



## DUAL ARM TOOL CHANGER

### **Error Messages**

ATC AMBIGUOUS TURRET POSITION, VERIFY POCKET # WITH SETTO,#

or, TURRET LOCATION LOST, RESET TURRET LOCATIONS WITH SETTO,#

The Tool Count sensor indicates the Turret is located between Buckets, or has been interrupted. Move Turret to next Bucket position, and apply SETTO,# where # is the Bucket number in the Bucket Ready position.

1. Another system may have faulted while Turret was moving or the ATC was communicating. Correct the fault, and reset Turret locations with SETTO,#.
2. Check the Door Interlock system.
3. Check for power interruption to the Turret Motor, fuses, and circuit breakers.
4. Check the Turret Motor for liquid contamination, or inoperative brake.
5. Check the Tool Count Sensor.

ATC AMBIGUOUS BUCKET POSITION, VERIFY POCKET # WITH SETTO,#

or, BUCKET NOT UP/DOWN, RESET TURRET LOCATIONS WITH SETTO,#

The Tool Up or Tool Down sensor indicates that Bucket is out of position, and the Turret Locations may be lost. Correct Bucket Up/Down problem, and apply SETTO,# where # is the Bucket number in the Bucket Ready position.

1. Check Tool Up/Tool Down reed switches on Bucket Cylinder.
2. Check for both air valves on at the same time.
3. Check for inadequate air supply.

### ATC ARM IS NOT IN HOME POSITION

The Stopping Sensor or the Arm at Home Sensor indicates that the Arm is not in its Home Position, and must be before the machine can continue.

1. Check Door Interlock system.
2. Check Head Position Sensor and Head position.
3. Check for power interruption to Arm Motor, fuses, and circuit breakers.
4. Arm Motor may need to be moved manually.

### ATC ARM SOLENOID SENSOR/HOME SENSOR FAILURE

or, ARM DID NOT MOVE FROM HOME

The Arm at Home Sensor indicates that the Arm has not moved away from ATC home position.

1. Check Door Interlock system.
2. Check Head Position Sensor and Head position.
3. Check for power interruption to Arm Motor, fuses, and circuit breakers.

### ATC BUCKET UP SOLENOID/SENSOR FAILURE

or, BUCKET DID NOT MOVE UP

The Tool Up Sensor has not reported a successful move up of the Bucket in preparation for rotating the Turret.

1. Check the lower reed switch on the Bucket Cylinder.
2. Check for inadequate air supply.
3. Check air valve.

#### ATC BUCKET DOWN SOLENOID/SENSOR FAILURE

or, BUCKET DID NOT MOVE DOWN

The Tool Down Sensor has not reported a successful move down of the Bucket in preparation for exchanging the tools.

1. Check the upper reed switch on the Bucket Cylinder.
2. Check for inadequate air supply.
3. Check air valve.

#### ATC COMMUNICATION ERROR WITH 1330 CARD

A communication timeout has occurred between the CNC CPU and the DATC Controller (1330).

1. Route ribbon cable connecting 1470 to 1330 away from fans.
2. If error occurs on power-up, there may not be an actual problem.

#### ATC INTERLOCK IS ON

An inhibited ATC function has been attempted while interlocked.

#### ATC TOOL CLAMPING FAILURE

or, ARM DID NOT ARRIVE AT SPINDLE

The Arm at Spindle Sensor or the Stopping Sensor has indicated that the Arm has not arrived at the Spindle.

1. Check for Arm Plunger latching problem.
2. Check Door Interlock system.
3. Check Head Position Sensor and Head position.
4. Check for power interruption to Arm Motor, fuses, and circuit breakers.

#### ATC TOOL UNCLAMPING FAILURE

or, ARM DID NOT LEAVE SPINDLE

The Arm at Spindle Sensor or the Stopping Sensor has indicated that the Arm did not leave the Spindle.

1. Check Door Interlock system.
2. Check Head Position Sensor and Head position.
3. Check for power interruption to Arm Motor, fuses, and circuit breakers.
4. Check for tool release failure.

#### ATC TOOL ARM OBSTRUCTED

or, ARM DID NOT ARRIVE AT SPINDLE

The Arm travel was interrupted before arriving at the spindle.

1. Check Door Interlock system.
2. Check Head Position Sensor and Head position.
3. Check for power interruption to Arm Motor, fuses, and circuit breakers.

#### ATC TOOL SENSOR FAILURE

or, ARM NOT AT SPINDLE

The Stopping Sensor and the Arm at Spindle Sensor both indicate that the Arm has not fully positioned at the Spindle.

1. Check Door Interlock system.

2. Check Head Position Sensor and Head position.
3. Check for power interruption to Arm Motor, fuses, and circuit breakers.
4. Check for proper Spindle orientation.
5. Check for Tool alignment in ATC Grippers.

#### CAROUSEL SOLENOID FAILURE (OR SENSOR)

or, TURRET HAS NOT ROTATED

The Tool Count Sensor indicates that the Turret Motor has not rotated the Turret as expected within the allotted time.

1. Check Door Interlock system.
2. Check for power interruption to Turret Motor, fuses, and circuit breakers.
3. Check Tool Count Sensor and alignment.

#### DRAWBAR SENSOR FAILURE

or, DRAWBAR NOT CLAMPING TOOL

The Drawbar Cylinder Sensor indicates that the Drawbar is still in release position, and has not retracted from the Spindle.

1. Check Drawbar mechanism for binding or no lubrication.
2. Check Drawbar Cylinder Sensor alignment.

#### DRAWBAR SOLENOID FAILURE (OR NO AIR)

or, DRAWBAR NOT RELEASING TOOL

The Drawbar Cylinder Sensor indicates that the Drawbar could not fully release the tool from the Spindle and the Drawbar Cylinder Piston has not moved down full stroke.

1. Check for inadequate air supply or inoperative air valve.
2. Check Drawbar Cylinder Sensor alignment.
3. Check for broken Drawbar Cylinder Piston.

### Commands

At the <ENTER NEXT COMMAND> line...

#### DD

Displays the Bucket number and Tool number table, and identifies the Bucket number located at the Bucket Ready position with an asterisk.

#### **1) SWAP TOOLS**

Option 1 within DD is SWAP TOOLS, which will exchange the Tool in the Spindle for the Tool in the Bucket Ready position. The Table will be updated.

#### **2) SORT TOOLS**

Option 2 within DD will sort the tools automatically until each Tool number is located in the same Bucket number. Upon completion, Tool number 1 will be in the Spindle.

#### SETTO

SETTO without a number parameter following resets all of the Tool numbers to that of the Bucket numbers, regardless of where the tools are located, and sets Bucket 1 at the Bucket Ready position, and Tool 1 in the Spindle.

1. Using Turret CW or Turret CCW, rotate Bucket 1 to the Bucket Ready position.

2. From the <Enter Next Command> line, type SETTO.
3. All of the Tool numbers will be reset to that of the Bucket numbers. Tool number 1 is in the Spindle.
4. Check the table in DD.
5. If Turret rotates in the incorrect direction, the Turret Motor may need to be re-phased.

### ***SETTO,#***

SETTO,# is used to reset the Turret locations by specifying that “#” is the number of the Bucket (not the Tool number) located at the Bucket Ready position and ready to be exchanged. The remaining Bucket and Tool numbers are recovered as the sequence is retained.

1. Rotate the Turret using Turret CW or Turret CCW at least one position until the desired Bucket number (not Tool number) is at the Bucket Ready position.
2. If Turret rotates in the incorrect direction, the Turret Motor may need to be re-phased.
3. From the <Enter Next Command> line, type SETTO,#, where # is the Bucket number of the Bucket now at the Bucket Ready position, and ready to exchange tools.
4. The sequence of the remaining tools in the Turret is not changed, and the new Bucket numbers are updated in the DD table. The asterisk identifies the Bucket in the Bucket Ready position.
5. The SETTO,# procedure may be repeated as many times as needed.

### **Tool Loading Procedure**

1. From MDI mode, (MANUAL DATA INPUT), type M19, press ENTER and START to orient Spindle.
2. Press MANUAL to switch to the <ENTER NEXT COMMAND> mode.
3. Rotate the Turret using Turret CW or Turret CCW keys until Bucket 1 is in the Bucket Ready position.
4. Type SETTO to reset the Bucket numbers with Bucket 1 at Bucket Ready position.
5. Return to MDI by pressing MANUAL.
6. Load the first tool into the Spindle by pressing TOOL IN/OUT and insert into the Spindle. Notice which of the two keyslots in the Tool Holder is deeper, or has a protruding setscrew. Align the Tool so that the deeper keyslot faces forward and does not have any protruding setscrew to interfere with the alignment key on the Arm of the ATC.
7. Type M6T2, and the DATC will place the first tool in Bucket 2, and wait for the second tool.
8. Similarly, load the second tool into the Spindle.
9. Type M6T3, and the second tool will move to Bucket 3.
10. Similarly, load the third tool into the Spindle.
11. Repeat as necessary until all of the tools have been loaded.

### Operating the DATC from a Program

The commands used within a program to operate the Dual Arm Tool Changer are the same codes as the Geneva and Servo-Turret toolchangers. The call for a toolchange can take advantage of the ability of the DATC to pre-stage the next tool into the Bucket Ready position. This is accomplished by commanding Txx and M6 independently. (Do not use T-xx as in previous versions).

The following sample programs show recommended and not recommended styles.

#### RECOMMENDED

```
...
N33      M6
N34      G1 G90 Z-4.557 S3000 M3
N35      T13
...
N47      M6
N48      G1 G90 Z-3.50 S10000 M3
N49      T14
...
N72      M6
```

#### NOT RECOMMENDED

```
...
N33      M6
N34      T13      (Pre-Stage ahead of Z move line)
N35      G1 G90 Z-4.557 S3000 M3
...
N47      M6 T13  (Tool number call repeated)
N48      T-14    (Pre-Stage with minus sign)
N49      G1 G90 Z-3.50 S10000 M3
...
N72      M6 T14  (Tool number call repeated)
```