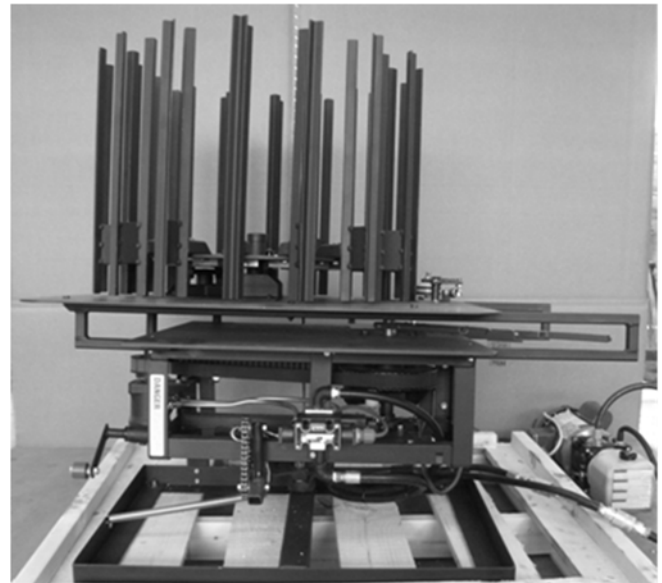
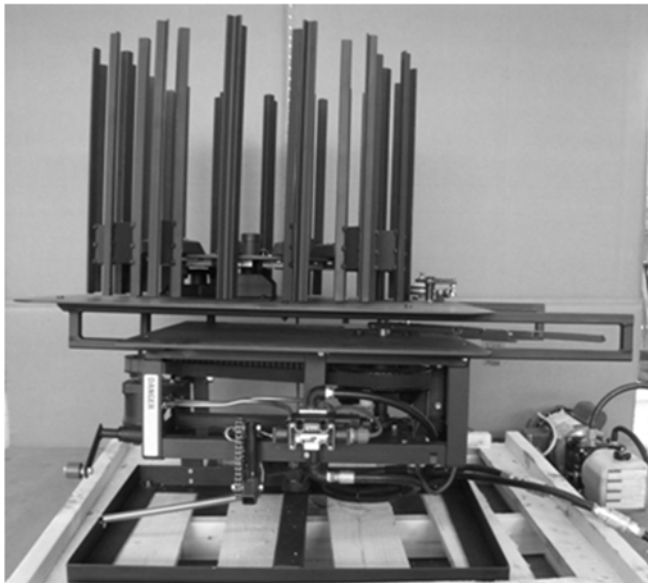


INSTALLATION • SAFETY • MAINTENANCE

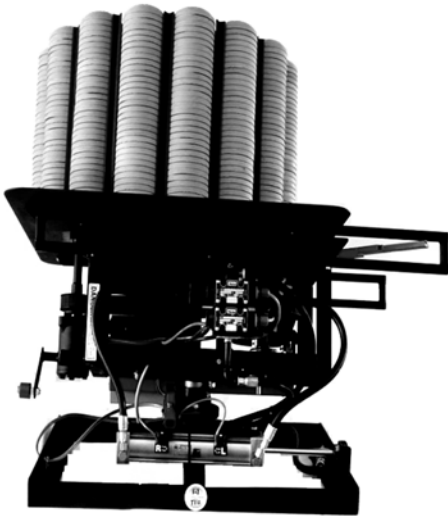
PAT-TRAP



SKEET MANUAL

Serial #: _____

Date: _____



U.S. PATENTS(S): 5249563, 6176229

Pat-Trap®

AUTOMATIC SKEET MACHINE

Manufactured by:

Pat-Trap, Inc
632 Western Ave
Henniker, NH. 03242

Telephone: 603-428-3396

Web Site: www.pattrap.com

Email: pattrap@tds.net

Pat-Trap, Inc. warrants the Pat-Trap® Skeet machine against defects in material or workmanship for a period of one year from date of original purchase; and agrees to repair **or**, at our option, replace any defective unit without charge.

IMPORTANT: This warranty does not cover transportation cost. Nor does it cover any damage resulting from accident, misuse or abuse, and any modifications or alterations including attaching the unit to other than the recommended receptacle or voltage.

NO RESPONSIBILITY IS ASSUMED FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.



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Safety Recommendations

NEVER STAND IN FRONT OF A SKEET MACHINE. THE SKEET MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE SKEET HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHEN THE THROW ARM IS COCKED. IF YOU ARE UNFAMILIAR WITH THE SKEET MACHINE:

The PAT-TRAP®

NEVER STAND IN FRONT OF A TRAP MACHINE. THE TRAP MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE TRAP HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHILE THE THROW ARM IS COCKED.

DO NOT TOUCH! -- ASK FOR HELP

NEVER ATTEMPT TO LOAD THE TRAP WHEN IT IS COCKED. ALWAYS RELEASE THE TARGET FROM THE TRAP MACHINE.

NEVER ADVANCE THE THROW ARM BY HAND WHEN THE ON/OFF/RELEASE SWITCH IS IN THE ON POSITION. THIS MAY DAMAGE THE MACHINE.

The target throw arm extends 4" beyond the throw plate. Keep away from moving parts. Never stand in front of the trap machine.

When the machine is turned ON the throw arm will travel forward to the cocked position through the danger zone.

When the throw arm is fired, the arm will travel through the indicated danger area zone.

The throw arm can be fired by pushing the pullcord button. It can also be fired by hand; by pushing the arm forward off the brake when the machine is either On or Off.

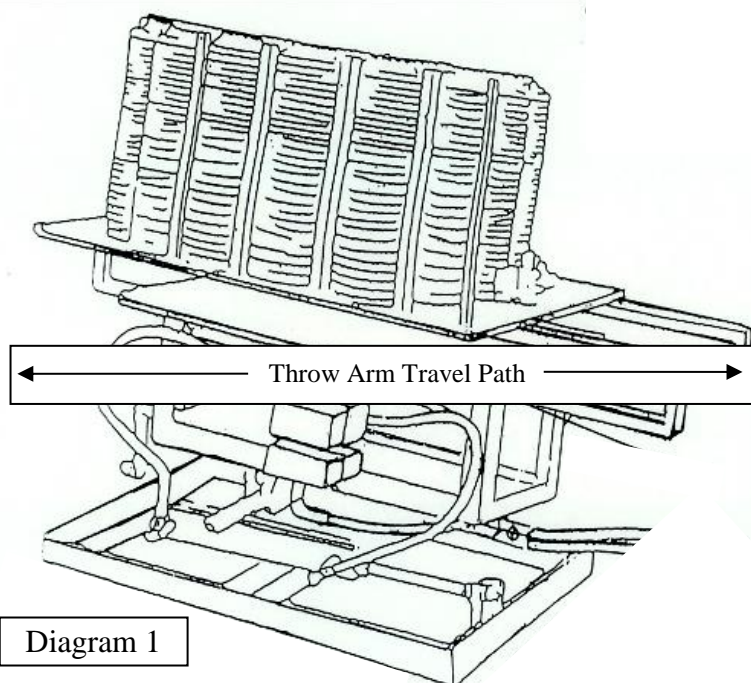
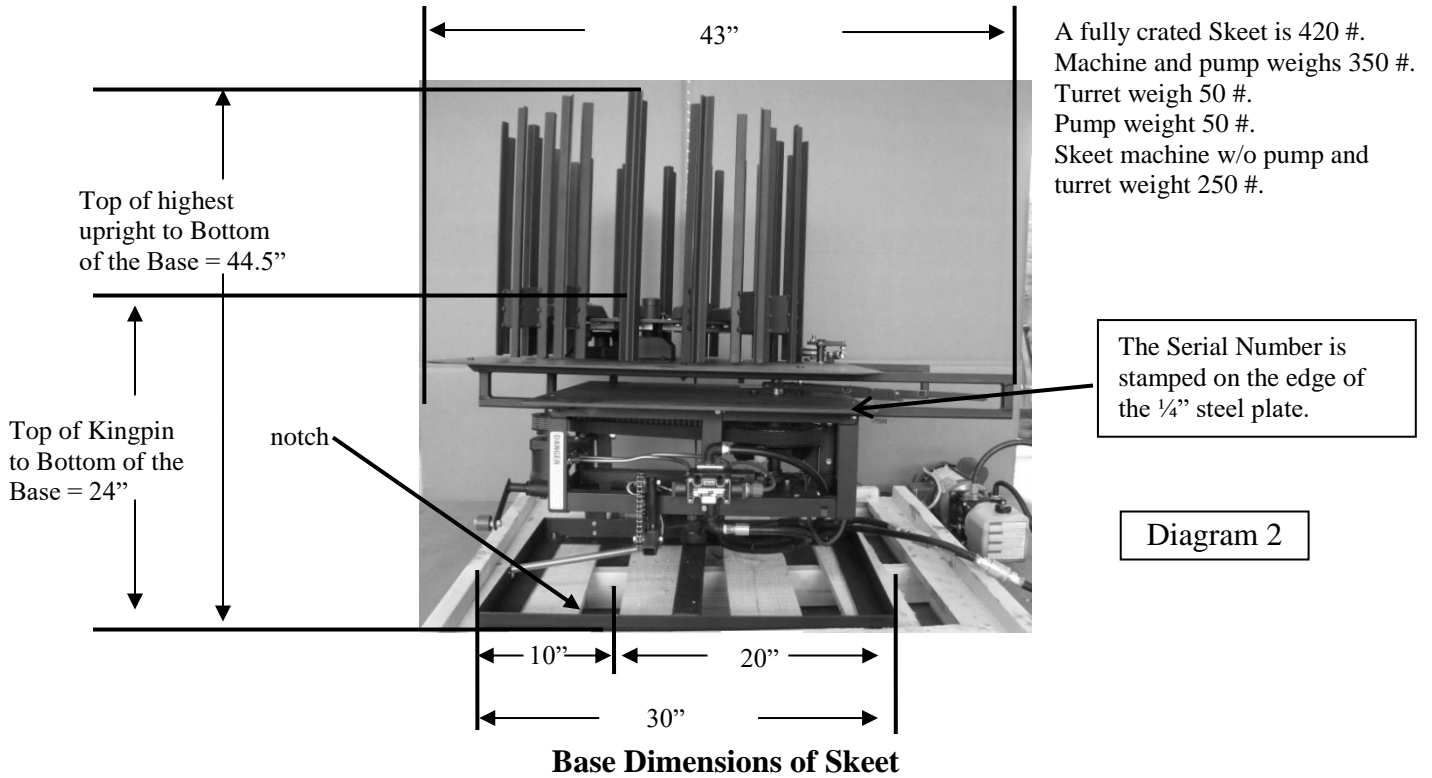


Diagram 1



SKEET SERIAL NUMBER LOCATION



Skeet Serial Number Location

Serial Number Location: The Serial Number is stamped on the front left edge (shooting stand 1 Side) of the 1/4" thick steel "Throw Plate".



Skeet machine positioning in skeet house.

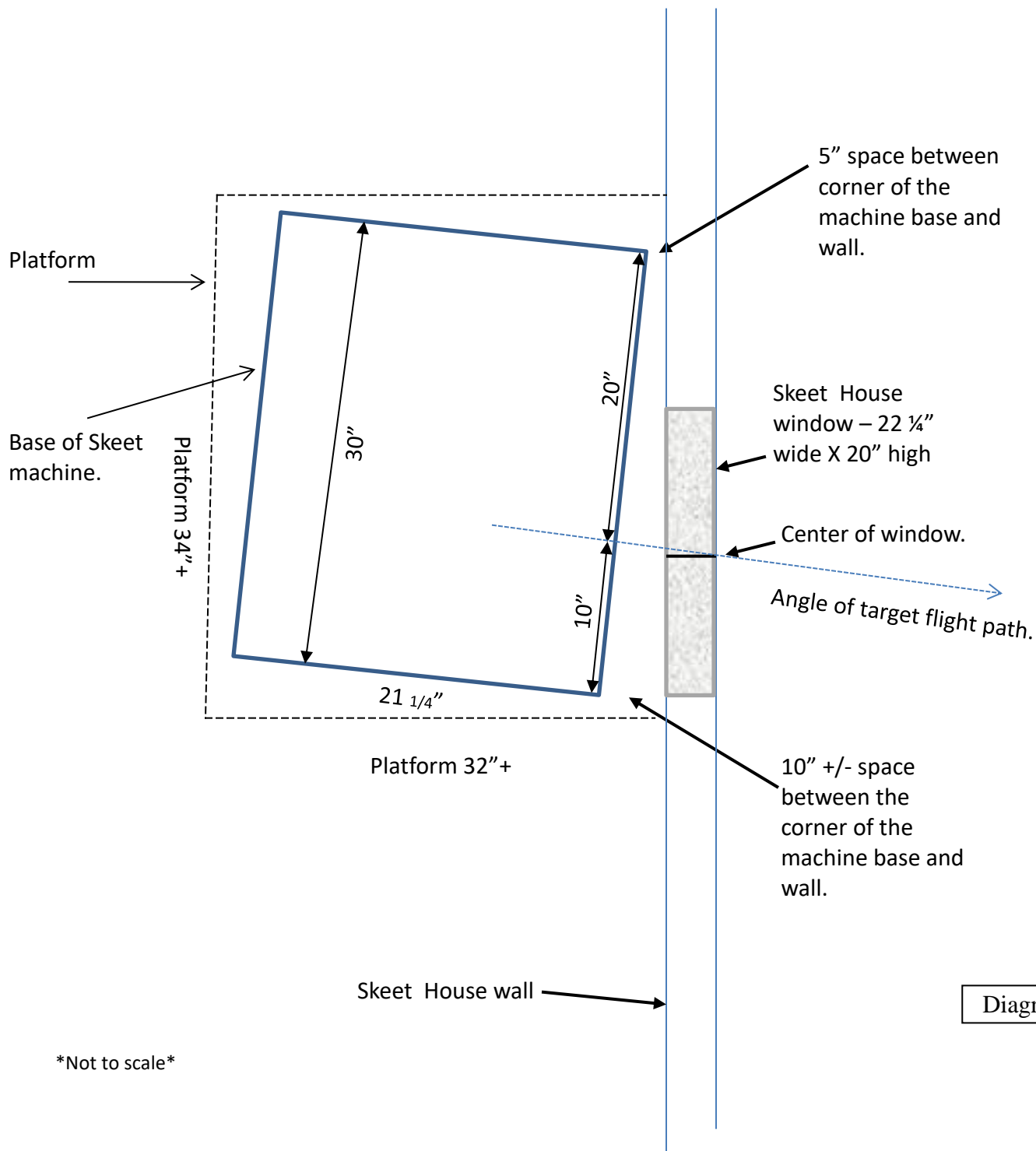
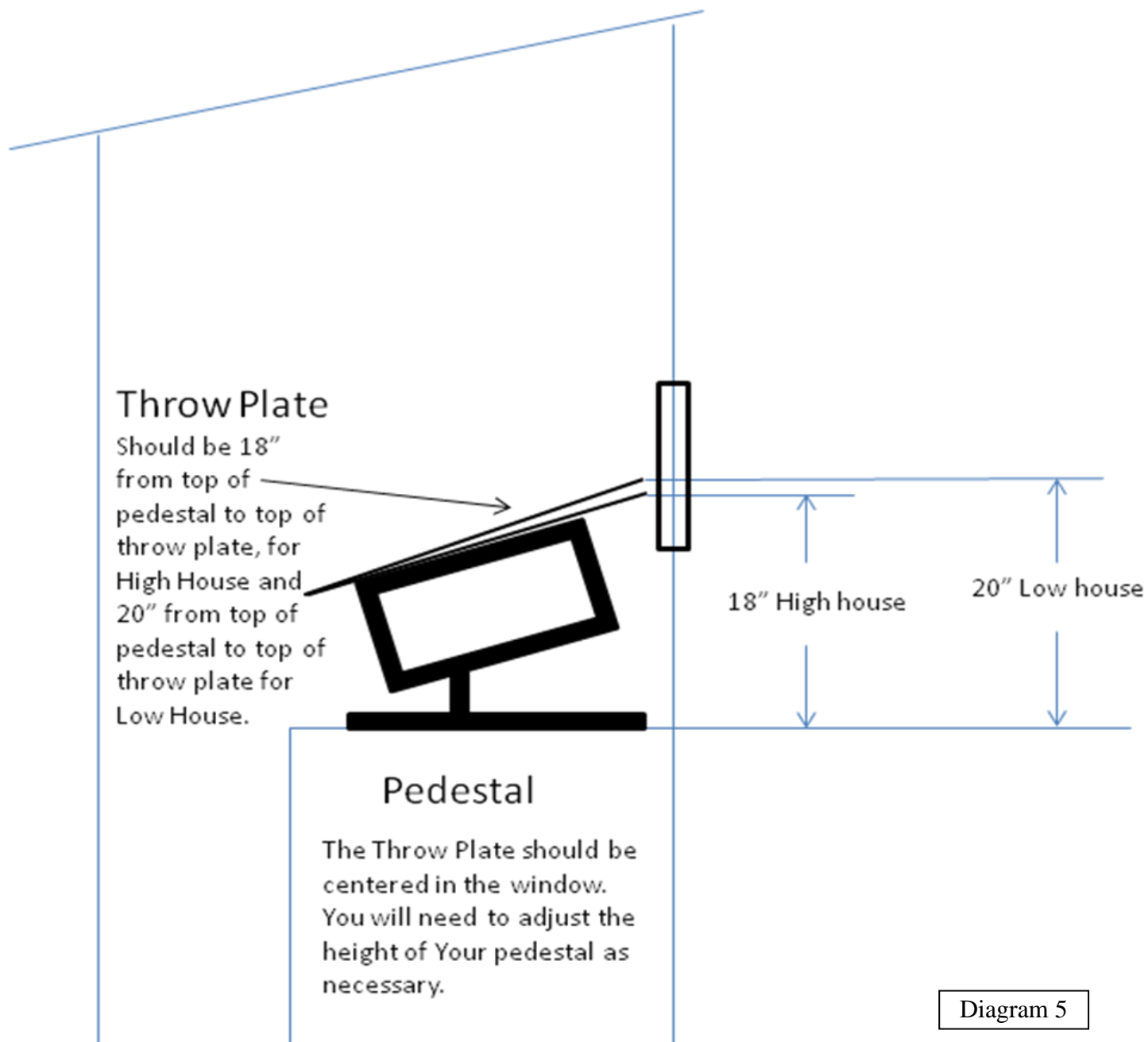


Diagram 4



Skeet Throw Plate Approximate Angles





Skeet Throw Plate Minimum and Maximum Height

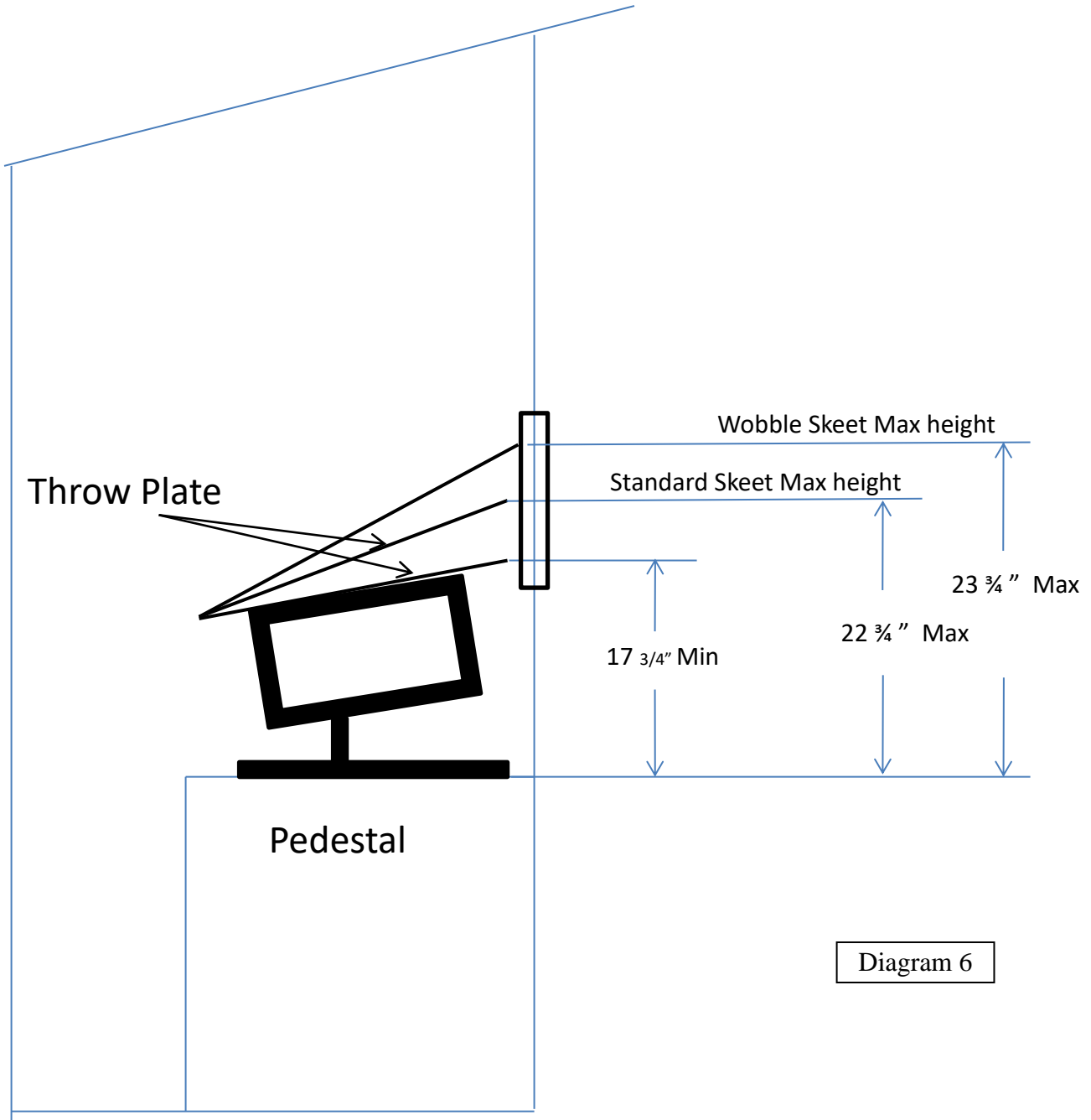


Diagram 6



INSTALLATION OF THE SKEET MACHINE AND PUMP

1. The machine must sit on a level platform
2. A notch on the front side of the angle iron base, 10” in from the left side, marks where the target leaves the machine.

Position to the front of the house with the notch lined up with the center of the window.
3. When the skeet machine is square to itself (as it is when you receive it) the machine will throw a straight away target. You must turn the machine on the mounting platform until you can throw the target through the hoop. Typically there will be a six inch difference from one side to the other. See diagram. Keeping the notch in the frame lined up with the center of the window, bolt down the machine to the platform.
4. Holes are provided in the corners of the base to bolt/screw down/secure your machine.
5. The pump reservoir is filled at the factory with motor oil **5W-20**
6. Place the pump on the floor – on the left side of the machine.
7. Connect the quick release fittings from the pump to the machine; slide back the outer sleeve of the female fitting while pushing onto the male fitting. Allow the female sleeve to slide forward to lock. Gently tug on the connections to check that they are securely fastened.



Hydraulic Pump System

Diagram 7



REMOVAL/REPLACEMENT OF THE TURRET

WARNING: To prevent damage to your machine the turret must be replaced the same way as it was removed.

1. Observe how the cogs are meshed with the cam followers: i.e., the pair of cam followers has to mesh within the cogs located beneath the turret.
2. To remove the turret, have two people, one on each side of the trap machine, lift straight up (no tools are required). Both people must lift up evenly to prevent the turret from binding on the kingpin. Replace the turret in the same way that it was removed.

MOUNTING THE POWER CONTROL BOX

Mount the power control box just inside the skeet house on the right wall. This should be the side of the skeet where personnel enter/exit the skeet house. The power control box should be easily accessible. Proper location of the control box is important to insure safety. *Remember:* Never stand in front of a skeet machine without having first released the target.

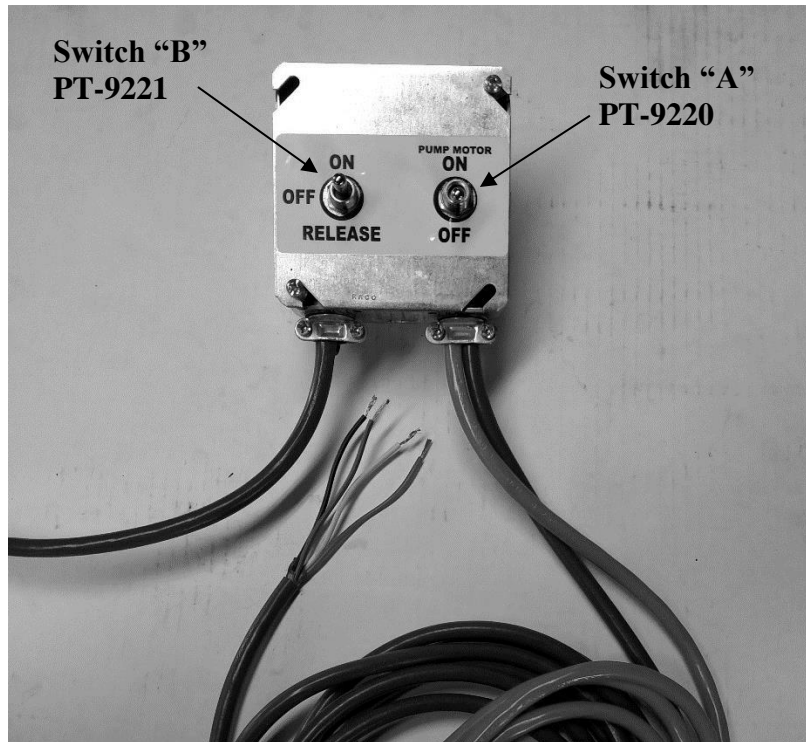


Diagram 8

Skeet Power Box and Counter



CONNECTING THE SKEET MACHINE TO THE POWER SOURCE

1. Check the power control box to confirm that the *motor* and the *on/off/release* switches are in the **OFF** position. When both toggle switches are snapped downward they are in the off position.
2. Connect the pump to the power control box by plugging the pump motor into the outlet coming from the power control box.
3. The skeet machine uses 110 volt AC power. Connect the skeet machine to the power source using the wire from the power control box.

Wobble Skeet Pair



Diagram 9



HOW THE PAT-TRAP® AUTOMATIC SKEET MACHINE WORKS

Turn the pump switch on and turn the on/off/release switch on (Diagram 8). The elevator rises to receive a target while the throw arm and turret advance. When a target is loaded, the elevator goes down and the throw arm advances the target until the Activator comes to the #2 switch bracket. The throw arm is now at the brake (in the cocked position) and the target is set.



Diagram 10

Throw Arm on Throw Arm Brake PT 9027B

When the skeet release switch is activated, Switch #1 overrides Switch #2 which then advances the throw arm off the throw arm brake causing the machine to fire.



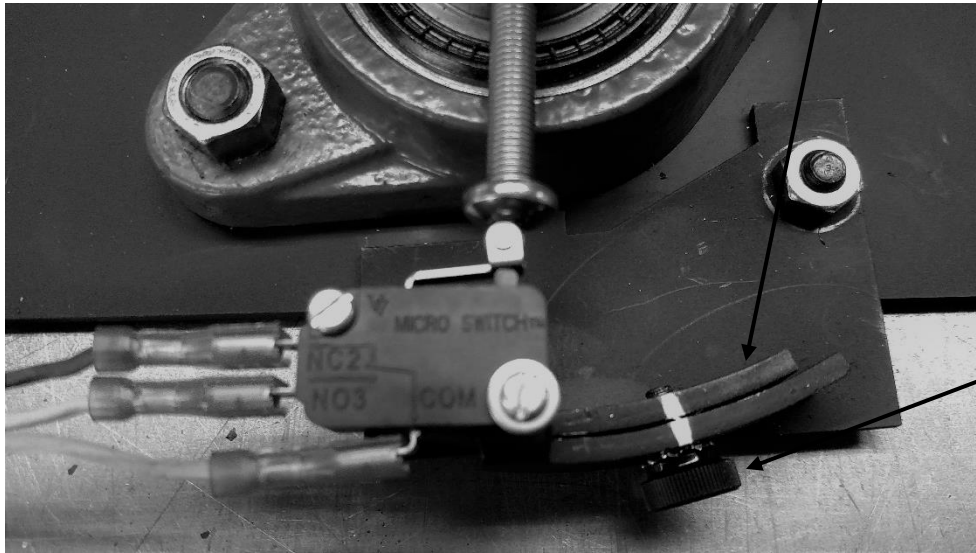
Diagram 11

#1 Switch Skeet Release (PT- 9325)



When the activator leaves Switch #2, the #2 switch closes and begins a new cycle of loading a target.

Switch Bracket
PT 9209D/G



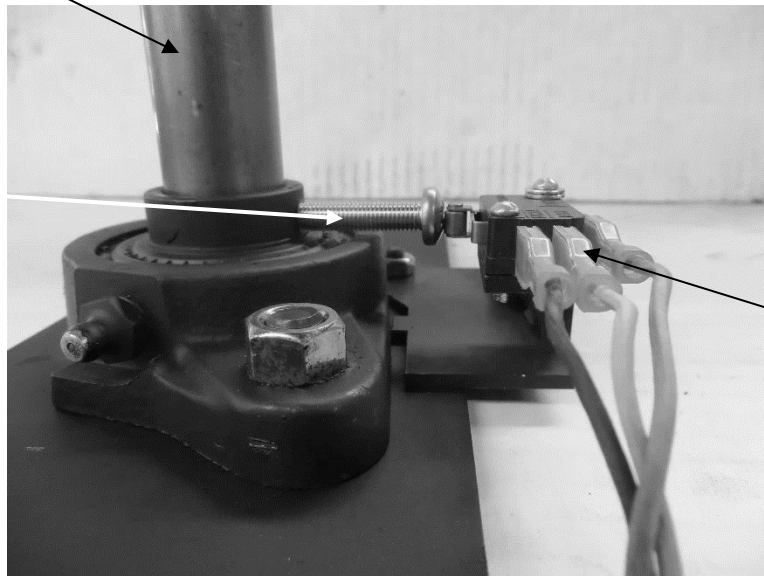
Thumb Screw
PT 9209E/G

Diagram 12

#2 Throw Arm Limit Switch
PT 9213
For Standard Skeet Machine

Main Shaft

1-1/8" Activator Bolt



#2-3 Activator
PT-9210B

#2 Micro
Switch
(PT 9213)

Diagram 13

Pat-Trap® #2 Switch Bracket in "Cocked Position"
For Wobble Skeet machine



SKEET SWITCH ID

Switch A	PAT-TRAP Pump Motor Switch (Diagram 7)
Switch B	PAT-TRAP On/Off/Release Switch (Diagram 7)
Switch #1	Skeet release switch (Diagram 9)
Switch #2	Throw arm limit switch (Diagram 10)
Switch #11A	Wobble Up – N/O Limit Reed Switch (<i>Wobble Only</i>) (Diagram 21)
Switch #12A	Wobble Down – N/O Limit Reed Switch (<i>Wobble Only</i>) (Diagram 21)

TURNING THE PAT-TRAP® SKEET MACHINE “ON”

1. Move the Pump Motor toggle switch UP to the “ON” position.
2. **IMPORTANT:** Turn the motor switch on *first* so that the hydraulic system is pressurized to prevent any air from entering the system. Allow the pump to warm up the hydraulic oil *before* operating the machine. In warm weather this will not matter. **Cold temperatures may cause the throw arm to cycle repeatedly if the hydraulic oil is not warm.** Please refer to the section: Cold Weather Adjustment Temperature/Release Time and Stopping the Throw Arm on the Brake.
3. Push the On/Off/Release toggle switch UP to the “ON” position.



TURNING THE PAT-TRAP® SKEET MACHINE “OFF”

1. Standing behind, and to the side of the skeet machine, push the On/Off/Release toggle switch all the way DOWN to release, and let go. The throw arm will fire the target and will not re-cock.
2. Push the Pump Motor toggle switch DOWN to the Off position.

LOADING THE PAT-TRAP® SKEET MACHINE

The Pat-Trap® skeet machine holds five (5) full cases of clay targets.

NEVER attempt to load the clay targets without first releasing the skeet machine.

NEVER STAND IN FRONT OF A SKEET MACHINE. THE SKEET MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE SKEET HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHEN THE THROW ARM IS COCKED.

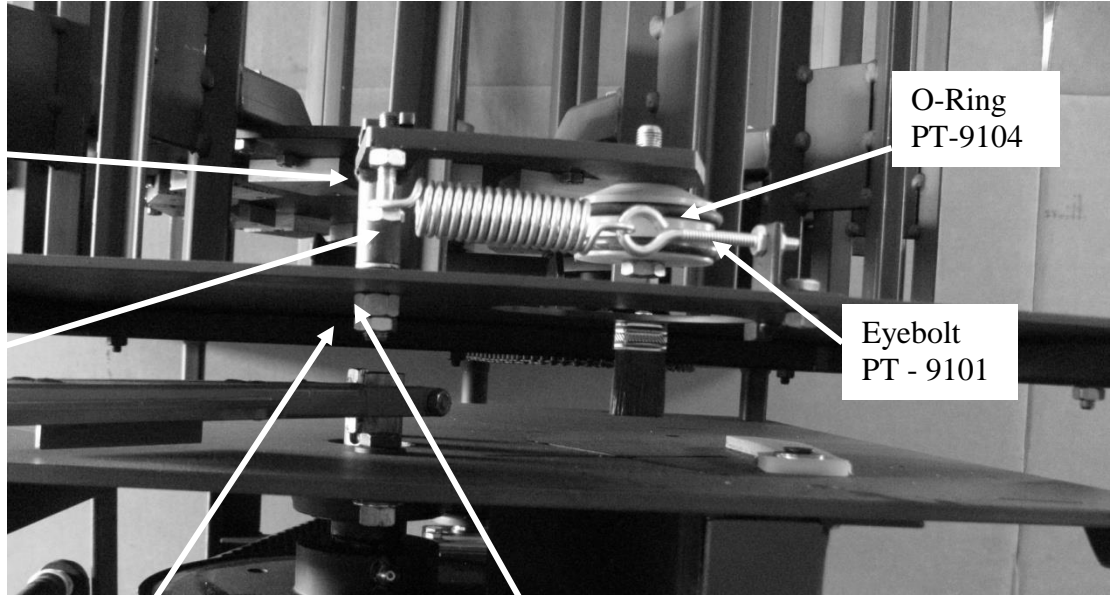


POSITION OF THE SKEET ROLLER PLATE SYSTEM

The roller plate must be positioned as shown. The measurement of the roller plates is taken from the face of the kingpin shaft to the inside edge of the roller wheel bolt. See Diagram

Anchor Bolt
for Extension
Spring

Extension Spring
PT 9100



Lower Jam Nut

Full Nut 3/8-24 Grade 8

Diagram 15

1 7/8"

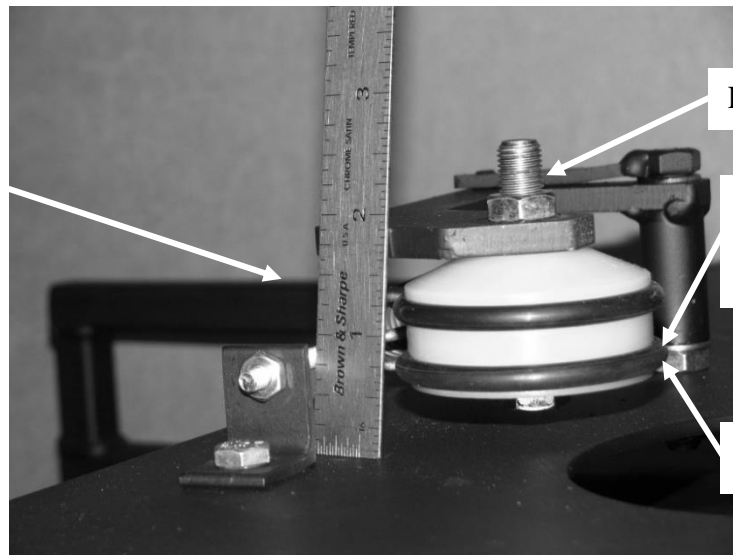


Diagram 16

If an adjustment is necessary, then the roller plate stop will have to be turned until the roller plate stops at the given measurement.



To set the position of the roller plate stop:

1. Remove the extension spring
2. Adjust upper jam nut so that when the nut is tightened the roller plate will pivot freely: with no more than 1/32" of up/down play between the roller plate shaft and jam nut.
3. Use an adjustable wrench to turn the roller plate stop to the correct position,
4. Hold back on the roller plate stop with the adjustable wrench while tightening the Full nut. Torque nut to 35/40 ft/lbs.
5. Tighten jam nut against full nut while holding back against the roller plate stop with the adjustable wrench. Torque jam nut to approximately 15 ft/lbs.
6. Check for free pivot of the roller plate after tightening.
7. Reconnect the extension spring.
8. Check the measurement to the roller plate from the king pin. It should measure 13 7/8" (Diagram 17).

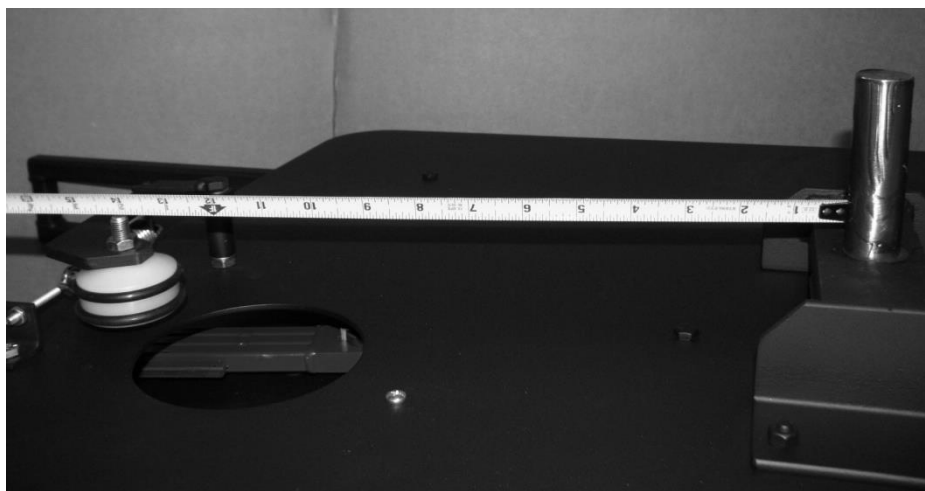
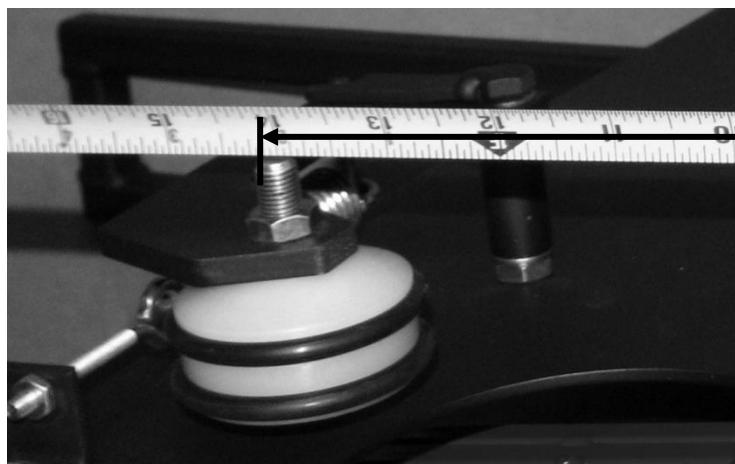


Diagram 17



13 7/8"

Diagram 18



SKEET WOBBLE



Diagram 19

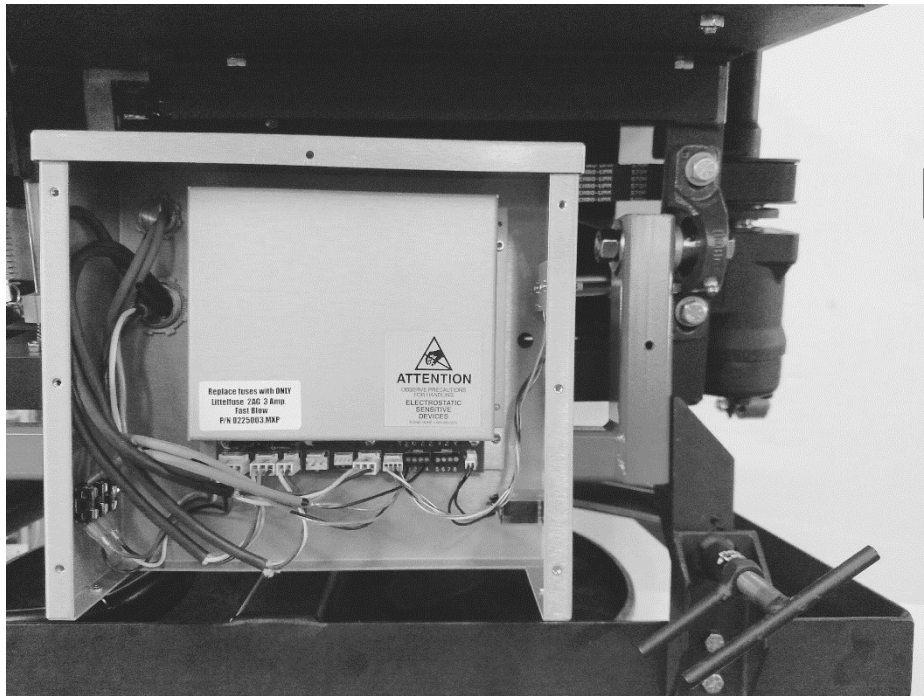


Diagram 20



CHANGE OVER TO WOBBLE

Standing clear of the trap machine, release the target. Use all safety procedures as stated in the previous section of this Manual.

The Wobble Switch must be pushed down to the AUTO position on the skeet machine electrical enclosure. This engages the machine to the automatic vertical oscillation mode.

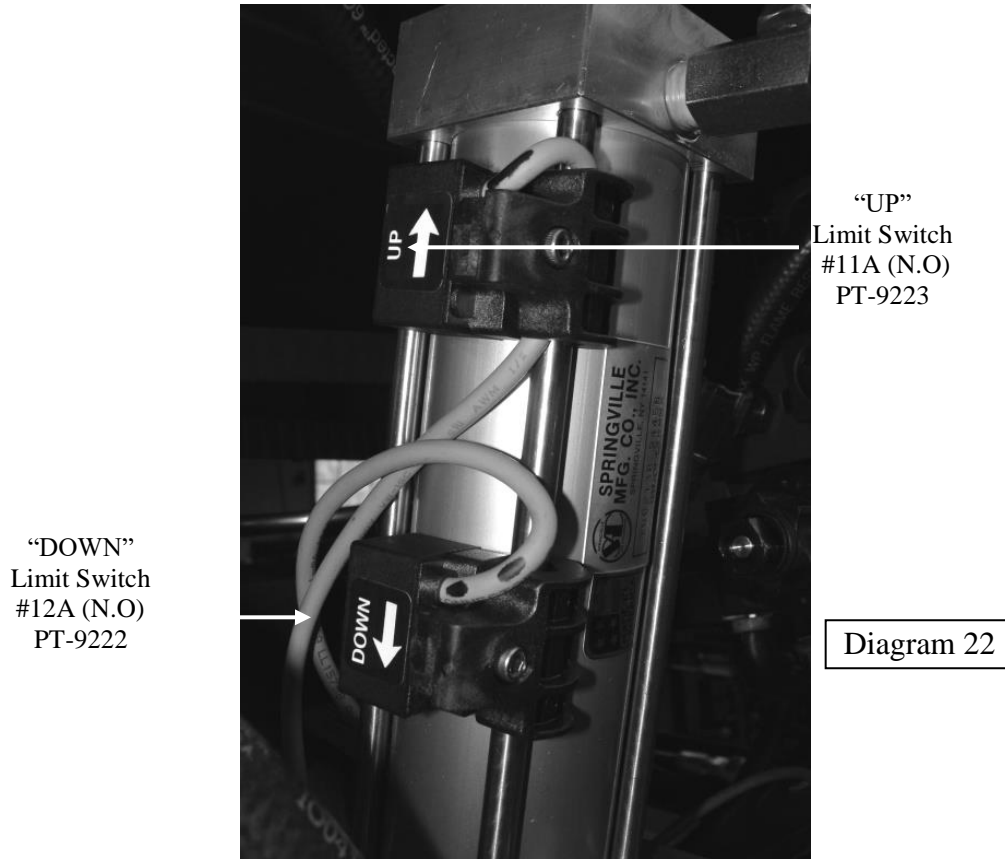
HEIGHT ADJUSTMENT FOR SKEET WOBBLE MACHINE

On the skeet machine electrical enclosure, the WOBBLE switch must be moved to the MANUAL position. For desired height, push the UP switch to go up; push the DOWN switch to go down.



Diagram 21

Windage Crank Handle



PAT-TRAP® Skeet Wobble Hydraulic Cylinder (PT – 9013M)



SETTING DISTANCE/SPEED

Clockwise rotation of the crank *increases* the spring tension thus increasing the speed of the target and the distance it travels.

Counter clockwise rotation of the crank *decreases* the spring tension. Continued counter-clockwise rotation will remove the tension from the crank and the spring tension lock-nut will hold. The elastic lock-nut holds the spring at the set minimum tension.

SETTING THE MINIMUM TARGET DISTANCE TO THROW A TARGET AT 60 YARDS

The standard minimum tension should be set so that the spring tension for a target is as follows:

1. Remove the crank by rotating it counter clockwise
2. Remove the nylon washer
3. Remove the two (2) 1/4" bolts from the stand-off collar
4. Remove the stand-off collar
5. See the elastic lock-nut. Use a 3/4" wrench on this nut to adjust the distance/speed.
6. When proper/desired distance/speed is achieved, back off the elastic lock-nut three (3) turns.
7. Re-assemble the parts.
8. When the crank becomes snug, continue to turn three (3) more times to achieve the proper distance/speed of the target.

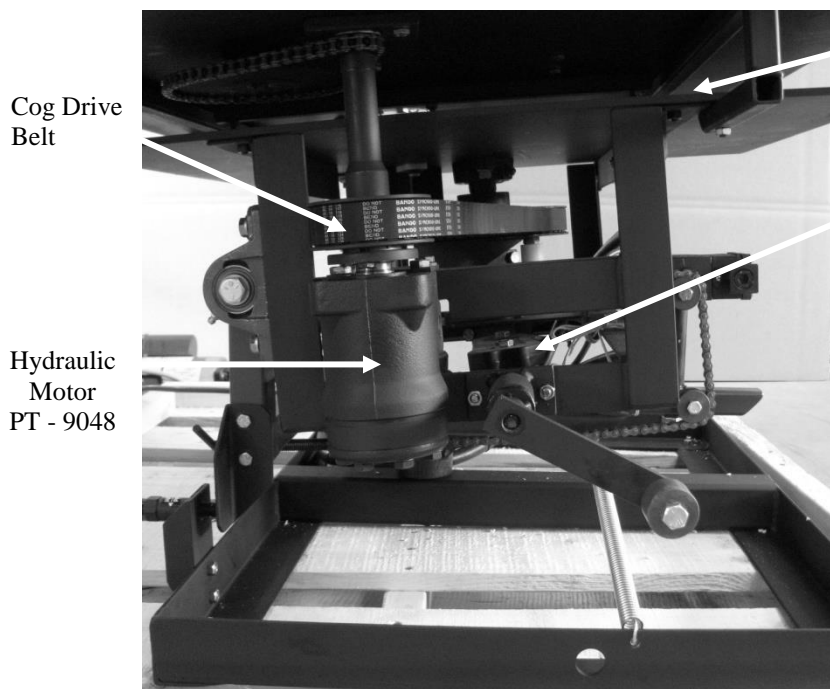


Diagram 24

Throw Plate

Main Spring
(Uni-band)
PT-9032

Stand Off
Collar Sleeve

Diagram 23



Nylon Washer
PT-9031B

Elastic Lock-nut



ADJUSTING HEIGHT OF TARGETS

IMPORTANT: NEVER STAND IN FRONT OF A SKEET MACHINE. THE MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE SKEET HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHEN THE THROW ARM IS COCKED.

Turn the elevation crank handle clockwise to raise the elevation or counter clockwise to lower the elevation.



Diagram 25

WINDAGE ADJUSTMENTS

Turn the windage crank handle clockwise to move the machine to the right or counter clockwise to move the machine to the left.



TARGET BRUSH MAINTENANCE

PROBLEM:

1. Breaking targets
2. Targets being thrown further to the right

SOLUTION:

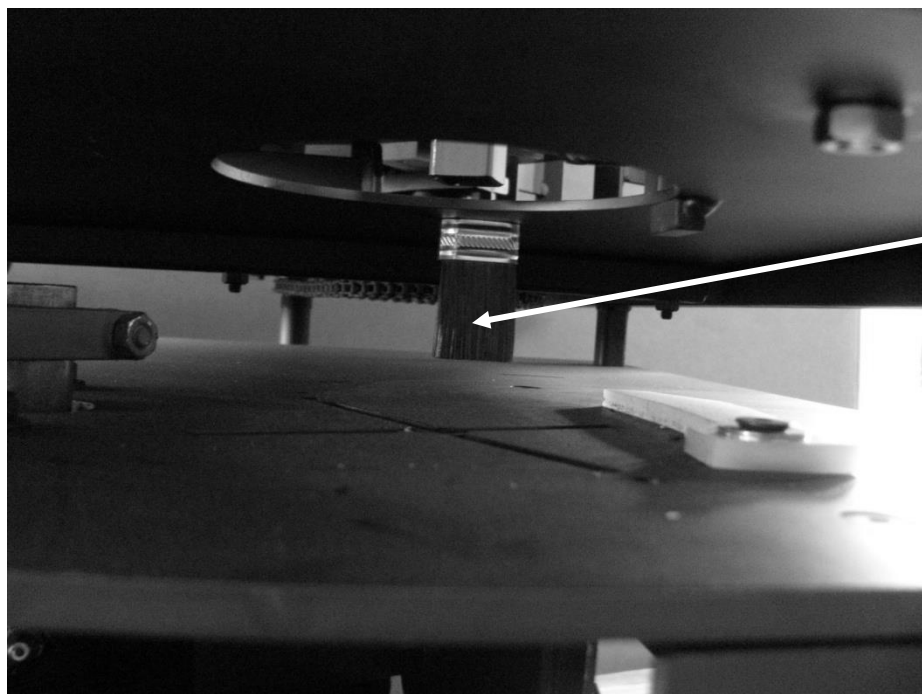
It may be time to change the target brush. When the target brush becomes worn out, the target can be bumped ahead *and/or* slide down the throw plate. This can cause either the target to break or be thrown further to the right.

PURPOSE:

The purpose of the target brush is to hold the target against the throw arm when the throw arm advances to the cocked position.

MAINTENANCE:

When the brush begins to “flair out”, loosen the screw and turn the brush 180 degrees. Replace the brush when needed. Align the brush as shown in Diagram 26.



Target Brush
PT - 9041

Diagram 26



COLD WEATHER ADJUSTMENT TEMPERATURE/RELEASE TIME

STOPPING THE THROW ARM ON THE BRAKE

IMPORTANT: NEVER STAND IN FRONT OF A SKEET MACHINE. THE SKEET MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE SKEET HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHEN THE THROW ARM IS COCKED.

In very cold weather, the pump motor should be turned on 30 to 60 minutes before operating time to warm up the hydraulic oil. If the On/Off/Release switch is turned on too soon, the machine will keep cycling (throwing targets).

Extreme temperature changes may affect the stopping position of the throw arm. Very cold temperature may cause the machine to keep cycling by itself. Very warm weather may cause the throw arm to stop too soon and cause slow pulls. Refer to the figure of the throw arm brake assembly for the proper stopping position of the throw arm. See Diagram 27.



Diagram 27

Correct Position for Stopping the Throw Arm on the Throw Arm Brake



ADJUSTING RELEASE TIME CORRECTION OF CYCLING PROBLEM

The throw arm limit switch (#2) controls where the throw arm stops on the throw arm brake. Move the switch bracket by increments of 1/16" to the left (toward the front of the skeet house) to stop the machine from cycling; this will lengthen the throw time by causing the throw arm to stop further back on the brake.

To *shorten* the throw time, move the switch bracket to the right (toward the back of the Skeet house) causing the throw arm to stop further forward on the brake. See Diagram 28.

For proper stopping position of the throw arm on the brake see Diagram 27.

CAUTION

When the machine is turned ON the throw arm will travel forward to the cocked position through the danger zone.

When the throw arm is FIRED, the arm will travel through the indicated danger area.

The throw arm can be fired by pushing the pullcord button. It can also be fired by hand, by pushing the arm forward off the brake when the machine is either On or Off.

#2 Limit Switch
PT - 9213G

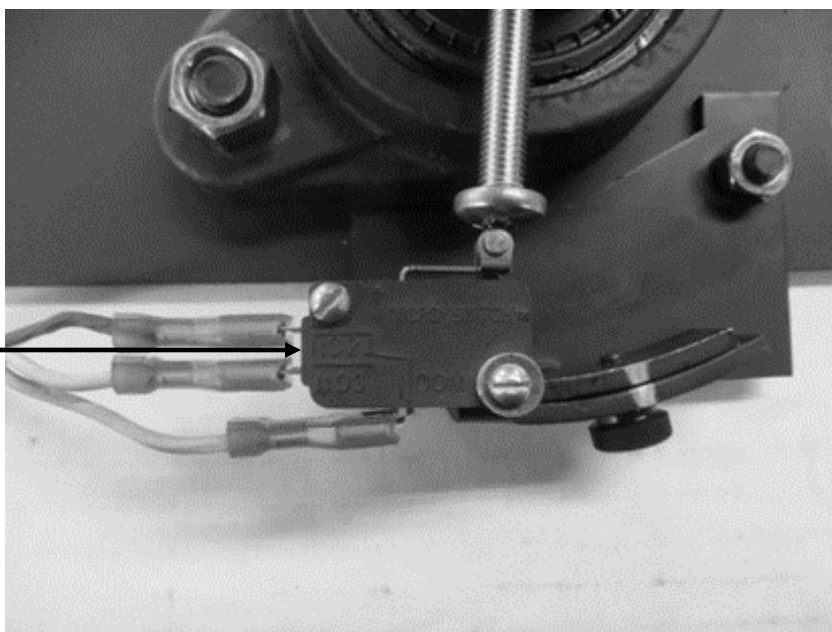


Diagram 28



ASSEMBLY AND MAINTENANCE OF THE THROW ARM BRAKE

A worn out brake rubber or broken brake flat spring will allow the throw arm to fire through (i.e., cycle) thereby throwing uncalled for targets.

Keep surfaces dry where the throw arm contacts the brake rubber.

Replace the throw arm brake rubber when it begins to wear out. See Diagram 4.4.

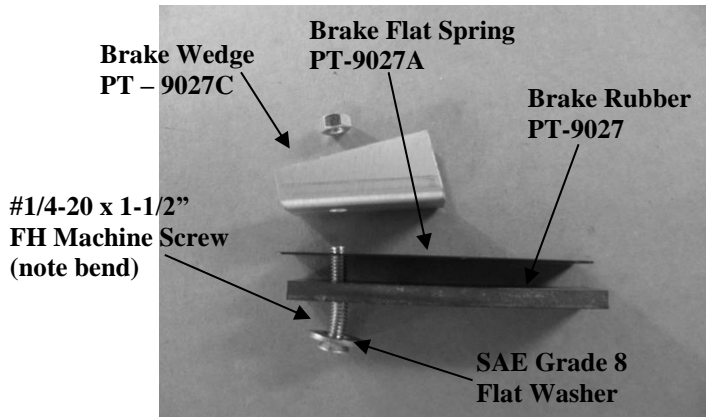


Diagram 29

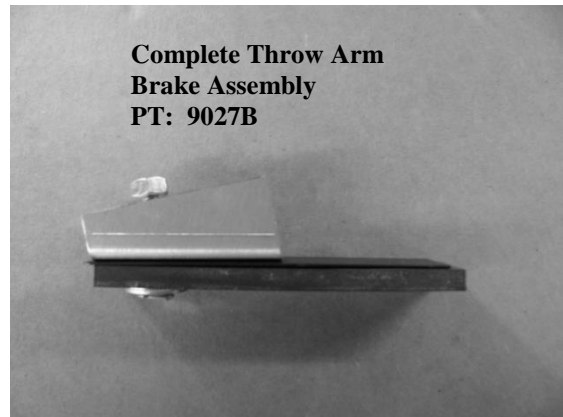


Diagram 30

Components of Throw Arm Brake Assembly

NOTE: The proper stopping position for the throw arm on the throw arm brake is shown in Diagram 42, which is approximately one inch from the right hand side of the brake rubber.



Diagram 31

Throw Arm in "Cocked Position" on Throw Arm Brake Assembly



REMOVAL OF THROW ARM

IMPORTANT: NEVER STAND IN FRONT OF A SKEET MACHINE. THE MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE SKEET HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHEN THE THROW ARM IS COCKED.

1. Remove and/or disconnect the main spring. Refer to the **Disconnecting The Uni-Band** section in this manual (Page 25).
2. Rotate the throw arm to a place where you can reach the nut. Use a 7/16th socket wrench with a long extension to loosen the 1/4-28 nut on the throw arm (See Diagram 32).
3. Move the arm to the area between the braces. Use a pry bar or a long screwdriver. Place it under the throw arm next to the throw arm shaft and pry up on the throw arm to remove.
4. NOTE: The arm might come off more easily if you wiggle the throw arm, slightly, up and down while prying up.
5. Pry downwards against the underside of the top plate to install the new throw arm.

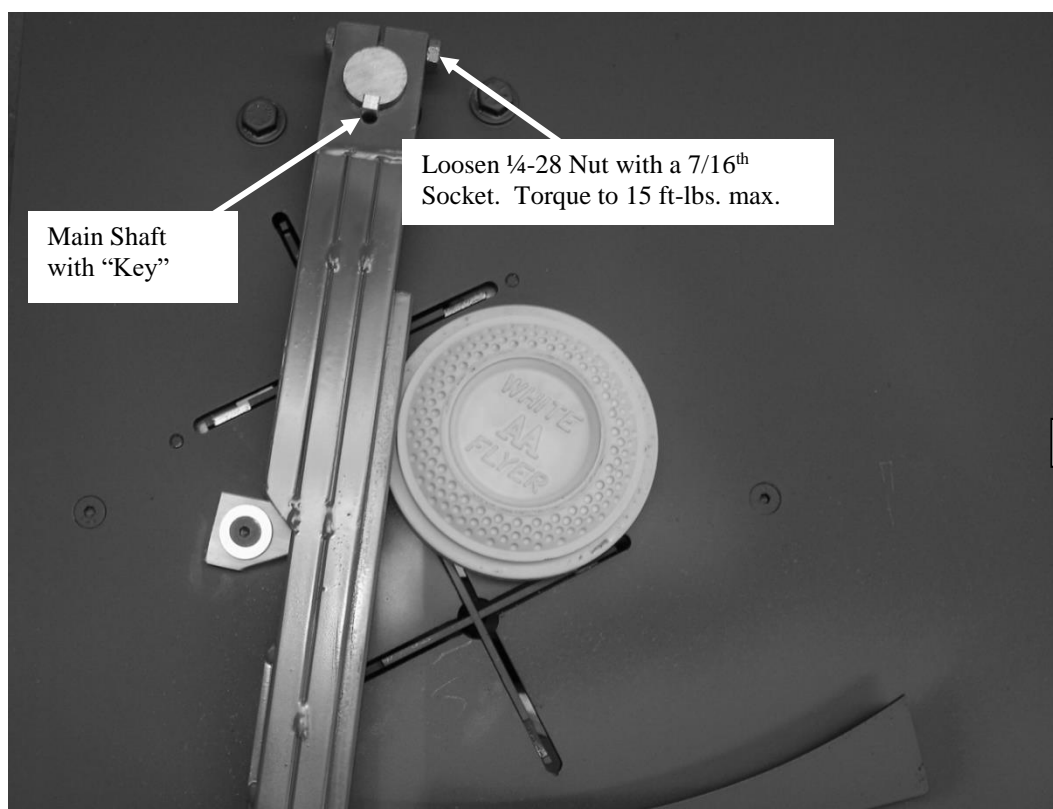


Diagram 32

Removal/Installation of Throw Arm (PT-9026)



DISCONNECTING THE UNIBAND FROM THE CLUTCH

1. Let off the crank handle tension.
2. Turn the machine on to cock the throw arm.
3. When the throw arm stops at the throw arm brake, turn the machine off without releasing the throw arm.
4. **WHEN THE THROW ARM IS COCKED, BE SURE TO STAND BEHIND THE MACHINE AND STAY CLEAR OF THE THROW ARM.** To completely release the tension on the throw arm carefully, manually, release the throw arm by first looping a rope or cord around the end of the throw arm. Then, holding back on the rope at 90 degrees to the throw arm, slowly move the throw arm past the brake and guide it around to the front of the machine.
5. Move the throw arm so that it is 6 7/8" from the right hand corner of the throw plate. See Diagram 42.
6. Use a 5/32" allen wrench to loosed the clutch rod-end bolt. Pull down on the rod end to remove. See Diagram 39.

INSTALLATION OF THE THROW ARM

1. Release the throw arm. Never attempt to work on your machine while it is in the cocked position.
2. Turn off the machine and "drop" the machine to the lowest elevation for an easier working position.
3. Disconnect the main spring before working with the throw arm. Refer to the Disconnecting the Uni-Band section in this manual.
4. Place the throw arm on the main shaft in the same place that it was. Hold the throw arm level while tightening the 1/4-28 nut. See Diagram 32.
5. The height of the bottom of the throw arm rubber needs to be 17/32" above the surface of the throw plate. (This measurement allows for 1/32" between the lip of the target and the throw arm rubber.) See Diagram 33 & 34.

Note: Bottom of Throw Arm Rubber is 1/2" Above Throw Plate Surface in the area where the target leaves the throw plate.

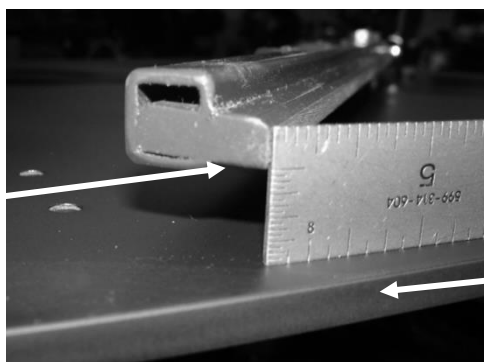


Diagram 33

Throw Plate

Setting Correct Height of Throw Arm with a Ruler



6. With the main spring disconnected, check to be sure that there is 1/32", but no more than 1/16", of clearance between the target and the throw arm through the area that the target travels --- especially the area where the target leaves the throw plate surface. Please refer to Diagram 34.



Diagram 34

Setting Correct Target Clearance for Throw Arm with a Target

MAINTENANCE OF THROW ARM COCKING PIN

The Skeet machine must be released and turned off before performing any work.

Rotate the bumper 45 degrees (1/8th turn) after approximately 100,000 throws (see counter located in the Electrical Control Box) to see if a flat spot is visible. The bumper should be easy to rotate by hand without having to loosen the bolt. Replace the bumper if worn or cracked. Slide the new bumper onto the bolt as pictured in Diagram 35.

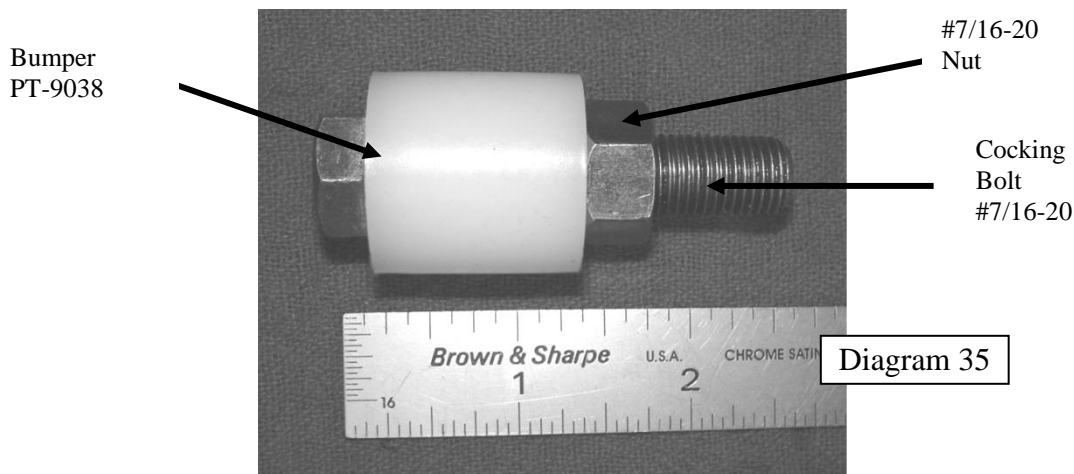


Diagram 35

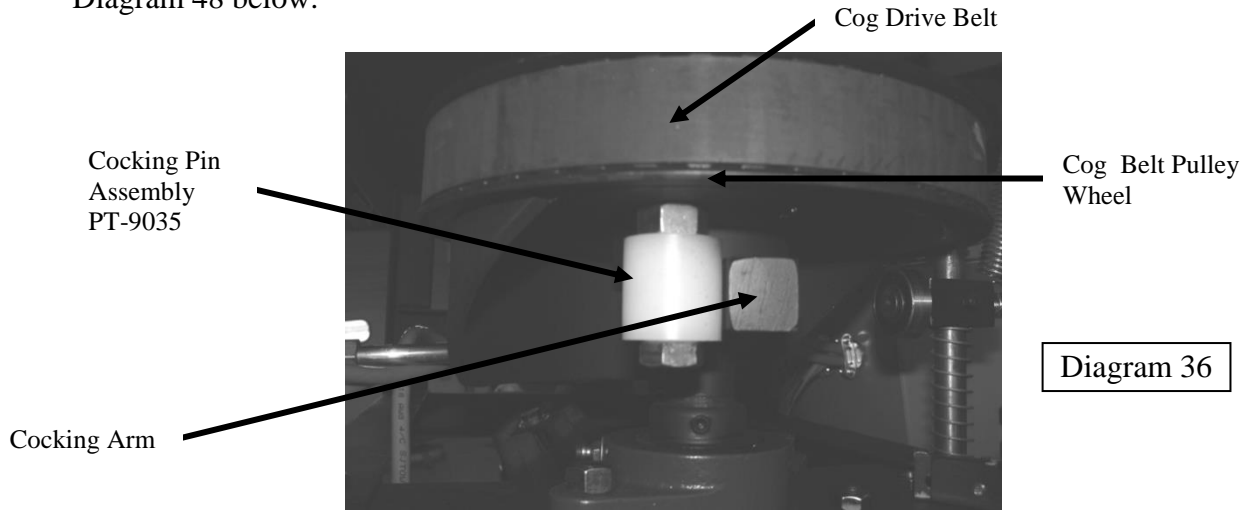
Cocking Bolt Assembly (PN-9035)

Turn the nut on by hand until it is against the bumper.

Screw the Cocking Pin Assembly into the bottom of the main cog belt pulley wheel until the nut contacts the wheel. See Diagram 36.



Now, tighten the nut against the main timing wheel very tight. (Torque to 35-40 ft-lbs.). See Diagram 48 below.

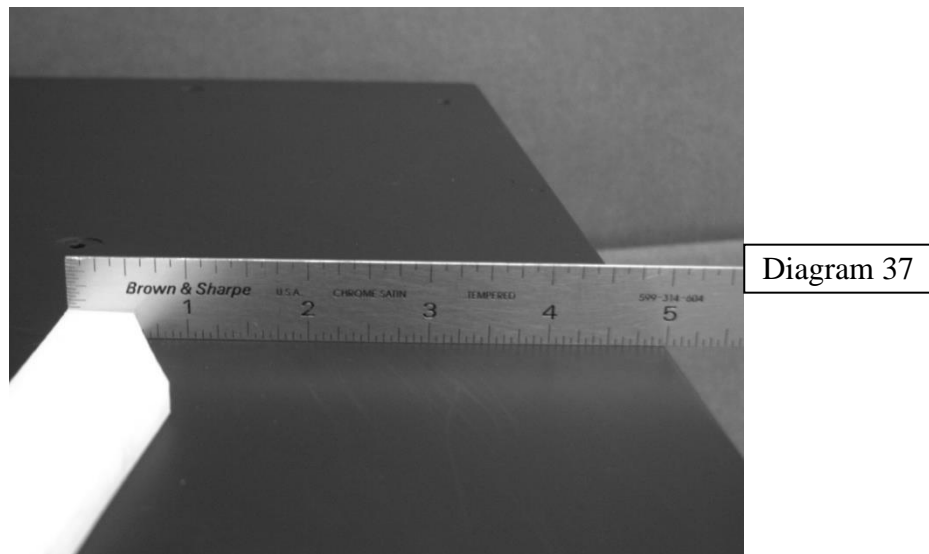


Cocking Bolt Assembly (PT-9035) Attached to Timing Pulley

IMPORTANT: Do not tighten the bolt against the nut because it will compress the bumper.

**INSTALLATION/POSITION
OF SKEET TARGET FINGER
(PT 9022)**

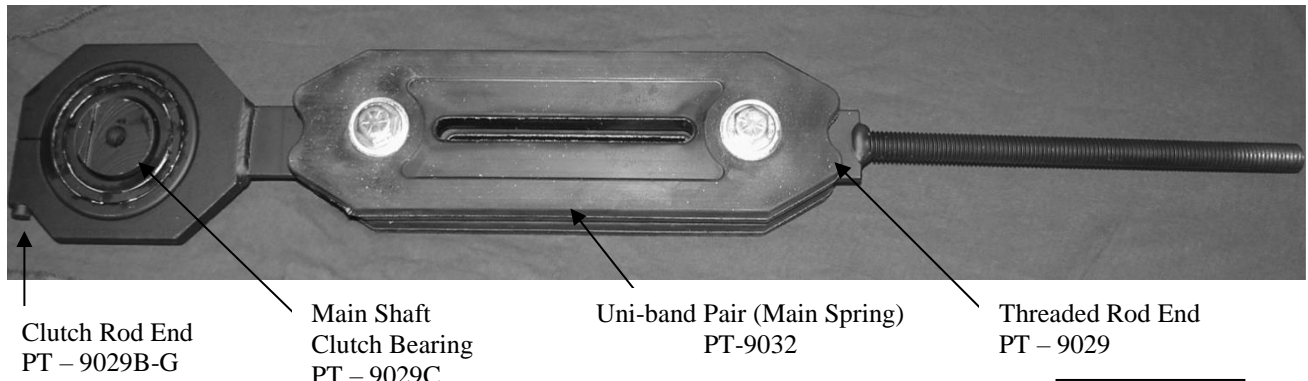
Position the target finger to the 5" measurement as shown in the diagram. The material is curved downward so that when the bolt is tightened the finger will flatten out firmly against the throw plate surface.





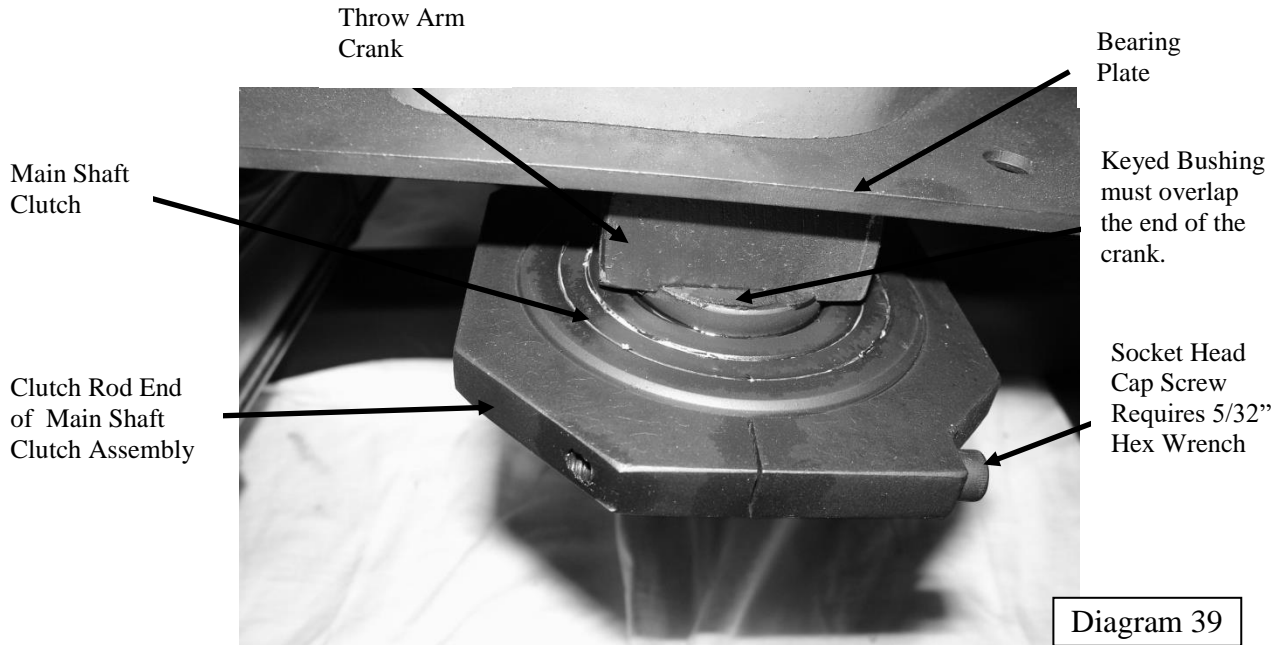
**REPLACEMENT/REMOVAL OF MAIN SHAFT CLUTCH ASSEMBLY
(PT-9034)**

IMPORTANT: NEVER STAND IN FRONT OF A SKEET MACHINE. THE MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE SKEET HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHEN THE THROW ARM IS COCKED.



Main Shaft Clutch Assembly (PN-9034)

Diagram 38



Clutch Rod End of Main Shaft Clutch Assembly

Diagram 39



REPLACEMENT/REMOVAL OF MAIN SHAFT CLUTCH ASSEMBLY (PT-9034)

1. Back off the tension on the Main Spring crank handle by rotating it counter clockwise.
2. Turn the machine on to cock the throw arm.
3. When the throw arm stops at the throw arm brake, turn the machine off without releasing the throw arm.
4. **WHEN THE THROW ARM IS COCKED, BE SURE TO STAND BEHIND THE SKEET MACHINE AND STAY CLEAR OF THE THROW ARM.** To completely release the main spring tension on the throw arm carefully, manually, release the throw arm by first looping a rope or cord around the end of the throw arm. Then, holding back on the rope at 90 degrees to the throw arm, slowly move the throw arm past the brake and guide it around to the front of the machine.
5. Move the throw arm so that it is 6 7/8" from the right hand corner of the throw plate. (Diagram 41.)



Diagram 40

Positioning Throw Arm When Installing Main Shaft Clutch Assembly

6. Clamp a vise-grip onto the throw plate with the throw arm at 6 7/8" to prevent the throw arm from moving forward.

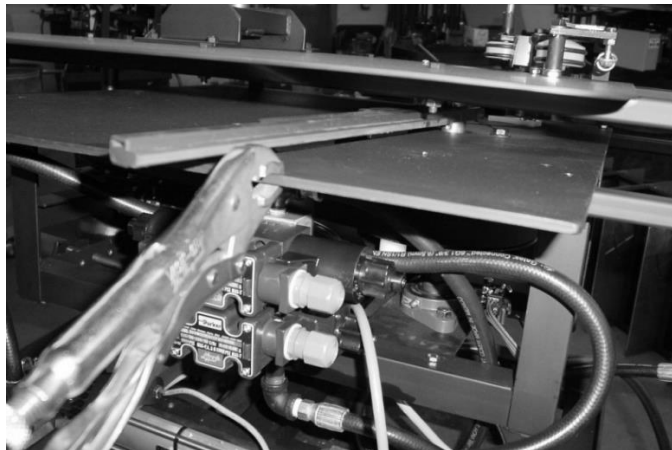
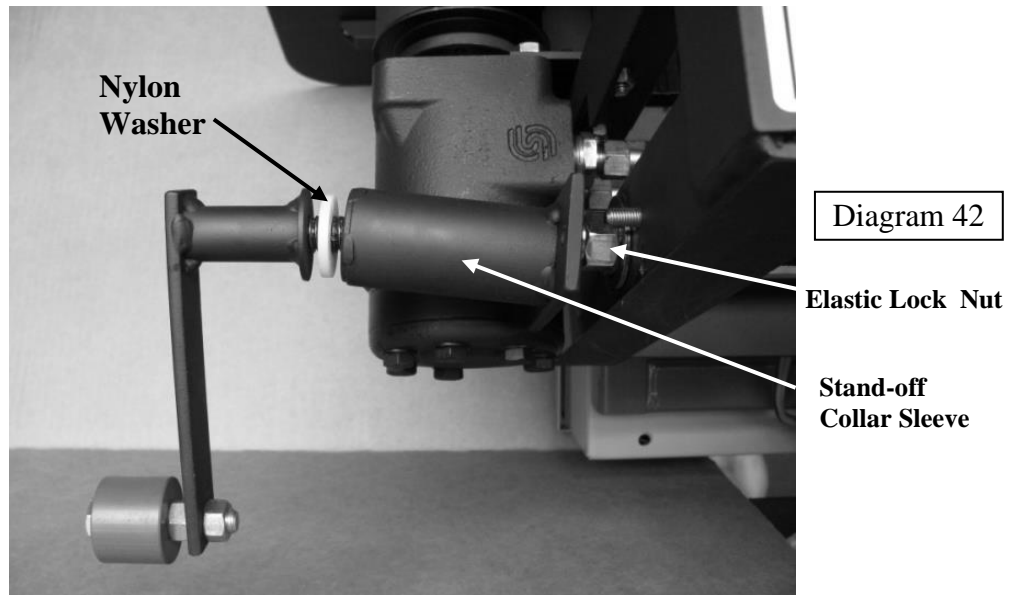


Diagram 41

Securing the Position of the Throw Arm at 6-7/8\"/>

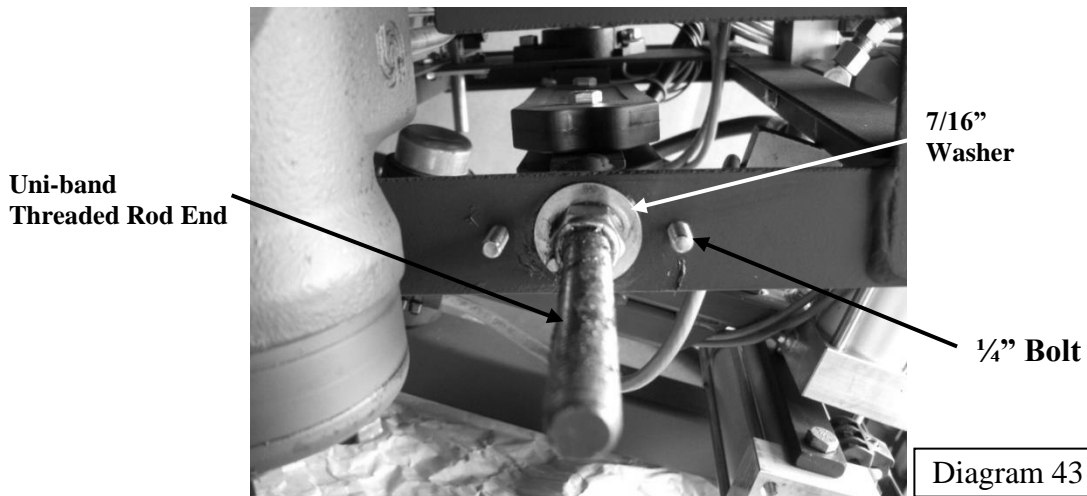


7. Remove the main spring crank handle from the threaded rod by rotating it counter clockwise.



Backing off the tension on PAT-TRAP® Main Spring Crank Handle

8. Remove the nylon washer that is sandwiched between the crank handle and the standoff collar sleeve (See Diagram 42).
9. Remove the two (2) 1/4" bolts from the standoff collar sleeve (See Diagram 43)



Removing Main Spring Standoff Collar Sleeve

10. Remove the standoff collar sleeve (See Diagram 42).
11. Locate the elastic lock-nut. Use a 3/4" wrench to remove this nut (See Diagram 42).

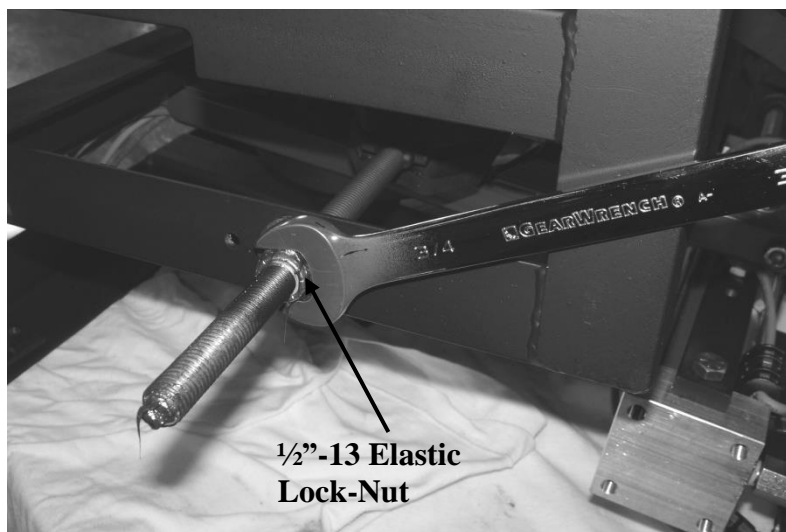


Diagram 44

Adjusting Elastic Lock Nut with 3/4" Wrench

12. One can now loosen the set screw (5/32" Hex Wrench) on the clutch rod-end of the Uni-Band. Pull back and down on the rod end to remove it from the clutch. (See Diagram 45).

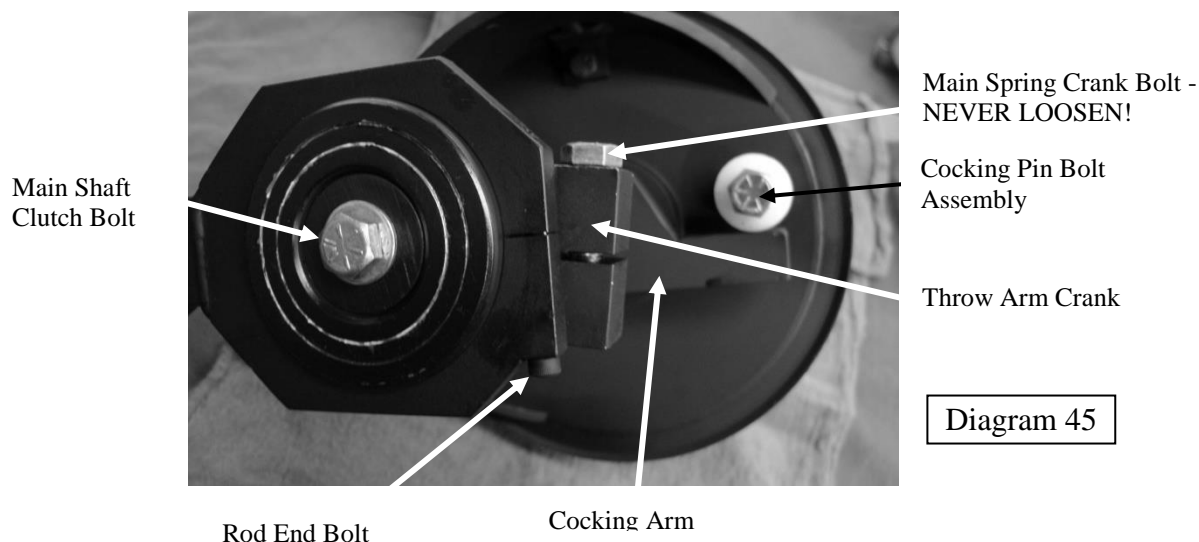


Diagram 45

Main Shaft Clutch Connection to Throw Arm Crank

13. Remove the rod end from the clutch. (DO NOT REMOVE MAIN SHAFT CLUTCH UNLESS DAMAGED)
14. To reassemble put the threaded rod-end through the hole in the frame, and then pull the clutch rod-end onto the clutch. Refer to Diagram 50 for proper positioning of the clutch within the rod-end (note 1/16" gap). Tighten up the clutch rod-end to the clutch using a 5/32" hex head wrench, while keeping the clutch rod-end level to the clutch.



15. Put the 7/16" washer onto threaded rod-end. Then screw on the elastic lock-nut. Refer to "Setting Distance and Speed" page 18. Regarding spring tension and adjustment of the elastic lock-nut.
16. Remove Vise Grip from the Throw Plate.
17. Once the proper distance and speed have been set, re-attach the crank handle, stand-off collar and the crank handle.
18. Inspect the hydraulic hoses to make sure that the rod-end does not rub against them.

WARNING: Do not work on the hoses when the throw arm is cocked. The throw arm must be released and the machine turned off when performing any work on the Skeet machine.



CHANGING A PAIR OF UNI-BANDS ON A MAIN SHAFT CLUTCH SYSTEM

1. Let off the crank handle tension.
2. Turn the machine on to cock the throw arm.
3. When the throw arm stops at the throw arm brake, turn the machine off without releasing the throw arm.
4. **WHEN THE THROW ARM IS COCKED, BE SURE TO STAND BEHIND THE MACHINE AND STAY CLEAR OF THE THROW ARM.** To completely release the tension on the throw arm carefully, manually, release the throw arm by first looping a rope or cord around the end of the throw arm. Then, holding back on the rope at 90 degrees to the throw arm, slowly move the throw arm past the brake and guide it around to the front of the machine.
5. Move the throw arm so that it is 6 7/8" from the right hand corner of the throw plate. See Diagram 32.
6. Clamp a vise-grip onto the throw plate with the throw arm at 6 7/8" to prevent the throw arm from moving forward. See Diagram 41.
7. Do **not loosen** the throw arm crank bolt. Diagram 47.
8. Changing the Uni-Bands can be done without removing the threaded rod-end from the machine.
9. Remove the Uni-Band connecting bolts. Disconnect the rod-end from the clutch by loosening the rod-end bolt using a 5/32" hex head wrench; pull down on the rod-end to remove it. See Diagrams 46, 48 and 49
10. When re-assembling with the new pair of Uni-Bands, leave the 3/8 –24 x2 1/4" Grade 8 bolts slightly loose at first. Then, pull the rod-end onto the clutch. Refer to Diagram 46 for proper positioning of the clutch within the rod-end (note 1/16" gap). Tighten the rod-end bolt using a 5/32" hex head wrench. Keep the rod-end level on the clutch. Refer to Diagram 59 for right side up.
Align the Uni-Bands as follows: See diagrams 46, 47 and 48
 - A. Keep the clamp in front of the throw arm at 6 7/8" (Step 2)
 - B. With the rod-ends and Uni-Bands in alignment to one another, torque the bolts to 10 ft/lbs.
 - C. Tension the Uni-Bands with ten turns of the crank handle.
 - D. Use two 9/16" wrenches. Hold back on the bolt head (on top) while tightening the nut (on bottom)



- E. Put equal pressure on both of the wrenches and torque the bolts to 35 ft/lbs minimum – 40 ft/lbs maximum. If using the sprocket toothed washers torque to 25 lbs.

“Sprocket toothed washer must be used if the area around the holes is not indented.”

11. Remove the vise grip from the throw plate.
12. Refer to the section on *Setting Distance and Speed (page 18)*, regarding minimum spring tension and adjustment of the elastic lock-nut.
13. Begin normal operation of the machine.



ASSEMBLY/INSTALLATION OF THE UNI-BAND (Main Spring) to the MAIN SHAFT CLUTCH

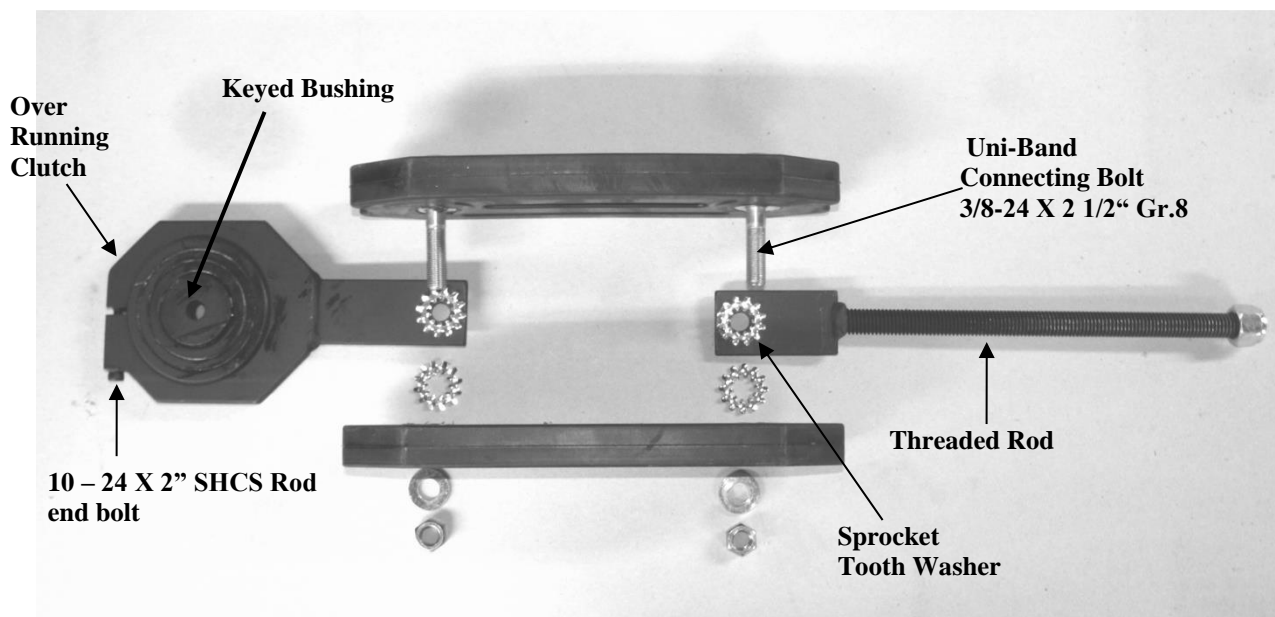
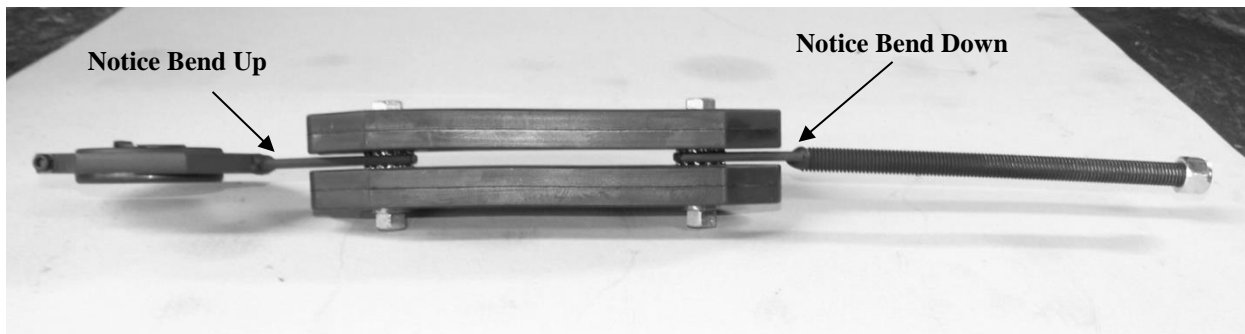


Diagram 46

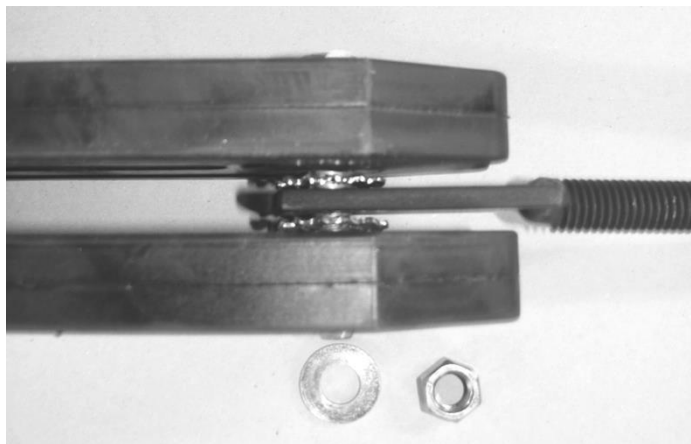




Diagram 48

0)

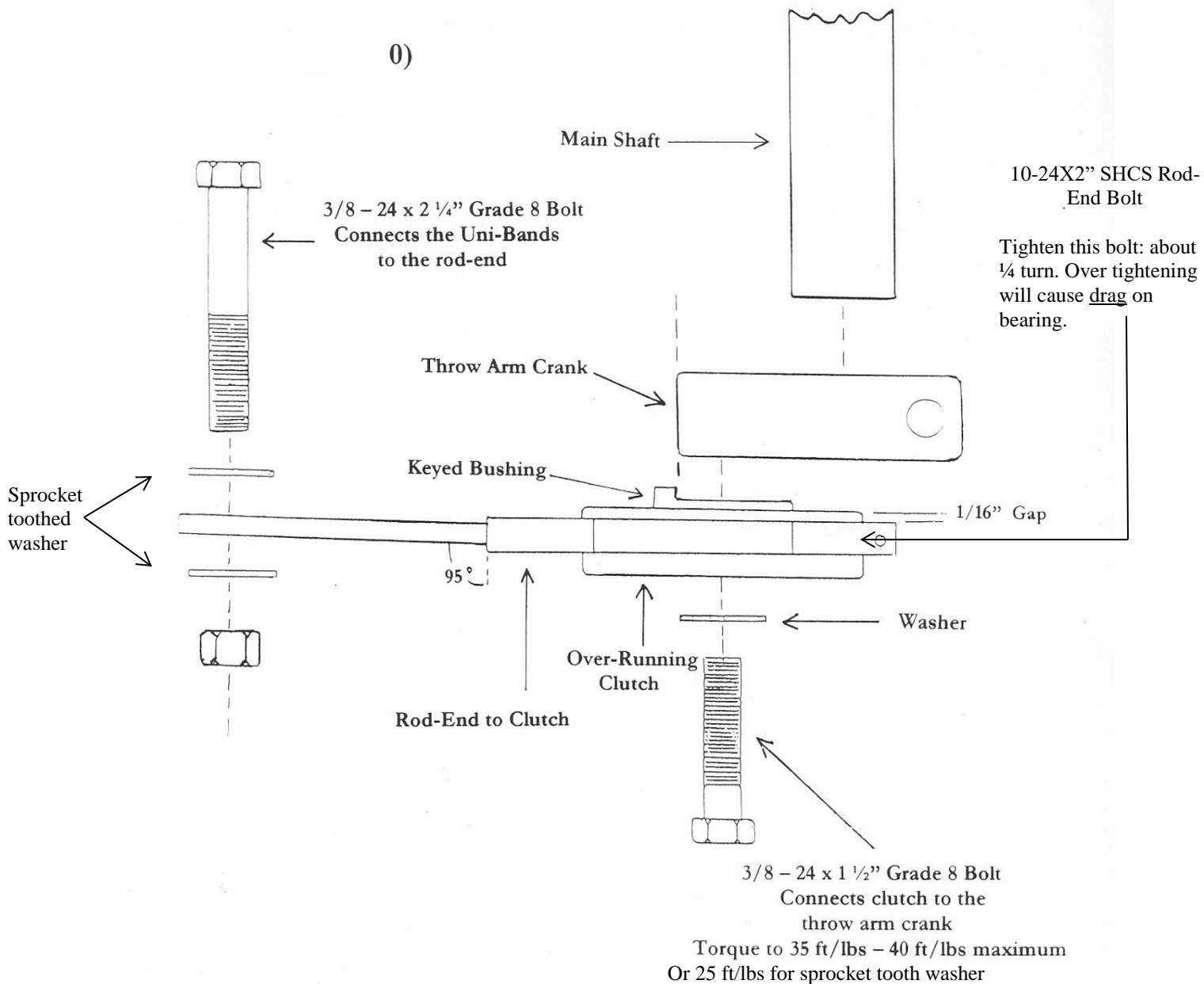




Diagram 49

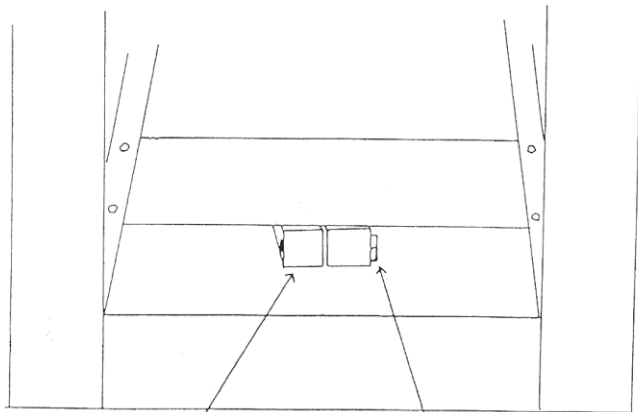
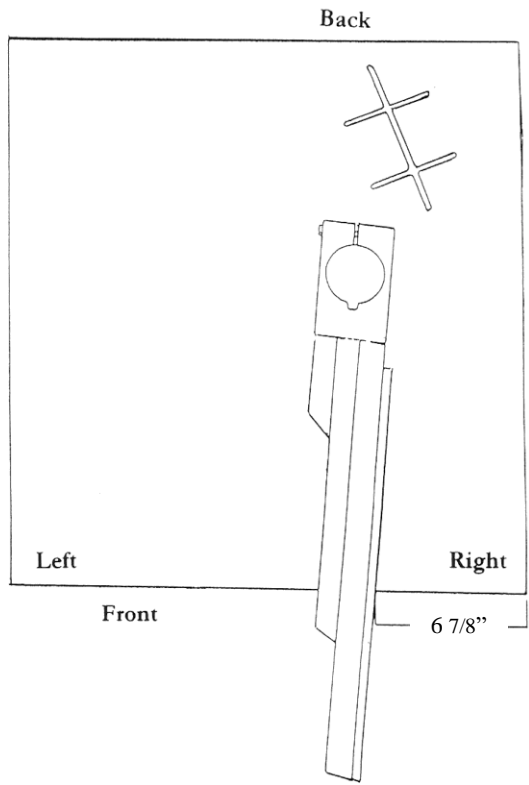


Diagram 50

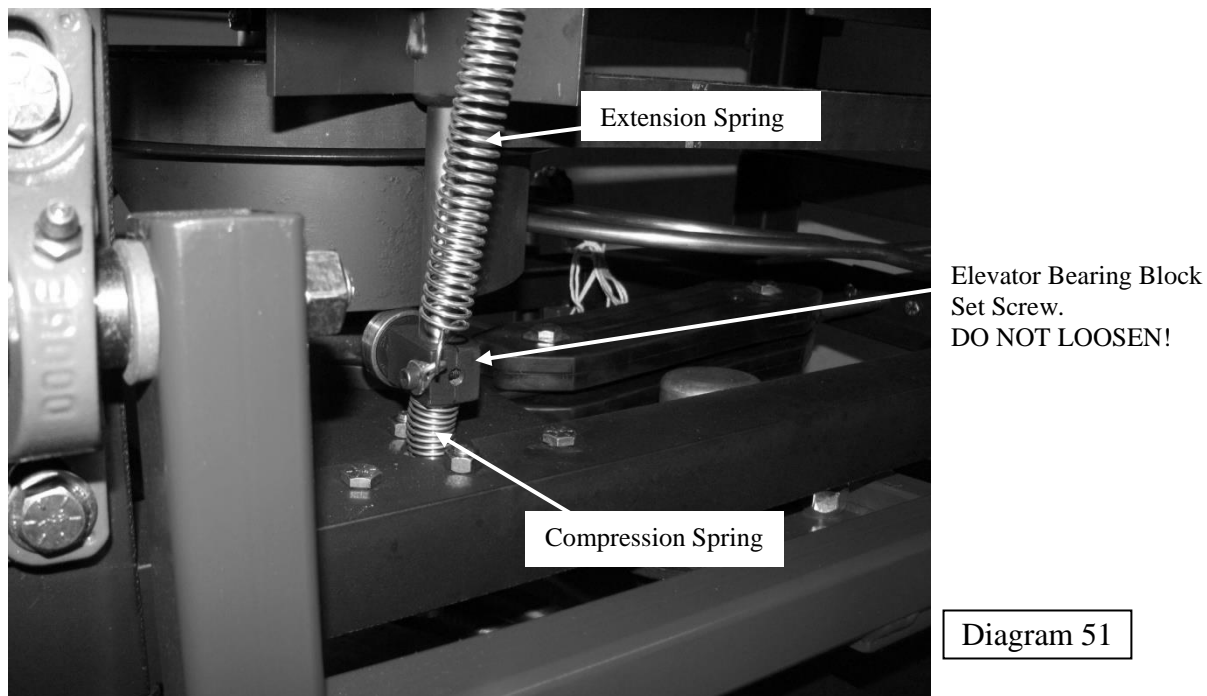
Throw arm crank
(Back view)

DO NOT LOOSEN or REMOVE



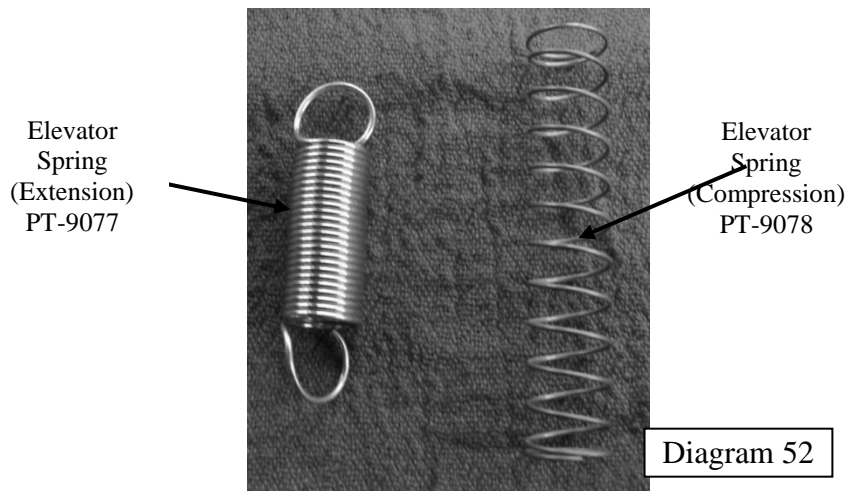
REPLACEMENT OF THE ELEVATOR EXTENSION SPRING

*****IMPORTANT:** Do not loosen or remove either the lock screw that the bottom of the spring hooks onto or the set screw. The screw is holding the bearing block in position so that the bearing is in alignment with the cam – See Diagram 51.



Elevator Bearing Block Detailing Bearing on Cam

1. Turn the machine on.
2. Fire the throw arm and then turn the machine off as soon as the elevator goes up: When the cam leaves the cam bearing.
3. If disconnecting the spring, remove the top end first.
4. If connecting the spring, connect the bottom end first.

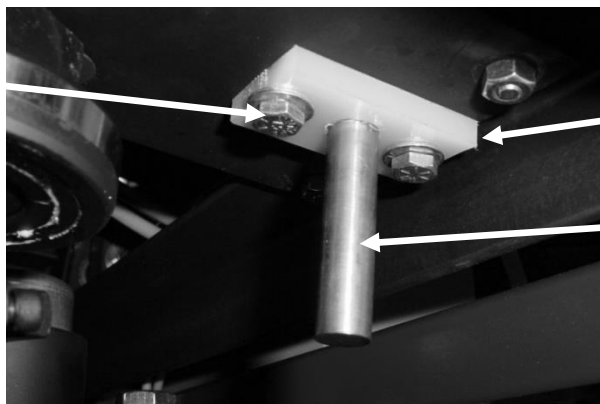




REPLACEMENT OF THE ELEVATOR COMPRESSION SPRING

1. Turn the machine on. As soon as the elevator goes up, turn the machine off.
2. Remove the two s (7/16" wrench). See Diagram 53.

Elevator Rod
Guide Bolt



Elevator Rod
Guide plastic
PT 9079

Stainless Steel
Elevator Rod

Diagram 53

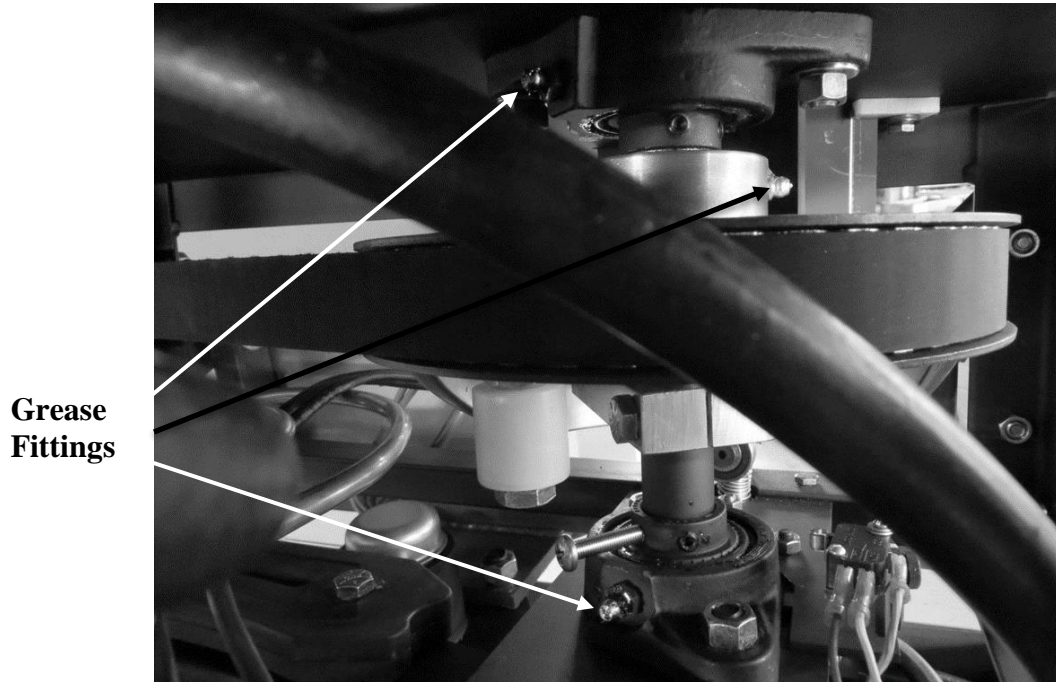
Bottom Elevator Guide

3. Remove the ELEVATOR ROD GUIDE. The plastic elevator rods guide must be replaced the same way as it was found (i.e., do not flip over).
4. Put the compression spring on over the elevator rod.
5. Replace the Elevator Rod Guide.
6. Fasten the two bolts only slightly snug; over tightening will deform the material and possibly cause the guide to tighten against the elevator rod.



THROW ARM SHAFT BEARING MAINTENANCE

Grease both the Upper and Lower Flange Bearings that Support the Main Shaft (throw arm) and Main Gear Belt Pulley Wheel once a year with a **PREMIUM** grade lubricating grease such as Lithium or Mobil EP1. Heavier-weight grease will “gum-up” and not allow the throw arm shaft to rotate freely. Diagram 54.



**Grease
Fittings**

Throw Arm Drive Shaft Assembly

Diagram 54

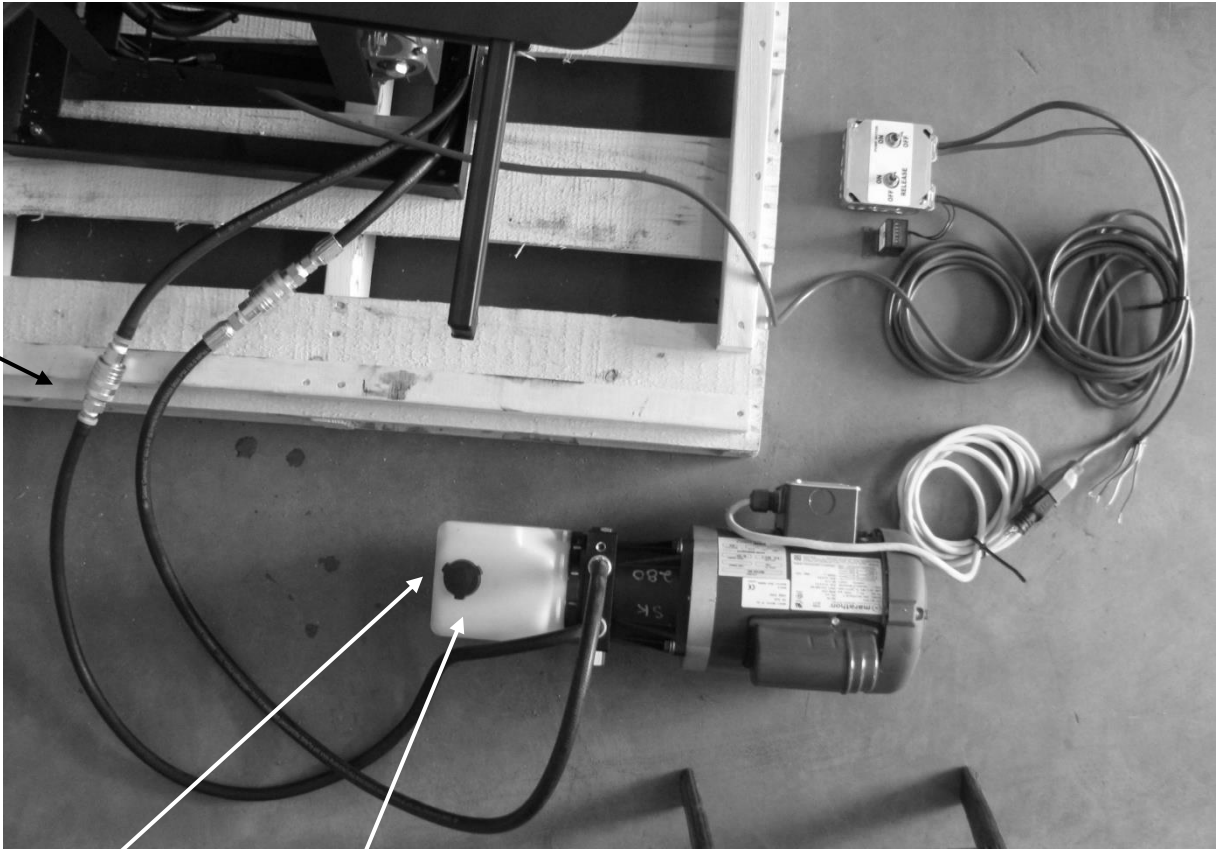


PROCEDURE TO FLUSH HYDRAULIC OIL

1. Please read completely before proceeding.
2. Remove the targets from the machine.
3. Turn the machine on.
4. For a Wobble machine, push the UP button until the cylinder bottoms out.
5. Leave the throw arm in the cocked position and turn the machine off.
6. Stand clear of the throw arm and disconnect the return-line hose. (See diagram 55)
7. A male coupling with three or four feet of drain hose now needs to be connected to the return line coupling from the machine to direct the flow of oil into a pail.
8. The throw arm should still be in the cocked position. Turn the pump on and run until drained. Then, take the disconnected return-line hose and hold at full length above the pump and depress the ball valve to drain the oil from the hose. NOTE: You need to use the tip of your thumb or a screwdriver when depressing the ball so that the hose isn't blocked.
9. Leaving the throw arm in the cocked position, turn off the pump.
10. Fill the tank with new oil. **USE 5W-20 motor oil.** Add oil as needed after each of the following steps.
11. The next steps require having the pull cord release switch in your hand. First, turn the on/off/release switch ON.
12. Depress the pull cord button.
13. Turn the pump switch ON. The throw arm will fire and the turret will index.
14. Turn OFF the pump switch IMMEDIATELY when the throw arm has re-cocked.
15. For the Wobble machine, Press the DOWN button and hold in while turning the pump switch ON. As soon as the cylinder bottoms-out, turn the pump OFF.
16. Re-connect the return-line hose. (See instruction 4)
17. The machine is now full of oil. Fill the tank to within one inch of the top.
18. Turn the machine on and move the wobble cylinder to center. Resume normal operation.



Return
Line



Fill with
5W20 oil

Pump
Reservoir

Diagram 55

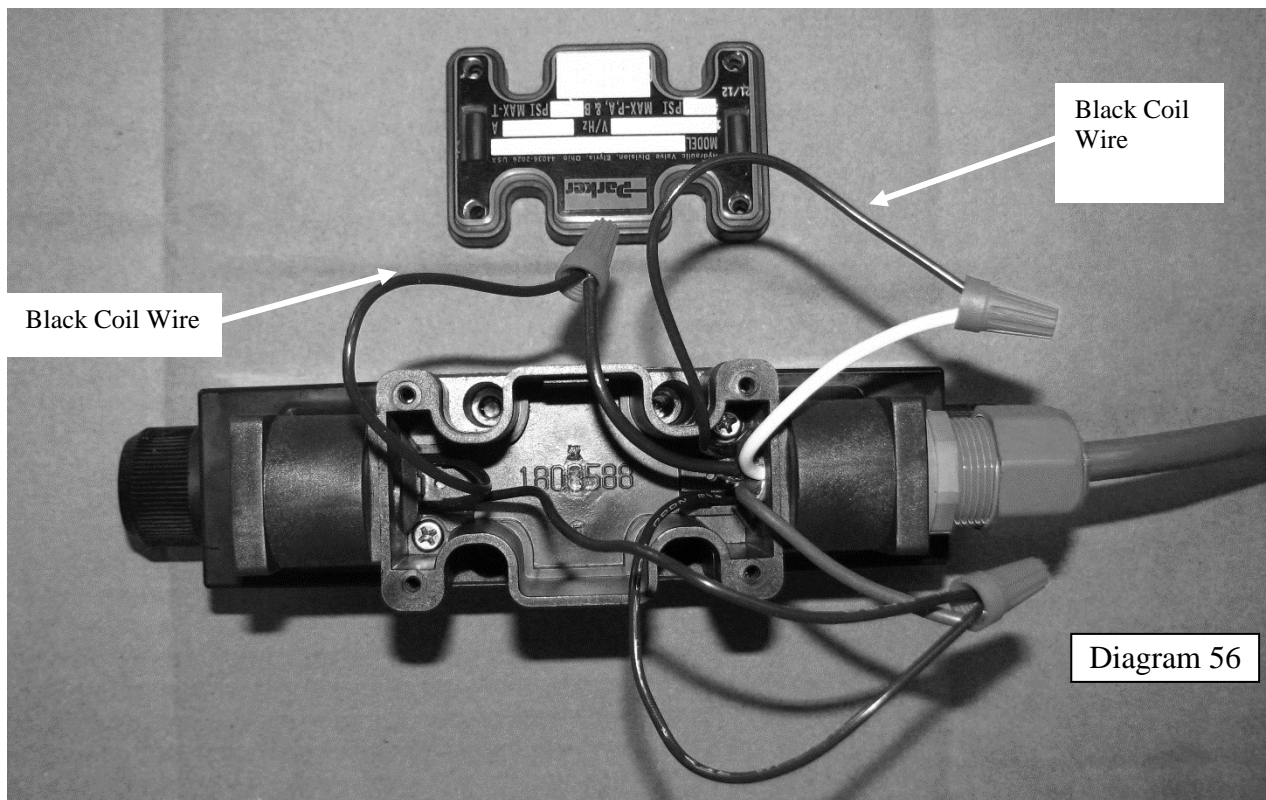
Hydraulic Pump System



SINGLE SOLENOID VALVE (THROW ARM/TURRET) WIRING GUIDE

IMPORTANT: NEVER STAND IN FRONT OF A SKEET MACHINE. THE MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE SKEET HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHEN THE THROW ARM IS COCKED.

The wiring guide for wiring the Single Solenoid Valve on a Skeet is as pictured in Diagram 56 below:



Wiring of Single Solenoid Valve

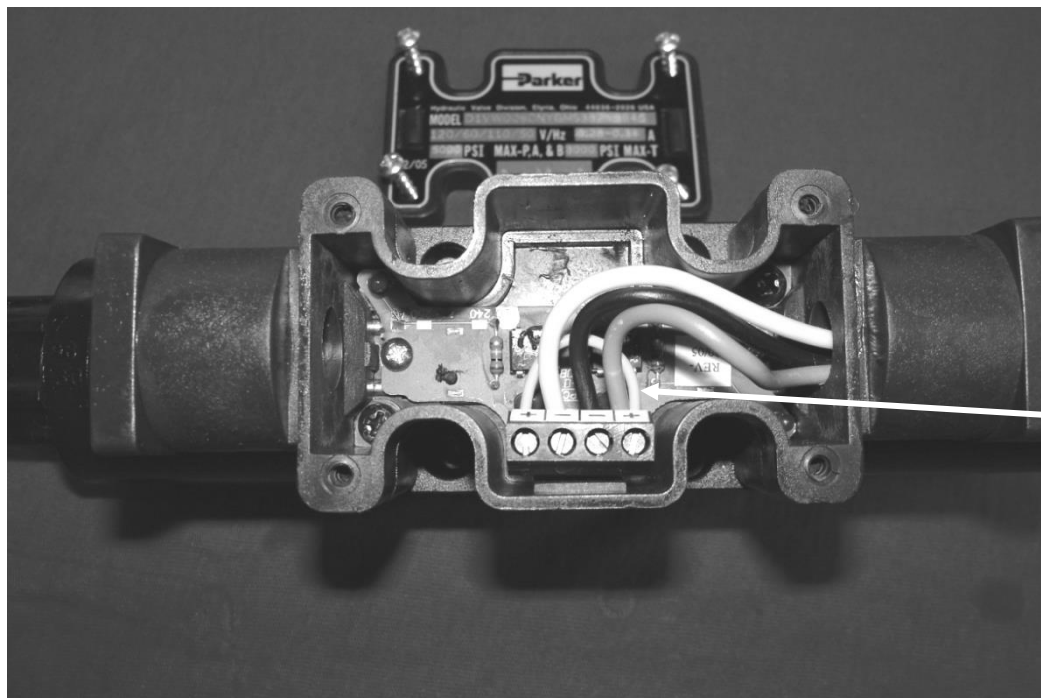
Connect one of the valve's black coil wires to each of the black and white wires entering the strain relief fitting along with a leg from the Varistor as shown above.



SOFT SHIFT VALVE WIRING GUIDE (OSCILLATION/WOBBLE VALVES)

IMPORTANT: NEVER STAND IN FRONT OF A SKEET MACHINE. THE MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE SKEET HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHEN THE THROW ARM IS COCKED.

The wiring guide for the Soft Shift Valve on a PAT-TRAP® is as pictured in Diagram 57 below:



Note: Jumper Wire

Diagram 57

Wiring of Soft Shift Valve

Wiring Terminals from Left to Right:

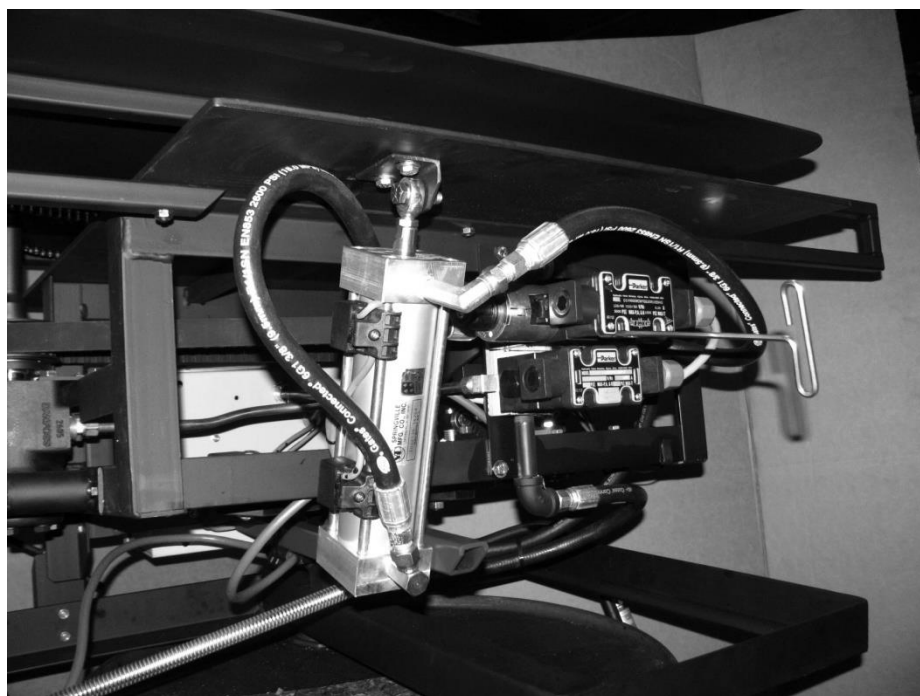
- Jumper Wire (+)
- White Wire (-)
- Black Wire (-)
- Green Wire and Jumper Wire (+)



REPLACEMENT OF A HYDRAULIC VALVE

IMPORTANT: NEVER STAND IN FRONT OF A SKEET MACHINE. THE MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE SKEET HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHEN THE THROW ARM IS COCKED.

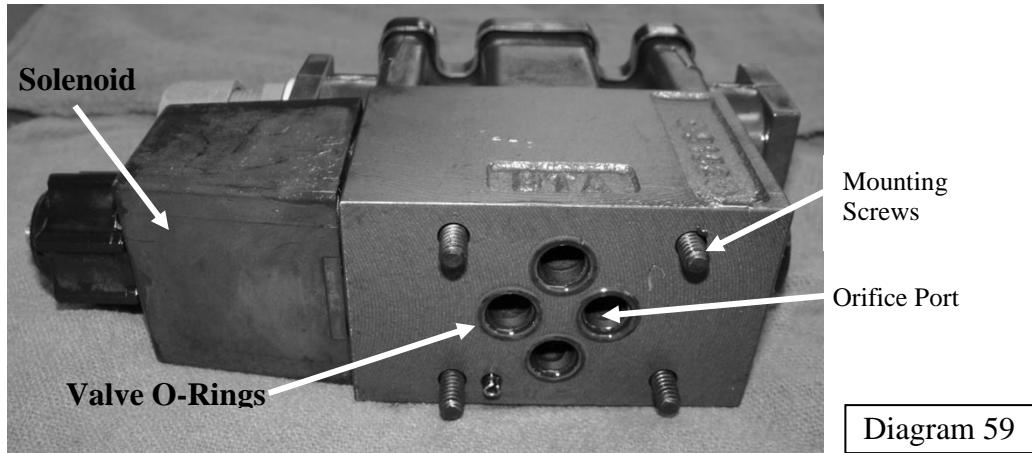
1. Disconnect the PAT-TRAP® from its power source.
2. Remove the cover plate on the valve's terminal box as shown in Diagram's 56 & 57.
3. Disconnect the electrical wires that are located within the valve's terminal box and remove from the strain relief fitting located on the side of the valve.
4. Place a paper towel or rag below the valve to be removed.
5. Remove the old hydraulic valve from the hydraulic sub-plate manifold by removing the four bolts that hold it in place. A 5/32" T-Handled Hex Wrench works best as shown in Diagram 58. Make sure that the holes are cleaned out before using the wrench.



Wobble Skeet
Diagram 58

Loosening/Tightening Valve Mounting Screws

6. Replace the old valve with the proper replacement valve, and secure to the hydraulic sub-plate manifold with the four bolts that hold it in place. A 5/32" T-Handled Hex Wrench works best as shown in Diagram 58.
7. Note: Use caution that the four O-Rings located around the valve's orifice ports are securely in place or else a leak will occur. See Diagram 59.



Rear View of Single Solenoid Valve

8. Re-attach the wires that are located within the valve's terminal box after feeding them through the strain relief fitting located on the side of the valve. Refer to Diagram 56 or 57 for the proper valve wiring guide.
9. Re-attach the cover plate on the Valve's Terminal Box as shown in Diagram's 56 or 57.
10. Connect the Skeet[®] back to its power source and resume operation.



To replace a FIELD ANGLE LIMIT SWITCH use the following directions:

1. NEVER STAND IN FRONT OF A TRAP MACHINE. THE TRAP MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE TRAP HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHILE THE THROW ARM IS COCKED.
2. Disconnect the PAT-TRAP® from its power source.
3. Open the cover of the Electrical Enclosure located on the back of the PAT-TRAP® with a medium Philips screwdriver .
4. Loosen the screws on the Romex Connector located on the rear exterior of the electrical enclosure. Remove the switch wires from their terminal. Tie a string to the switch wire ends and pull out of the box. Fish the new switch wire back into the box.
5. The connections for the field limit switches to their terminal shown in Diagram 76 are as follows:



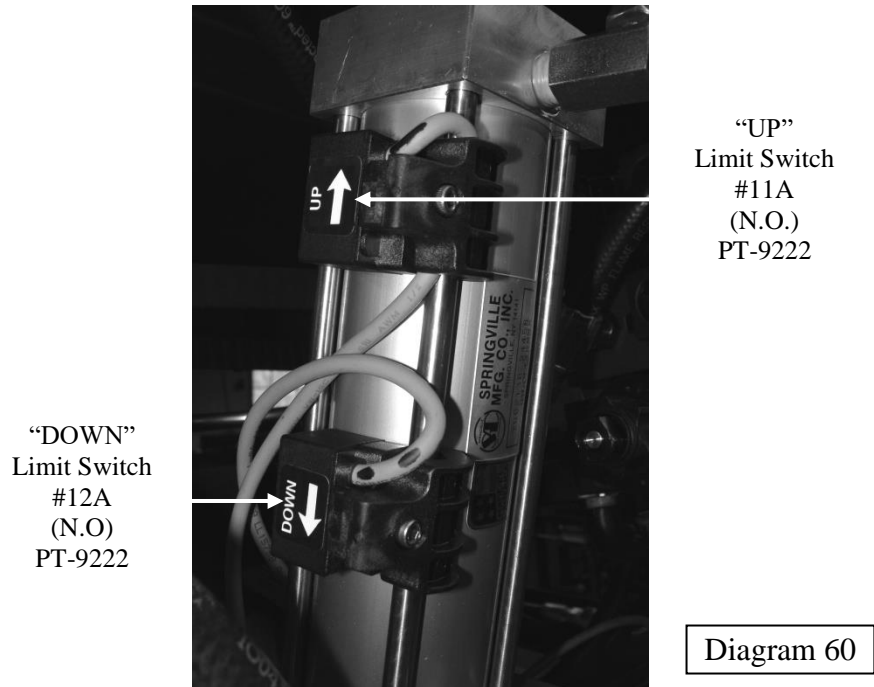
Inside the Electrical Enclosure of the PAT-TRAP®

Diagram 76

6. After replacing the appropriate field limit switch, close and secure the cover of the electrical enclosure with 6 - 32 X1/4 Philips head screws. Connect the PAT-TRAP® back to its power source and resume operation.



WOBBLE WIRING GUIDE FOR UP and DOWN LIMIT SWITCHES (#11A and #12A)



Limit Switches on the PAT-TRAP® Wobble Hydraulic Cylinder

To replace a Wobble Up or Down LIMIT SWITCH use the following directions:

IMPORTANT: NEVER STAND IN FRONT OF A SKEET MACHINE. THE MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE SKEET HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHEN THE THROW ARM IS COCKED.

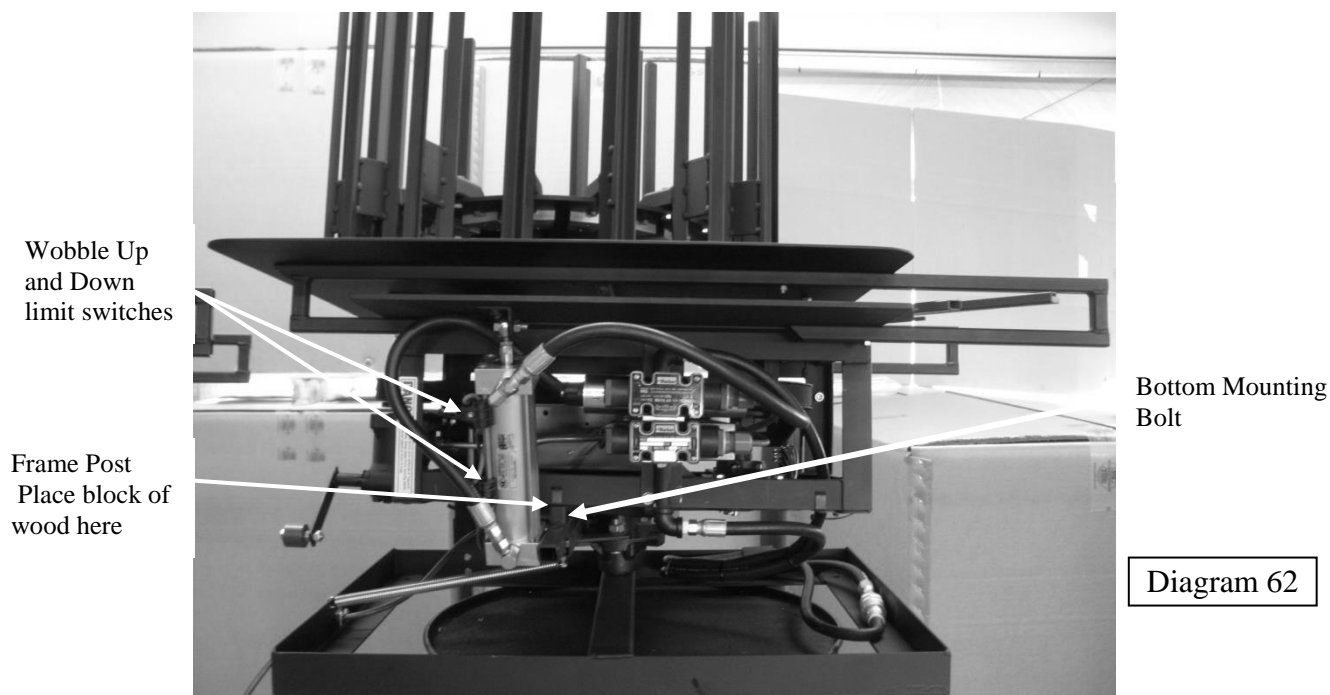
1. Disconnect the Skeet® from its power source.
2. Open the cover of the Electrical Enclosure located on the back of the PAT-TRAP®. Use a string to keep the cover up while accessing the enclosure.
3. Loosen the screws on the Romex Connector located on the rear exterior of the electrical enclosure. Remove the switch wires from the relay base. Tie a string to the switch wire ends and pull out of the box. Fish the new switch wire back into the box.
4. After replacing the appropriate Up or Down Wobble limit switch, close and secure the rear cover of the electrical enclosure. Connect the PAT-TRAP® back to its power source and resume operation.



REPLACEMENT OF WOBBLE CYLINDER

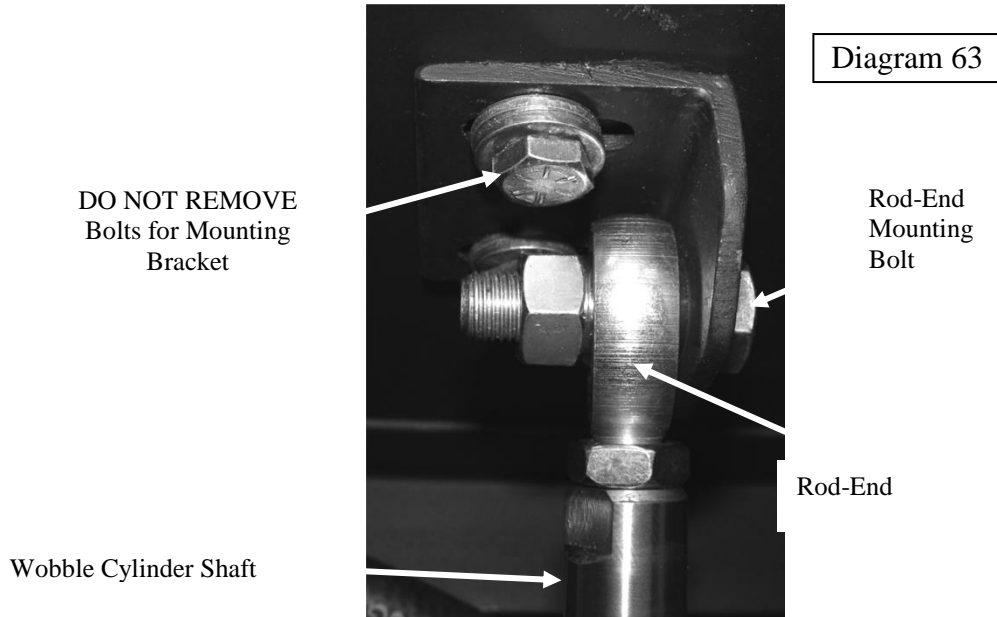
To replace a vertical hydraulic Wobble cylinder use the following directions:

1. Tools required: 1" thick block of wood, 9/16" wrench (ratchet or speedy wrench will help), 9/64" hex wrench, 1/2" wrench, 5/8" and 11/16" wrenches (or adjustable wrench).
2. Set the 1" thick block of wood on the frame post. See Diagram 62.
3. Carefully lower the machine onto the block of wood without crushing it.



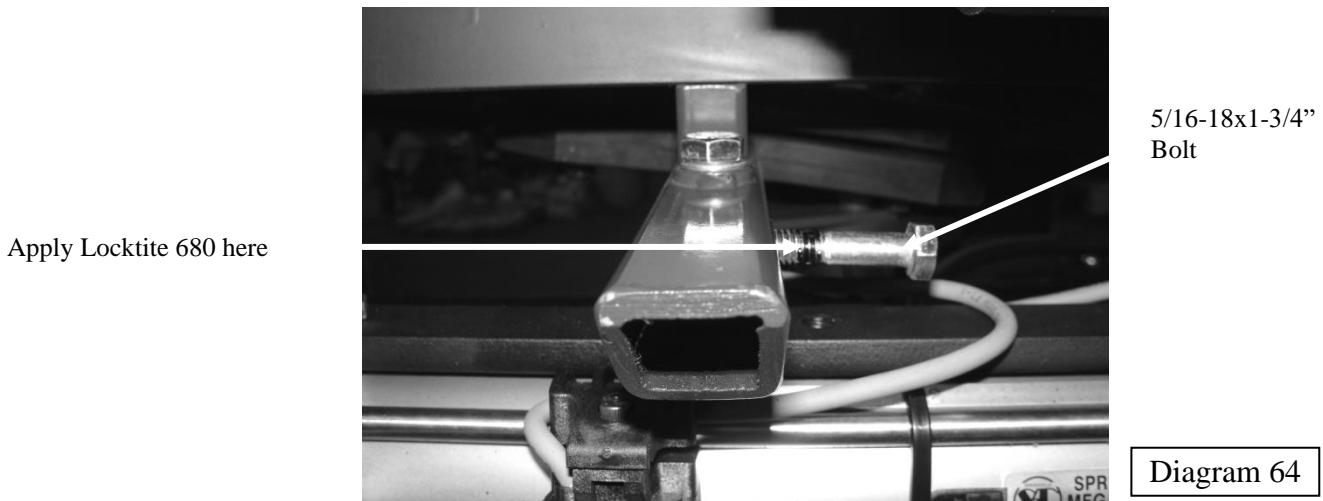
Wobble Cylinder

4. STAND BEHIND THE PAT-TRAP[®] MACHINE RELEASE THE THROW ARM AND TURN OFF THE MACHINE. THE MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE TRAP HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHEN THE THROW ARM IS COCKED.
5. Disconnect the Skeet[®] from its power source.
6. Remove Wobble Up and Down limit switches from the cylinder tie rods with a 9/64" hex wrench. See Diagram 62.
7. Remove the cylinder rod-end mounting bolt using two 9/16" open-end wrenches. See Diagram 63.



Rod End to Mount Wobble Cylinder to PAT-TRAP®

8. Remove the hydraulic hoses that connect to the short adapters. Use the 5/8” and 11/16” open-end wrenches to perform this task.
9. Remove the bottom mounting bolt located on the bottom of the Wobble Cylinder using a 1/2” wrench. See Diagram 62.
10. When putting on the new Wobble cylinder, first apply a small quantity of Loctite 680 to the last threads of the #5/16-18 x 1-3/4” bottom mounting bolt as shown in Diagram 64.



Bottom Bolt for to Mount Wobble Cylinder



11. Replace the cylinder rod-end mounting bolt using two 9/16" open-end wrenches. Diagram 64.
12. Remove 1" thick block of wood from frame post.
13. Make sure that the cylinder rod-end mounting bolt is tight (torque to 25-30 ft-lbs).
14. Replace the field angle limit switch to the Wobble cylinder tie rods with the 9/64" hex wrench. Do not over-tighten the plastic switch bracket clamp because it WILL break.
15. Connect the hoses. When tightening, make sure that the hoses are positioned as shown in Diagram 62. This is done so that the hoses won't rub against the machine when at the extreme up, down, left, and right angle limits.
16. After installing the new Wobble cylinder, turn on the machine.
17. Put the Auto/Manual switch into the manual position. Push the UP button and run the cylinder rod to the end. Remove the wooden block.
18. Push the DOWN button and run the cylinder rod to the end. Now the air is out of the cylinder.
19. Check the oil level within the hydraulic pump reservoir and add 5W-20 oil as required.
20. Move the Wobble cylinder back to center (between limit switches) and begin normal operation.



General Maintenance

IMPORTANT: NEVER STAND IN FRONT OF A SKEET MACHINE. THE SKEET MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE SKEET HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHEN THE THROW ARM IS COCKED.

Surface Mounted Oil Roller Plates need to be oiled every 2-3 weeks, depending on usage: (The Elevated Roller Plate design does not need this maintenance)

Use 3 in 1 oil, or another good quality lubricant. Place a few drops along the edges of the plate so that the oil works its way under the plate.

1. Inspect the o-rings on the target rollers for wear every 6 - 12 months.
2. Inspect the Target brush for wear every 6 - 12 months.
3. Inspect the Throw Arm Brake Rubber and Flat Spring for wear or breakage every 6 - 12 months.
4. Inspect the throw arm approximately every 6 – 12 months.

If a groove forms on the face of the throw arm rubber, or the bottom edge is badly rounded, then the throw arm may be too high on the rim of the target.

To inspect the height of the throw arm you need to disconnect the main spring. First, move the arm to the front of the machine where the target leaves the machine. There should be 1/32” – 1/16” gap between the lip of the target and the bottom of the throw arm rubber. Take the measurement at the end of the throw arm.

After setting the arm to the correct height make sure that the throw arm scrapers clear the throw plate 360 degrees. Also check the clearance between the scraper and the doubles finger. If the throw arm is bent or the rubber is badly worn, send to PAT-TRAP, Inc. to be repaired.

5. Grease the throw arm shaft bearings every 1 ½ - 2 years. (see page 50 in manual)
6. If the Throw arm rubber surface appears glazed use a block of wood and 80 grit sandpaper to re-dress the surface – making sure to keep the sanding block square to the surface.
7. Grease Main Spring Crank Handle threads & washer yearly.



Maintenance Schedule

Item	Part Number	100,000 Targets	200,000 Targets	400,000 Targets	600,000 Targets	800,000 Targets	1,000,000 Targets
Target Brush	9041	•	•	•	•	•	•
O-Rings	9104	•	•	•	•	•	•
Main Spring (Uni-Bands)	9032		•	•	•	•	•
Throw Arm Rubber	SP120		•	•	•	•	•
Grease Main Shaft Bearings			•	•	•	•	•
5W-20 Motor Oil In Pump							•

- - Inspect and/or Replace if worn or a performance issue.



TROUBLE SHOOTING

NEVER STAND IN FRONT OF A TRAP MACHINE. THE TRAP MACHINE MUST BE TURNED OFF AND THE SPRING RELEASED BEFORE ENTERING THE TRAP HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENT WHILE THE THROW ARM IS COCKED.

OSCILLATION PROBLEM for Standard Pat-Trap & Wobble machine

Make certain that all switch wires and cables are properly connected. See plug – in terminal connections J4, J6, and J7, and see Conn#1 and Conn#2 to make certain that the reed limit switch wires are securely connected. (Diagram #)

Stand to the right and rear of the machine near the Electrical Enclosure Box. Put the Auto/Manual switch into the manual position. Turn the machine on. If one or both directional buttons do not work then check the fuse(s). Next check Auto mode. If the machine does not oscillate after firing the throw arm or the oscillation or wobble cylinder is bottomed-out on the cylinder rod then follow the next procedures.

AUTO MODE #11A & #12A SWITCHES

If a limit switch is stuck in either an Open or Closed state you can perform a continuity test with a meter. Disconnect the switch wires from their respective terminals and connect to your meter. Put a magnet beside the switch in question and see if the switch changes as it should.

If a limit switch intermittently fails, meaning that the cylinder bottoms out occasionally, then you will need to use trial and error to determine which switch is failing. Begin with the assumption that a switch is sticking in an open state; ie, if switch #12 sticks open then it will cause the machine to bottom out to the down side.

If the **#11A Switch** (N/O Up Angle Limit Reed Switch P/N 9223-G) is stuck “open” then the machine will travel all of the way up. This will cause the relief valve in the pump to engage and create a loud noise.

Switch to Manual Mode and use the manual push button to bring the machine back to center and replace the switch.

If the **#12A Switch** (N/O Down Angle Limit Reed Switch P/N 9222-G) is stuck “open” then the machine will travel all of the way down. This will cause the relief valve in the pump to engage and create a loud noise.

Switch to Manual Mode and use the manual push button to bring the machine back to center and replace the switch.



If the **#11A Switch** (N/O UP Angle Limit Reed Switch P/N 9222-G) is stuck “closed” then the machine will travel all of the way down. This will cause the relief valve in the pump to engage and create a loud noise.

Switch to Manual Mode and use the manual push button to bring the machine back to center and replace the switch.

If the **#12A) Switch** (N/O Down Angle Limit Reed Switch P/N 9222-G) is stuck “closed” then the machine will travel all of the way up. This will cause the relief valve in the pump to engage and create a loud noise.

Switch to Manual Mode and use the manual push button to bring the machine back to center and replace the switch.

AUTO/MANUAL SWITCH FOR WOBBLE

The default mode is Auto. If the Auto/Manual Board is unplugged the machine will remain in the Auto mode: meaning that the machine should automatically oscillate down and up after firing the throw arm.

If the machine continues to wobble automatically when the toggle switch is in manual mode then replace the Auto/Manual Board.

If the Up and/or Down Push Buttons do not work then try the Auto mode to see if the machine wobbles in both directions. If the wobble function is operational in Auto mode then the Soft Shift solenoid is good (PT9061) and the Main Board is good.

In this case change the Auto/Manual Switch Board.

SOFT SHIFT/SOLENOID VALVE (PT9061) and Main Board

In the case of a defective valve a short circuit might occur. A short will blow a fuse. Replace the correct fuse and follow the next steps.

In this event you will commonly find the wobble cylinder bottomed-out on the rod.

Put the Auto/Manual switch into the Manual mode. If both up and down push buttons work then the valve is good. The cause of the bottoming-out of the cylinder could then be a bad limit reed switch, a bad cable connection or a stuck valve.

If the toggle switch is in Manual mode and you find that one directional button does not work and the other button causes a noise from the pump then the valve could be bad.



If both directional buttons do not work then check the fuses.

If a fuse is blown then replace it with proper fuse only. Unplug terminal J6 (wobble). Turn the machine on and operate the Auto/Manual functions. If the fuse(s) does not blow then the Main Board is good.

Plug in the J6 terminal, and turn on the machine. Operate the Auto/Manual functions. If the fuse(s) blows then replace the valve.

If the fuse(s) blows when the J6 terminal is unplugged when the machine is turned on then also unplug J2 and J3 and try again. If the fuse(s) blows then replace the Main Board.

Check that all cables and limit reed switch wires are properly plugged in or connected to their terminals.

A STUCK SOFT SHIFT VALVE FOR WOBBLE (NON-ELECTRICAL PROBLEM)

In this case you will find the cylinder bottomed out up or down. With the toggle switch in either Auto or Manual mode the pump will continue to strain (in relief mode). With the On/Off/Release switch in the off position and only the pump running you will hear the pump straining. In this case turn all power off and release the throw arm if cocked. Use a 1/8" diameter tool and push in firmly on both ends of the soft shift valve in question. The Manual shift push-rod should move in about 5/16". You will feel the resistance of a spring inside.

Turn the pump on to see if it runs normally. If it does then the valve is no longer stuck. Then try normal operation of the machine. If it sticks again then replace the valve.

THE THROW ARM WILL NOT COCK

Check **fuses**

Check the **#2 Micro Switch**

Check the **J1, J2 and J3 Cable Connections**

Check the **Hydraulic Solenoid Valve**

Check the **ON/OFF Release Switch** with an OHM meter with the power unplugged.

THROW ARM WILL NOT RELEASE WITH PULL CORD, VOICE RELEASE, OR THE ON/OFF/RELEASE SWITCH IN THE POWER BOX



Check fuses

Check the **#2 Switch**

Check cable connections J1, J2, J3.

Check the plug ends at the pull cord or voice release connection

Check the ON/OFF/RELEASE SWITCH with an OHM meter with the power unplugged.

THROW ARM DOES NOT STOP ON THE BRAKE (continually throws targets)

Disconnect the **Pull Cord** or **Voice Release System**

Check **Brake Assembly**

Check the **#2 Switch**: See "Cold Temperature Adjustment"

Check the **Hydraulic Solenoid Valve**

TARGETS BEGIN TO FALL SHORT OR THERE ARE AN UNUSUAL NUMBER OF TURNS ON THE CRANK HANDLE TO THROW A 50 YARD TARGET

Check for a broken **Uni-Band** (Main Spring)

Grease the **Main Shaft Bearing** with a low viscosity grease.

TARGETS ARE BEING THROWN MORE TO THE RIGHT

See **Target Brush** section

See **Throw Arm Maintenance** in **Maintenance** section

Check timing of the pinion

Check for a broken elevator spring

Check for dust buildup on the Elevator wings. This can cause the Elevator to get stuck in the guides.

Use a scrapper or sandpaper to clean.



BROKEN TARGETS

Check the **Target Brush**

Check the **O-rings**

Check the **Elevator Springs**

Check the **Roller Plate Spring** tension

Check the **Throw Plate** surface for corrosion: Sand with 80 grit sand paper if needed.

Check **Pinion Timing**

There will be a problem if the **Skeet finger** is bent upwards.

Check the Skeet Target Finger



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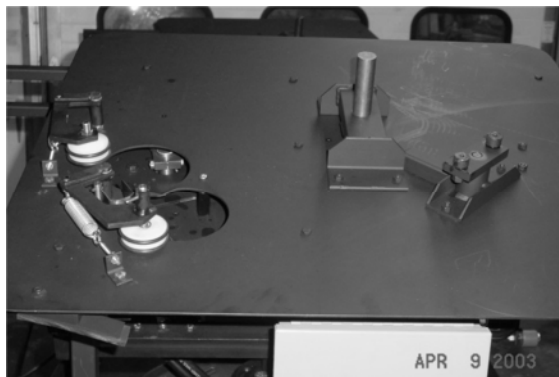


Timing of Pinion – PAT TRAP® SKEET

WARNING: NEVER STAND IN FRONT OF SKEET MACHINE. THE SKEET MACHINE MUST BE TURNED OFF AND MAIN SPRING RELEASED PRIOR TO ENTERING THE SKEET HOUSE. NEVER ATTEMPT TO MAKE ANY ADJUSTMENTS WHEN THE THROW ARM IS IN THE COCKED POSITION.

The following are the instructions for re-timing the turret pinion assembly on the Pat-Trap® Skeet Machine:

1. Unload the targets from the machine's turret and lift the turret off of the king pin. (Note: It is easier to remove the turret if two people lift up on opposite sides of the turret, i.e., 180° apart)



Picture 1.

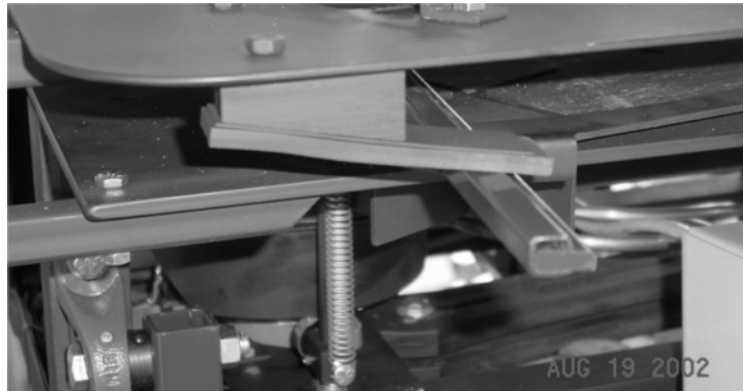
2. Turn the pump on. Allow it to warm up for ten minutes or more if the temperature is cold. The Pump switch is the right-hand switch in Picture 2 below.



Picture 2.

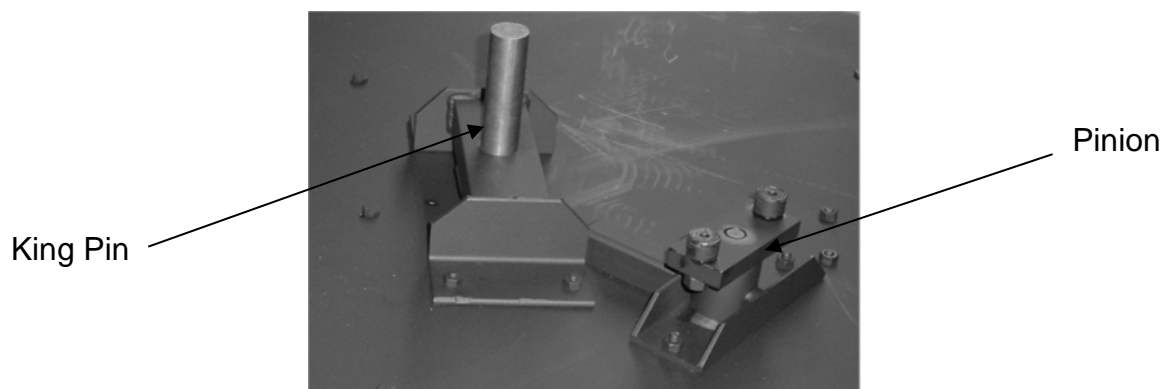


3. Turn the machine on. When the throw arm comes forward to the throw arm brake and stops, it is in the cocked position. (See picture 3 below)



Picture 3.

4. Turn off the trap machine (Left Switch in Picture 2 above). Release the machine manually by standing clear of the throw arm and pushing the throw arm off the brake.
5. Compare the position of the pinion block on your skeet machine with Diagram 1. The diagram represents the top view of the pinion block in relation to its base. The measurement given is taken from the corner "A" of the pinion block to the outside edge "B" of the pinion base (steel channel). The distance between points "A" and "B" is approximately $\frac{3}{16}$ " when correctly timed.



Picture 4.

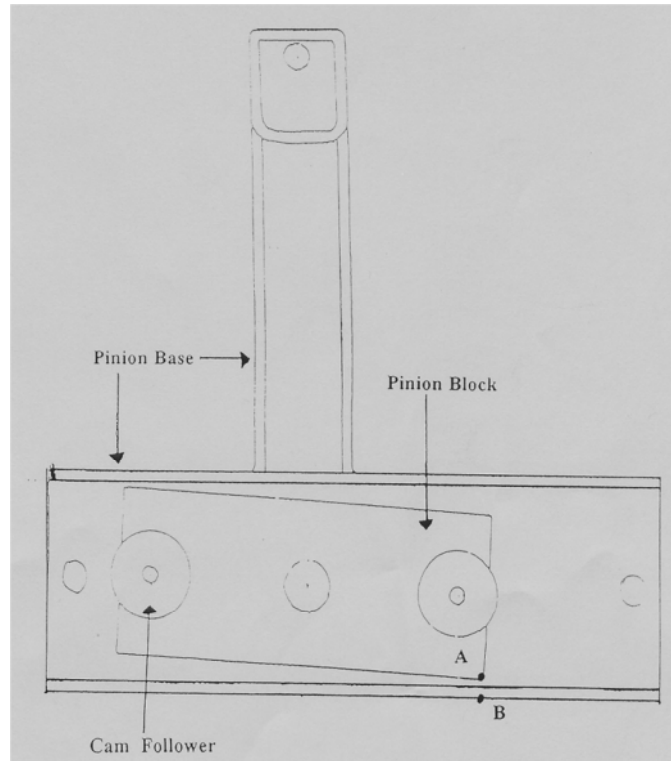


Diagram 1.

6. If the distance between points “A” and “B” is not close to the 3/16” spacing, then the timing can be corrected by disconnecting the drive chain to the pinion sprocket and rotating the pinion to the correct position and replacing the drive chain. See Picture 5.



Picture 5.



7. Note: The connecting link is located on the chain between the large sprocket and the small sprocket. If you can not see it, you will have to turn the trap machine on again and cycle it (repeat steps 3 and 4 above) until the connecting link comes around to the position required to remove it. Be sure to stay clear of the throw arm and that the machine is off and that the throw arm is released before working on the chain. Use a small screwdriver to remove the keeper bale for the connecting chain link. Once chain is removed, position the pinion so that points "A" and "B" are at the 3/16" measurement, then replace chain and the connecting link.



Picture 6.

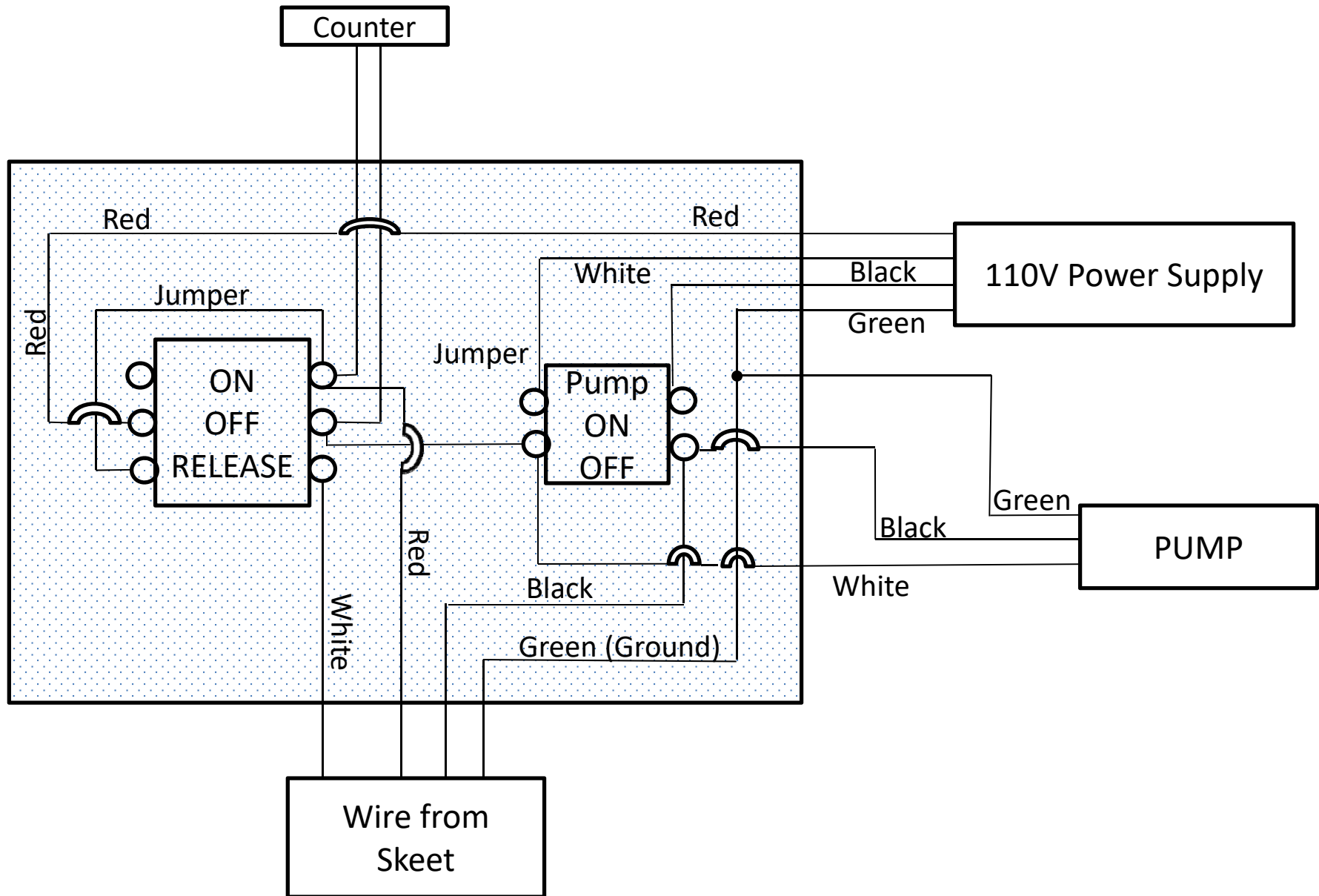
8. Please call if you have any questions (603) 428-3396.



Drying Out a Pat-Trap® Skeet Machine After a Flood

1. **DO NOT TURN THE PAT-TRAP® SKEET MACHINE ON!** If you have turned the Pat-Trap® skeet machine on before performing these steps you will need to buy a filter system from Pat-Trap, Inc. to remove water from the Pat-Trap® skeet machine.
2. Disconnect the power to the skeet house and the Pat-Trap® Skeet machine.
3. Open the gray electrical box located on the rear of the Pat-Trap® skeet machine and remove the relays and the timer/interrupter from their respective bases.
4. Using a hair dryer, on a cool setting, dry out the relay bases and the inside of the electrical enclosure.
5. Remove the clear covers on relays and let the relays dry out.
6. Remove the rear cover on the clock motor of the timer/interrupter and let dry out.
7. Pour out all of the oil in the reservoir of the hydraulic pump.
8. Pull out the drain plugs on the bottom of the farm duty electric motor attached to the hydraulic pump and let dry.
9. Remove all targets from the Pat-Trap® Skeet machine.
10. Use compressed air and towels to remove any excess dirt, debris and water on the exterior of the Pat-Trap® Skeet machine.
11. Lightly oil the throw plate and the top plate with 3 in 1 oil or hydraulic oil to prevent surface rust. Wipe off any excess oil.
12. When dry, replace the covers on the relays and put them back into their appropriate relay bases.
13. When dry replace the rear cover on the timer/interrupter and replace into the relay base. (Far right location inside the electrical enclosure)
14. When dry replace the drain plugs in electric motor.
15. Replace the oil in hydraulic pump reservoir with new Mobil 1–W5 motor oil to the appropriate full level.
16. Turn on the motor of the hydraulic pump on the Pat-Trap® Skeet machine and let it warm up for ten minutes.
17. Turn on the Pat-Trap® Skeet machine and check to see that is it working. If problems occur call Pat-Trap, Inc. (603)428-3396.

Skeet & Wobble Skeet Wiring Diagram From 110 Power Supply



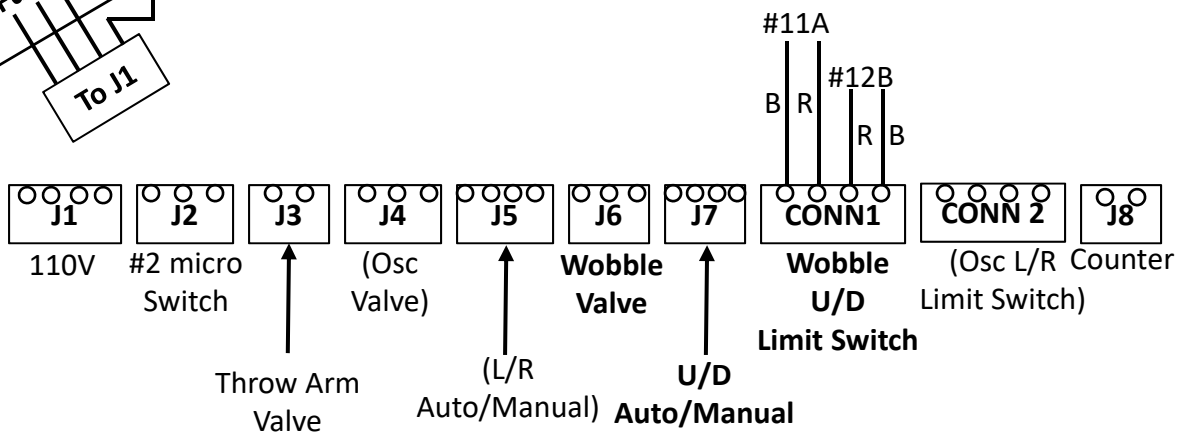
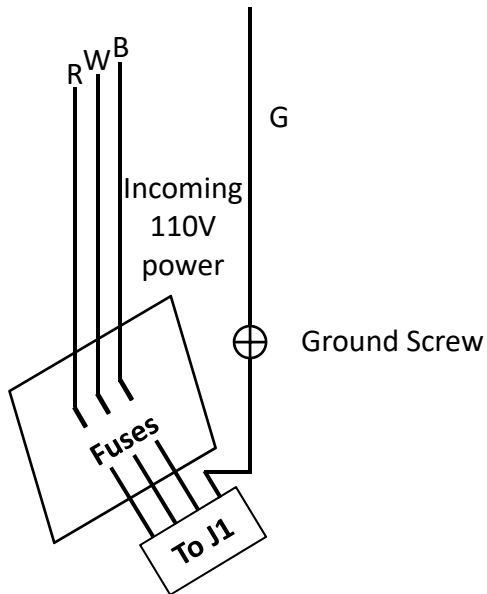
Wobble Skeet

Solid State Cable Connections

3 ea 250V 3A Littelfuse cartridge.
Spare fuses located inside enclosure cover.



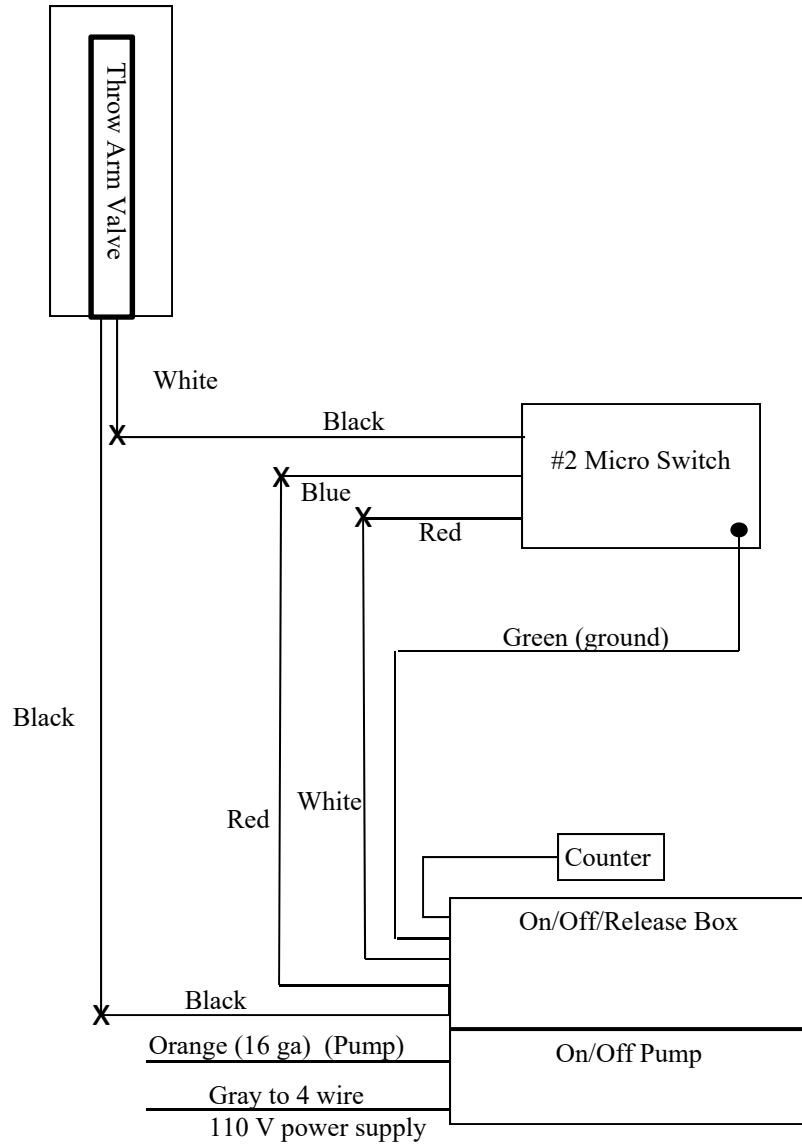
4 #06-32X3/8" socket head screws



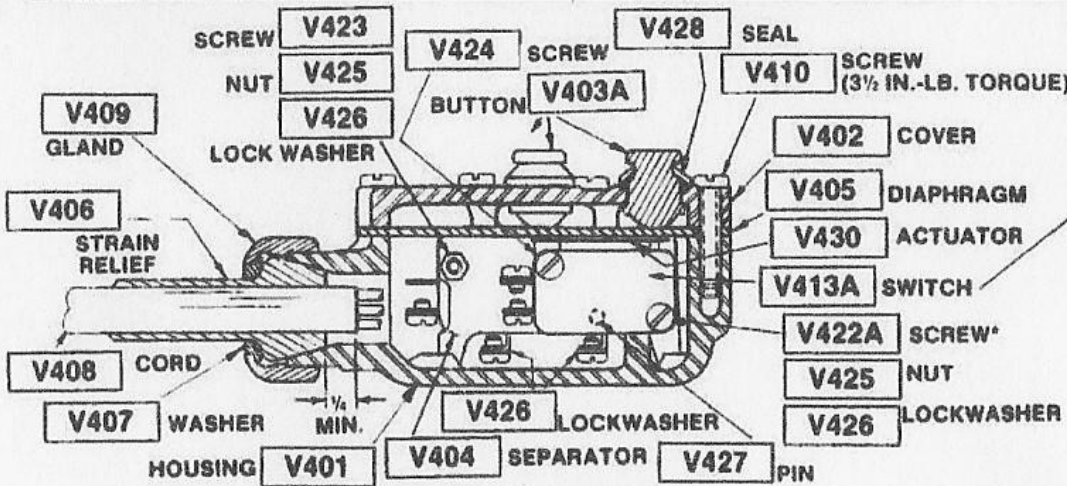
Fasteners & Hardware

- Main Board: 4- 6-32X3/8 T-handle hex wrench 7/64"
- Auto/Manual Switch Board: 2-4-40X3/8 phillips head screw
- Enclosure Cover: 7- 6-32x1/4 phillips head screws

Standard Skeet Wiring Diagram

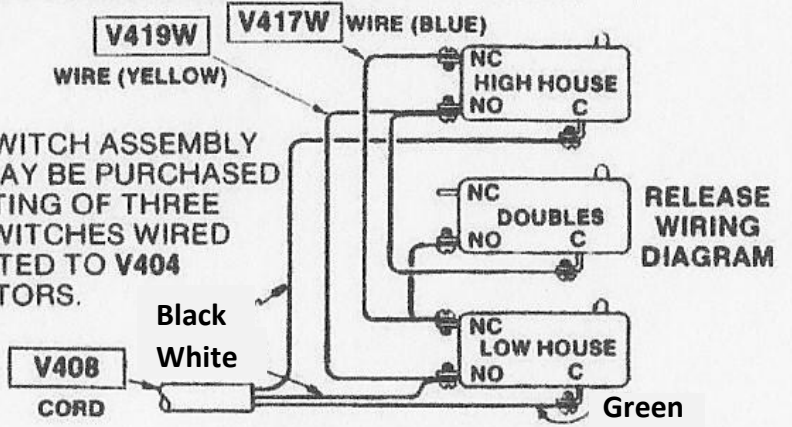


DANGER—AVOID INJURY! MAKE SURE ELECTRICAL POWER IS DISCONNECTED AND TRAPS ARE UNCOCKED BEFORE ATTEMPTING TO INSTALL OR SERVICE. INSPECT FREQUENTLY AND REPLACE DAMAGED PARTS.



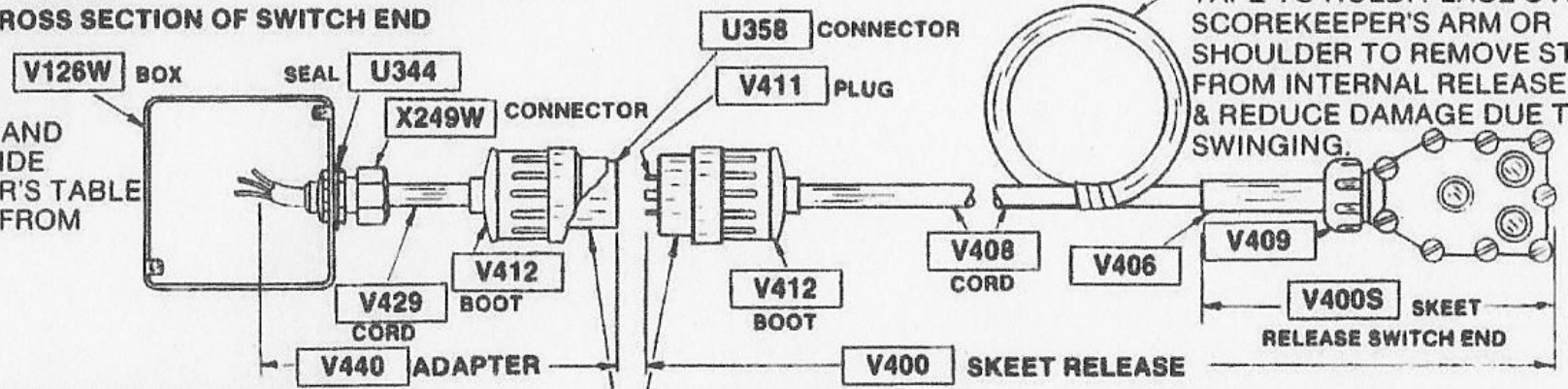
CROSS SECTION OF SWITCH END

NOTE: SWITCH ASSEMBLY V413W MAY BE PURCHASED CONSISTING OF THREE V413A SWITCHES WIRED & MOUNTED TO V404 SEPARATORS.



NOTE: FORM LOOP NEAR V406 & TAPE TO HOLD. PLACE OVER SCOREKEEPER'S ARM OR SHOULDER TO REMOVE STRESS FROM INTERNAL RELEASE WIRING & REDUCE DAMAGE DUE TO SWINGING.

INSTALL BOX AND ADAPTER INSIDE SCOREKEEPER'S TABLE TO PROTECT FROM WEATHER.



CONVERSION OF OLDER TRAPS:
DISCONNECT RECEPTACLE ONE WIRE AT A TIME AND REPLACE EACH IN TURN WITH V429 ADAPTER WIRE OF SAME COLOR. (IF OLD RECEPTACLE HAS GREEN WIRE, REPLACE WITH RED ADAPTER WIRE.) CHECK WIRING WITH DIAGRAM FURNISHED WITH TRAP.

WRAP ALL WIRE NUTS WITH AT LEAST TWO LAYERS OF PVC ELECTRICAL TAPE.

WHEN REPLACING OLDER ZIW RELEASE UNITS (METAL-TWO SWITCH) WRITE PRODUCT SERVICE DEPT. FOR NECESSARY TRAP INTERNAL CHANGE INSTRUCTIONS.

CONNECT WHITE WIRE TO CENTER POST, RED TO WIDE BLADE, BLACK TO NARROW.

TIGHTEN CORD GRIPS ON X249, U358, V409 & V411 TO PERMIT 35LB. PULL WITHOUT SLIPPAGE. DO NOT OVERTIGHTEN OR DAMAGE MAY RESULT.

WARNING
ELECTRICAL INSTALLATION MUST BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE AND APPLICABLE LOCAL CODES!

Noted changes for a Pat-Trap Skheet Pull Cord

*SINGLE 1 1/2" LONG SCREW & SPACER OF EARLIER MODEL HAS BEEN REPLACED WITH TWO 3/8" LONG SCREWS, NUTS & LOCKWASHERS.



U.S. PATENTS(S): 5249563, 6176229

Pat-Trap®

AUTOMATIC SKEET MACHINE

Manufactured by:

Pat-Trap, Inc
632 Western Ave
Henniker, NH. 03242

Telephone: 603-428-3396

Web Site: www.pattrap.com

Email: pattrap@tds.net

Pat-Trap, Inc. warrants the Pat-Trap® Skeet machine against defects in material or workmanship for a period of one year from date of original purchase; and agrees to repair **or**, at our option, replace any defective unit without charge.

IMPORTANT: This warranty does not cover transportation cost. Nor does it cover any damage resulting from accident, misuse or abuse, and any modifications or alterations including attaching the unit to other than the recommended receptacle or voltage.

NO RESPONSIBILITY IS ASSUMED FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.