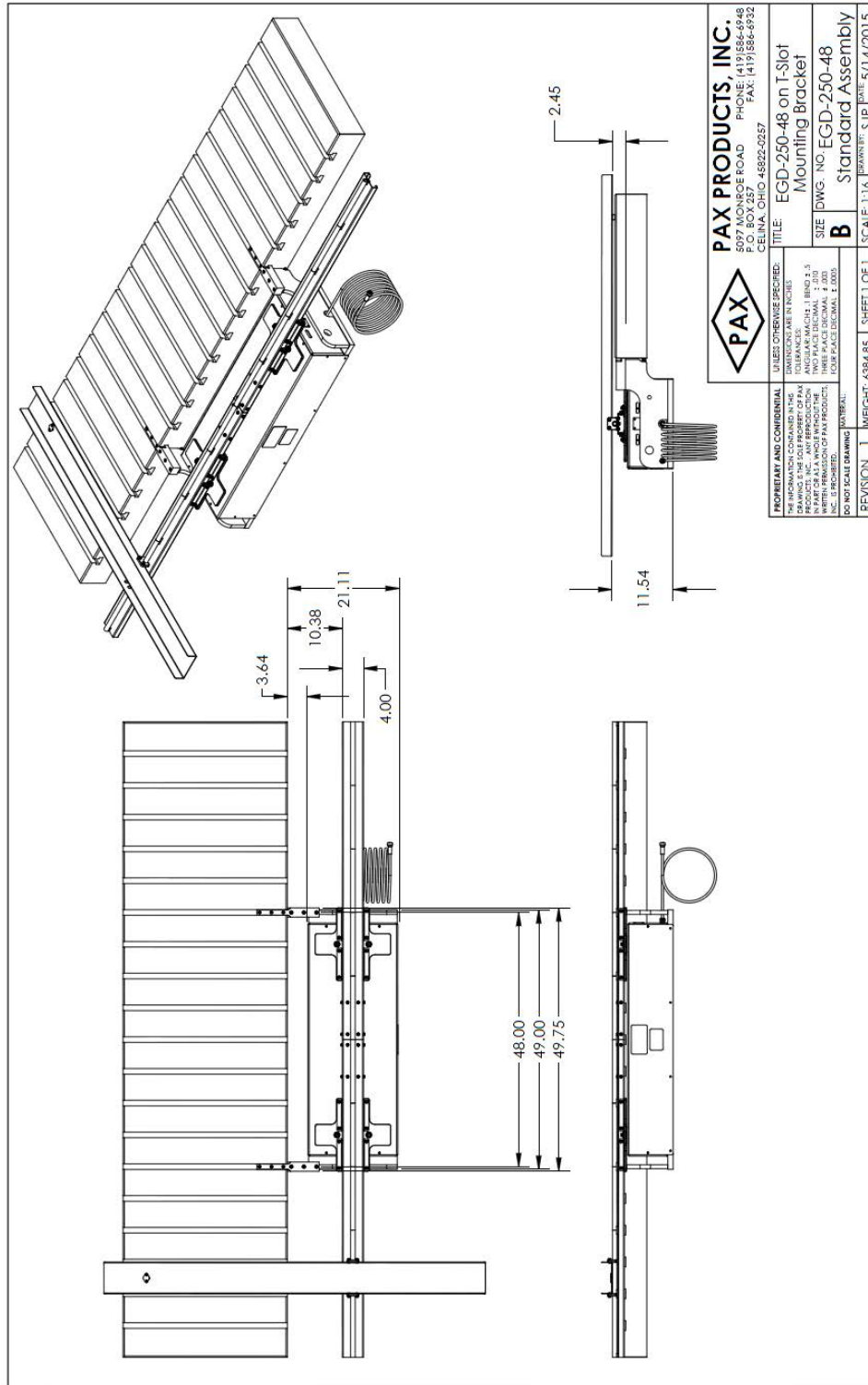


Figure 4: EGD-250-48 SHOWING OFF-CENTER TRAY POSITIONING



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MAINTENANCE

SECTION 1: BEARINGS

Pax EGD Conveyors utilize a combination of sealed and open bearings in their design. In the EGD-250-48 model, sealed bearings are used on the input and output linkage arms and the rocker support blocks. Open bearings are used inside the gearbox to support the output shaft and are lubricated, along with the elliptical gears, by a fixed-fill volume of gear oil. The gearbox is sealed on the output shaft using a shaft seal.

The Thompson linear ball bearings are a closed bearing and can be greased. The bearings can be greased via 4 grease inserts on the unit. The grease inserts may be accessed through slots on the side covers. It is recommended to use *Shell ALVANIA EP Grease 2* or equivalent. **Application of fresh grease is recommended on a monthly basis to prolong the life of your bearings.** Please refer to Figure 5 for grease locations. Increased frequency of grease application should be considered based on heavy usage and the cleanliness of the environment of operations.

The oil in the EGD-250-48 drive unit protects and prolongs the life of your system. A unit operating within the stated capacity and in a clean environment should replace the oil every 5 years. Continuous operation, cleanliness and heavy loading conditions require more frequent oil change, approximately every 2 years. The fixed-fill gear oil located in the gearbox assembly may be filled through the 1/8" NPT Plug located on the top of the gearbox assembly. It is recommended to use *Shell OMALA – Advanced Synthetic Industrial Gear Oil S4 GX 220* or equivalent. To change the oil, the top cover must be removed first. This requires removing the shaker bar adapter plate. Remove the magnetic pipe plug from the gearbox and install a 1/8" pipe fitting attached to a small hose. The magnetic plug is accessible from the output side of the gearbox of the unit and does not require removing the gearbox assembly from the base plate. Remove the plug on the top of the gearbox assembly to begin draining. Replace the magnetic plug into the base plate and add 600 mL, 20.3 oz, of gear oil. Replace the 1/8" NPT plug and reinstall the top cover, and shaker arm adapter plate.

NOTE: While the top cover is removed, inspect the linear rails for signs of wear or damage.

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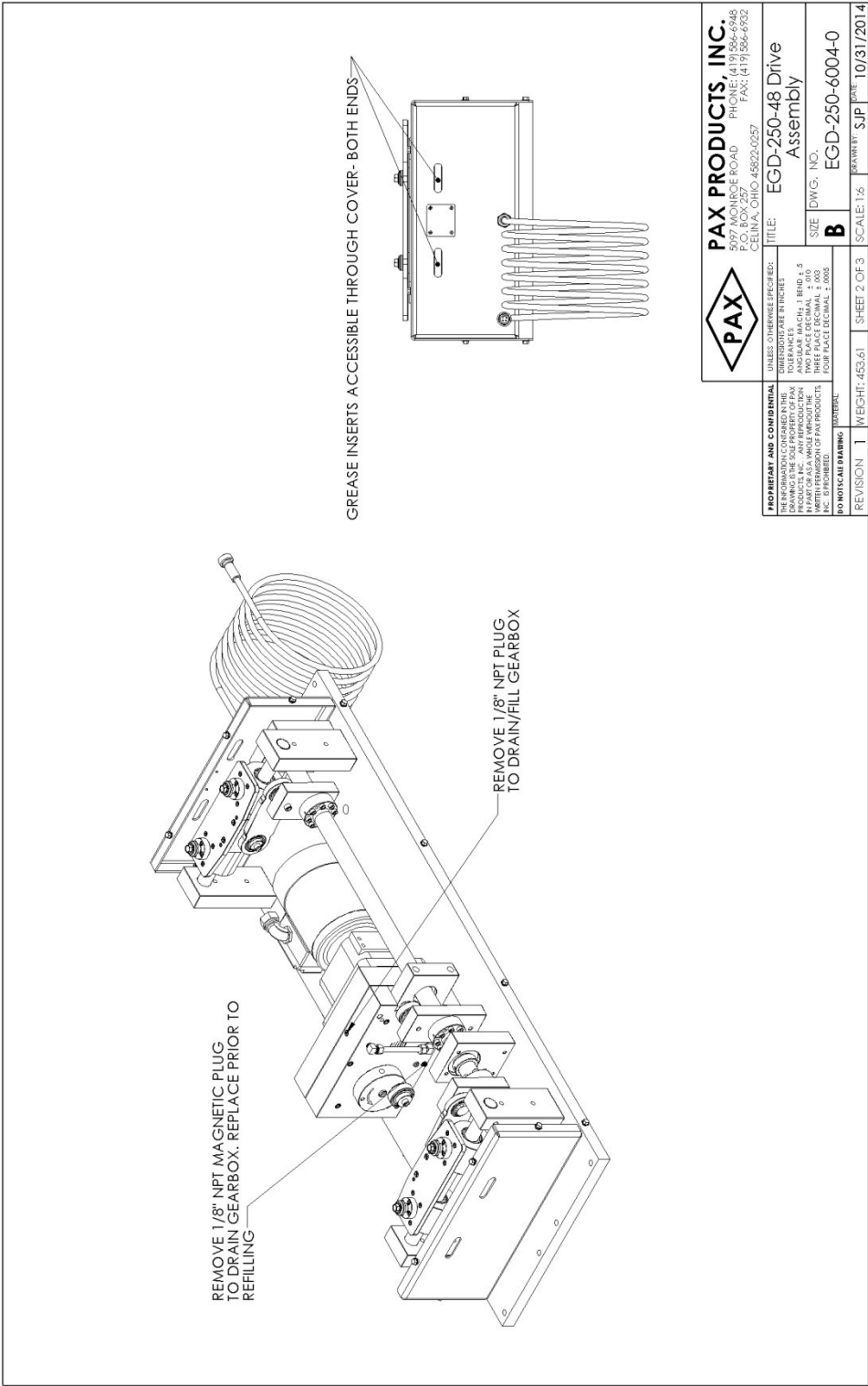


Figure 5: INSTRUCTIONS FOR LUBRICATING THE LINEAR BEARINGS



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SECTION 2: TRAY, WEAR PAD, AND QUICK CONNECT BRACKET ASSEMBLY

The trays, wear pads and quick connect brackets should be free of cracks or dents. The bolts holding the wear pad in place should be below the wear surface. If the top of the fasteners are at the same level as the wear surface, the opposing surface will experience metal-to-metal contact. Additional wear pads may be ordered through Pax.

The quick connect brackets should attach firmly to the tubes on the shaker arm. A loose connection to the shaker arm could cause the tray to detach during operation. The quick connect bracket should be replaced and may be ordered through Pax.

Inspect the trays for dents or damage that may impede performance of the conveyor. If necessary, replace the tray to insure proper performance. Replacement and new trays may be ordered through Pax.

SECTION 3: GENERAL

The Pax EGD Conveyors should routinely be cleaned and inspected for wear or damage. A good time to do this may be during die changes. A routine inspection should cover the following:

- 1) Make sure the power cord has no exposed wires or visible signs of damage to the cord. Inspect the plug and where the plug connects to the VFD for damage and dirt. Inspect the cord going from the VFD to the unit for damage as well and verify the cord is securely fastened prior to use. Replace or clean as needed. **NOTE: The EGD unit must be switched off prior to unplugging the unit. Failure to do so may damage VFD and/or motor.**
- 2) Make sure all the fasteners are tight. Since conveyors are used in high vibration environments, a fastener may vibrate loose. Use caution not to over-tighten bolts that are threaded into aluminum.
- 3) Ensure the top cover is in good working order and securely fastened in place. These protective covers must remain in place at all times during operation.
- 4) Ensure the shaker arm assembly is secure to the shaker bar adapter plate and all fasteners are tight. Use caution not to over-tighten bolts that are threaded into aluminum.

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PARTS LIST:

ORDER REPAIR AND REPLACEMENT PARTS FROM:

PAX PRODUCTS INC.
P.O. BOX 257
5097 MONROE RD.
CELINA, OH 45822
1-800-733-6930 PHONE
(419) 586-6948 PHONE
(419) 586-6932 FAX

PLEASE PROVIDE THE MODEL NUMBER AND SERIAL NUMBER WHEN ORDERING

**NOTE: SUBSTITUTING PARTS NOT AUTHORIZED BY PAX PRODUCTS INC.
MAY CAUSE A DETERIORATED PERFORMANCE OF THE EGD
CONVEYOR AND WILL VOID WARRANTY.**

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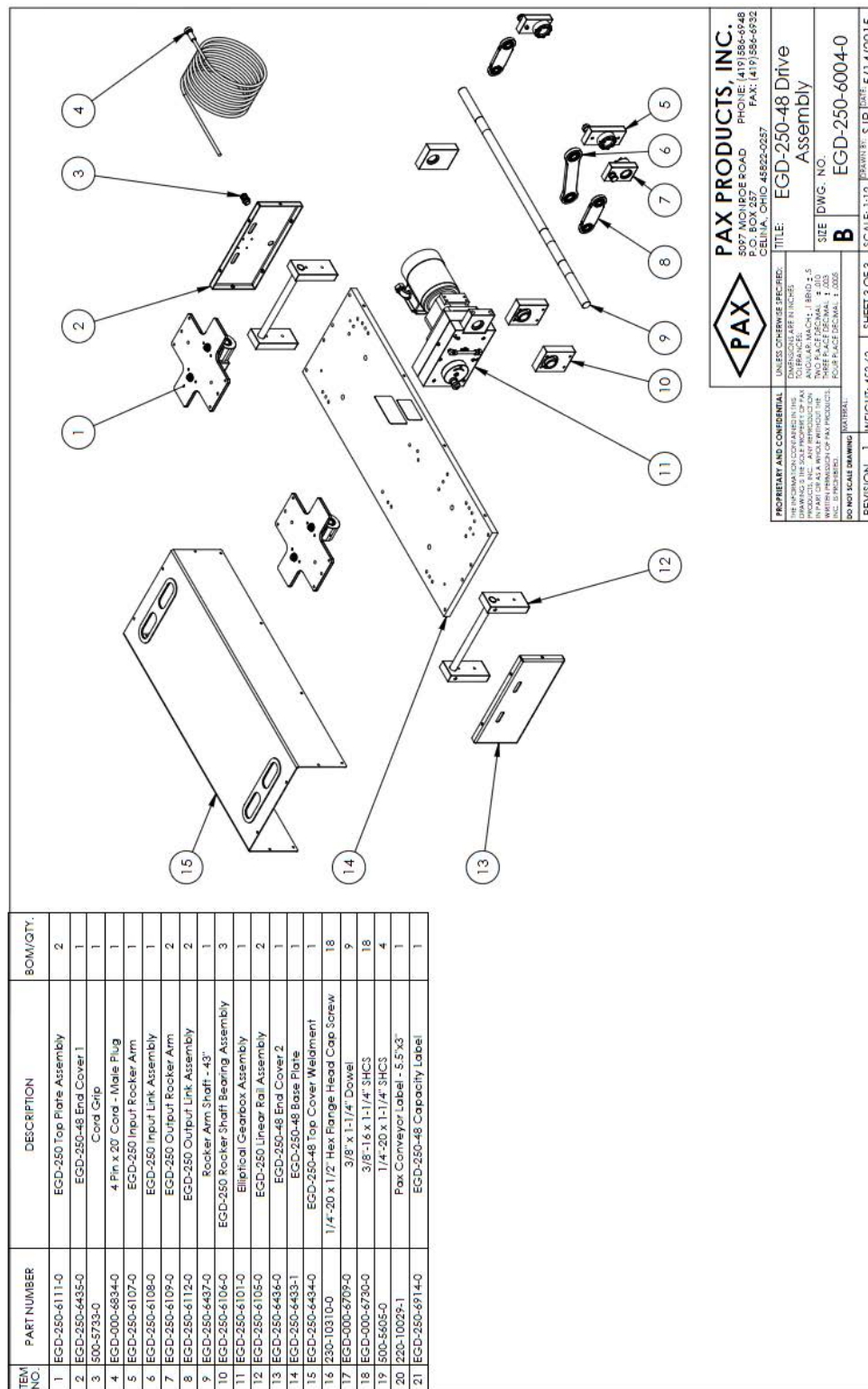


Figure 6: EGD-250 DRIVE UNIT ASSEMBLY

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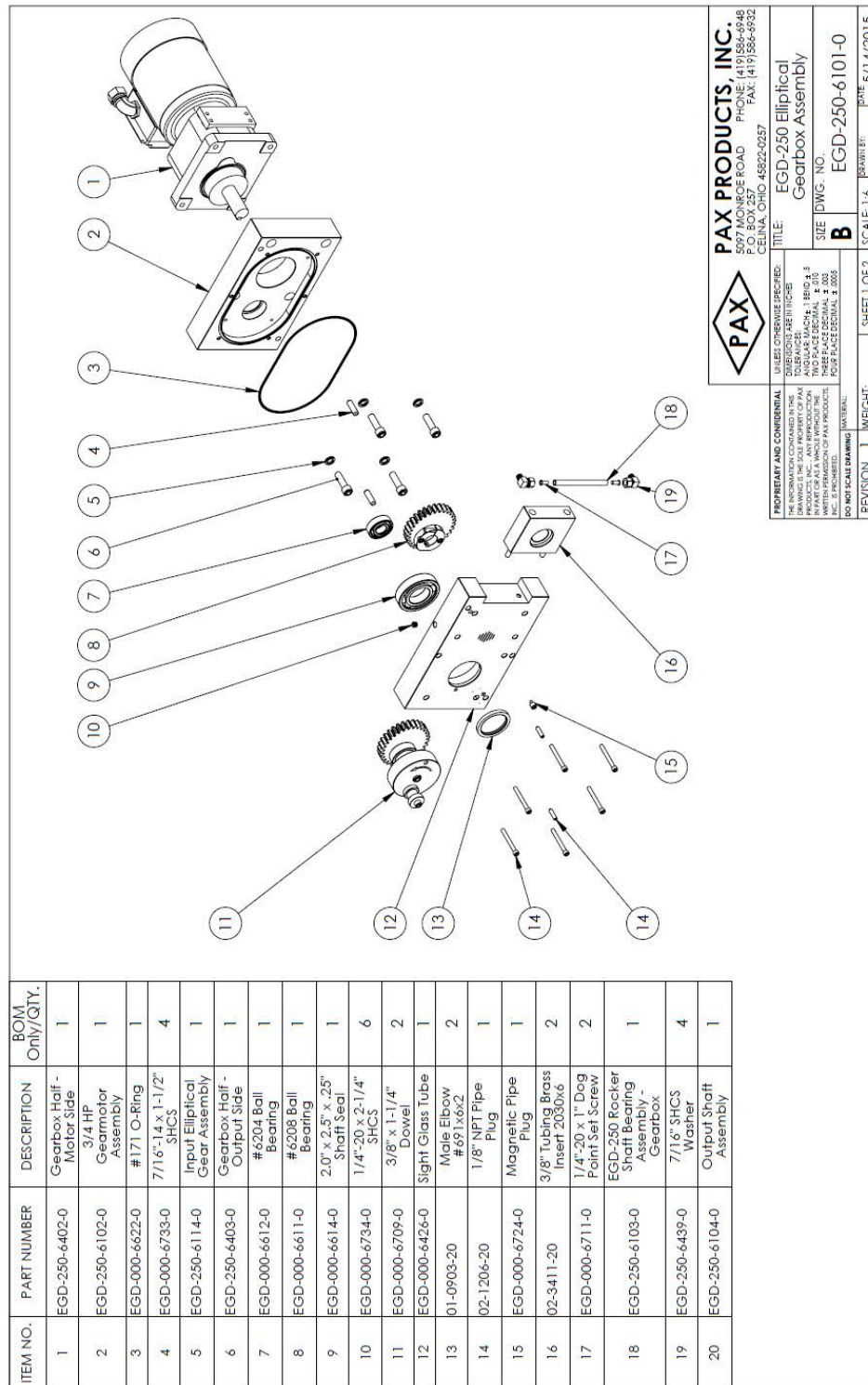
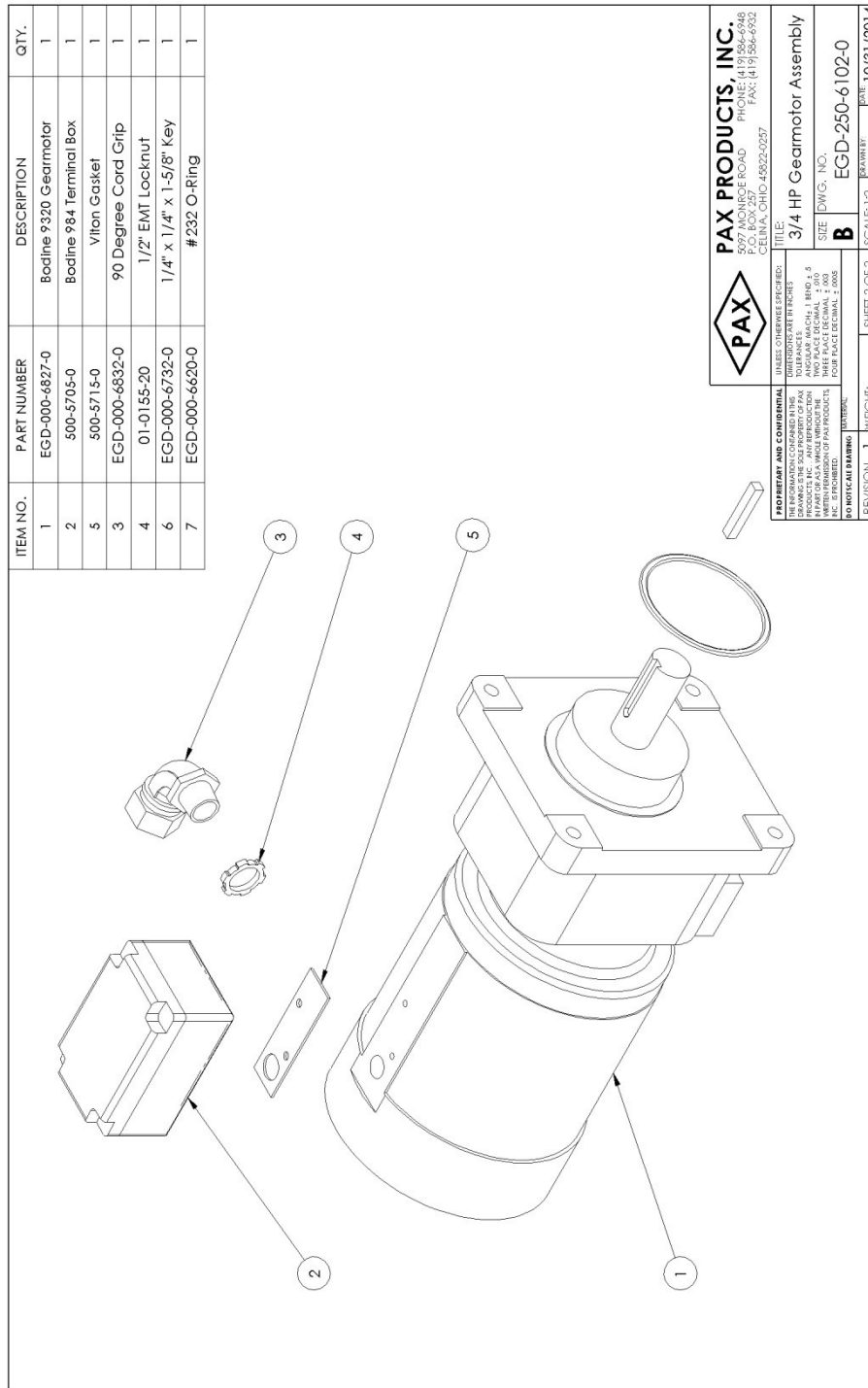


Figure 7: EGD-250 240 VAC 3 PHASE POWER GEARMOTOR ASSEMBLY



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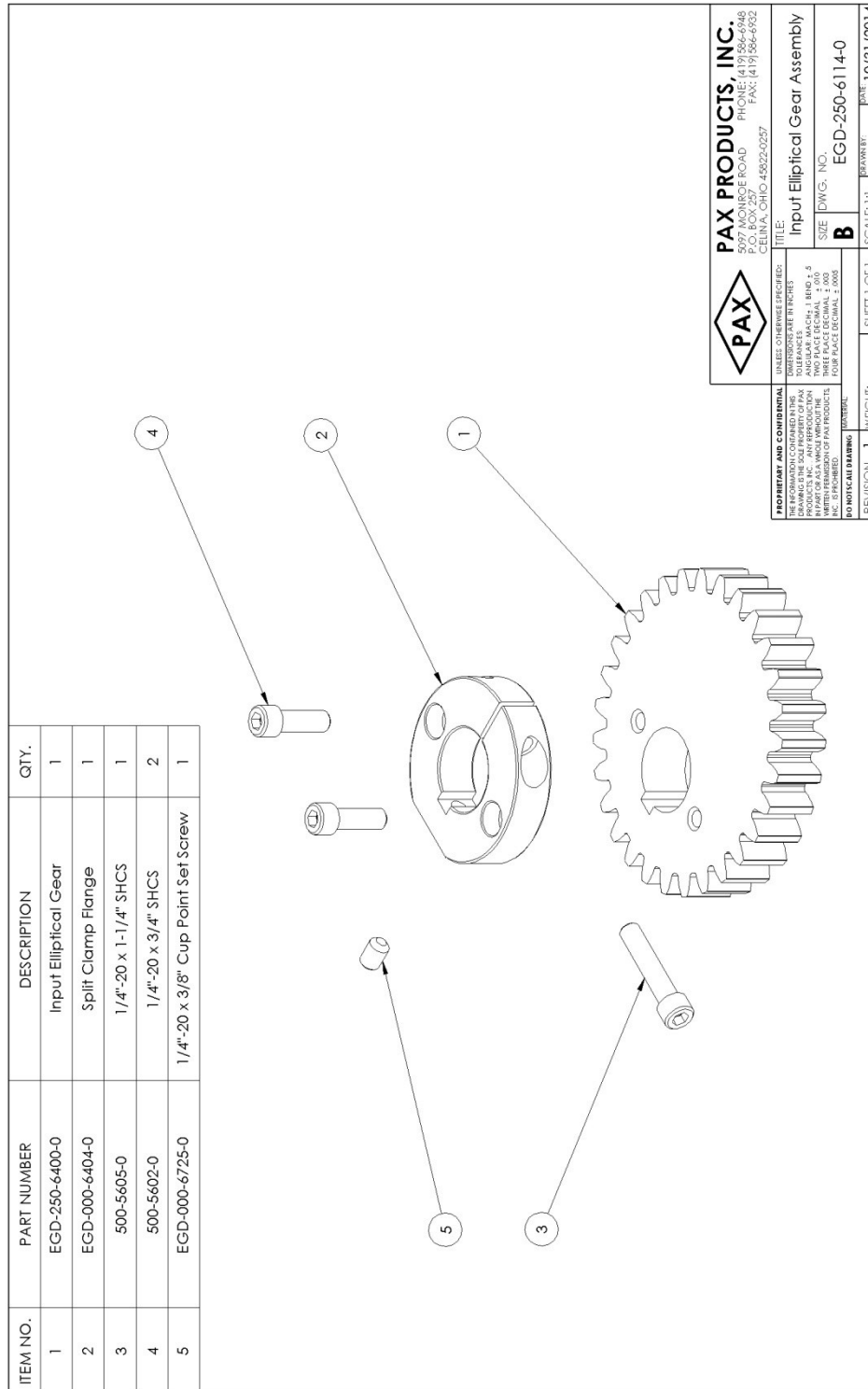


Figure 9: EGD-250 INPUT GEAR SUB-ASSEMBLY

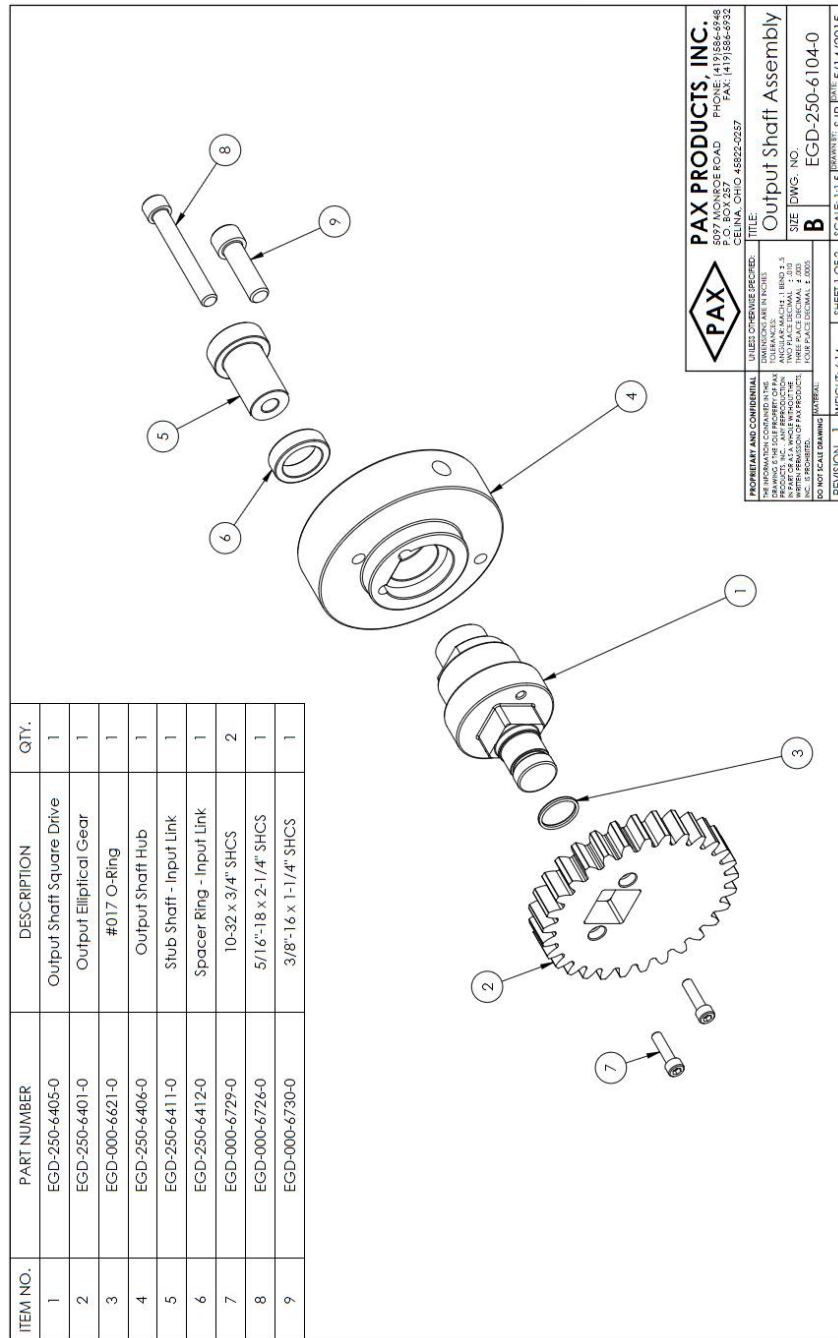


Figure 10: EGD-250 OUTPUT SHAFT ASSEMBLY



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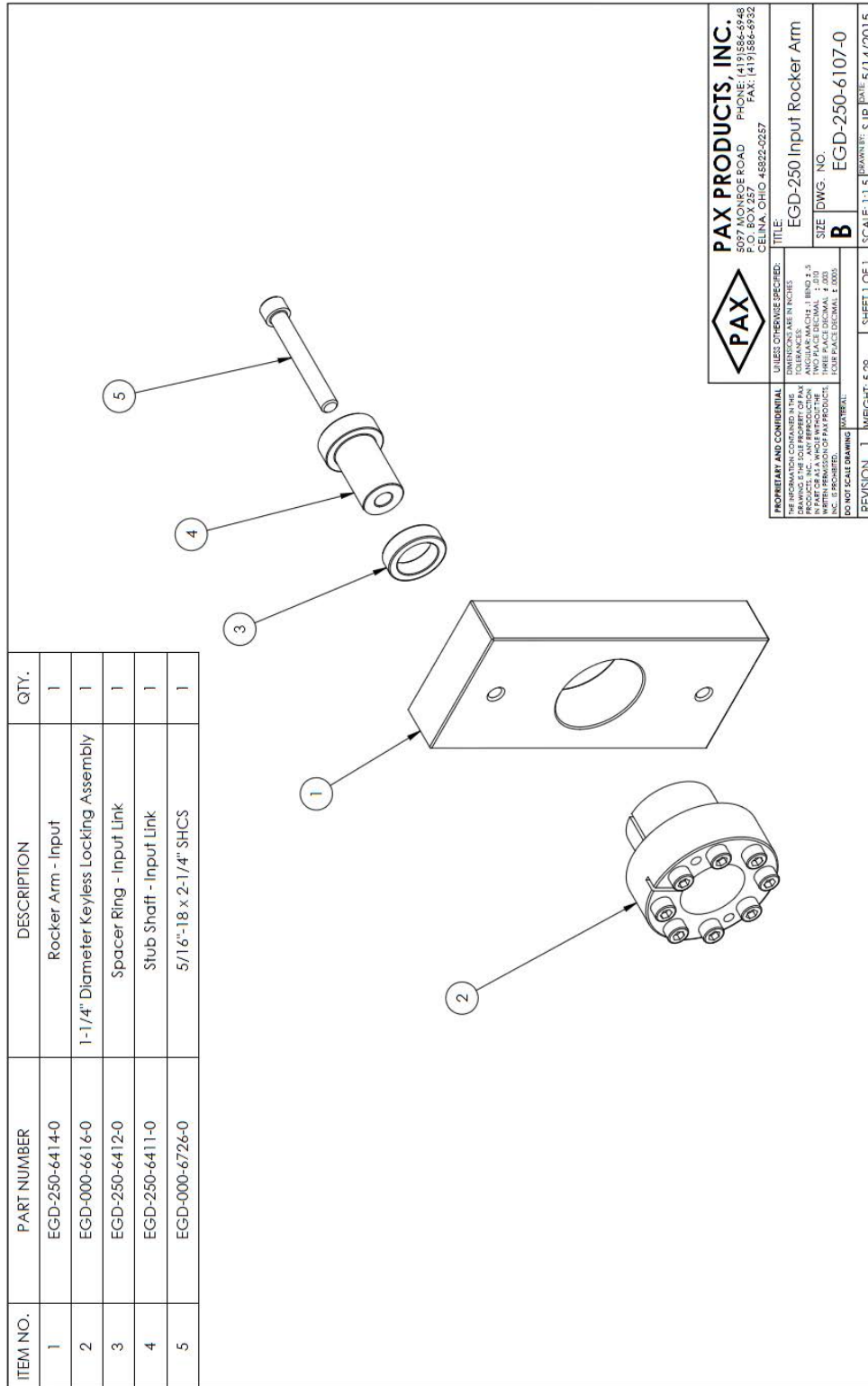


Figure 12: EGD-250 ROCKER ARM ASSEMBLY

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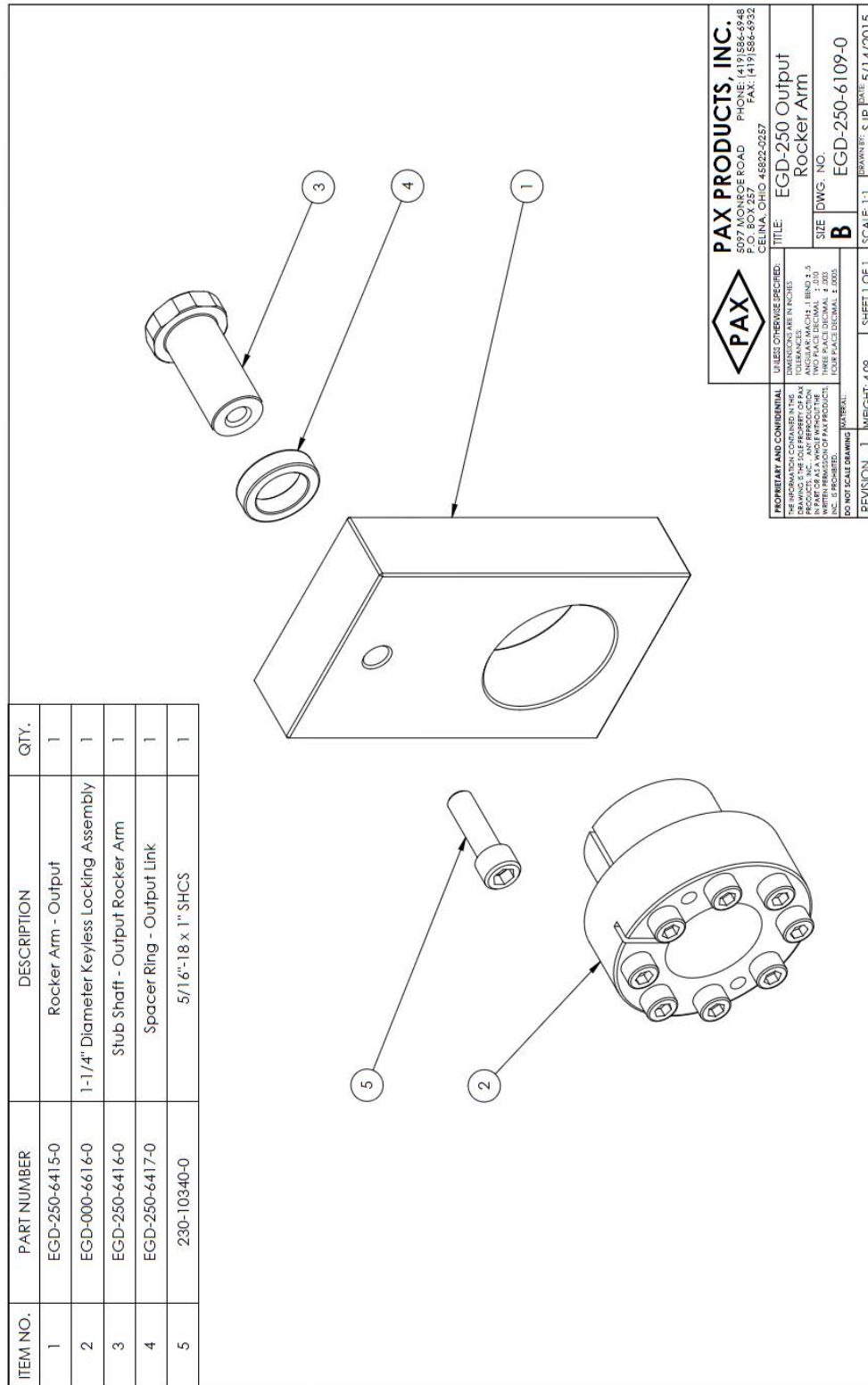


Figure 13: EGD-250 ROCKER BEARING BLOCK ASSEMBLY

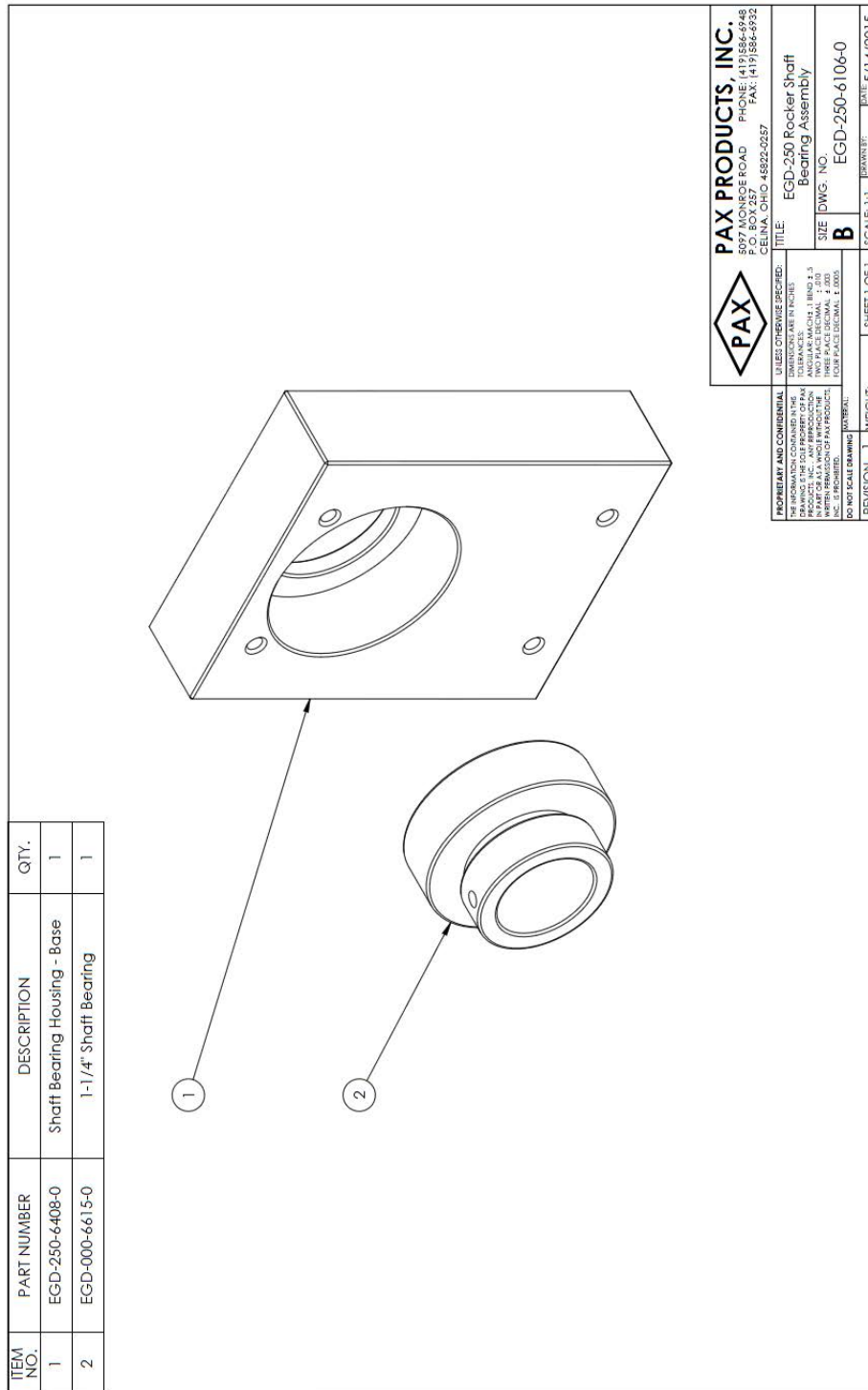


Figure 14: EGD-250 ROCKER SHAFT BEARING ASSEMBLY

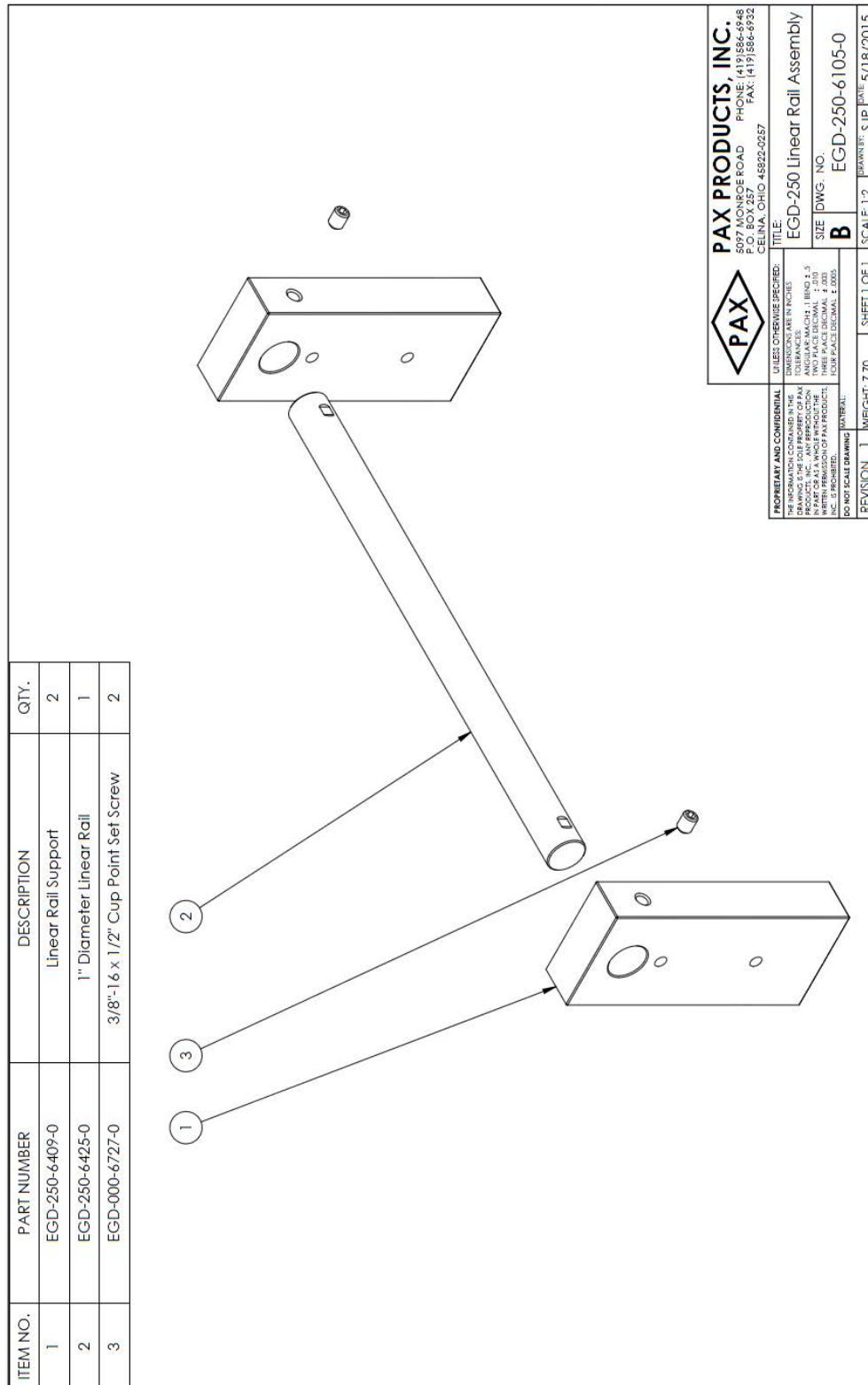


Figure 16: EGD-250 LINEAR RAIL ASSEMBLY

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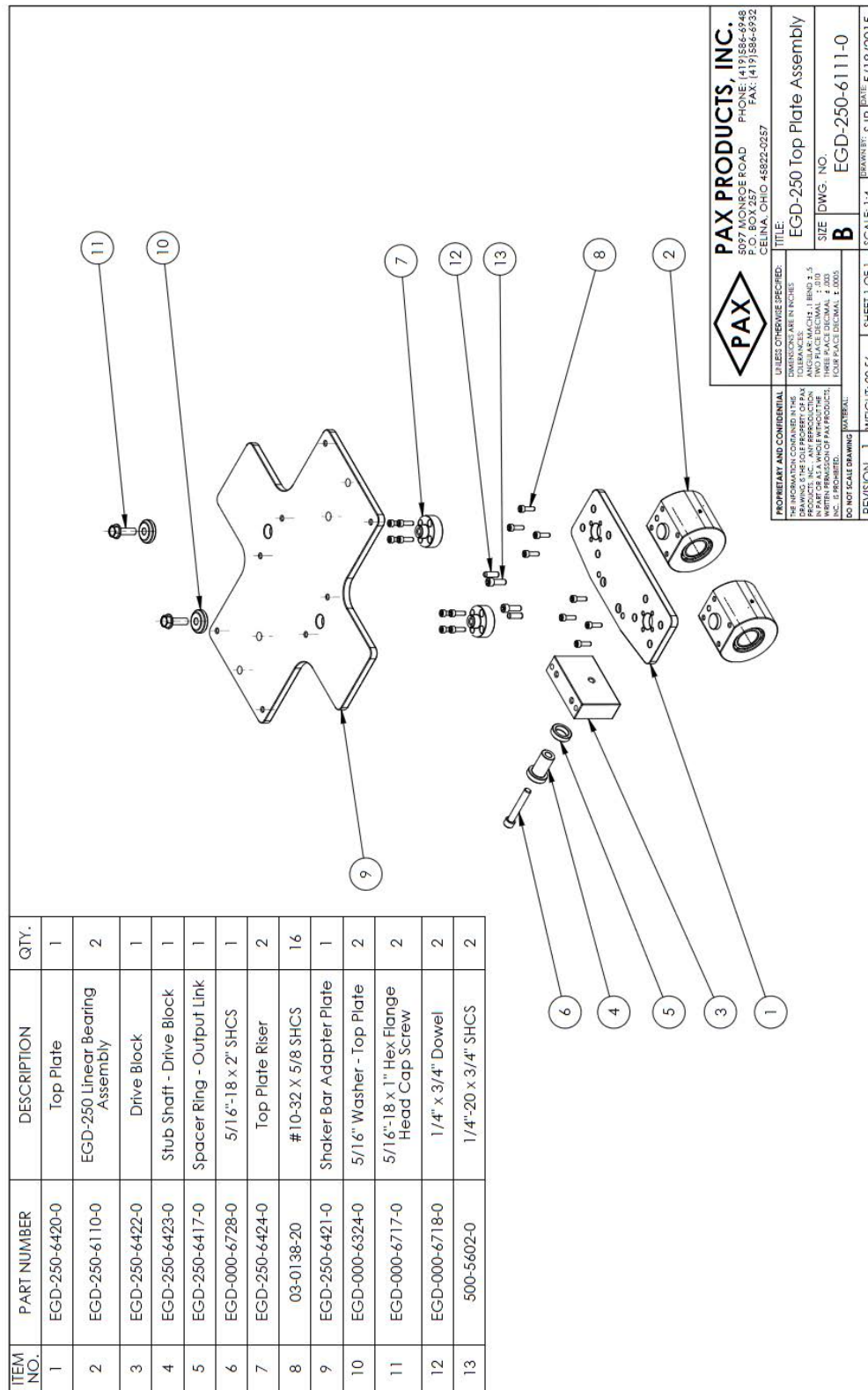


Figure 17: EGD-250 TOP PLATE ASSEMBLY

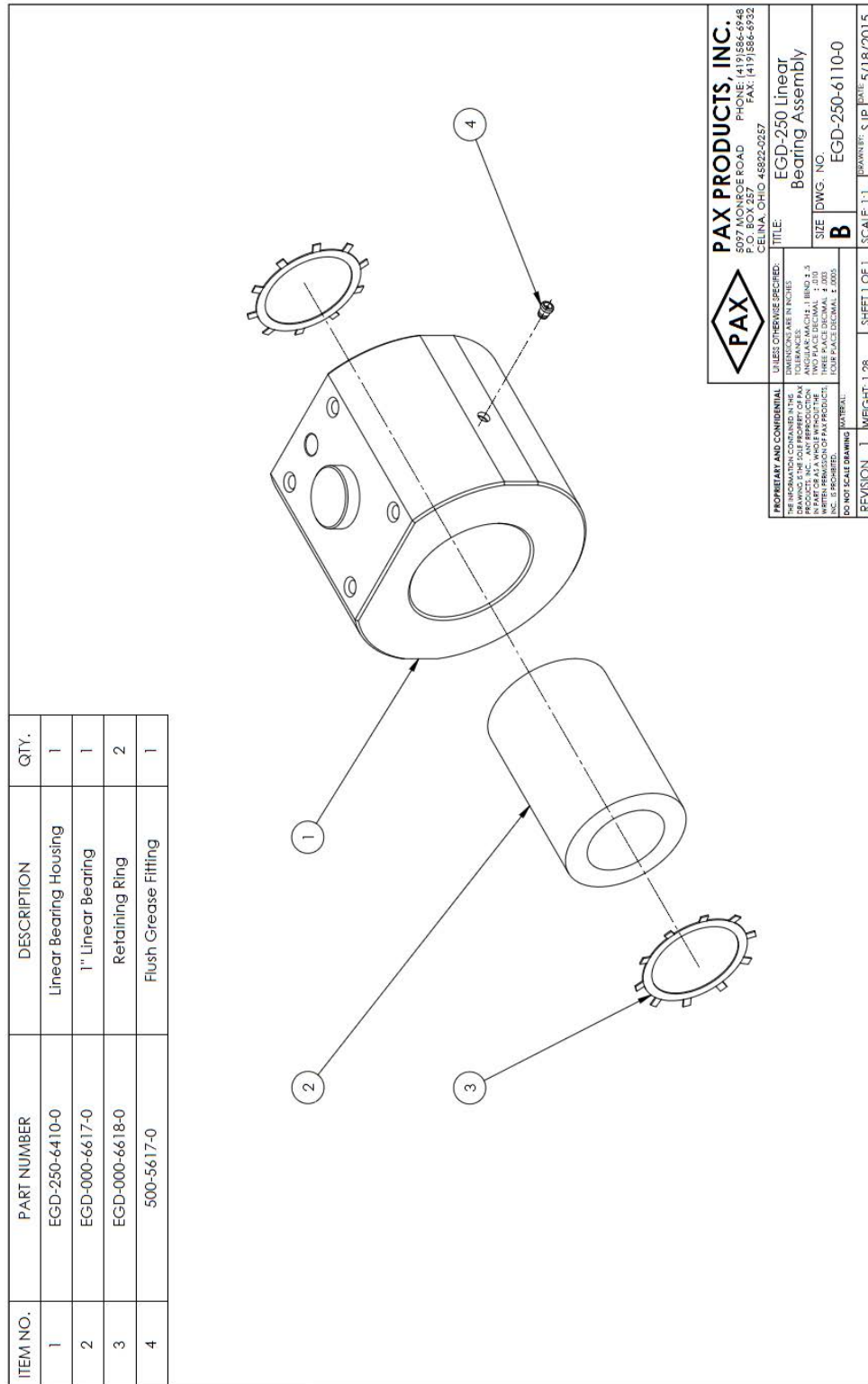


Figure 18: EGD-250 LINEAR BEARING ASSEMBLY

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VARIABLE FREQUENCY DRIVE COMPONENTS

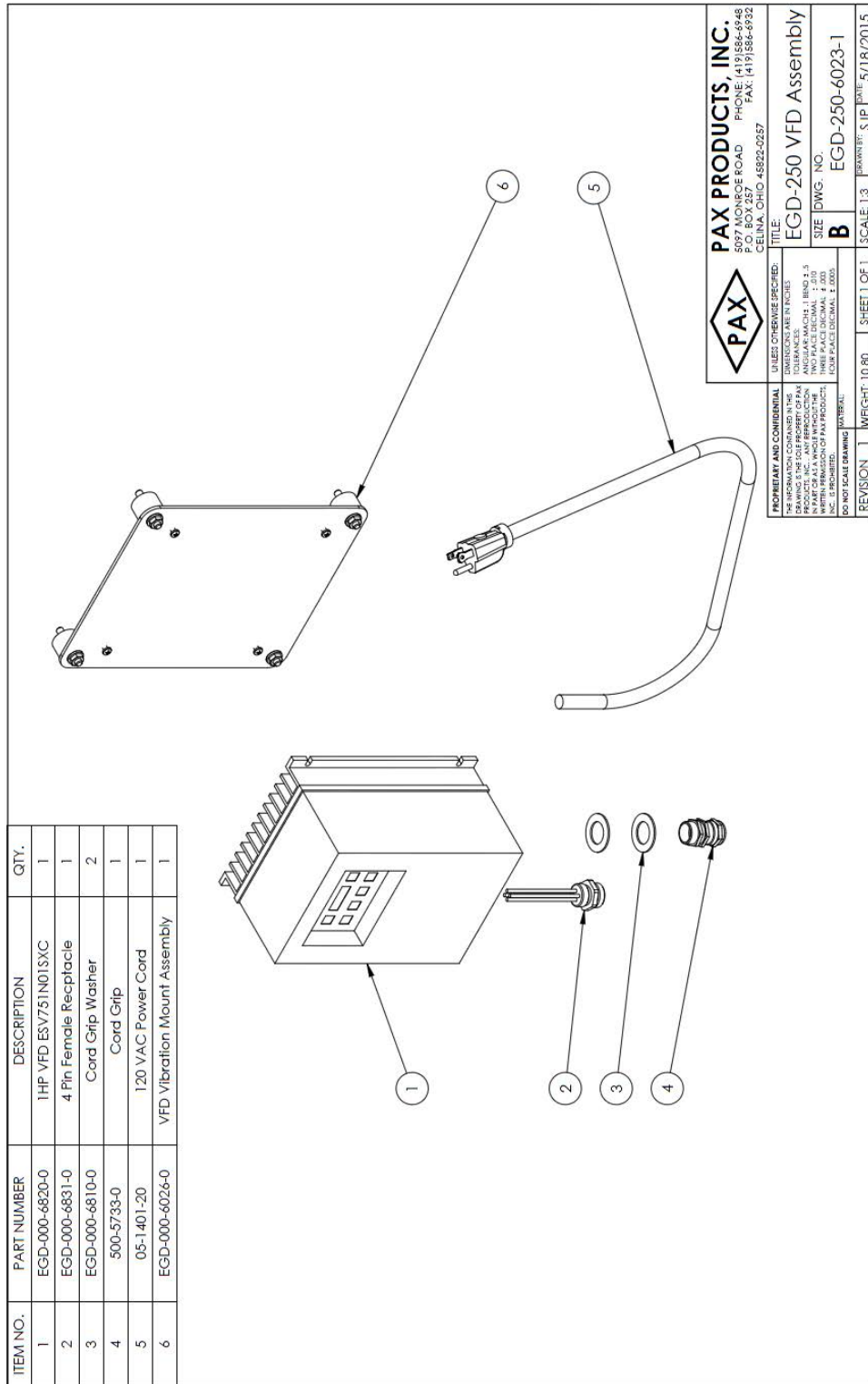


Figure 19: EGD-250-6023-1 VFD ASSEMBLY 120/240 VAC SINGLE PHASE INPUT

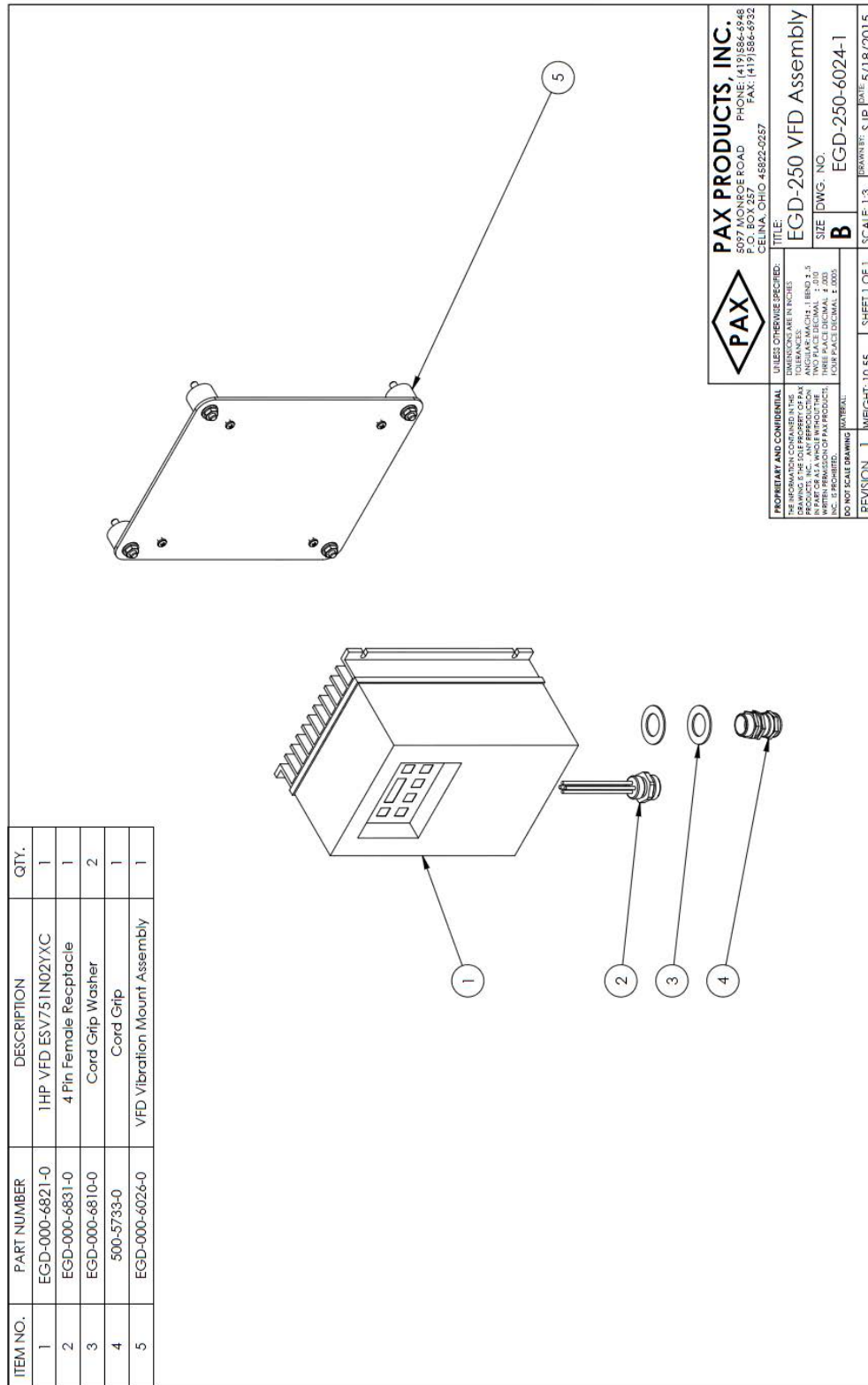


Figure 20: EGD-250-6024-1 VFD ASSEMBLY 240 VAC 3 PHASE INPUT



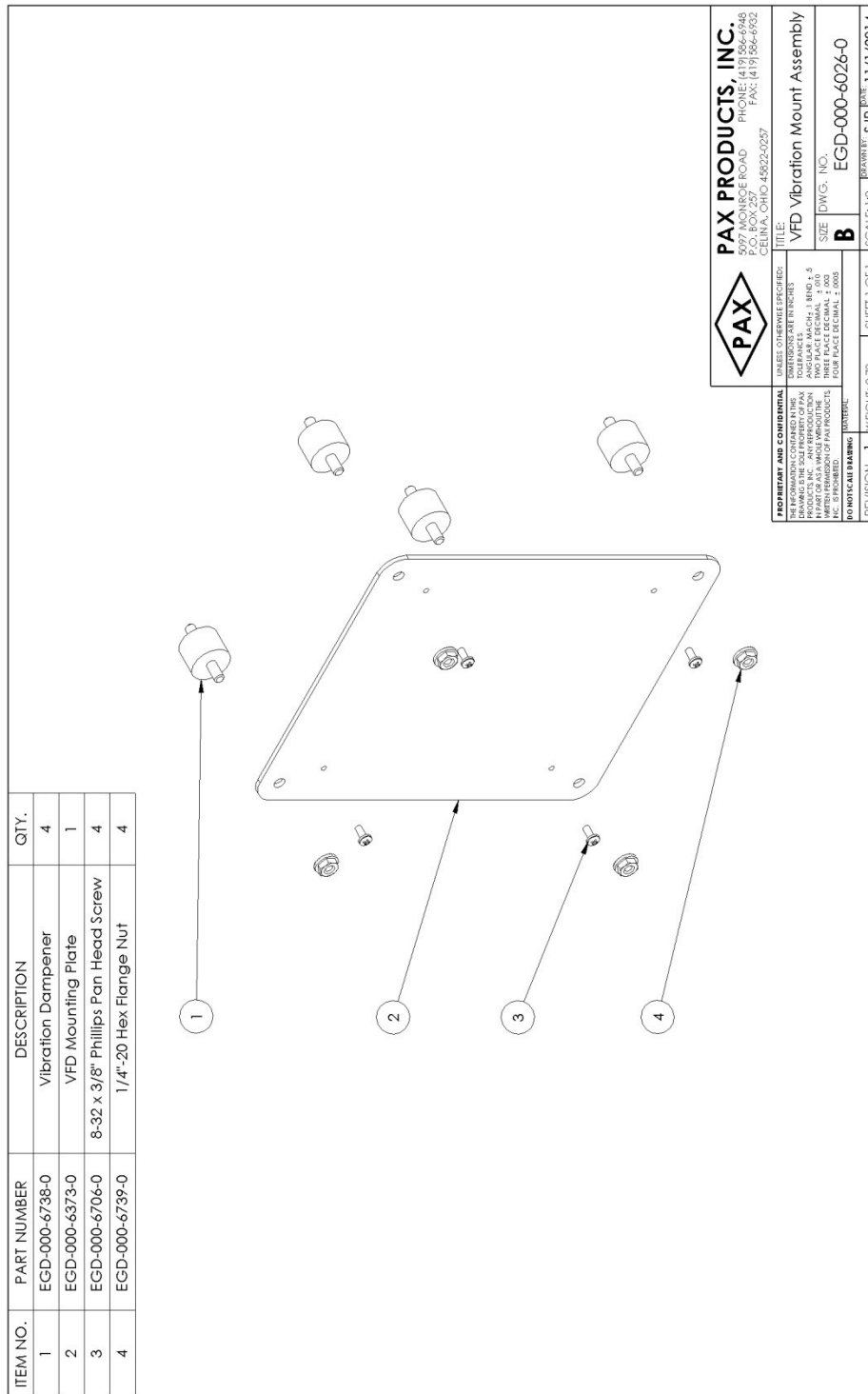


Figure 22: EGD-000-6026-0 VFD VIBRATION MOUNT ASSEMBLY



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MOUNTING BRACKET COMPONENTS

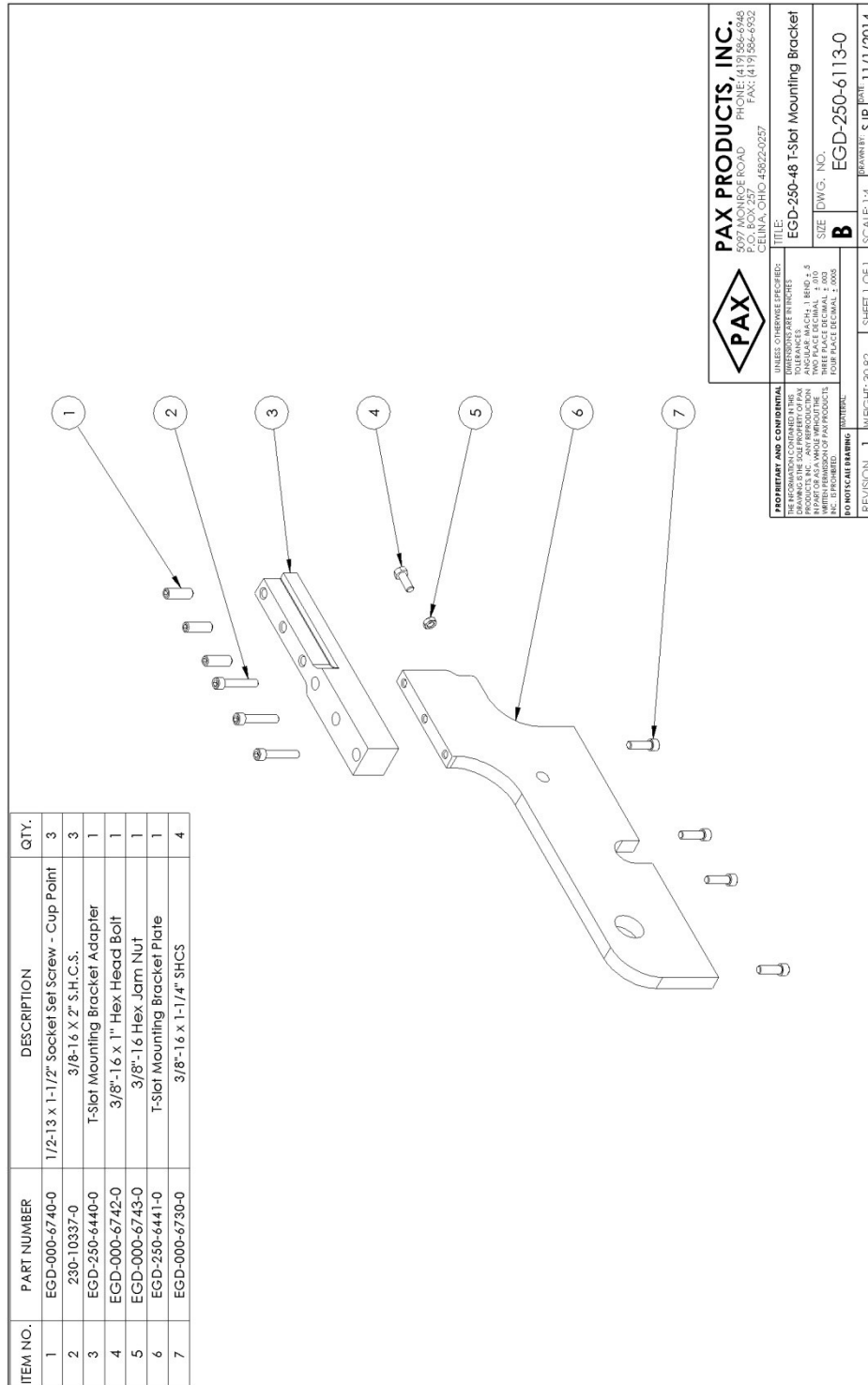


Figure 24: EGD-250-6113-0 EGD-250-48 T-SLOT MOUNTING BRACKET

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CUSTOM TRAY CONFIGURATIONS AND OPTIONS

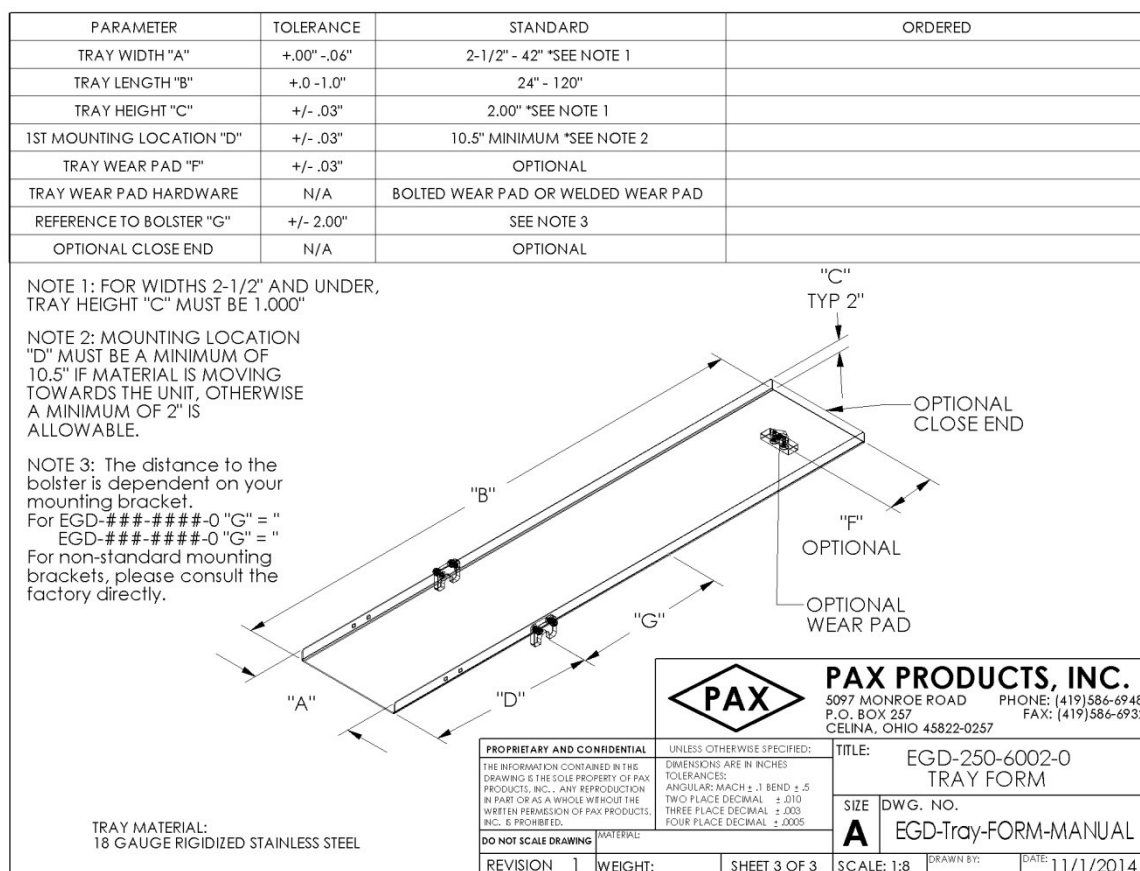


Figure 25: PAX TRAY CONFIGURATION FOR ORDERING



Figure 26: RIGIDIZED METAL TRAY WITH PAX QUICK CONNECT BRACKETS

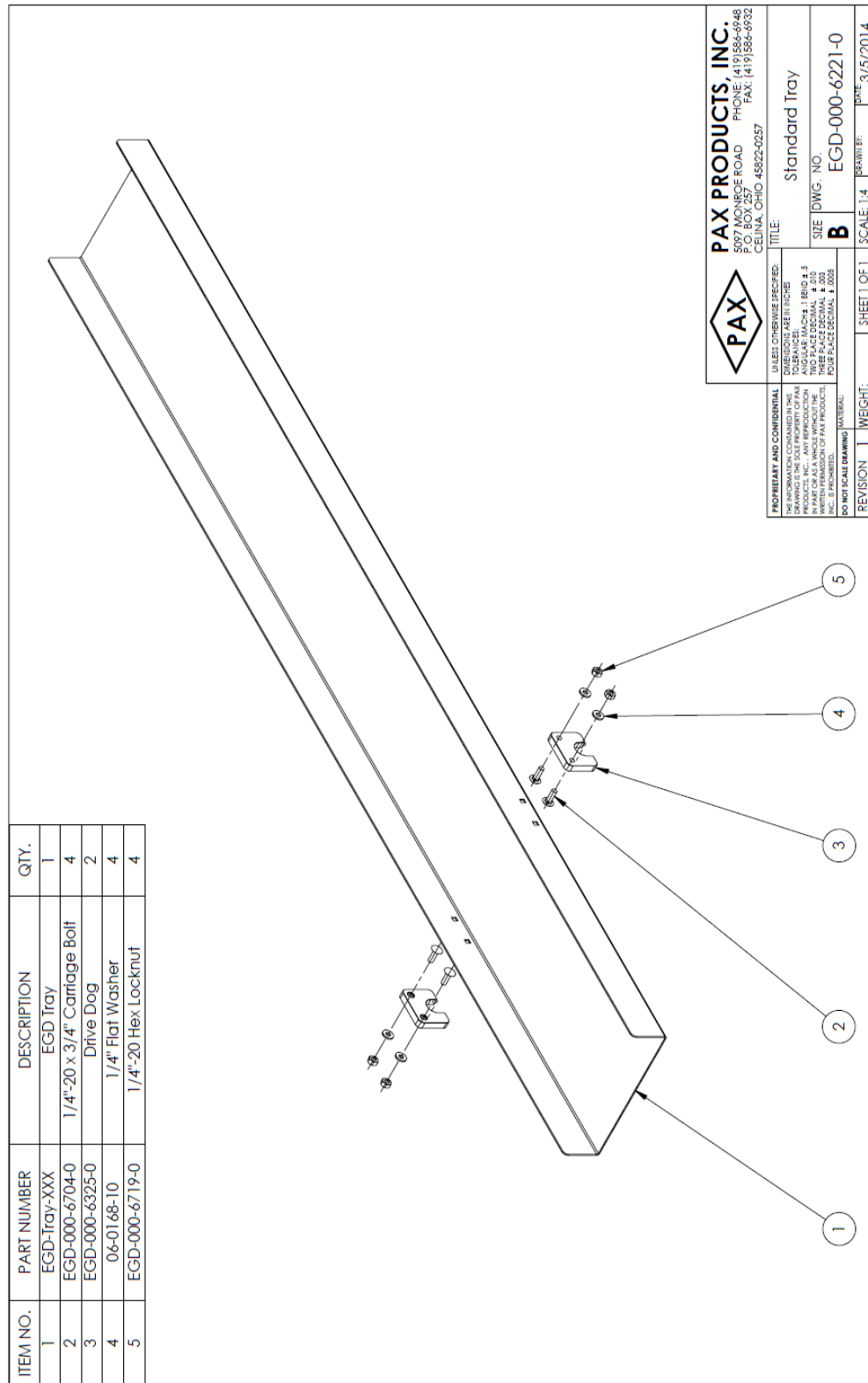


Figure 27: EGD-000-6221-0 STANDARD TRAY

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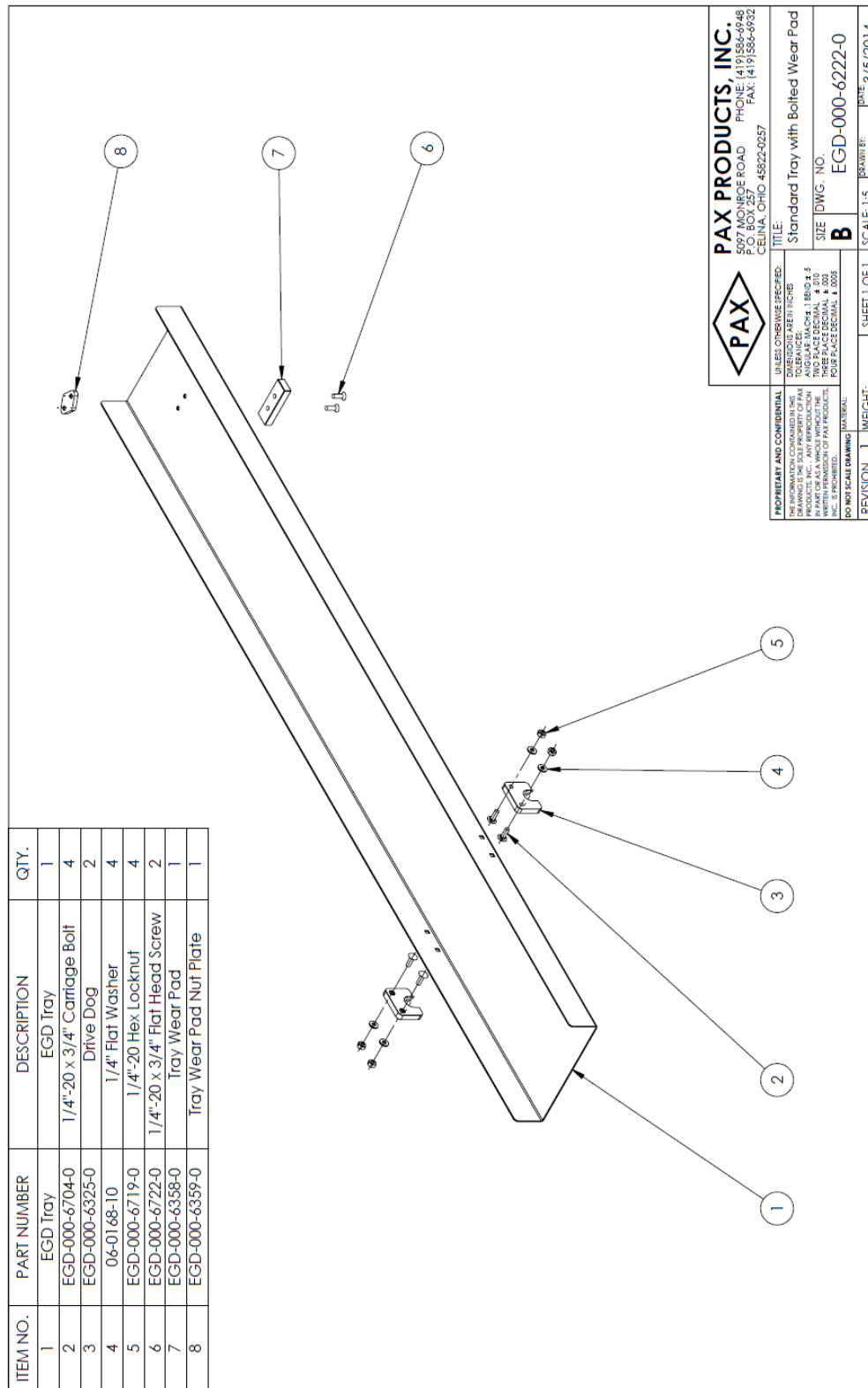
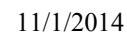


Figure 28: EGD-000-6222-0 STANDARD TRAY WITH BOLTED WEAR PAD



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TRAY ACCESSORIES

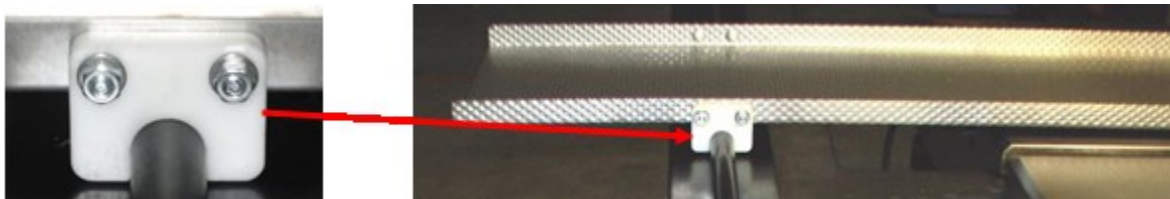


Figure 30: PAX TRAY MOUNTING BRACKETS ON RIDGEDIZED METAL TRAY

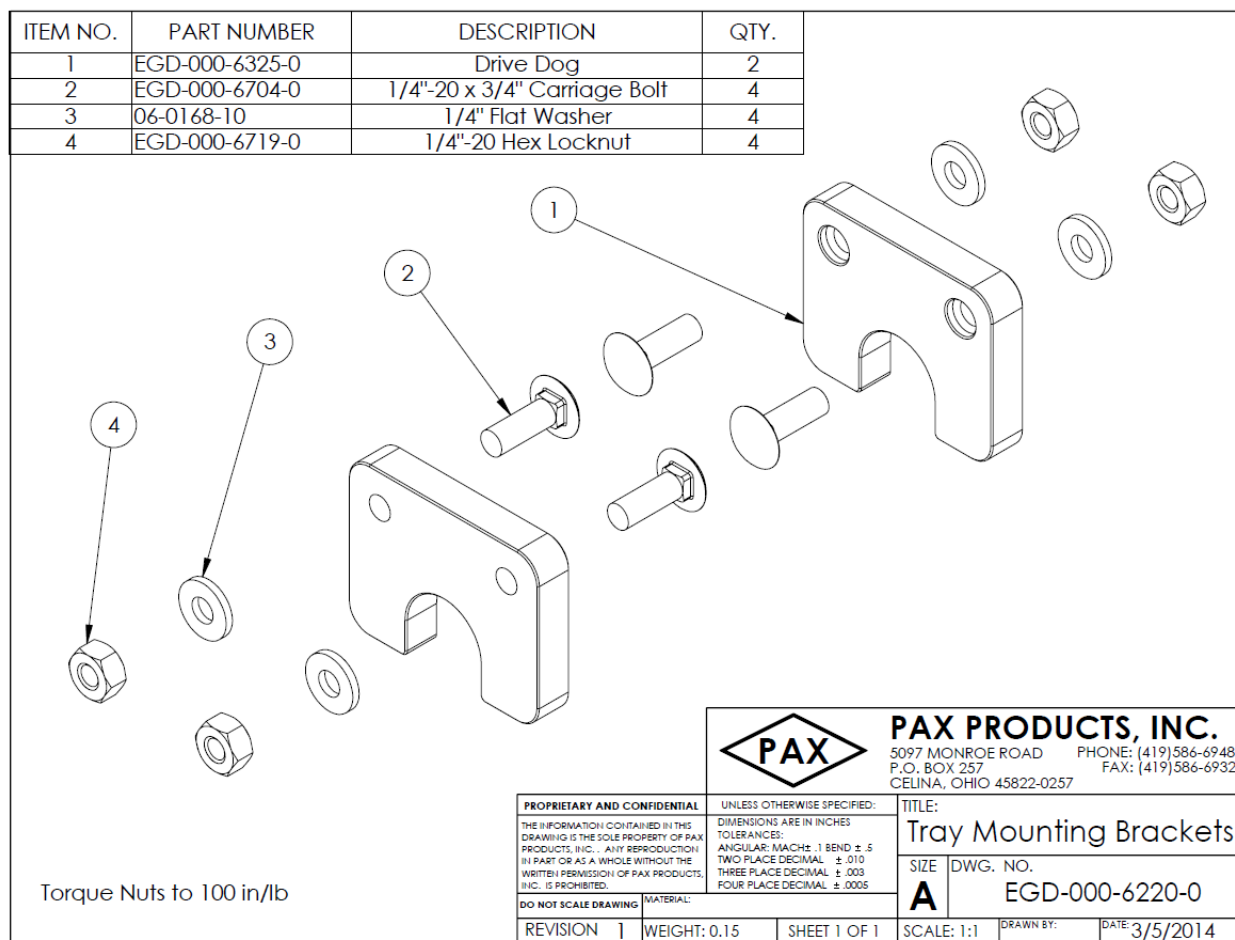


Figure 31: EGD-000-6220-0 TRAY MOUNTING BRACKETS

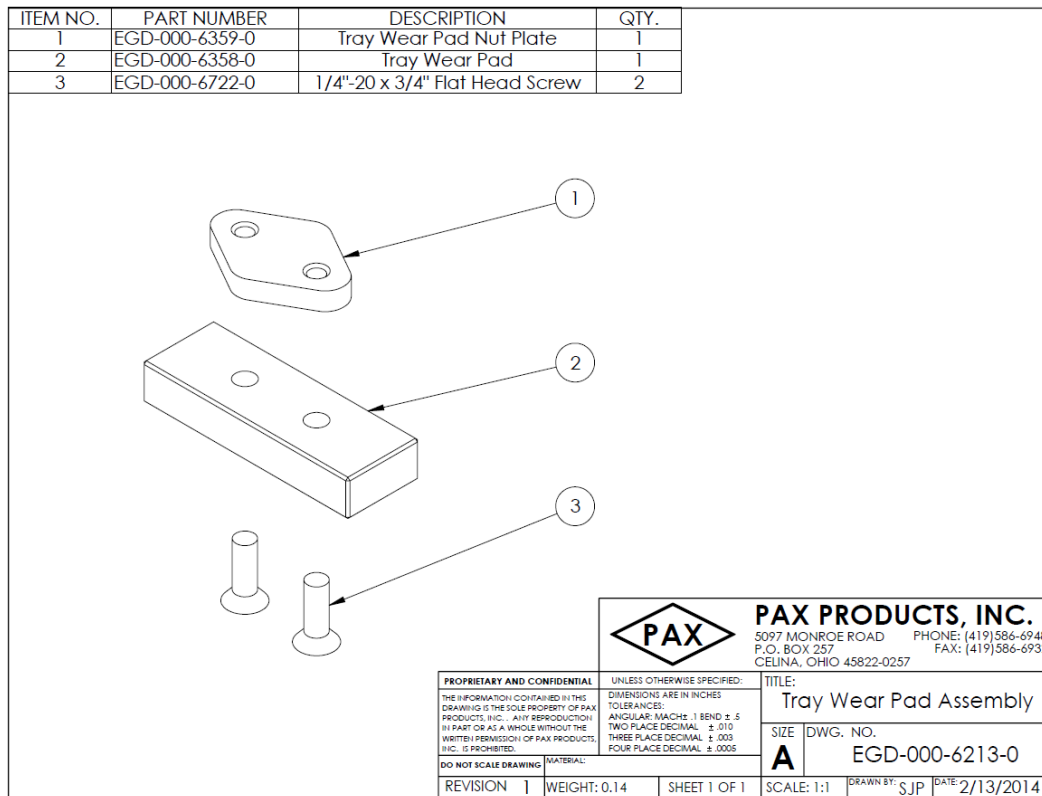


Figure 32: EGD-000-6213 TRAY WEAR PAD ASSEMBLY

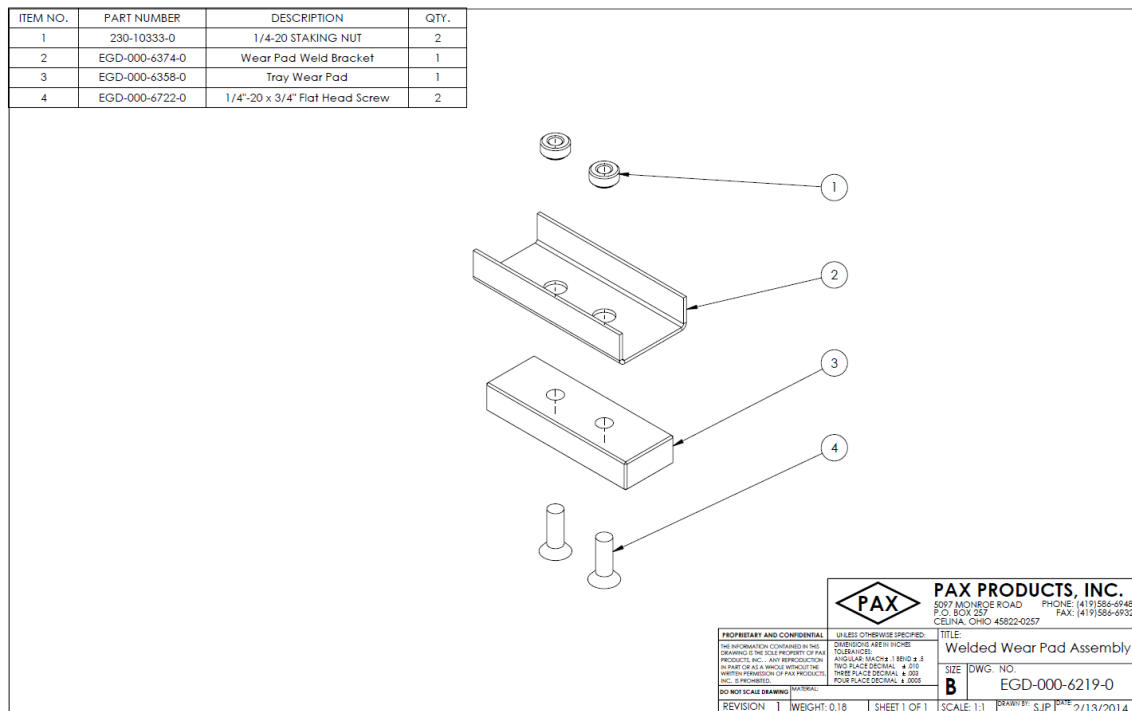


Figure 33: EGD-000-6219-0 WELDED WEAR PAD ASSEMBLY