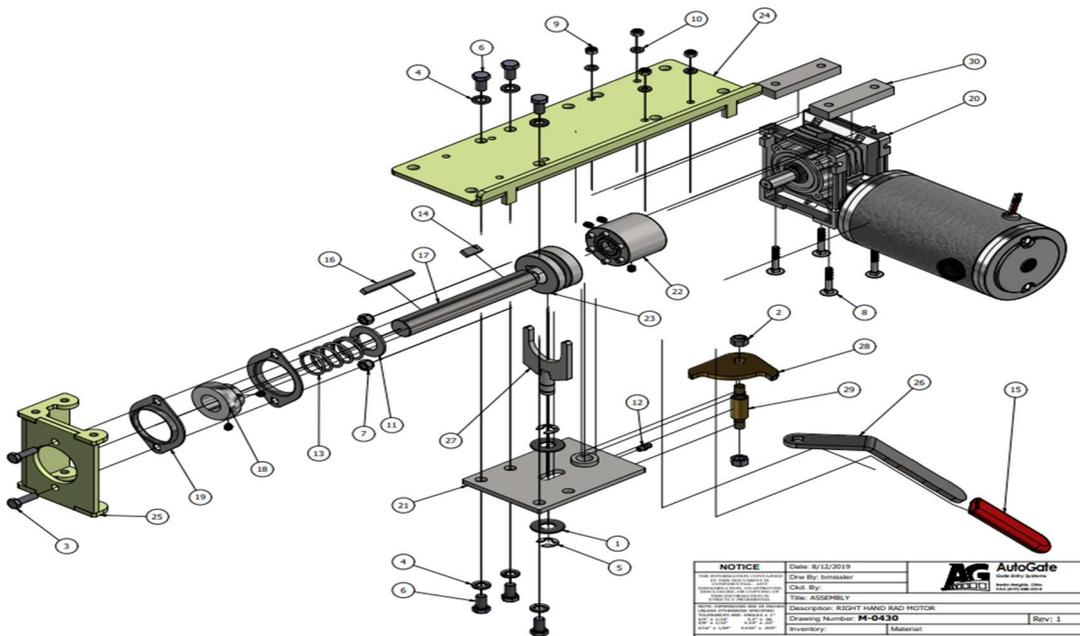
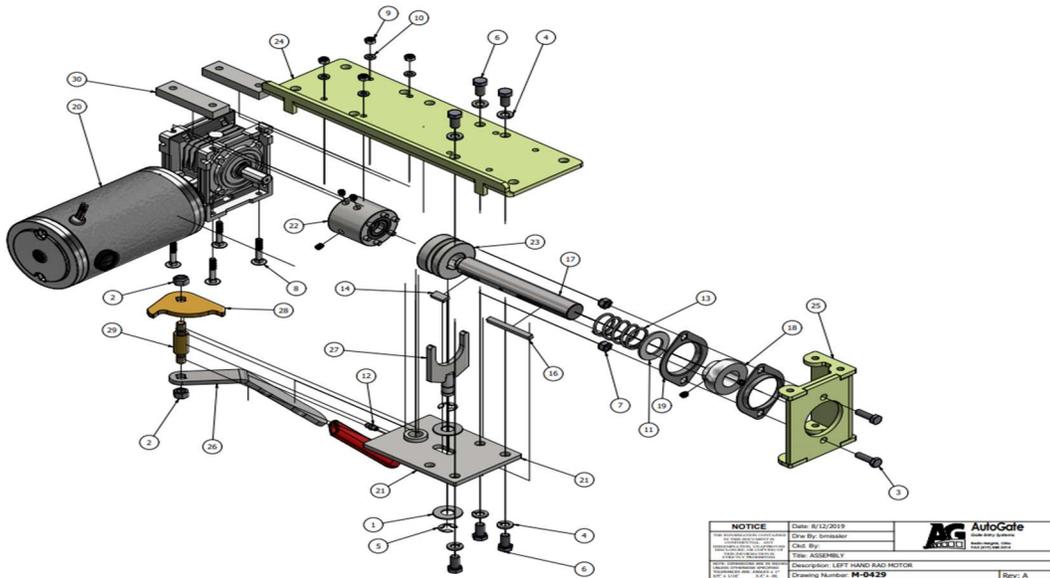


Technical Document: TD-0012
 Rev: C Date: 2-8-2022
 Ref: Right Angle Drive: M-0429, M-0430

RIGHT ANGLE DRIVE GEARMOTOR FIELD REPLACEMENT INSTRUCTIONS

READ INSTRUCTIONS PRIOR TO STARTING

REQUIRED TOOLS: Workbench or other suitable flat work surface, tape measure, 9/16" wrench, 9/16" socket, 10mm socket, ratchet, 1/8" hex key, two (2) 2x4 wood blocks approximately 9 inches long, 2" x 4" x 1/8" spacer plate or any other flat wide tool, pen or pencil and paper.



PARTS LIST			
ITEM	QTY	DESCRIPTION	PART NUMBER
1	2	1/2" BEVELED WASHER -- GALV	G-0207
2	2	3/8-16 TOP LOCK NUT -- GR. 8	G-0214
3	2	5/16-18 x 1" HCS -- Z/P	G-0229
4	6	3/8" LW -- Z/P	G-0244
5	2	1/2" -- E-CLIP/RETAINING RING	G-0249
6	6	3/8-16 x 3/4" HCS -- Z/P	G-0250
7	2	5/16-18 Nylok Nut -- Z/P	G-0255
8	4	M6x1x40MM -- CARRIAGE BOLT	G-0295
9	4	M6-1.0 NYLON LOCK NUT	G-0296
10	4	1" FW -- 18-8 SS	G-0297
11	1	WASHER-FLAT 1 x 1 3/4 x 3/32 SS	G-0306
12	1	ZERK FITTING -- 1/4" STRAIGHT	H-0401
13	1	90DM COMPRESSION SPRING	H-0448
14	1	KEYSTOCK 3/16" x 3/8" x 3/4"	H-0450-1
15	1	90DM HANDLE GRIP	H-0453
16	1	KEYSTOCK -- 1/4" SQ x 2-1/2"	H-0464
17	1	RAD 1" MAIN DRIVE SHAFT	H-0568
18	1	1" INSERT BEARING	H-0569
19	2	FLANGE HOUSING- 1" BEARING	H-0570
20	1	GEAR MOTOR -- 24V / 90 GC	M-0308
21	1	90DM RETRACTOR PLATE WELDMENT	T-0806
22	1	RAD FIXED COUPLER	T-0856
23	1	RAD Slide Coupler	T-0857
24	1	RAD Mounting Plate	T-0858
25	1	RAD BEARING MTG BRACKET	T-0859
26	1	90DM RETRACTOR CAM HANDLE	T-0860
27	1	RAD COUPLER FORK WELDMENT	T-0869
28	1	90DM RETRACTOR CAM	T-0877
29	1	90DM Retractor Cam Shaft	T-0878
30	2	90DM SPACER -- GROSCHOPP	T-0897

Parts Included in this kit:

#8 – 4 pcs. M6 x 1 x 40mm carriage bolt

#9 – 4 pcs. M6-1.0 nylon lock nut

#10 – 4 pcs. 1" flat washer – 18-8 SS

#20 – 1 pc. Gear motor – 24v / 90 GC

1.) Lock the gate in the open or closed position using the **T/M Safety Pin**_(see the operator details page (#10) in the installation and operation manual or contact AutoGate.



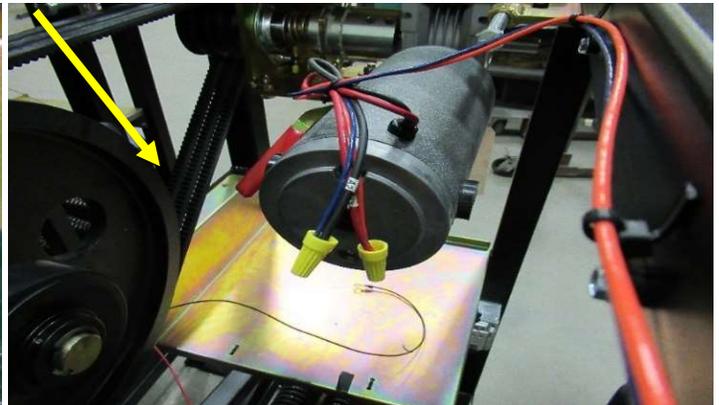
Example: CLOSED position

2.) Remove four (4) “Tek” screws retaining the operator top panel then remove the top panel.

3a.) Turn off the **DC** and **AC** power switches.



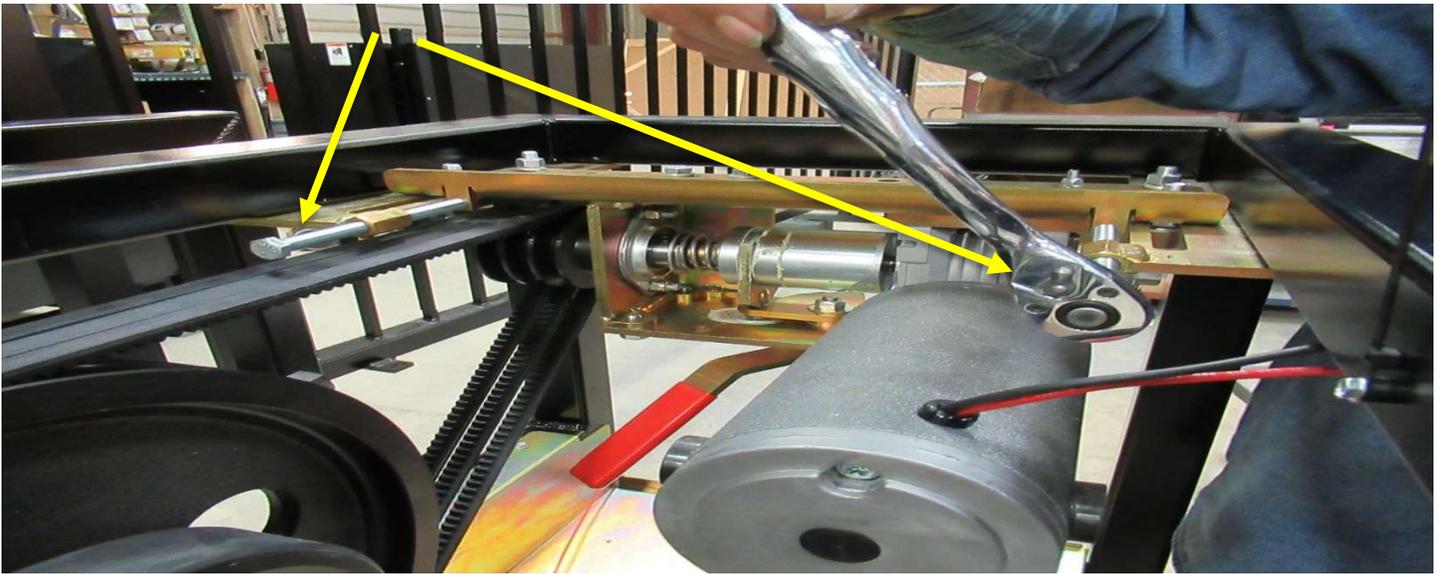
3b.) Disconnect the motor power wires.



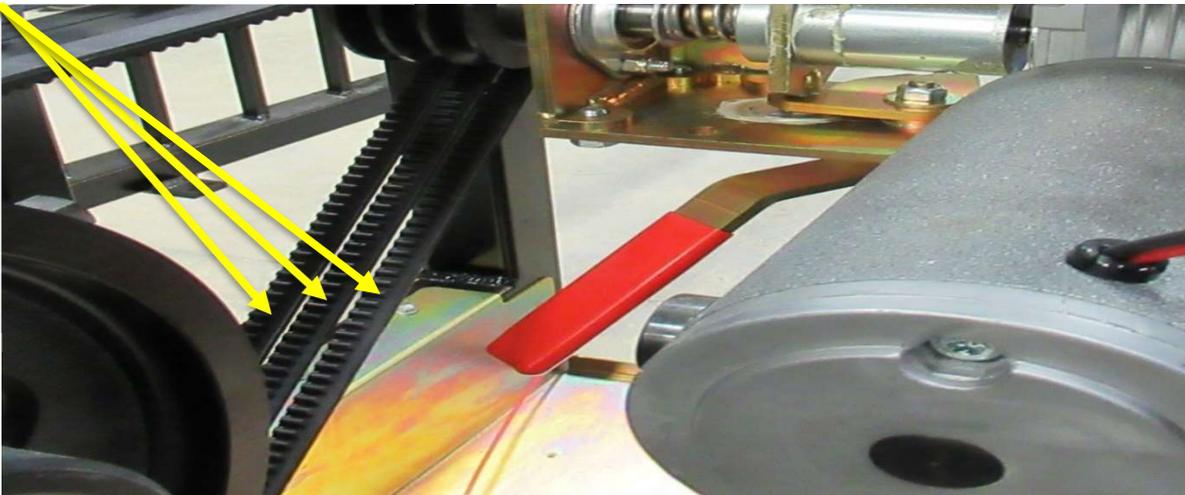
3c.) **LOOSEN** the four (4) 3/8-16 hex nuts (**DO NOT REMOVE at this Time**).



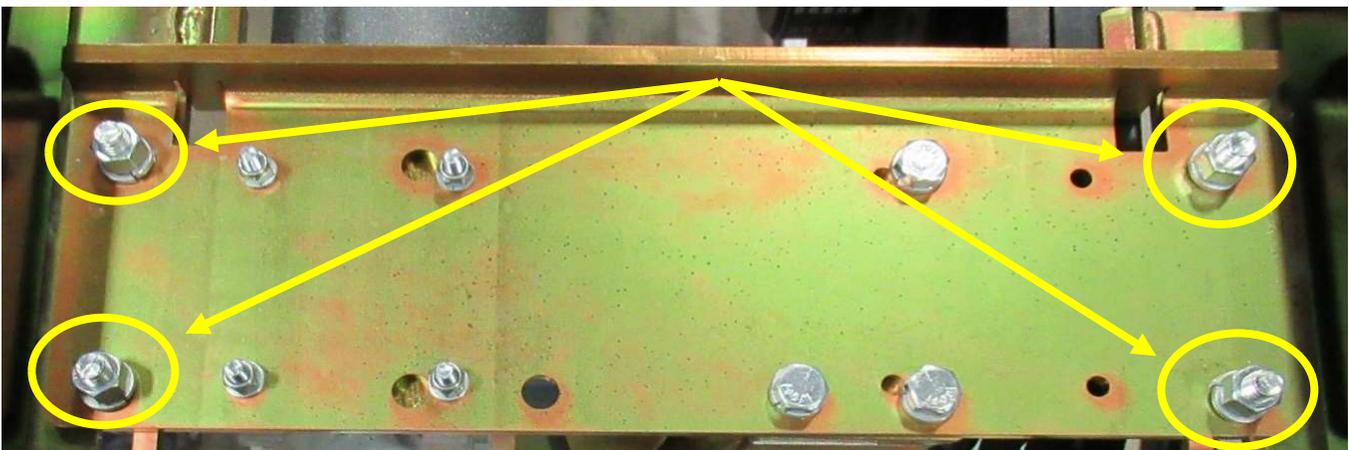
3d.) Remove two (2) 3/8-16 Belt Tension bolts. Slide the RAD motor assembly to loosen the motor belts.



3e.) Remove three (3) Drive Belts from the motor pulley.



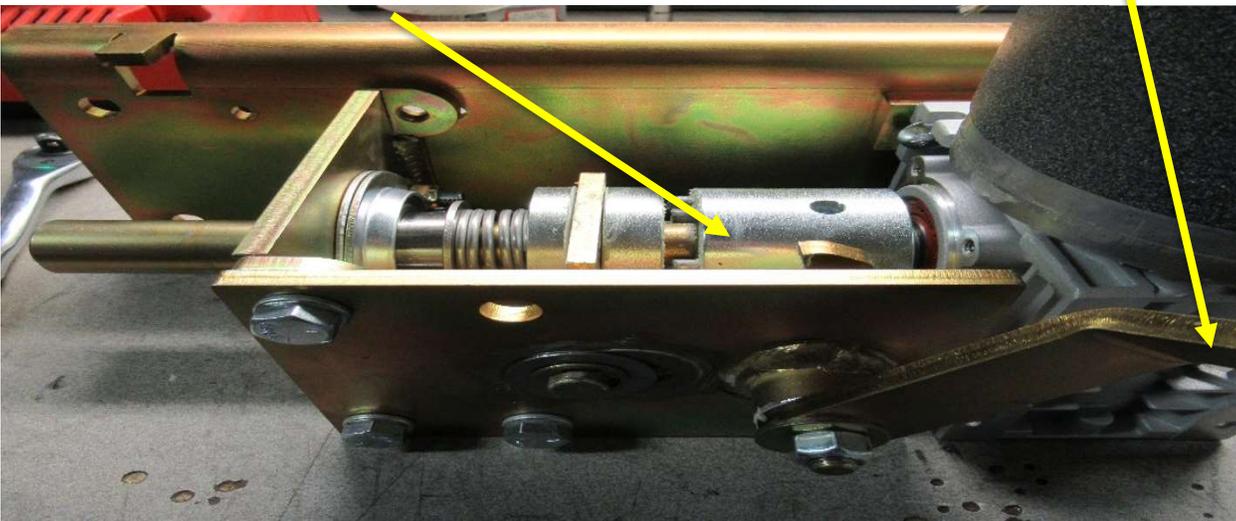
3f.) Remove ALL four (4) 3/8-16 hex nuts, four (4) 3/8" split lock washers, and four (4) 3/8-16 carriage bolts.



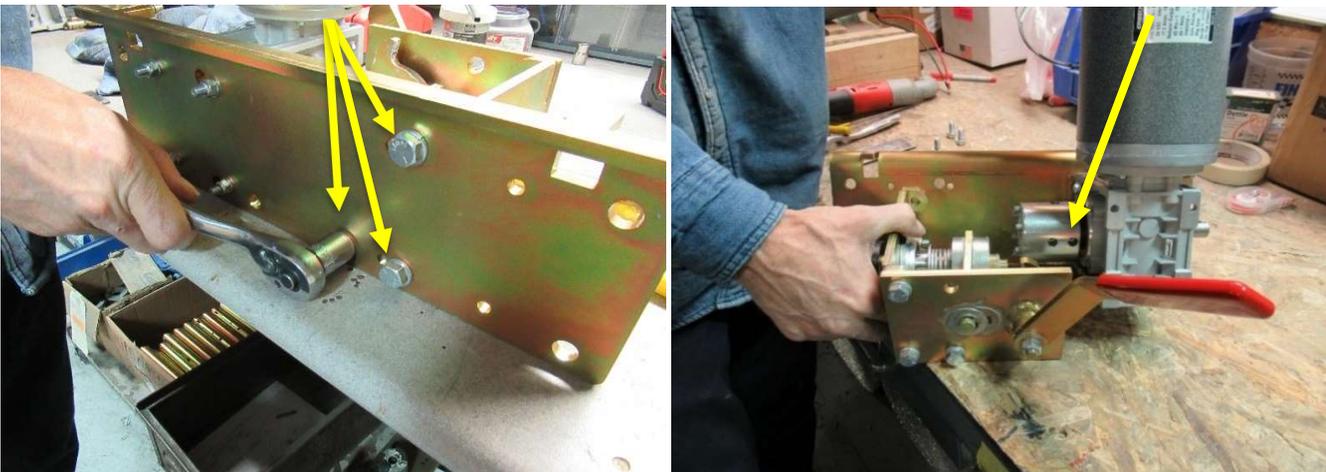
4.) Lift the **Motor Assembly** and move it toward the center of the operator then lower the **Motor Assembly** out of the operator and place on a workbench or other suitable work surface.



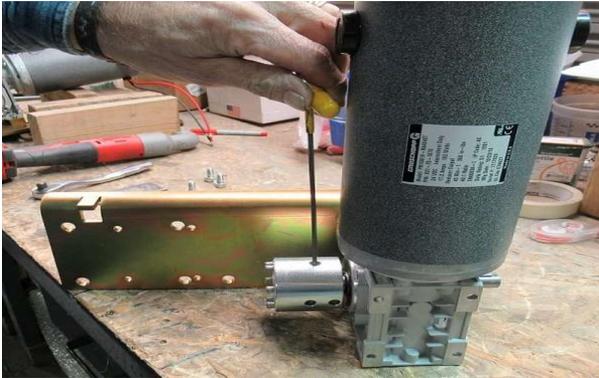
5.) Orient the **Motor Assembly** as shown (RH model shown, LH opposite). Using the **90 DM Retractor Cam Handle** Position the **RAD Slide Coupler** in the open position.



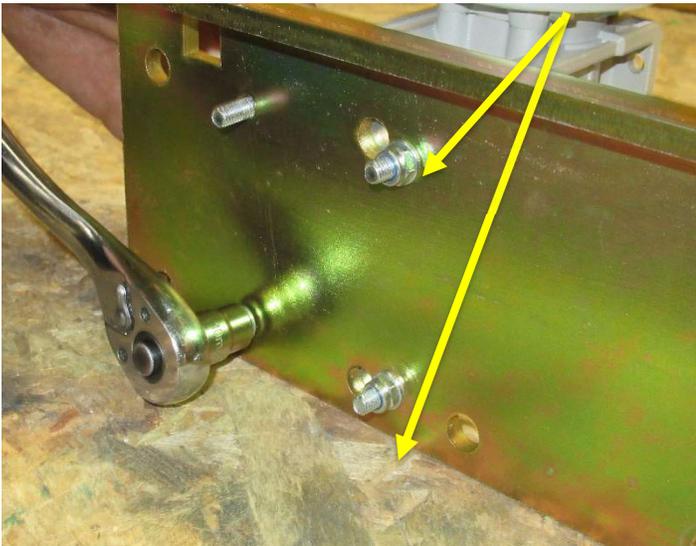
6.) Remove three (3) 3/8-16 bolts securing the **RAD Bearing Mounting Bracket** then remove the assembly.



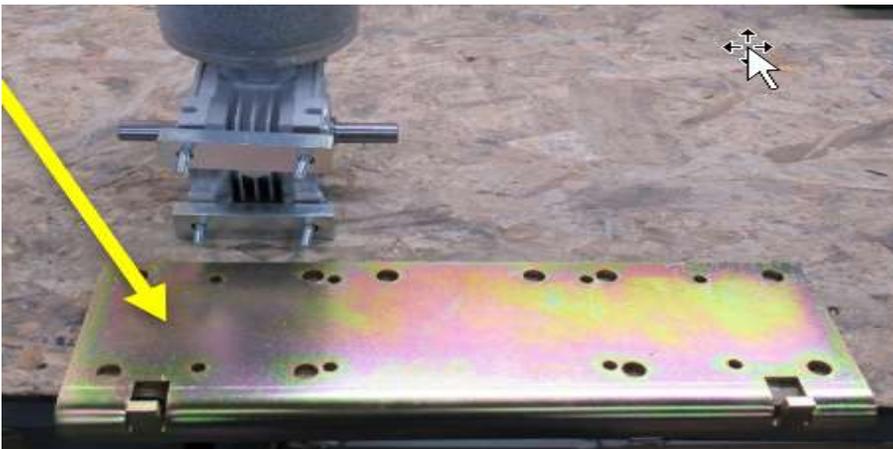
7.) Loosen, but **do not remove** three (3) set screws securing the **RAD Fixed Coupler** to the gearbox shaft then remove the coupler. (**retain for use on the replacement motor and gearbox assembly**)



8.) Remove and discard four (4) M6-1.0 nylon hex nuts and four (4) M6 x 12mm flat washers used to retain the motor and gearbox assembly to the mounting plate.



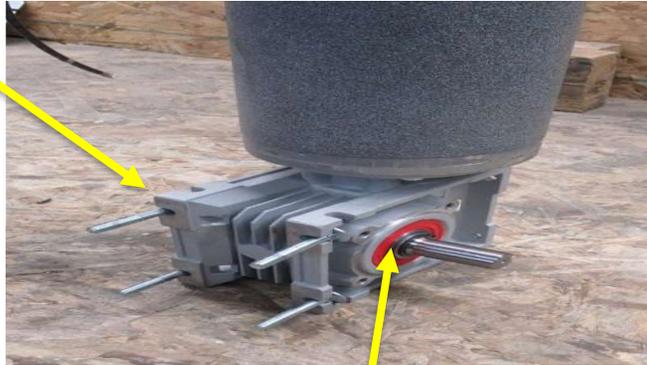
9.) Remove mounting plate. (Retain)



10a.) Remove and retain two (2) spacer blocks



10b.) Remove and discard four (4) M6-1.0 x 40mm carriage bolts. They can be difficult to remove and may have to be cut off.



10c.) Use a pair of snap ring pliers to remove one of the snap rings from the motor shaft. Remove the shaft and retain it and the snap ring.

11.) Place the replacement motor and gearbox assembly on a work bench or other suitable work surface

12a.) Install the shaft into the replacement motor's gear box using the snap ring and snap ring pliers.

12b.) Insert four (4) supplied M6-1.0 x 40mm carriage bolts into the slots on the motor and gearbox assembly.

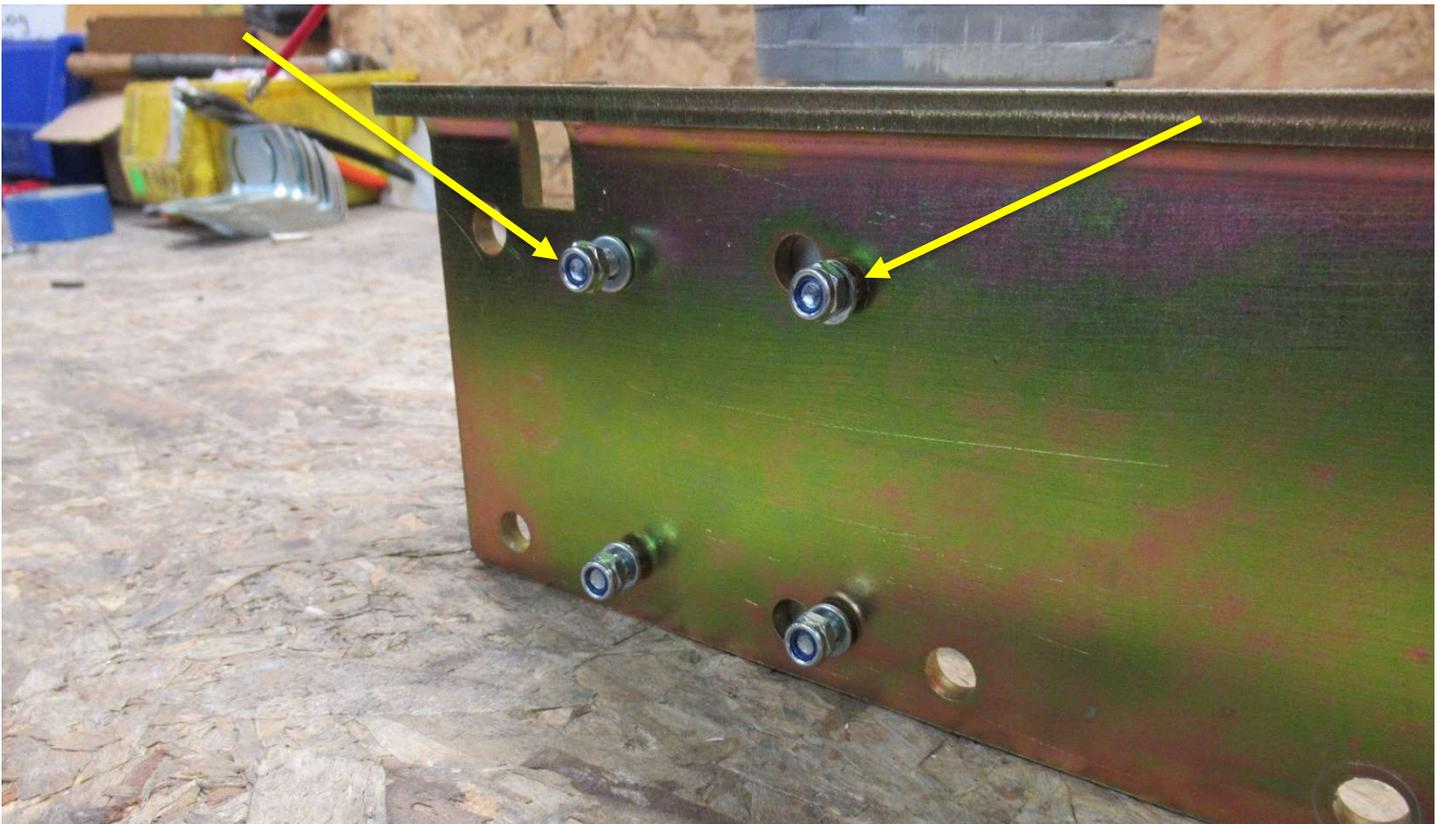
12c.) Place two (2) retained spacers on the four (4) M6-1.0 x 40mm carriage bolts



12d.) Install the **Mounting Plate** onto the replacement motor and gearbox assembly



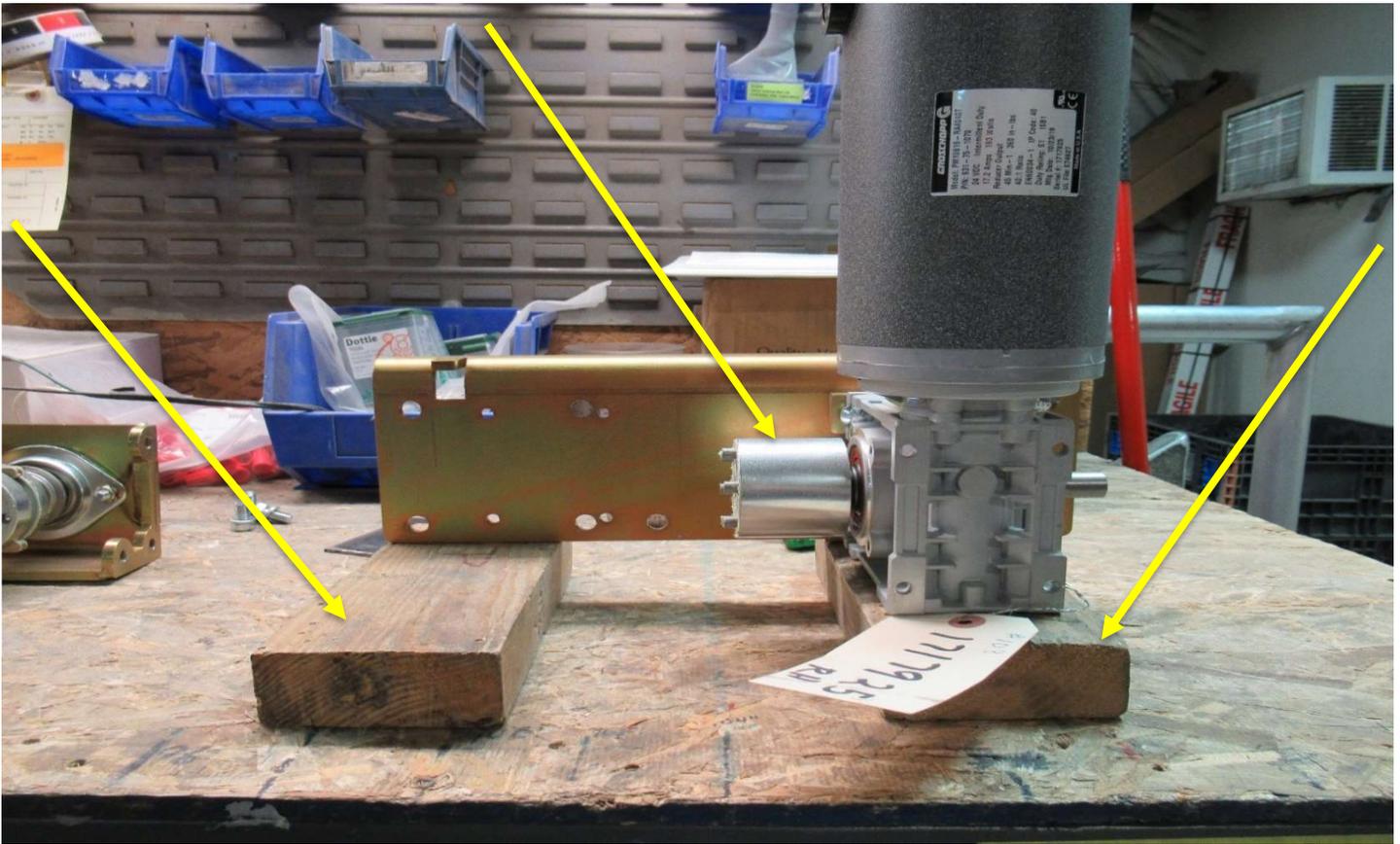
12e.) Install four (4) (**supplied**) M6 x 12mm flat washers and four (4) supplied M6-1.0 nylon hex nuts, (**do not tighten them.**)



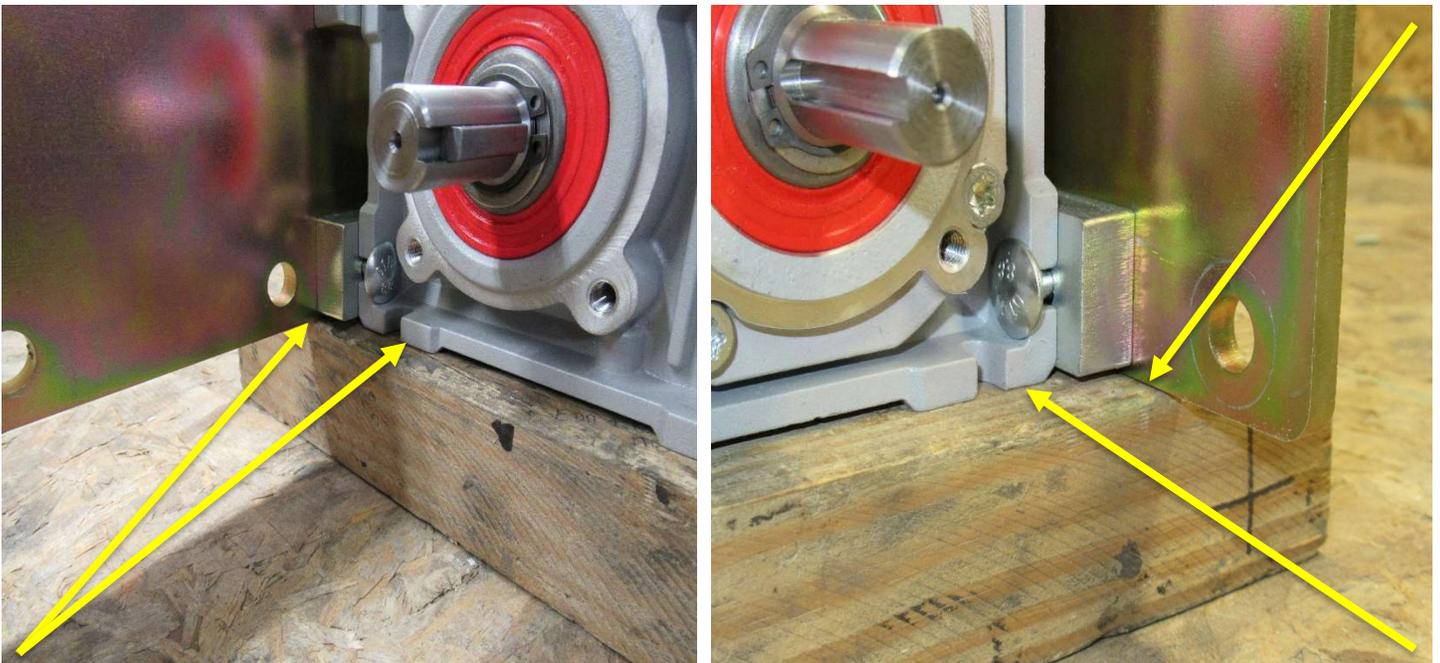
13a.) Place two (2) wood blocks on a workbench or other suitable work surface

13b.) Place the new motor and gearbox assembly and mounting plate on the wood blocks

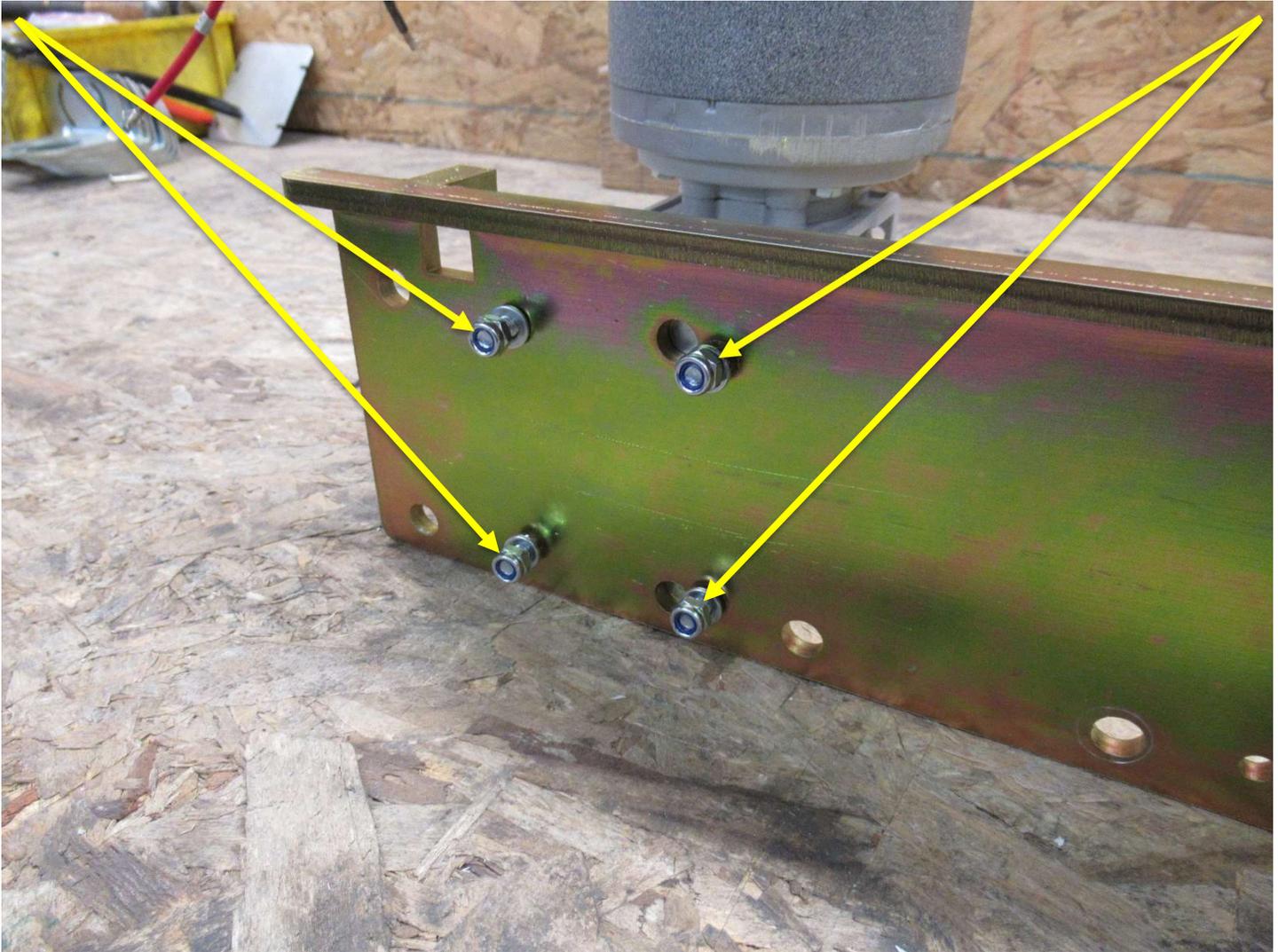
13c.) Install the **RAD Fixed Coupler** on to the gear box shaft but ***do not tighten the set screws***



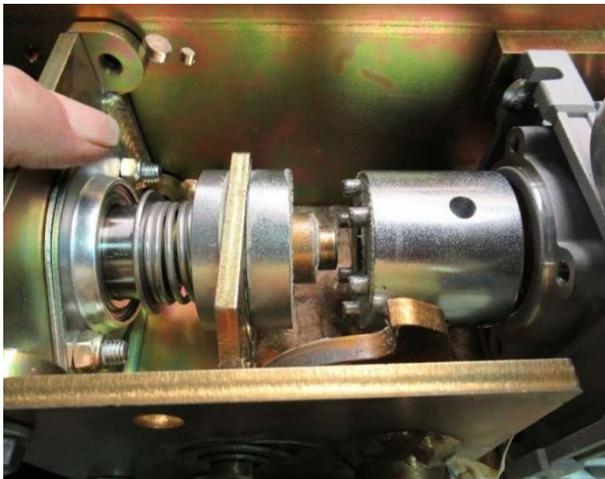
14.) Ensure the motor and gearbox assembly and the plate are fully seated on the wood blocks (***no gaps present***)



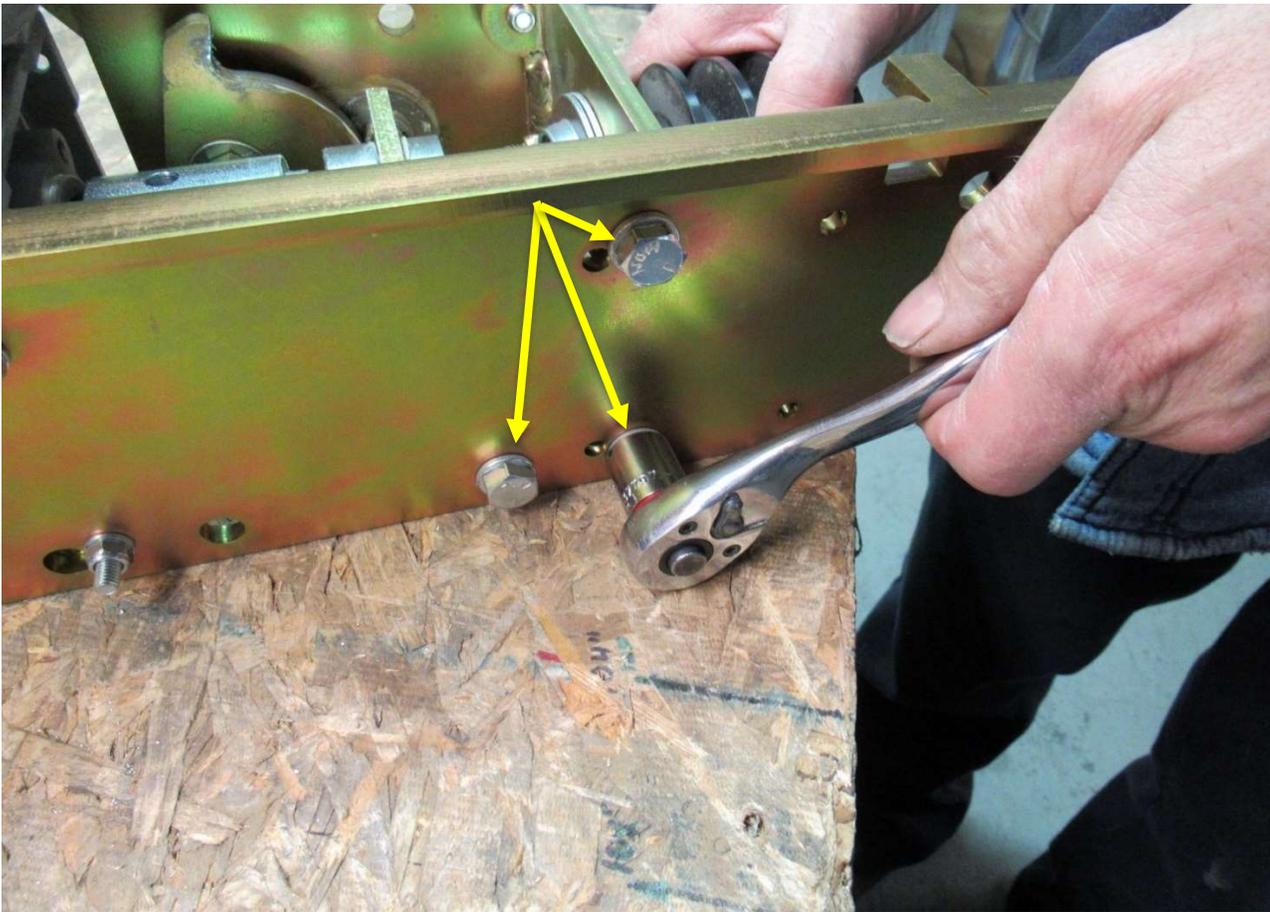
15.) Tighten four (4) M6-1.0 nylon hex nuts (*ensure the mounting plate and gearbox stay seated against wood blocks*)



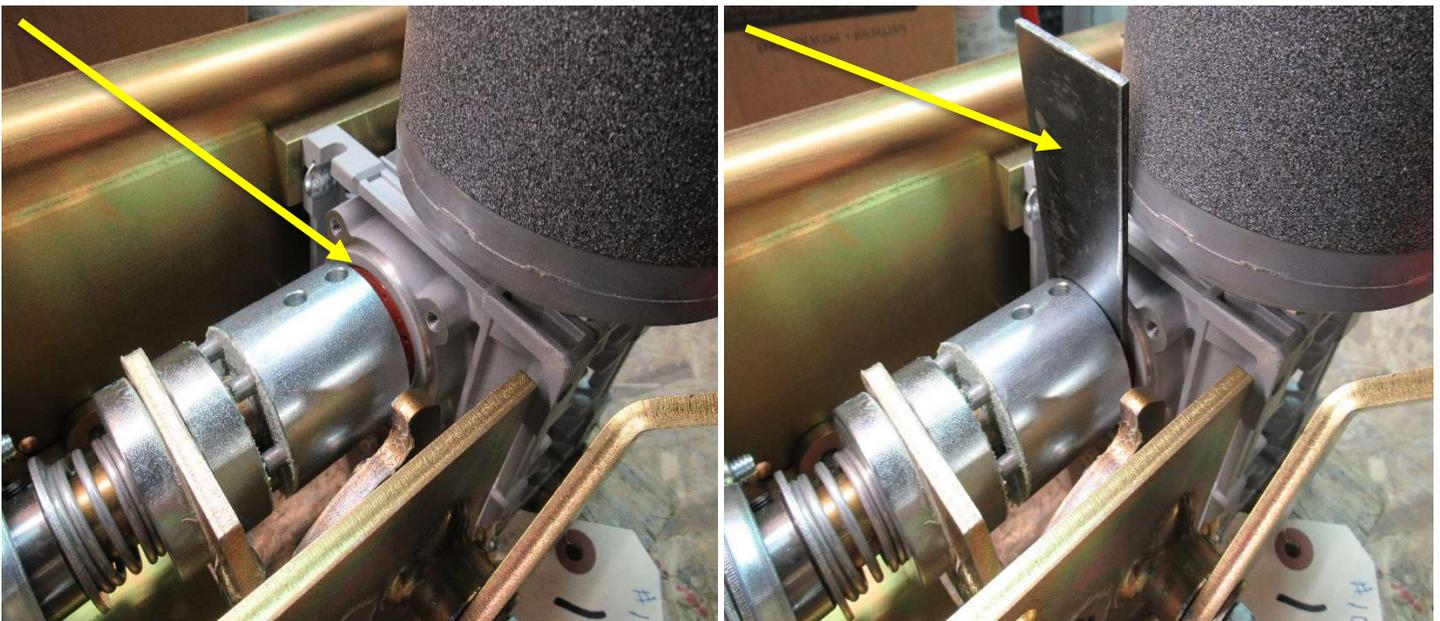
16a.) Install the **RAD Bearing Mounting Bracket** assembly ensuring the pilot end of the RAD 1" Main Drive Shaft is seated into the bearing in the **RAD Fixed Coupler**.



16b.) Secure the **RAD Bearing Mounting Bracket** assembly with three (3) 3/8-16 bolts

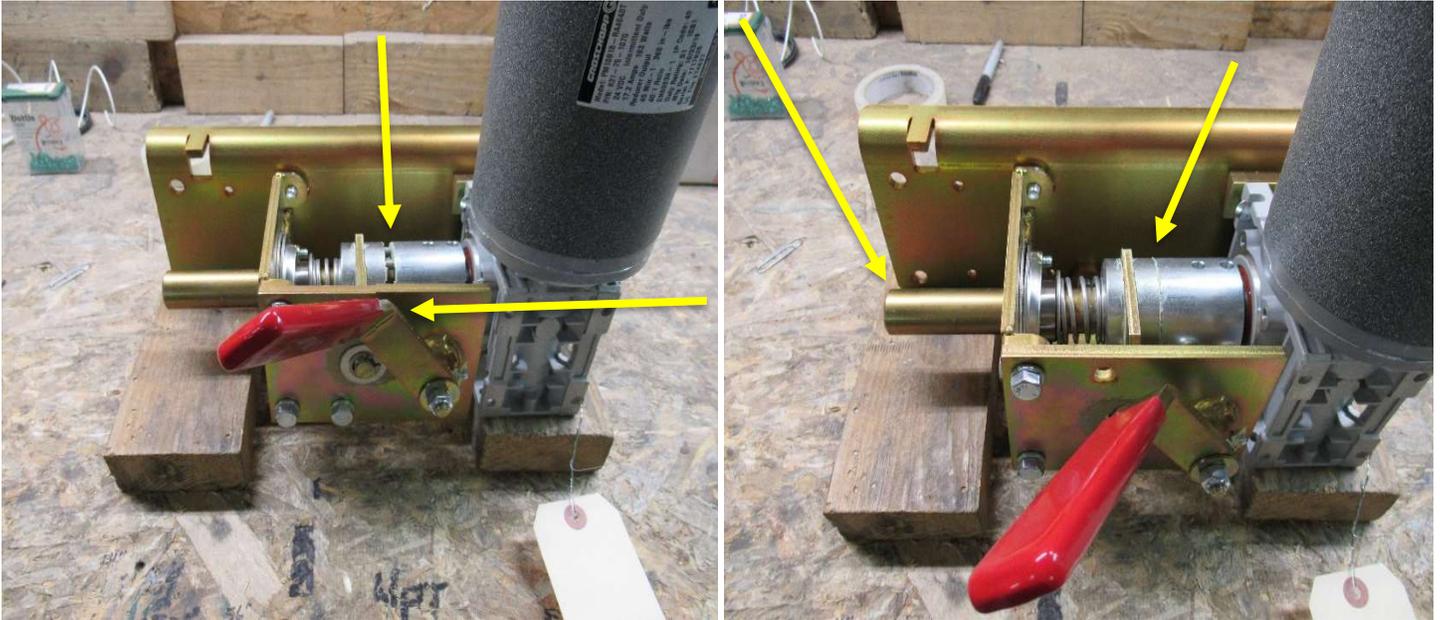


17.) Insert the 2" x 4" x 1/8" spacer plate or other flat wide tool between the gearbox and **RAD Fixed Coupler** and push the fixed coupler toward the **RAD Slide Coupler** to ensure the RAD 1" **Main Drive Shaft** is fully seated in the bearing then tighten the set screw/screws that are visible.



18a.) Close the **RAD Slide Coupler** using the **90 DM Retractor Cam Handle**. Turn the shaft, by hand, until the **RAD Slide Coupler** closes fully then inspect for a gap between the two (2) couplers. If a gap is present repeat steps 16 and 17 until the gap is no longer present.

18b.) Open the **RAD Slide Coupler**, turn the shaft then close the **RAD Slide Coupler**. Turn the shaft until the **RAD Slide Coupler** closes fully then inspect for a gap between the two (2) couplers. Repeat this step 3 to 4 times checking for gaps each time. If a gap is present repeat step 16 and 17 until the gap is no longer present.



19.) Place the **Motor Assembly** on top of the side slide plates. Reconnect the motor power wires. Turn the AC and DC power switches on. Run the motor using the **OPEN** and **CLOSE** buttons on the control board. As the motor runs, observe the couplers and ensure there is no wobble and/or gaps. **Repeat steps 16 – 18 to eliminate all wobble and/or gaps.**



20.) Install the **Motor Assembly** into the operator



21.) Prior to re-installing the belts, inspect for wear and replace accordingly.

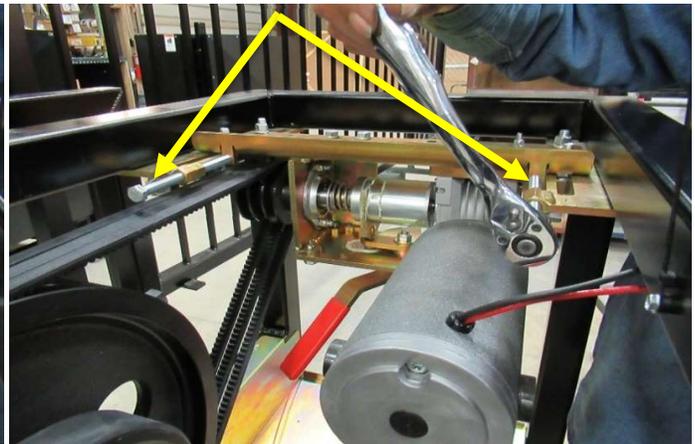
22a.) Install four (4) 3/8-16 carriage bolts, lock washers and hex nuts finger tight



22b.) Install three (3) **Drive Belts**



22c.) Install two (2) 3/8-16 **Belt Tension** bolts

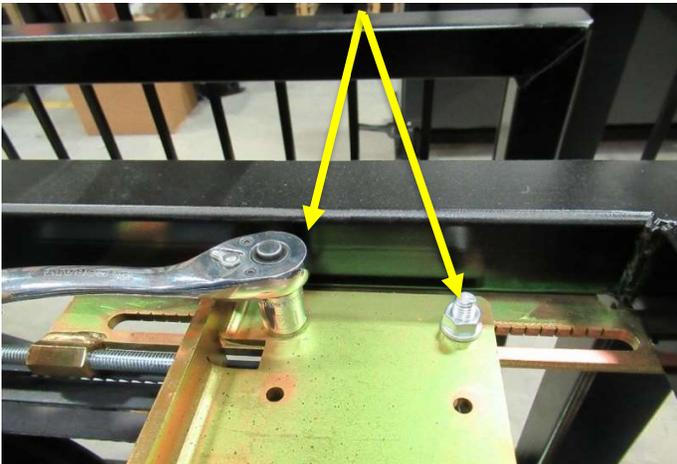


23.) Use **Belt Tension** bolts to adjust the **RAD Mounting Plate** back to the measurement taken in **Step 4** or to the correct belt tension, (**7 1/4"** in this example).

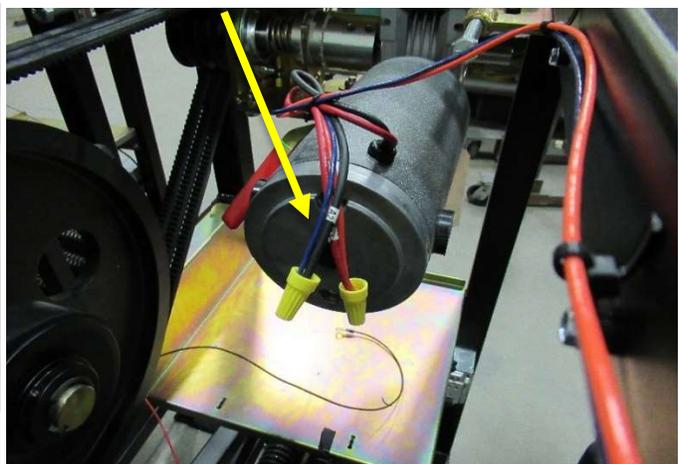


24. Tighten the (3) small belts down with 1/2" of deflection and the Larger Belt with 1/4" of deflection by adjusting the **Belt Tension** bolts. (This should be sufficient to operate your VPG system.)

25.) Tighten four (4) 3/8-16 hex nuts



26.) Reconnect the motor power wires



27.) Turn the **DC** and **AC** power switches on



28a.) Ensure the **RAD Slide Coupler** is locked in the open position

28b.) Jog the motor using the **OPEN** and **CLOSE** buttons on the control board to bring the remaining set screws to a more accessible location for tightening

28c.) Turn the AC and DC power switches off then finish tightening the set screws



29.) Remove the **T/M Safety Pin** to unlock the gate

30.) Turn the **AC** and **DC** power switches on

31.) The operator is now ready to run

32.) Cycle the gate several times to ensure the alignment is correct

33.) Test all entrapment devices for proper operation

34.) Check Maintenance log to verify no preventative maintenance is needed.

35.) Re-Install the top panel