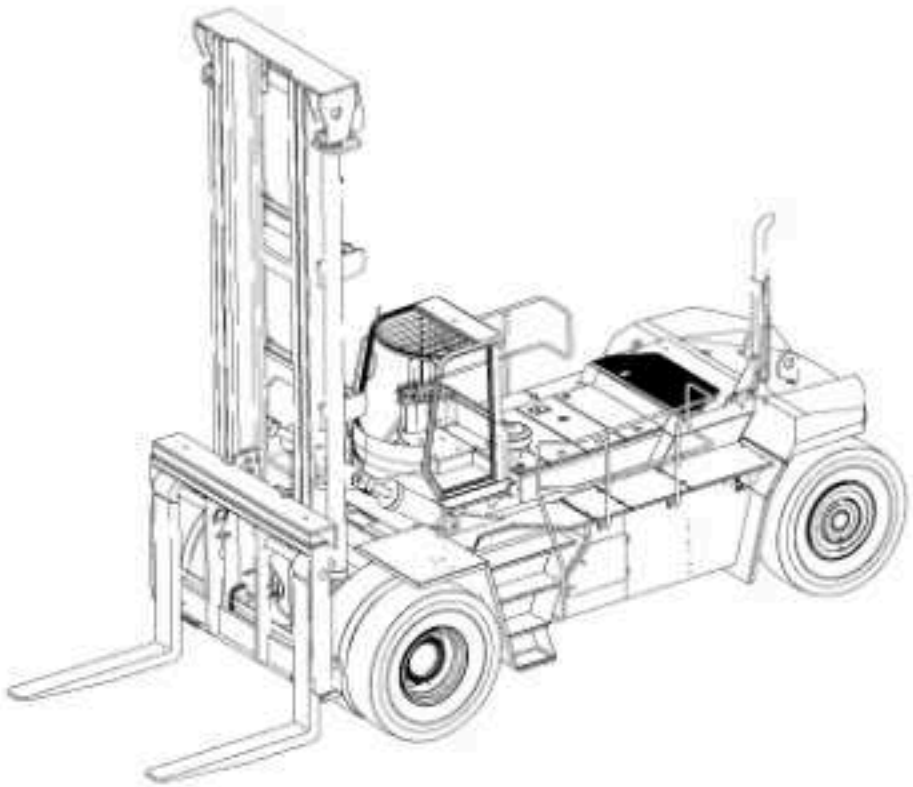
# SERVICE MANUAL

## H177 (H45-65XM)



FORM 1456964-H177 Rev. 08/14

MidWestTech | Hyster H177 (H45-65XM) Forklift Service Manual | Publication 1456964-H177 Order the manual at mid-west-tech.com >

# TABLE OF CONTENTS


General ..... 1
Description ..... 1
Differential Repair ..... 1
  Remove ..... 1
    Differential Carrier From Axle Housing, Remove ..... 1
    Differential and Ring Gear From Differential Carrier, Remove ..... 5
    Drive Pinion and Pinion Carrier From Differential Carrier, Remove ..... 7
  Disassemble ..... 8
    Differential and Ring Gear Assembly, Disassemble ..... 8
    Drive Pinion and Pinion Carrier, Disassemble ..... 9
  Clean and Inspect ..... 12
  Assemble ..... 13
    Pinion, Bearings, and Pinion Carrier, Assemble ..... 13
    Pinion Bearings, Adjust Preload ..... 13
      Press Method ..... 13
      Yoke or Flange Method ..... 14
    Triple-Lip Seal, Install ..... 15
    Pinion Carrier Shim Set, Adjust Thickness (Depth of Pinion) ..... 16
    Differential and Ring Gear, Assemble ..... 18
    Differential Gears Rotating Torque, Check ..... 21
    Differential and Ring Gear Assembly, Install ..... 21
    Differential Bearings, Preload Adjust ..... 23
    Ring Gear, Runout Check ..... 24
    Ring Gear Backlash, Adjust ..... 24
    Gear Set, Tooth Contact Pattern Check ..... 27
    Thrust Screw, Install and Adjust ..... 30
  Install ..... 30
    Differential Assembly Into Axle Housing, Install ..... 30
Specifications ..... 32
Troubleshooting ..... 36


©2012 HYSTER COMPANY



MidWestTech | Hyster H177 (H45-65XM) Forklift Service Manual | Publication 1456964-H177 Order the manual at mid-west-tech.com >

## FAULT CODES DURING CLUTCH CALIBRATION

*Table 5. Fault Codes During Clutch Calibration*

| Fault Code | Explanation |
|---|---|
| E.1.XX | 1' relates to faults during clutch filling time. |
| E.2.XX | 2' relates to faults during clutch engagement. |
| E1.XX | XX' relates to the fault codes listed in Table 6. |

*Table 6. Fault Codes During Clutch Calibration*

| Fault Code | Explanation | Controller's Action | Comments | Troubleshooting |
|---|---|---|---|---|
| 1-5, 7-9, 11-13, 15, 17-24 | Unexpected Algorithm response during calibration. | Stop calibration of clutch xx. Wait for continue request. | • Engine does not respond to target engine speed.<br>• Vehicle started moving.<br>• Bad parameter configuration. | Continue calibration to identify if all clutches experience same problem. Download correct parameter file and restart calibration. Check if vehicle starts moving during calibration. Check engine speed response. |
| 06 | During calibration the turbine speed signal does not reach a minimum value. | Controller will flag the fault and will abort calibration of clutch with error code. | • Turbine speed does not reach minimum value during shifting iteration process caused by slipping clutch or bad turbine speed signal. | Measure clutch pressure to detect clutch leakage check speed sensor signal (can be in relation with 42.04 and/or 42.05 during normal operation and with E1.26 during touch pressure calibration) Check stall speed to detect slipping clutch |
| 10 | Transmission failure during calibration. | calibration is stopped. | • Caused by shutdown error code during calibration. Example: 20.60 error code during calibration. | Resolve cause of shutdown error code during calibration. |
| 14 | During calibration, the turbine speed signal does not decrease. | Controller will flag the fault and will abort calibration of clutch with error code. | • Turbine speed does not decrease caused by excessive internal leakage and/or slipping clutch or bad turbine speed signal. | Measure clutch pressure to detect clutch leakage Check speed sensor signal (must be in relation with 42.04 and/or 42.05 during normal operation and with E1.26 during touch pressure calibration). |



MidWestTech | Hyster H177 (H45-65XM) Forklift Service Manual | Publication 1456964-H177 Order the manual at mid-west-tech.com >

# Technical Data

## PUMP UNIT

| | |
|---|---|
| Maximum operating pressure | 250 bar (3626 psi) |
| Operating temperature | -20 + 70°C (-4 + 158°F) |
| Supply voltage | 24 Vdc |
| Rating pump motor with valve (nominal at 20°C (68°F)) | 72W |
| Control unit absorption | 40mA (24 Vdc) |
| Advised fusing | 10A (24 Vdc) |
| Capacity grease reservoir | 4 liter (1.05 gal) |
| Nominal grease output pump | 12 $cm^3$ / min |
| Pump material | Hard anodised aluminium - nylon reinforced |
| Protection class | IP67 |



MidWestTech | Hyster H177 (H45-65XM) Forklift Service Manual | Publication 1456964-H177 Order the manual at mid-west-tech.com >

| | | |
|---|---|---|
| | No power at the solenoid on the auxiliary block. | Check for proper voltage at the solenoid, if voltage is present, replace the solenoid. If voltage is not present check the appropriate switch. |
| One or all indicator lights do not function. | Blown fuse or bulb. | Replace blown fuse or bulb. |
| | The proximity sensor switch is not functioning. | No input signal to the sensor switch. When the sensor switch is activated an LED in the sensor is **ON**. Replace faulty sensor switch. Adjust the distance between the sensor switch and the sensor bracket to 2 to 5 mm (0.079 to 0.197 in.) |
| | The electric circuit of a particular function is open. | Check for blown fuses or loose connectors. Check the proper functioning of the Printed Circuit Board. |
| Hydraulic functions other than the function selected are operating at the same time. | Electric solenoid or relief solenoid of a function other than the selected function is stuck in an open position. | Clean or replace the solenoid. |
| Precise positioning of the attachment is difficult. | Air has entered one or more attachment cylinders. | Cycle the affected cylinders a few times to clear the air from the system. |

## Schematics

**NOTE:** For the correct schematics and wiring diagram for the ELME spreaders, see Table 5

***Table 5. ELME Schematic Overview***

| ELME Model | Hydraulic Schematic | Electrical Schematic | Wiring Diagram |
|---|---|---|---|
| 812-8283 | 757077 | 757009 | 757010 |
| 812-8412 | 757077 | 772000 | 772001 |
| 812-8436 | 757077 | 775187 | 775188 |
| 812-8509 | 757077 | 775187 | 775188 |
| 812-8626 | 757077 | 781632 | 781633 |
| 812-8627 | 757077 | 781632 | 781633 |
| 812-8630 | 757077 | 778941 | 778942 |
| 813-8231 | 757077 | 757009 | 757010 |
| 813-8286 | 757077 | 757009 | 757010 |
| 813-8347 | 757077 | 757009 | 757010 |
| | | | |



MidWestTech | Hyster H177 (H45-65XM) Forklift Service Manual | Publication 1456964-H177 Order the manual at mid-west-tech.com >