



CASTLE INC



Owners Manual

AT Race Assembly Table – 4x5

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1 Introduction

Thank you for making the Castle AT Race Assembly Table the latest addition to your shop. Since 1985 our goal has been to manufacture and develop machines that make cabinetmaking and casework easier, faster and more profitable for the woodworker. This machine represents our commitment to your productivity. Castle machines are made in Petaluma, California and are manufactured to the highest standards using local vendors wherever possible.

This instruction manual is intended for use by anyone setting up or servicing this machine. It should be kept available for immediate reference so that all operations can be performed with maximum efficiency and safety.

Note: Do not attempt to perform maintenance or operate this machine until you have read and understand the information contained in this manual.

2 Machine Safety

NOTICE: The Castle AT Race Assembly Table was designed with operator safety as a priority. This machine was carefully prepared for shipment at our factory. Upon receipt of the machine, inspect for shipping damage. Report any damage **IMMEDIATELY** to the freight company, your Castle dealer and to Castle, Inc. DO NOT attempt to operate the machine if you observe any physical damage. Contact Castle, Inc. at 800.282.8338 for instructions.

2.1 Safety Rules

- 1 **USE CAUTION WHEN OPERATING THIS MACHINE!** Only skilled operators should use this machine, or be within ten feet when the machine is in operation.
- 2 Read the Operator Manual carefully before operating. An Operator Manual should be attached to this machine. It contains important information and warnings concerning the use and operation of this machine. Improper use of this machine may result in serious injuries to persons and property.
- 3 Always wear protective eyewear when operating or standing near an operating machine.
- 4 Keep all body parts away from the moving parts of this machine whether it is in operation or at rest.
- 5 Do not place hands or fingers between the work piece and the clamp or near the cutters at any time. Always use a securing device when undertaking close work.
- 6 Do not wear gloves or loose clothing (such as sweaters, jackets, or jewelry) when operating or standing near an operating machine.
- 7 Before attempting adjustments, maintenance, or repair, **DISCONNECT** this machine from its air supply. Wait for all motion to stop.
- 8 Always keep the area around this machine clean and uncluttered. Poor housekeeping could result in slips, falls, or other injuries.

- 9 Concentrate at all times. Failure to pay attention to the task at hand is the cause of most accidents.

2.2 Key Features

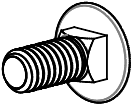

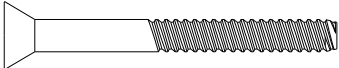
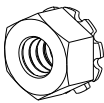
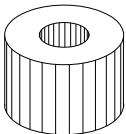

Your Castle AT Race Assembly Table's ergonomic design places the bottom rail at 32" above floor level to reduce bending, reaching and operator fatigue. The highly efficient design allows the hold-down cylinders to be repositioned and clamped in one quick smooth action for fast production. The super rigid, precision beam is both light and strong and moves effortlessly on ball bearings.

The Castle AT Race Assembly Table is equipped with a pressure regulator, pressure gauge and hose for a pneumatic air screw driver (sold separately). The convenient driver holster is inches away from the work at all times.

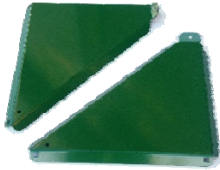

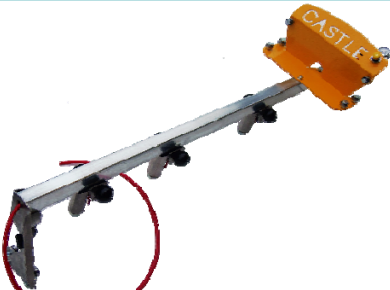

2.3 Inventory

Included with each Castle AT Race Assembly Table are the following items. Please take a moment to verify that each of the items listed below and on the following pages are included with your shipment.

- Owners Manual
- Warranty Card – Please fill out and mail to Castle, Inc. or visit our website at www.castleusa.com and register online.
- Hardware: (See following page for hardware details)

CASTLE AT RACE ASSEMBLY TABLE HARDWARE PACK			
ITEM	PART #	DESCRIPTION	QTY
AT RACE LEG BRACE – HARDWARE PACK #1			
 	F51835	5/16-18 X 3/4" Carriage Bolts	10
	F51828	5/16 – 18 Hex Nuts	10
AT RACE FENCE – HARDWARE PACK #2			
  	F44134	1/4-20 X 1-3/4	15
	F01422	1/4-20 Kop Nut	15
	N00345	5/16 Large Aluminum Spacer (Fence Installation)	15
AT RACE TABLE TOP – HARDWARE PACK #3			
	F10212	#10 x 2-1/2" Phillips Pan Head Sheet Metal Screw	18

CASTLE AT RACE ASSEMBLY TABLE PARTS LIST

ITEM	PART #	DESCRIPTION	QTY
AT RACE LEG BRACE			
	G48013	AT LEG BRACE,	1 L, 1 R
AT RACE BEAM BRACKETS			
	G48018	AT Race Beam Bracket, Left w/Set Screws	1
	G41019	AT Race Beam Bracket, Right w/Set Screws	1
AT RACE CLAMP ARM			
	C48001	AT Race Clamp Arm Assembly	1
AT RACE SIDE & BOTTOM FENCE			
	O08474	AT Race Side Fence	1
	O08594	AT Race 5' Bottom Fence	1

2.4 Machine Requirements

Your Castle AT Race Face Frame Assembly Table requires a minimum of **85 PSI** air not to exceed 150 PSI.

- Supply Line should be a minimum of ¼" line.
- Install an air filter trap to reduce the potential for foreign particles and water from your air supply prior to entry into the machine. The filter should be mounted to the wall where your supply comes from and **SHOULD NOT** be mounted to your machine.

2.5 Other Supplies

- Plywood sheet at least 8' X 4' (not included)
- (2) Scrap 2 X 4's

3 Setting Up Your AT Race 5' Table

Your Castle AT Race Assembly Table is shipped knocked-down, with the legs bolted to a pallet and the frame and top inside with the rest of the components securely attached. Inspect your table components carefully to insure that there is no damage before proceeding with set-up.



Fig 1

3.1 Getting Started

Safe assembly of your Castle AT Race Assembly Table takes **two** people. In addition, you will need the following tools to uncrate and assemble your Castle AT Race Assembly Table.

1. 1/2" Open End Wrench
2. 1/2" Socket w/ratchet
3. Socket extension
4. 9/16" Socket w/ratchet
5. 5/32" Allen Wrench
6. Framing square



3.2 Unpacking your Table

1. Cut zip ties and remove the Beam Brackets (Fig 2), Fences (Fig 3), and Clamp Arm Assembly (Fig 4).



Fig 2



Fig 3

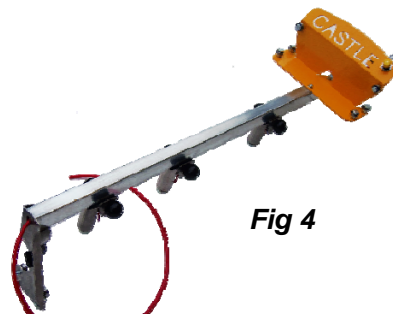


Fig 4

1. Using a 1/2" Open End Wrench, remove the bolts holding the threaded rod used to secure the AT Race parts for shipping. (Fig 5)

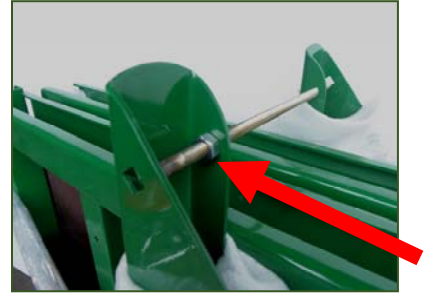


Fig 5

2. The triangular Leg Braces and (3) Hardware Packs will be inside the top of the leg. Once you have removed the threaded rod you should be able to pull the leg braces out. (Fig 6)

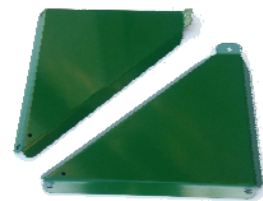


Fig 6



Fig 7



Fig 8



Fig 9

3. Using a 9/16" Socket Wrench, remove the Lag Bolts holding the legs to the pallet. (Fig 10)
4. Lift the 2 table tops out and set them aside for later use. Set a few 2 x 4's on the floor to prepare for the next step.

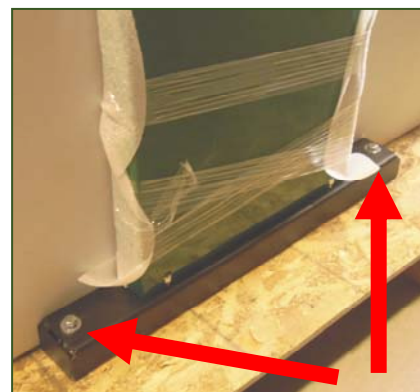


Fig 10

3.3 Attaching the Legs

1. Use the AT Race Leg Brace Hardware pack (Pack #1) for installing the legs. The legs bolt onto the longer flange on the back side of the table frame.
2. Have someone hold the leg while you fasten it to the frame using the 3/8-16 x 3/4" Carriage Bolts (Fig 11). The flat part of the angle iron should face the inside of the leg. The nuts are easiest to tighten if the head of the bolts are inserted from inside the leg channel.



Fig 11



Fig 12

3. Attach the leg support braces using bolts supplied. Repeat this process for the other side (Fig 13)



Fig 13

4. Roll the assembly onto the legs by rolling it first over the top tube, then onto the leg backs, and finally up and into a fully upright position (Fig 14).



Fig 14

5. Check that all the leg braces and bolts are securely tightened.

3.4 Fence Installation

1. Attach the fences using the ¼-20 Flat Head bolts [F44134], aluminum spacers [N00345] and the ¼-20 Kep Nuts [F01422] found in Hardware Pack #2.



Fig 15



Fig 16

The holes closest to the bottom left side of the table frame are round and the holes going away from the lower left corner grow slightly to an obround at the upper left side of the table and towards the middle of the bottom beam of the table frame. This allows for adjustment to insure that the fences are square to each other.

2. Only tighten the nuts at the lower left corner for the side fence and bottom left fence and at the bottom right corner of the bottom right fence. You will tighten the remaining nuts once the table top is installed (Fig 17).

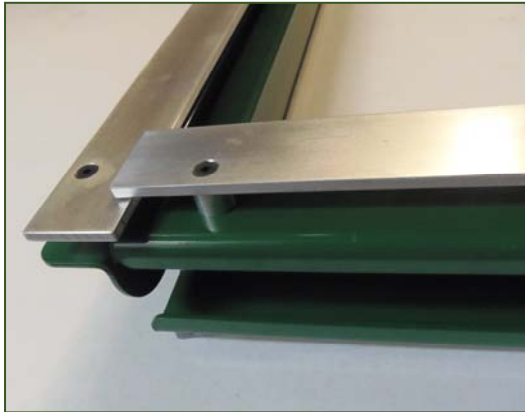


Fig 17

NOTE: When fastening the fences be sure to only tighten one bolt on each fence at the bottom left corner of the frame. You will tighten the rest later.

3.5 Worktop Installation

1. Place the table top onto the frame. Make sure the top is sitting as far left as it will go and flush with the bottom edge of the frame.

2. Install (3) draw bolts at the rear of the table top to secure. (Fig 18)



Fig 18



Fig 19

3. Using the (30) #10 X 2-1/2" pan Phillips sheet metal screws [F10212] fasten the table down through the rear of the frame. (Fig 19)

4. Place a sheet of plywood measuring AT LEAST 4' wide on the table, and rest it on the bottom fence (Fig 20).



Fig 20

5. Swing UP on the right end of the bottom fence until the fence is flush with the wood.
6. Now tighten all of the bolts for the bottom fences
7. Rotate the side fence from the lower pivot point until it is flush with the side of the wood sheet.
8. Tighten the bolts on the side fence.
9. Confirm that the bottom and side fences are at a 90° using a carpenter's square.

3.6 Open Back Beam Installation

NOTE: This part of the installation may require (2) two people



1. Install the Beam Brackets as shown. Note the position of the upper set screw. (Fig 21)

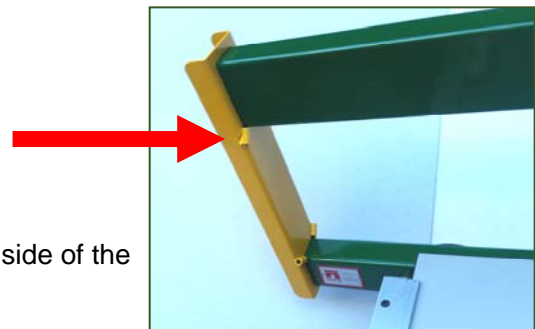


Fig 21

2. Slide the top beam through yellow bracket on one side of the table then on the other. (Fig 22).



Fig 22

3. Once the beam is in place tighten the set screws in the beam brackets in all (3) places on each using a 7/64" Allen Wrench. (Fig 23)



Fig 23

NOTE: For proper alignment of the upper beam to the table, use a framing square to insure that the beam is 90 degrees to the table. If not, loosen the set screws at the bottom of each [yellow] beam bracket and rotate the [green] beam up until it is 90 degrees to the table top.



3.7 Clamp Arm Installation

1. Once the beam is installed and secured the arm is installed.
2. Remove the bottom bearing assemblies on the upper bracket. (Fig 24 & 25)

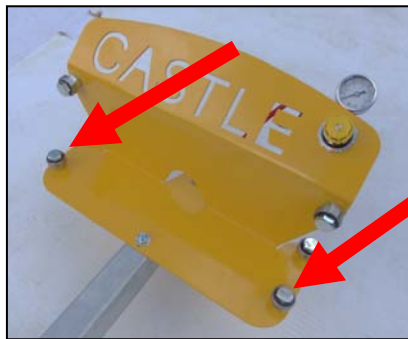


Fig 24

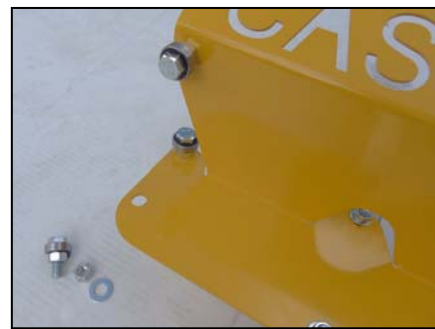


Fig 25

3. Tip the arm up and position the top bracket under the upper beam as shown. (Fig 26)
4. Rotate the beam and position the upper bearings on the top bracket on TOP of the upper beam. (Fig 27)
5. Swing the arm down so that the top bracket sits as shown. (Fig 28)

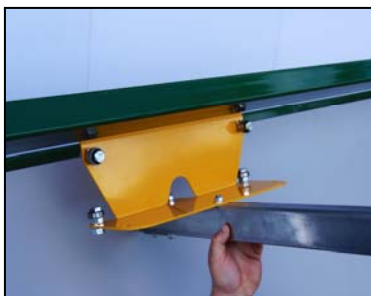


Fig 26



Fig 27



Fig 28

5. At the bottom of the arm, the bottom bracket bearings should rest above the table frame. (Fig 29).
6. Press down on the bottom bracket to position the spacers below the leg of the opening on the bottom channel of the frame. (Fig 30)
7. You will need to adjust the arm to be sure the bearings are in full contact with the bottom of the frame.

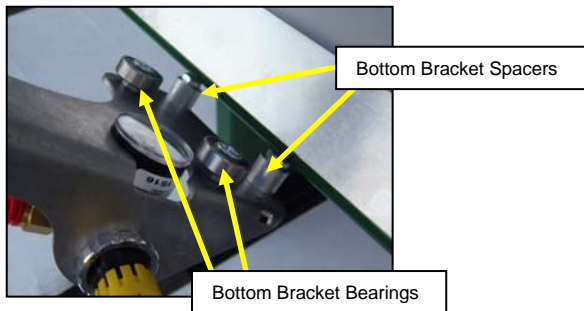


Fig 29



Fig 30



NOTE: This part of the installation may require (2) two people

8. Slightly loosen the (2) bolts that attach the arm to the top bracket. (Fig 31)



Fig 31

9. You will need help to push up on the arm and bottom bracket to properly position the bottom bracket bearings on the bottom of the table frame. (Fig 32)
10. The bearing should be 90% engaged with the channel at the lower part of the table frame. (Fig 33)
11. Once the arm has been properly positioned, tighten up the lower bolt on the top bracket to secure the arm. (Fig 32) *NOTE: You will only need to tighten the lower bolt on the top bracket. The upper bolt will be tightened once the arm has been adjusted to be parallel to the left fence.*

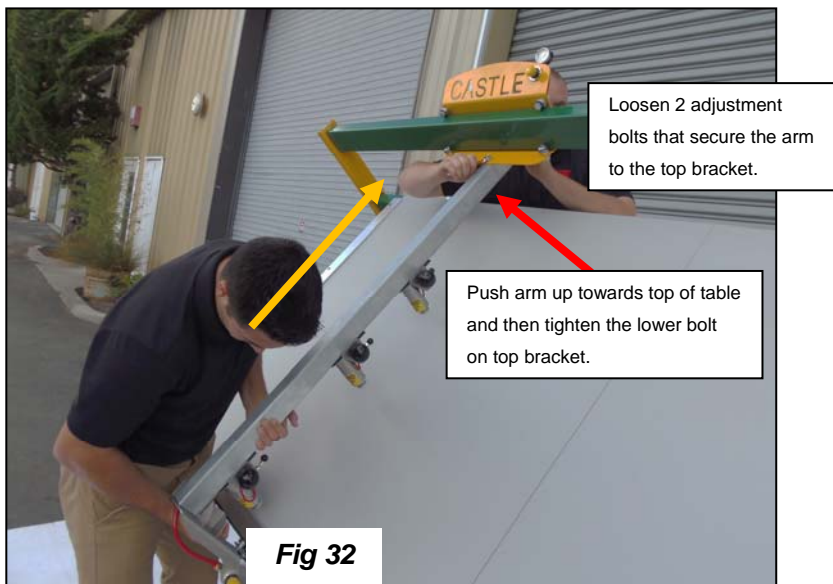


Fig 33

12. Next you will need to position the arm parallel to the left fence on the table. To do so, move the arm as close to the left fence as you can. Confirm the space between the fence and arm at the top and bottom of the arm. Once the position has been verified, tighten the upper bolt that secures the arm to the top bracket.

13. Finally you will need to install the bearing assemblies on the bottom of the upper bracket. Install the bearing assemblies that were removed before the arm was placed on the beam. (Fig 34)
14. Shims are provided to place between the beam and the bracket for proper tension. (Fig 35)
15. Once adjusted, remove the shims.



Fig 34



Fig 35

3.8 Connecting Air

1. The AT Race Frame Right will have a through-wall fitting for connecting your main air to the table. (Fig 36) Attached to the fitting at the top is a 12.5' section of 3/8" Black Hose that will connect to the "Air In" port on the main air pressure regulator on the Top Bracket.

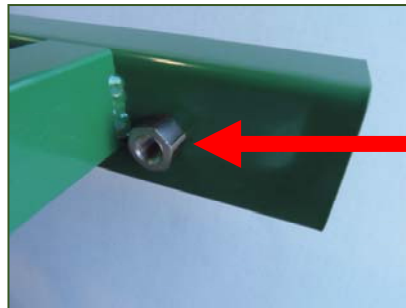


Fig 36

2. For proper connection of the 3/8" Black Hose, be sure to run the hose inside the top channel of the Frame Right and out the obround hole and into the Main Air Connection on the regulator from the back of the machine. This will allow the arm to move across the table without getting tangled with the air hose.

3. Also included is an air hose (Red 3/8" Hose) for use with an air drill [optional]. If you will be using an air drill you will need to connect the hose to the main air regulator, as well.

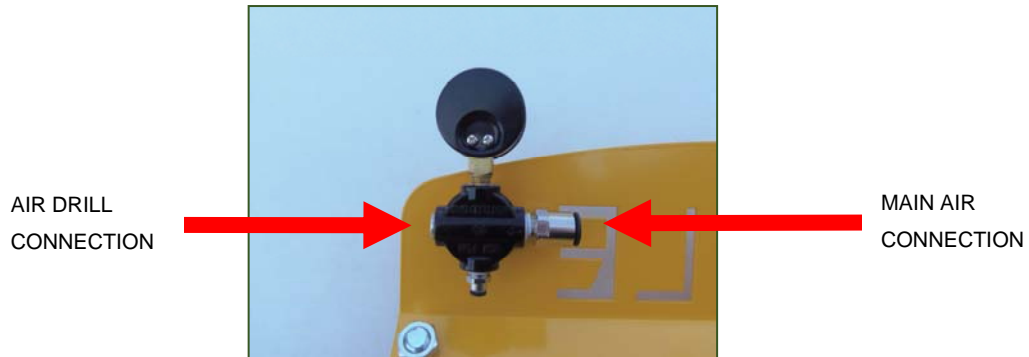


Fig 37

4. For an Air Drill use, remove the plug on the Air Regulator and connect the end of the 3/8" Red Hose.
5. To set the Air Pressure, pull out the yellow knob on the regulator and turn the knob until the pressure measures **85 PSI** on the gauge. (Fig 38)

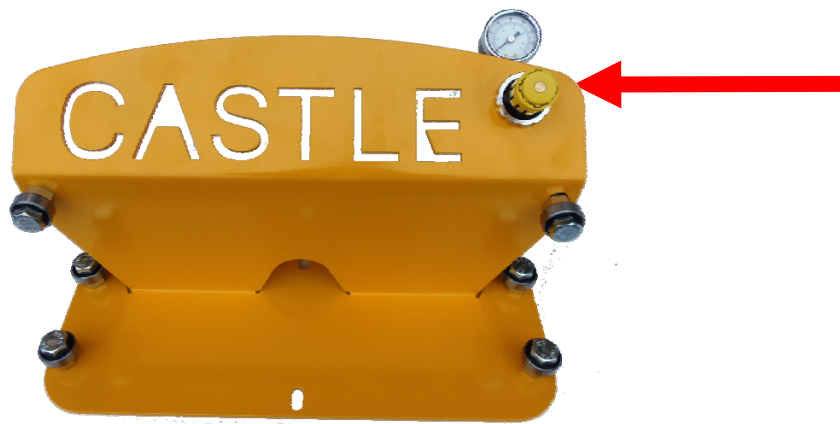


Fig 38

4 Operating Instructions

Warning: Always wear eye protection when operating pneumatic equipment.

4.1 Cylinder Actuation

To operate the clamp cylinder locate the toggle switch on the Clamp Valve. Moving this lever up and down will clamp and release the cylinder.

1. The AT Race Clamps have handles on both sides for ambidextrous use. Each clamp has its own 3-Way valve with toggle switch for clamping and releasing.
2. The clamps easily slide up and down on the Clamp Arm by pushing or pulling on the knobs on either side of the clamp assembly.



Fig 39



Fig 40

4.2 Drill Holster

The Clamp Arm Bottom Bracket includes a holster for your drill. Your driver tip will sit in the hole in the corner of the bracket and rest on the bottom shelf. This positions your driver ideally for easy reach and keeps the drill chuck away from the bracket. (Fig 41)



Fig 41

5 Maintenance

Castle recommends that your table top be periodically cleaned of excess glue and/or dust. The Poly Foot pads are subject to wear over time and should be replaced. Replacement pads (Part #N70118) are available on our web store at store.castleusa.com.

If you detect a considerable slowdown in the speed of the cylinder actuation, the cylinder may need to be rebuilt using the AT Race Cylinder Rebuild Kits (Part #K48002) (Fig 42).

See section 6.2 and 6.3 of this manual for instructions on how to remove your cylinder(s) and rebuild them using the rebuild kit.



Fig 42

6 Trouble Shooting Guide

6.1 Adjusting the Arm Bearings

Your Assembly Table Arm rides on two sets of bearings; one at the bottom bracket and one at the upper bracket. If the arm becomes loose or rides on the beam roughly, these bearing sets may need to be tightened. This procedure is performed best with two people.



1. Loosen the two bolts in the top bracket that hold the arm in place while someone holds the bottom bracket firmly in place against the table.
2. **Do not** loosen the bottom bracket bolts.
3. Locate the bearings attached to the upper brackets that ride on the top of the beam. Tighten the bolt head on one side of the bearing while holding the on the other side of the bearing.

Note: For smooth operation of your Assembly Table Arm, it is important that the bearing bolts be tightened down firmly.

4. After tightening the bearing nut on the front of the upper bracket, the nut on the rear of the upper bracket should be tightened next.
5. Do this by holding the nut closest to, and in front of the bracket, while tightening the nut at the rear of the bracket.
6. If the bearings were loose, the tightening procedure could change the arm positioning. Test the positioning of the arm by rolling it along the beam. It should roll smoothly the whole way and be parallel to the table top.

6.2 Aligning the Arm

When your Castle AT-Race Assembly Table is set up or reassembled after relocation, the arm may need to be aligned to ensure proper operation.

NOTE: This procedure is best done with two people.



1. Loosen the two bolts on the top bracket that hold the arm in place while a second person holds the bottom bracket firmly in place on the table.
2. Do not loosen the bottom bracket bolts!
3. Adjust the arm in the upper bracket until the desired position is achieved.
4. Tighten the bolts in the upper bracket
5. Test the positioning by rolling the arm along the beam. It should roll smoothly across the entire work top.
6. You may need to repeat steps 3 through 5 to achieve proper adjustment and smooth functioning of the arm.

6.3 Removing the Cylinder

Over time your cylinders may slow down due to wear. It may be necessary to rebuild your cylinder by replacing the larger internal O-ring, gasket, stainless steel washer and screw.

1. Turn off the airline to the regulator. The line is connected to the regulator by a push-in fitting. Push in on the outer ring to release the tension on the air line as you pull the airline out.

2. Remove the rear plumbing bracket located at the upper end of the Clamp Arm (Fig 43).

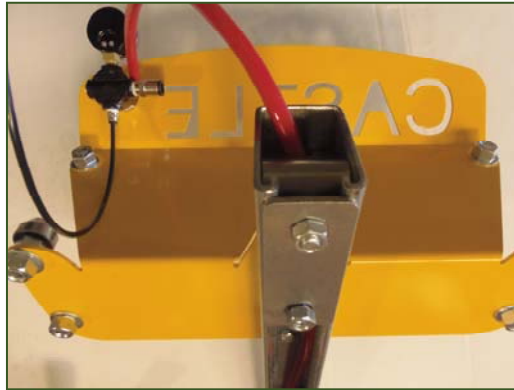


Fig 43

3. Slide the cylinders out of the Clamp Arm by pushing them through the top of the Upper Clamp Arm Bracket (Fig 44).

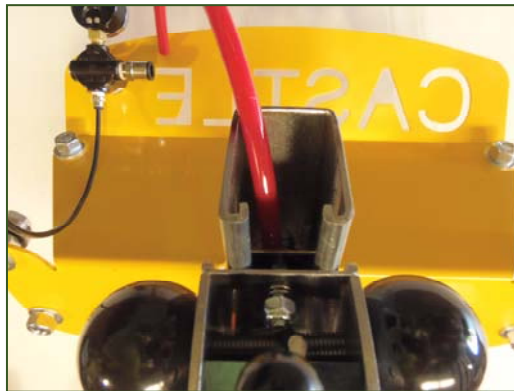


Fig 44

6.4 Rebuilding the Cylinder

The cylinders have O-rings and gaskets that help maintain pressure within the cylinder. Over time these seals can become worn or damaged and may need to be replaced. Contact Castle directly for information on replacement parts.

1. Turn off the air and remove the airline to the regulator. The line is connected to the regulator by a push-in fitting. Push the outer ring to release the tension on the airline as you pull the airline out.
2. Remove the rear plumbing bracket located at the upper end of the Clamp Arm.
3. Slide the cylinders out of the Clamp Arm by pushing them through the top of the Upper Clamp Arm Bracket.
4. With the cylinder off the arm, remove the Snap Ring (Fig 46).



Fig 45



Fig 46



Fig 47



Fig 48

5. Remove the piston. (Fig 47)
6. Remove the Nut and Center Screw (Fig 48)
7. Remove the Large Washer and the Gasket. (Fig 49)



Fig 49

8. Replace the O-Ring with the new one from the rebuild kit and apply the enclosed lube.
9. Reassemble the cylinder reversing steps 4 through 8 using the replacement parts included in your rebuild kit (K48002).
10. When tightening the center screw, make sure the holes on the gasket and the large washer line up with the fitting on the plate.
11. Slide the cylinder(s) back onto the arm and plug the airlines back in.
12. Reconnect air to the table and test the rebuilt cylinder. The piston should come down and retract quickly.



7 WARRANTY INFORMATION

Castle, Inc. uses only the highest quality materials available for the construction of our machines. Your AT Race 5' Table is warranted for one (1) full year from the date of purchase against workmanship or material defects under normal use and service. Castle, Inc. is not responsible for failures or injuries due to negligence, misuse, alteration, unauthorized service, or accidents.

Owners of new machines are obligated to contact their dealer AND Castle before contracting for, or attempting warranty repairs or service.

If Castle or dealer technicians determine that reasonably simple adjustments or tests are necessary in delivering remedy to a failed machine, owners of warrantied machines are obligated to exercise due diligence while assisting in the execution of these simple adjustments or tests.

When a problem cannot be resolved via telephone support, Castle will, at its expense, send replacement parts and instructions to the purchaser necessary to cure the defect. Castle will not be responsible for providing labor on repairs that are deemed reasonable for the owner to accomplish. Castle, Inc., at its sole discretion, will elect to either repair (by a Castle technician or dealer technician) or replace a machine in the case of warranty issues that exceed reasonable owner repair expectations. Alternatively, Castle will factory repair any machine provided the machine is returned to Castle, shipping prepaid, within the warranty period.

Castle will not, under any circumstances, be liable for consequential, incidental, special or exemplary damages, or for loss of time, revenue or production. Further, Castle disclaims any warranty, expressed or implied, as to the merchantability or fitness of a Castle product for any particular purpose.

30 Day Refund Policy

Any Castle machine that is un-altered and in almost new condition may be returned by the purchaser, for any reason, within 30 days of the purchase date for a full refund. Please contact your Castle authorized dealer for more information.

For Technical Assistance, Parts & Tooling contact your local *Castle Dealer* or

Castle Inc. at 800-282-8338

Monday through Friday, 7:30am – 3:30pm, PST