# NEW HOLLAND
# TZ21D
# TZ24D
# Compact Tractor

# SERVICE MANUAL




87541685

MidWestTech | New Holland TZ21D, TZ24D Compact Tractor Service Manual | Publication 87541685
Order the manual at mid-west-tech.com >

# CONTENTS

## SECTION 00 - GENERAL INFORMATION

## Chapter 1 - General Information

### CONTENTS


| Section | Description | Page |
|---|---|---|
| | Precautionary Statements | 3 |
| | Personal Safety | 3 |
| | Machine Safety | 3 |
| | Information | 3 |
| | Safety | 4 |
| | Precautionary Statements | 4 |
| | The Tractor | 4 |
| | Servicing the Tractor | 4 |
| | Precautions Before Servicing | 5 |
| | Basic Understanding Servicing | 5 |
| | Operating the Tractor | 6 |
| | Driving the Tractor | 6 |
| | Operating the PTO | 7 |
| | Diesel Fuel | 7 |
| | Safety Frame (ROPS) | 7 |
| | Safety Decals | 8 |
| | Instruction Decals | 11 |
| | Ecology and the Environment | 17 |
| | Helpful Hints | 17 |
| | Universal Symbols | 18 |
| | General Information | 19 |
| | Please Read Carefully | 19 |
| | Minimum Hardware Tightening Torques | 20 |
| | Metric Bolt Torque Specifications | 21 |
| | Lubrication and Maintenance | 22 |
| | General Information | 23 |
| | Grease Fittings | 24 |
| | Chains | 25 |
| | Lubrication and Maintenance Chart | 26 |
| | Lubrication Fittings | 27 |
| | Diesel Fuel | 27 |
| | Fuel Usage Safety | 27 |
| | Specifications | 28 |
| | Engine | 28 |




MidWestTech | New Holland TZ21D, TZ24D Compact Tractor Service Manual | Public... Order the manual at mid-west-tech.com >

Capacities ..... 28
Cooling System ..... 29
Electrical System ..... 29
Fuel System ..... 29
Brakes ..... 30
Steering ..... 30
Power Take-Off (PTO) ..... 30
Hydraulic Lift Section ..... 30
Transmission Speeds ..... 31
Cast Iron Weights ..... 32
Drawbars ..... 32
3-Point Hitch ..... 32
Tires ..... 32
Wheel Bolt Torques ..... 32
ROPS Attaching Bolt Torques ..... 32
General Dimensions ..... 33
Wheel Tread Settings ..... 33
Liquid Ballast (optional) ..... 35
Tire Pressure ..... 35

## SECTION 03 - SPECIFICATION & STRUCTURE

### CONTENTS

| Section | Description | Page |
|---|---|---|
| | Specification | 2 |
| | External Views | 4 |
| | Engine Sectional Views | 5 |
| | Power Flow | 6 |
| | Four Wheel Drive Power Flow | 6 |
| | PTO Power Flow | 7 |
| | Oil Flow | 9 |
| | Oil Flow Schematic | 9 |
| | Power Steering | 10 |
| | Hydraulic Power Lift System | 14 |
| | Mower Lift Linkage | 17 |
| | Operation | 17 |
| | HST | 20 |
| | Wiring | 21 |



MidWestTech | New Holland TZ21D, TZ24D Compact Tractor Service Manual | Public... Order the manual at mid-west-tech.com >

## SECTION 05- SEPARATING THE TRACTOR

### CONTENTS


| Section | Description | Page |
|---|---|---|
| | Engine Removal | 2 |
| | Transmission Removal | 5 |
| | Front Axle & the other removal | 9 |


## SECTION 07- INSTALLATION AND TRIAL RUN

### CONTENTS


| Section | Description | Page |
|---|---|---|
| | Installation | 2 |
| | High pressure oil pipe | 2 |
| | O-ring for HST | 3 |
| | Front axle assembly | 3 |
| | Coupling and joint assembly | 3 |
| | Front wheel drive shaft and joint assembly | 4 |
| | ROPS frame | 4 |
| | Foot brake and hand brake adjustment | 4 |
| | Brake switch | 5 |
| | HST neutral position adjustment | 6 |
| | Mower linkage | 7 |
| | PTO clutch safety switch | 8 |
| | Trial Running | 8 |


## SECTION 10 - ENGINE SYSTEMS

## Chapter 1 - Engine Systems

### CONTENTS


| Section | Description | Page |
|---|---|---|
| 10 000 | Specifications | 6 |
| | Torque Specifications | 15 |
| | Metric Bolt Torque Specifications | 15 |
| | Special Tools | 16 |
| | General Information - Description of Operation | 17 |
| | Identification Chart | 17 |
| | Cylinder Head and Valve Train Components | 17 |
| | Cylinder Block Assembly | 19 |
| | Troubleshooting | 20 |
| | Overhaul | 26 |




MidWestTech | New Holland TZ21D, TZ24D Compact Tractor Service Manual | Public... Order the manual at mid-west-tech.com >

| | Model TZ21D Hydrostatic | Model TZ24D Hydrostatic |
|---|---|---|
| **CAST IRON WEIGHTS** | | |
| Front End: | | |
| AG & Turf Tires- With FWD | (3) weights @ 27 kg (60 lbs.) each | (3) weights @ 27 kg (60 lbs.) each |
| Rear Wheel (per wheel) | | |
| AG Tires | (1) weight @ 34 kg (75 lbs.) | (1) weight @ 34 kg (75 lbs.) |
| Turf Tires | N/A | N/A |
| **DRAWBARS** | | |
| Fixed/Clevis | Standard | Standard |
| **3-POINT HITCH** | | |
| Category Type | 1 | 1 |
| Position Control Type | Mechanical | Mechanical |
| Draft Control Type | N/A | N/A |
| Drop Rate Control | Standard | Standard |
| Lift Capacity @ 24" | | |
| Behind kg (lbs.) | 318 kg (700 lbs.) | 318 kg (700 lbs.) |
| **TIRES** | | |
| FRONT: | | |
| Agricultural: | | |
| FWD | 18 x 8.50-8 | 18 x 8.50-8 |
| Turf: | | |
| FWD | 18 x 8.50-8 | 18 x 8.50-8 |
| Industrial: | | |
| FWD | N/A | N/A |
| REAR: | | |
| Agricultural: | 26 x 12.00-12 | 26 x 12.00-12 |
| Turf: | 26 x 12.00-12 | 26 x 12.00-12 |
| Industrial: | N/A | N/A |
| **WHEEL BOLT TORQUES** | | |
| Front Wheel- Disc-to-Hub: | | |
| FWD | 88 N·m (65 ft. lbs.) | 88 N·m (65 ft. lbs.) |
| Rear Wheel- Disc-to-Axle | 122 N·m (90 ft. lbs.) | 122 N·m (90 ft. lbs.) |
| Disc-to-Rim | N/A | N/A |
| **ROPS ATTACHING BOLT TORQUES** | | |
| ROPS to Rear Axle | 50 N·m (37 ft. lbs.) | 50 N·m (37 ft. lbs.) |
| Seat Belt | 50 N·m (37 ft. lbs.) | 50 N·m (37 ft. lbs.) |



MidWestTech | New Holland TZ21D, TZ24D Compact Tractor Service Manual | Public... Order the manual at mid-west-tech.com >

## TROUBLESHOOTING

| CONDITION | POSSIBLE CAUSE | REMEDY |
|---|---|---|
| Hard Steering | 1. ORBITROL (Control Valve Unit) | |
| | (1) ORBITROL not aligned to steering column | Reposition ORBITROL (If loosening its mounting bolts lightens the steering wheel load, it means that the control valve unit was in misalignment) |
| | (2) Spool and sleeve combination is seized because of foreign matter | Replace |
| | (3) Over-tightening of the end cap bolts | Retighten to the specified torque limit |
| | 2. Hydraulic Pump | Replace pump |
| | (1) The pump is stuck and will not work | Replace pump |
| | (2) The pump is worn | Test pump performance. If necessary, remove the pump; disassemble the pump and replace all internal seals |
| | (3) Pumping performance is inadequate | Disassemble flow priority valve. Check for contamination or damage |
| | (4) Flow priority valve not shifting full travel | Replace the control valve assembly |
| | 3. Relief Valve | Adjust the relief valve pressure |
| | (1) The valve is damaged because of internal deterioration | |
| | (2) Pressure setting is too low | |
| Steering wheel will not return to neutral position or will turn by itself | 1. ORBITROL (Control Valve Unit) | |
| | (1) Spool and sleeve combination is stuck and will not rotate | Replace control valve assembly |
| | (2) ORBITROL not aligned to the steering column | Realign |
| Cylinder will not follow steering wheel rotation or will respond sluggishly | 1. ORBITROL (Control Valve Unit) | |
| | (1) Air is trapped in the cylinder | Bleed air out of the cylinder |
| | (2) Internal oil leakage because of damaged piston seal | Replace the seal |
| Steering wheel will "kick back" | 1. ORBITROL (Control Valve Unit) | |
| | (1) ORBITROL has been improperly rebuilt, resulting in valve mistiming | Repair the control valve assembly |
| | 2. Piping | |
| | (1) Pipes are improperly connected to the four ports of ORBITROL | Correct the pipe connections |
| Oil leakage | | |
| 1. From the splined connection of column to spool | 1. Leaky oil seal | Replace the seal |
| | (1) Dirty hydraulic oil | Change the hydraulic oil |
| From mated face joints (valve body, spacer plate, ORBITROL, end cap) | 2. Damaged O ring | Replace the damaged O ring |



MidWestTech | New Holland TZ21D, TZ24D Compact Tractor Service Manual | Public... Order the manual at mid-west-tech.com >

## ENGINE OIL PRESSURE CIRCUIT

1. Current flow starts at the battery positive (+) terminal and is transferred to the starter battery terminal by the positive (+) battery cable.
2. From the starter, current flows to the 40-amp main slow blow fuse. The slow blow fuse supplies current to terminal 30 on the engine start switch.
3. When the engine start switch is in the ON position, current is transferred from terminal 30 to the AC terminal of the engine start switch.
4. From the AC terminal of the engine start switch, current flows to the.15-amp fuse.
5. The 15-amp fuse provides current to terminal 3 of the instrument panel connector. The current illuminates the oil pressure indicator light on the instrument panel.
6. The ground circuit is completed from terminal 2 of the instrument panel connector, through the oil pressure sender switch when closed, then to the ground at the engine block. The oil pressure sender switch closes when oil presser fall below 4.2 PSI (0.3 Bar).

| TROUBLESHOOTING ENGINE OIL PRESSURE CIRCUIT | | |
|---|---|---|
| **CONDITION** | **POSSIBLE CAUSE** | **REMEDY** |
| Engine oil pressure indicator light will not illuminate | Faulty bulb | Check and replace bulb |
| | Blown 15-amp fuse | Replace 15-amp fuse |
| | Loose Connections | Check connectors |
| | Faulty engine oil pressure switch | Check and replace switch if necessary |
| Engine oil pressure indicator light stays illuminate constantly | Faulty engine oil pressure switch | Check and replace switch if necessary |
| | Wire harness from switch to bulb shorted to ground | Check wire harness for damage repair as necessary |
| | Lack of engine oil | Fill engine oil |
| | Low engine oil pressure | Check engine oil pressure |

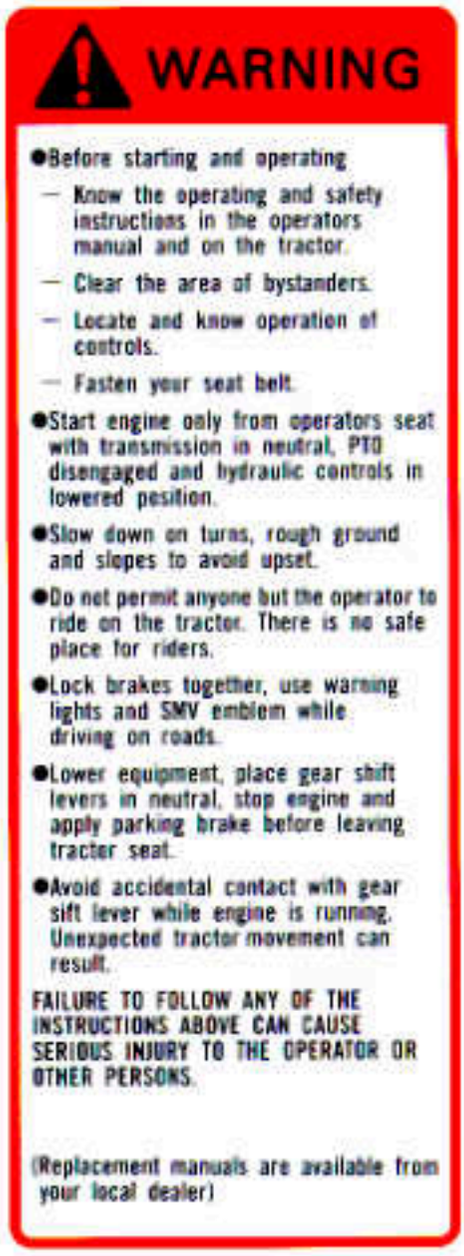


MidWestTech | New Holland TZ21D, TZ24D Compact Tractor Service Manual | Public... Order the manual at mid-west-tech.com >

# SAFETY DECALS

The following safety decals have been placed on your machine in the areas indicated. They are intended for your personal safety and for those working with you. Please take this manual and walk around your machine to note the content and location of these warning signs. Review these warning signs and the operating instructions detailed in this manual with your machine operators.

Keep the decals legible. If they are not, obtain replacements from your authorized dealer. The decal replacement part numbers are listed with each decal.



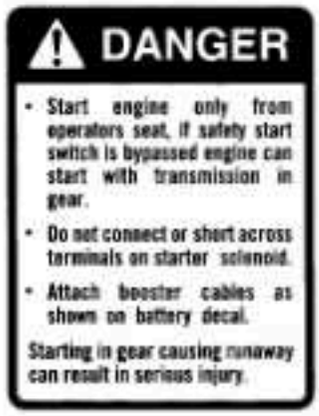

**WARNING:** Before Starting and Operating
PART NO: SBA390198380
LOCATION: In Front of Operator's Seat Left Side of Platform




**WARNING:** Pull Only From Drawbar
PART NO: SBA390198910
LOCATION: Top of PTO Shield




**WARNING:** Do Not Operate With Shield Removed
PART NO: SBA390198480
LOCATION: Inside of Engine Side Shields




**DANGER:** Start Engine Only from Operator's Seat
PART NO: SBA190196683
LOCATION: On the Starting Motor



MidWestTech | New Holland TZ21D, TZ24D Compact Tractor Service Manual | Public... Order the manual at mid-west-tech.com >