

C-03

MAINTENANCE MECHANIC TRAINING

SKILL CHECK GUIDE

Duty C: Fixturing

C-03: Rebuild Fixture (BMD Manipulator)

Issued 01/01/99

Rationale

This Skill Development Guide provides the knowledge a Learner needs to rebuild a BMD Manipulator. The Learner must be able to disassemble, clean and inspect the manipulator components, and reassemble the manipulator.

Skill Check Set-Up

Designate a BMD Manipulator that needs to be rebuilt. Check to ensure that the parts required for the rebuilding the manipulator are in stock. Arrange the availability of a cleaning area for use when manipulator parts need to be cleaned.

Observe as the Learner reassembles the manipulator. Check to ensure that all defective parts are replaced. Loctite 242 is applied to all fasteners threads and all screws are torqued. The pusher rod must have Cop-Graft applied to the threads and the polished surface. When replacing the pusher rod, the rod and nut must be a matching set. Flange sealant must be applied to the cover and flange bearing gaskets. The gear and bearing assembly must be lubricated before the hub and shaft protection is installed.

Provide the tools, materials, and resources needed to demonstrate the task.

What The Learner Will Need

This section contains the safety information, tools, and resources you will need before rebuilding a manipulator.



- Follow all Caterpillar facility safety standards when performing this task.
- When cleaning parts, wear heavy industrial gloves and a respirator fitted with a charcoal filter for protection against the hazards associated with the cleaning solvents.
- An explosion hazard exists with cleaning solvents. Smoking is not permitted in the paint or cleaning areas.
- Know the location of the MSDS for the cleaning solutions.
- Solvents must be disposed of according to the HAZMAT regulations.



- hammer and brass punch
- external snap ring pliers
- screw driver (flat blade)
- torque wrench (metric and standard)
- Allen wrenches
- air impact wrench with Allen insert for button allen head screw
- air hose and fitting
- wiping rags and/or paper towels
- Loctite 242
- Maintenance Mechanics hand tools
- electric nut driver

- pry bar
- die grinder with rotary wheel
- Cop-Graft anti-seize compound
- Wil-Bond or other cleaning agent



- Manufacturer's parts list and drawings



Skill Check

Given a request to rebuild a BMD Manipulator, rebuild the manipulator.

Needs
Mastered Practice

Safe Work Practices

- _____ Needs
_____ Practice 1. Follow all Caterpillar facility safety standards when performing this task.
- _____ Needs
_____ Practice 2. When cleaning parts, wear heavy industrial gloves and a respirator fitted with a charcoal filter for protection against the hazards associated with the cleaning solvents.
- _____ Needs
_____ Practice 3. An explosion hazard exists with cleaning solvents. Smoking is not permitted in the paint or cleaning areas.
- _____ Needs
_____ Practice 4. Know the location of the MSDS for the cleaning solutions.
- _____ Needs
_____ Practice 5. Solvents must be disposed of according to the HAZMAT regulations.

Task Standards

- _____ Needs
_____ Practice 1. All 16mmX45, 28 new screws must have Loctite 242 applied to the threads.
- _____ Needs
_____ Practice 2. All 16mmX45 screws must be torqued to 205 Newton Meters (150 ft-lbs).
- _____ Needs
_____ Practice 3. All 12mmX40, 28 new screws must have Loctite 242 applied to the threads.
- _____ Needs
_____ Practice 4. All 12mmX40 screws must be torqued to 100 Newton Meters (74 ft-lbs).
- _____ Needs
_____ Practice 5. The pusher rod must have Cop-Graft applied to the threads and the polished surface.
- _____ Needs
_____ Practice 6. The pusher rod and nut must be a matching set when replacing the pusher rod.

- _____ 7. Flange sealant must be applied to the cover and flange bearing gaskets.
- _____ 8. The gear and bearing assembly must be lubricated before the hub and shaft protector assembly is installed.
- _____ 9. All safe practices must be demonstrated.



Evaluator's Sign-Off

The Learner has demonstrated safe work practices and competent performance of the task.

Evaluator: _____ Date: _____

Learner: _____ Clock No: _____

