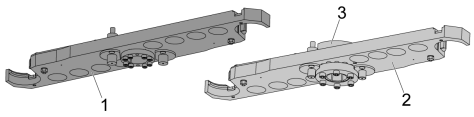
VMC Side Mount Tool Changer - Double Arm - Replacement - AD0324

LAST UPDATED: 10/22/2024

VMC Side Mount Tool Changer - Double Arm - Replacement

AD0324

Introduction



This procedure tells you how to replace these double-arm types on a VMC Side-mount Tool Changer:

- 8-screw double-arm [1]. This double-arm has the hub on the bottom of the arm.
- 6-screw double-arm [2]. This double-arm has the hub [3] on the top of the arm.
    - There is a removal section for this type double arm when the cambox seizes up.

This procedure applies to the following service kits:

- **93-0393A:** DOUBLE ARM CT40-40-5/11
- **93-0394A:** DOUBLE ARM CT40-6/11
- **93-0487A:** DOUBLE ARM BT40-6/11
- **93-0488A:** DOUBLE ARM BT40-40-5/11
- **93-0614:** DOUBLE ARM CT EC-300 SVC FROM BT TO CT
- **93-0947:** COMPLETE BT40-E4 SVC EC-400 FRM BT TO CT
- **93-0948:** DOUBLE ARM CT EC-400 SVC FROM BT TO CT
- **93-1197:** COMPLETE BT40-E3 SVC EC-300 FRM CT TO BT
- **93-3322:** SMTC ARM CT40 13.5 2.5DEG W/O OFFSET KEY
- **93-0945:** Double Arm CT40-2

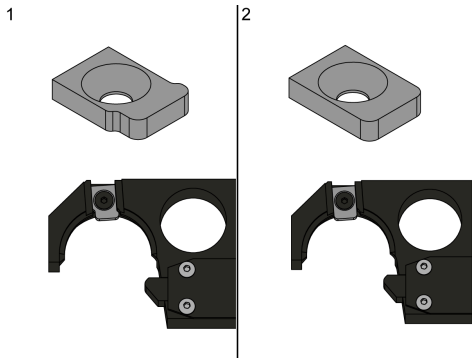
Prerequisites:

Use (1) of the following split tools:

- P/N T-2186 Alignment Split Tool SMTC BT30
- P/N T-2086 Alignment Split Tool SMTC CT40
- P/N T-2087 Alignment Split Tool SMTC BT40
- P/N T-2089 Alignment Split Tool SMTC CT50
- P/N T-2088 Alignment Split Tool SMTC BT50

Tools Required:

- Haas Control Key
- P/N T-2108 SMTC Arm Alignment Tool
- (2) 3/8-16x2 1/2" Socket Head Cap Screws
- Split Tool

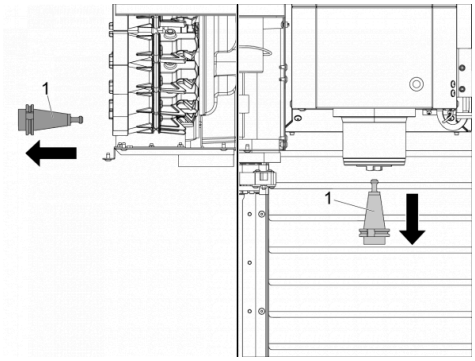


This applies to kits 93-0394A and 93-0487A

This kit comes with 2 different types of keys for the tool arm. When replacing the old arm take notice of what type of key is used and use the corresponding key from the new kit. The different types of keys can be seen in the image for reference.

IMPORTANT: After the keys are installed on the arm verify that the key alignment with the tool holders is correct to prevent any damage to the arm and tool holders.

Removal



1

Make sure no tool [1] is in the current pocket and the spindle.

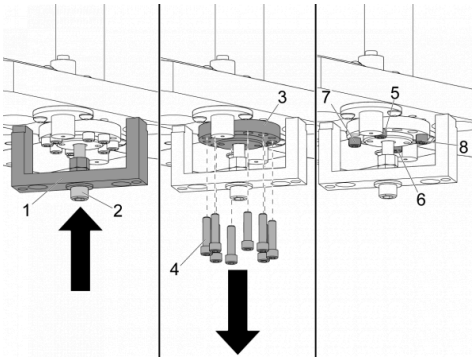
Power on the machine with your Haas Control Key.

Push **[ZERO RETURN]** and then **[ALL]**.

Go into RECOVERY mode. Go into MANUAL TOOL CHANGER OPERATION mode.

Push **[ATC FWD]** until the arm moves down near the bottom of travel.

Push **[EMERGENCY STOP]**.



2

For An 8-Screw Double-Arm

Put the T-2108 tool [1] onto the double arm. Use your fingers to tighten the center screw [2] to the shaft.

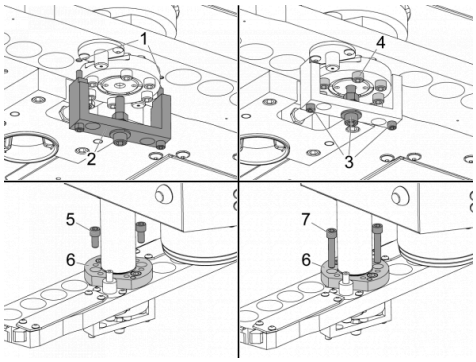
Remove the (8) screws [4] from the clamp [3].

Install (4) jack screws into the threaded holes on the clamp [3]. Lightly grease the screw threads. Use (4) of the (8) screws [4] you removed.

Tighten the jack screws in a star pattern. Tighten from the first screw [5] to screw [8] in order. Do this until the double arm can turn freely on the shaft.

Note: Be careful not to scratch the output shaft.

Remove the T-2108 tool [1] and the double arm. Install all of the screws you removed.



3

For A 6-Screw Double-Arm

Find the (2) holes [1] adjacent to the covers for the plungers. Put the T-2108 tool [2] onto the double arm. Use your fingers to tighten the screws [3] to the shaft and the arm.

Loosen the (6) screws [4] from the clamp about a 1/4" from the double arm. Do not remove the screws.

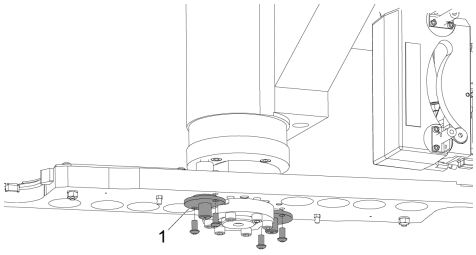
Remove (2) of the (4) screws [5] from the hub [6]. Do not remove two screws adjacent to each other.

Insert (2) 3/8-16 x 2 1/2" jack screws [7] into the hub. Lightly grease the screw threads. Turn the (2) jack screws a small amount at a time. Do this until the double arm can turn freely on the output shaft.

Remove the T-2108 tool and the double arm. Install all of the screws you removed.

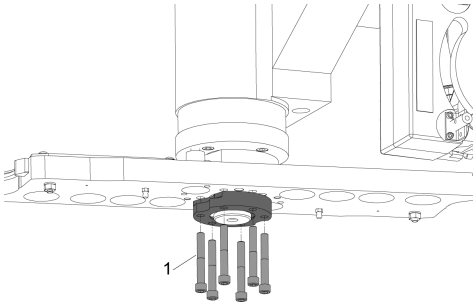
Removal of Double-Arm in Seized Position

This section is for camboxes that have seized up and the double arm cannot be moved further to expose the mounting bolts.



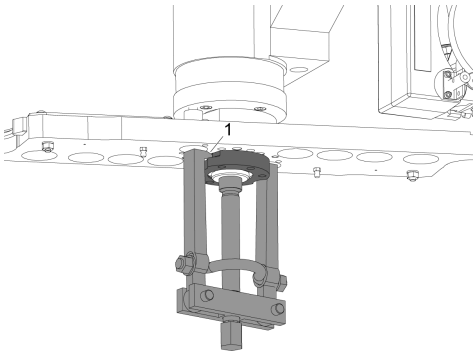
1

Remove the two plungers next to the hub, be aware that if the cambox is seized up the spings in the plungers will spring out when removing the plunger.



2

Remove the (6x) SHCS 5/16-18 bolts [1] from the hub of the double arm.



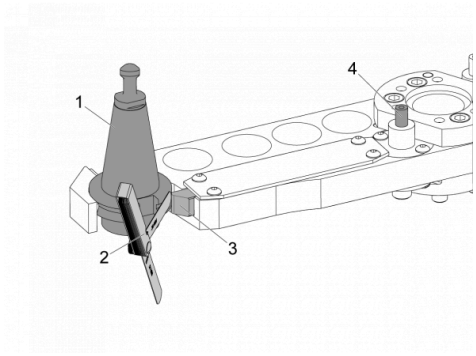
3

Place the hooks of the gear puller on the notch [1] shown in the image, place the center screw in the position shown and turn the center screw to pull off the hub.

NOTE: If the plungers are not removed the hooks are not able to fit in the designated area.

NOTE: After the hub is removed the arm may fall down, be sure to grab the arm before completely removing the hub.

Installation



1

Press down on the plunger [4].

Put a tool holder [1] with no cutter into the new arm.

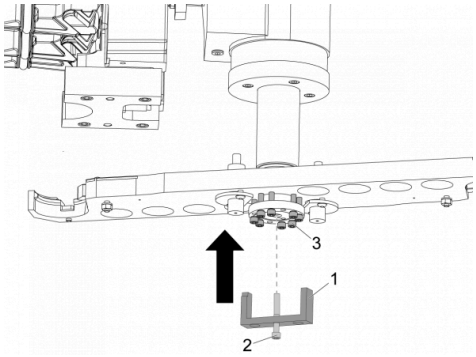
Push the slide [3] back into the arm as far as possible. Measure the space between the slide and the tool holder. Use a feeler gauge [2]. Make sure the space is between 0.015" (0.381 mm) and 0.025" (0.635 mm)

If adjustment is necessary, use SIDE-MOUNT TOOL CHANGER - DOUBLE ARM - PLUNGER AND ADJUSTER ASSEMBLY - INSPECTION.

Remove the tool holder.

Do this step again on the opposite side of the arm.

Release the plunger. The slide should return to its original position.



2

For An 8-Screw Double-Arm

Install (8) screws [3] on the double arm. Leave the screws loose. Make sure the clamp can move easily.

Clean the shaft of any grease and then install the double arm. Put the T-2108 tool [1] on the double arm.

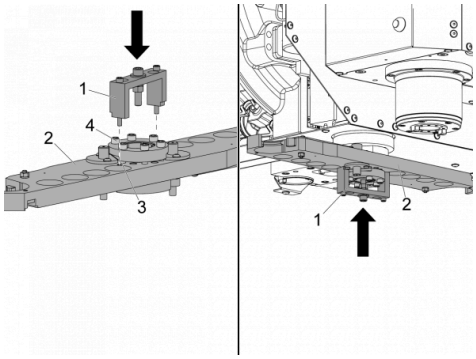
Caution: Be sure to support the double arm during this step. If the arm is not tightly held it can fall and cause injury.

Turn the screw [2] into the shaft. Turn the center screw [2] to lift the double arm on the shaft.

Make sure the notches in the T-2108 tool [1] fit over the covers for the plungers.

Lightly tighten the clamp screws. Do this until the double arm stays in position, but you can turn it with your hand.

Note: Do not tighten the clamp too much. This makes it difficult to adjust the double arm height.



3

For A 6-Screw Double-Arm

Install the (6) clamp screws [4] on the double arm [2]. Leave the screws loose. Make sure the clamp can move easily.

Find the (2) holes [3] adjacent to the covers for the plungers. Put the (2) screws through the T-2108 tool [1] and into the double arm [2]. Make sure the notches in the tool fit over the covers for the plungers. Tighten the (2) screws.

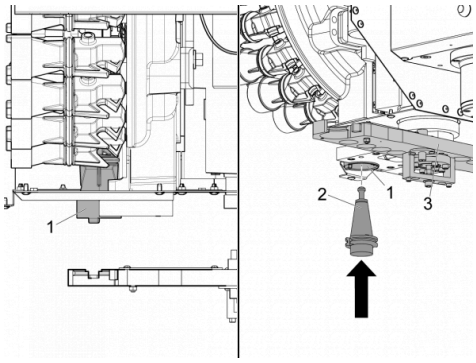
Caution: Be sure to support the double arm [2] during this step. If the arm is not tightly held it can fall and cause injury.

Clean all grease from the shaft. Then install the double arm [2]. Turn the screw into the shaft.You turn the center screw to lift the double arm [2] on the shaft.

Lightly tighten the clamp screws. Do this until the double arm [2] stays in position, but you can turn it with your hand.

Note: Do not tighten the clamp too much. This makes it difficult to adjust the double arm [2] height.

Alignment



1

Release the **[EMERGENCY STOP]**.

Make sure to insert the Haas Control Key. If necessary cycle power.

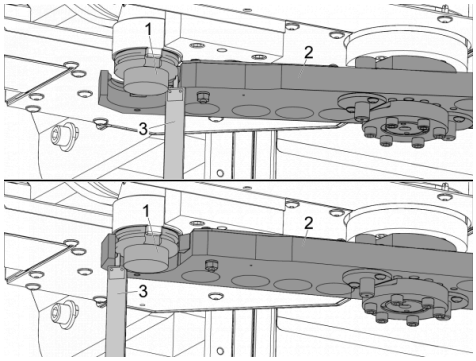
Go into **RECOVERY** mode. Go into **MANUAL TOOL CHANGER OPERATION** mode.

Push **[ATC FWD]** until **DOUBLE ARM** has a value of **CLAMP/UNCLAMP**. Manually rotate the double arm [3] to be parallel with the Y Axis.

Move the tool pocket [1] to the down position.

Push **[EMERGENCY STOP]**. Clear alarms.

Put a tool holder [2] with no cutter into the pocket.

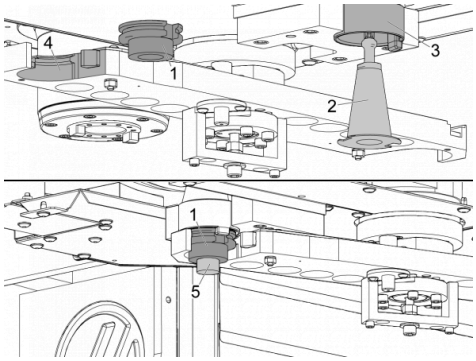


2

Manually turn the double arm [2] so the slide slightly touches the tool holder [1]. Use a caliper [3] to measure the height between the bottom of the V Flange and the double arm.

Manually turn the double arm so the arm engages the tool holder. Use a caliper to measure the height between the bottom of the V Flange and the double arm.

If the measurement is different, then adjust the height of the arm and repeat this step. Use the T-2108 tool to adjust the double arm height. When the measurement is the same, record the measurement.

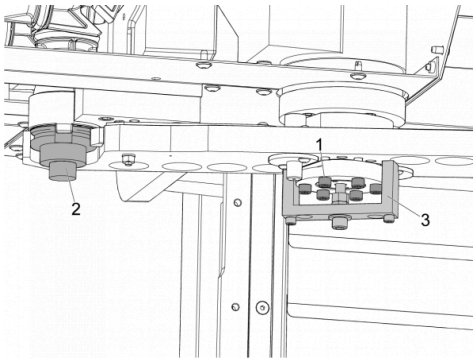


3

Manually turn the double arm until you can remove the tool holder. Remove the tool holder with no cutter.

Put the bottom part [1] of an alignment split tool into the arm [4] near the pocket. Install the top part [2] of an alignment split tool into the pocket [3]. Align the split tools.

Put the pin [5] for the alignment split tool into the top and bottom parts to do an alignment check. Remove the pin.



4

Lightly tighten the clamp screws 1/4 turn. Tighten the screws [1] in the star pattern. Do an alignment check [2] each time you tighten all the screws. Do this until the screws tightly hold the double arm.

Remove the T-2108 tool [3].

Torque the screws in the star pattern to the correct ft-lbs below.

Note: You must do this action a number of times. Do this to make sure the screws are torqued to the correct ft-lbs.

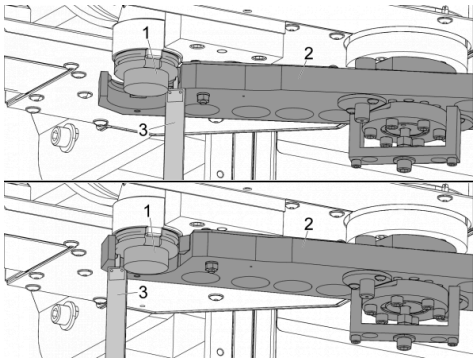
- 8-Screw Double-Arm - 15 ft-lb (20 Nm)
- 6-Screw Double-Arm - 20 ft-lb (28 Nm)

Push **[EMERGENCY STOP]**. Clear alarms.

Remove both parts of the alignment split tool.

Put a tool holder with no cutter into the pocket.

Release the **[EMERGENCY STOP]**.



5

Push **[ATC FWD]** until the slide slightly touches the tool holder [1].

Push **[EMERGENCY STOP]**. Clear alarms.

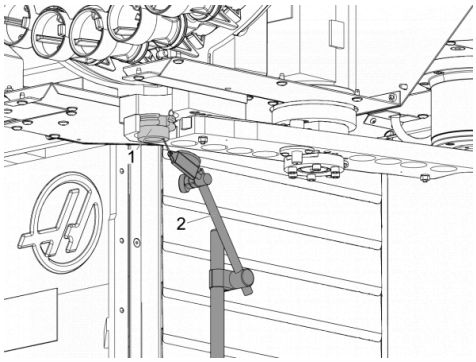
Use a caliper [3] to measure the height between the bottom of the V Flange and the double arm [2].

Record the measurement. Compare the measurement to the measurement you recorded in step 1. There should not be more than a 0.01" (0.25 mm) difference.

If there is a difference of more than a 0.01" (0.25 mm), adjust the height of the arm. For assistance freeing the arm review the "VMC - Side-Mount Tool Changer - Double Arm - Replacement - Removal" section. Adjust the arm to the correct height and start this section over.

If the measurement is the same, continue to the next step.

Release the **[EMERGENCY STOP]**.



6

Push **[ATC REV]** until you can safely move the tool pocket to the up position. Move the tool pocket to the up position.

Push **[EMERGENCY STOP]**. Clear alarms.

Remove the tool holder with no cutter.

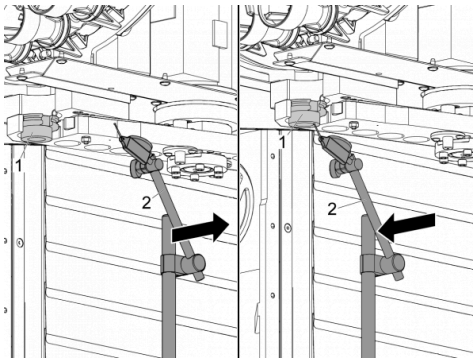
Put the bottom part [1] of the alignment split tool into the arm near the pocket.

Release the **[EMERGENCY STOP]**.

Push **[ATC FWD]** until **ARM** at **CL/UNCL** has a value of 1.

Push **[EMERGENCY STOP]**. Clear alarms.

Install an indicator [2] below the alignment split tool. Put the indicator tip on the bottom of the alignment split tool. Set the indicator to 0.



7

Note: The pocket is up.

Move the indicator [2] away from the pocket. Do not change the indicator setting. Remove the bottom part [1] of the alignment split tool.

Release the **[EMERGENCY STOP]**.

Rotate the arm 180 degrees using **[ATC FWD]**. Push **[ATC FWD]** until **ARM** at **CL/UNCL** has a value of 1.

Push **[EMERGENCY STOP]**. Clear alarms.

Put the bottom part of the alignment split tool into the arm near the pocket.

Release the **[EMERGENCY STOP]**.

Jog the indicator below the split tool. The indicator should not move more than 0.01" (0.25 mm).

If the indicator shows more than 0.01" (0.25 mm), you must do step 8.

If the indicator shows less than 0.01" (0.25 mm), skip step 8.

8

Do this step if the indicator shows more than 0.01" (0.25 mm).

For An 8-Screw Double-Arm:

Start this procedure again from the "VMC - Side-Mount Tool Changer - Double Arm - Replacement - Removal" section Step 2.

For A 6-Screw Double-Arm:

Start this procedure again from the "VMC - Side-Mount Tool Changer - Double Arm - Replacement - Removal" section Step 3.

Note: If the problem continues after you repeat the procedure, make sure that the shaft and the double arm are not damaged. If they are not damaged, make sure that the cambox is aligned.

For a VMC - CHC do these procedures:

- VMC - SIDE-MOUNT TOOL CHANGER - SET PARAMETER 64 - Z AXIS TOOL CHANGE OFFSET
- VMC - SIDE-MOUNT TOOL CHANGER - PARAMETER 257 - SPINDLE ORIENTATION OFFSET

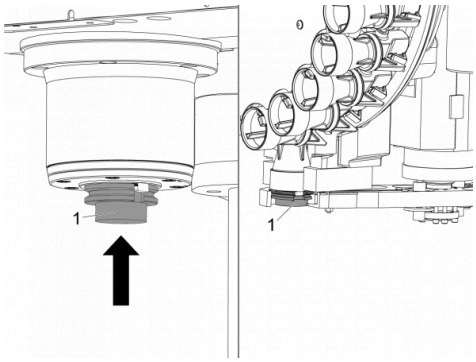
For a VMC - NGC do these procedures:

- SIDE-MOUNT TOOL CHANGER - Z-AXIS TOOL CHANGE OFFSET - NGC
- SIDE-MOUNT TOOL CHANGER - SPINDLE ORIENTATION OFFSET - NGC

For a UMC set these parameters:

UMC-750 - X and Y-Axes Tool Change Offsets – Parameter 210 and 211

Test



1

Push **[EMERGENCY STOP]**. Clear alarms.

Put a soft material on the table and the waycovers to protect them if a tool holder falls.

Insert a tool holder [1] into the spindle.

Close the operator door.

Release the **[EMERGENCY STOP]**.

If your machine has a servo tool changer press **[25%. RAPID]**.

Enter **MDI** mode.

Press **[ATC FWD]**.

Do this again multiple times. Switching between pressing **[ATC FWD]** and **[ATC REV]**.

If there are no problems at 25% do this step again at 100%.

If there are problems push **[EMERGENCY STOP]**. Clear alarms. Check the alignment and adjust it as needed.