

MASSEY FERGUSON

MF 5400

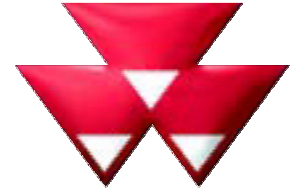
Draper Header



SERVICE MANUAL

FROM MASSEY FERGUSON

Workshop Service Manual



MASSEY FERGUSON

Draper Header

5400



CALIFORNIA
Proposition 65 Warning

WARNING: Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, or other reproductive harm.

WARNING: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm. Wash hands after handling.

Draper Header

1 General	1-1
1.1 General information	1-3
1.1.1 Introduction to this service manual	1-3
1.1.2 Units of measurement	1-3
1.1.3 Table of contents	1-3
1.1.4 Page numbers	1-3
1.1.5 Intended use	1-3
1.1.6 Proper disposal of waste	1-3
1.2 Safety	1-5
1.2.1 Safety symbol	1-5
1.2.2 Safety messages	1-5
1.2.3 Information messages	1-5
1.2.4 Safety signs	1-5
1.2.5 A word to the technician	1-6
1.2.6 The service manual	1-7
1.2.7 Operation	1-7
1.2.7.1 Prepare for operation	1-7
1.2.7.2 General information	1-8
1.2.7.3 Personal protective equipment	1-9
1.2.7.4 Seat instructions	1-9
1.2.7.5 Shield and guards	1-9
1.2.7.6 Exhaust warning	1-10
1.2.7.7 Flying debris	1-10
1.2.7.8 Handrails	1-11
1.2.7.9 Agricultural chemicals	1-11
1.2.8 Travel on public roads	1-11
1.2.9 Maintenance	1-12
1.2.9.1 General maintenance information	1-12
1.2.9.2 Fire prevention and first aid	1-14
1.2.9.3 High pressure leaks	1-15
1.2.9.4 Tire safety	1-15
1.2.9.5 Replacement parts	1-16
1.3 Cylinder stops	1-17
1.3.1 Engage the stop for the reel lift cylinder	1-17
1.3.2 Disengage the stop for the reel lift cylinder	1-17
1.4 Specifications	1-18
1.4.1 Dimensions and weights	1-18
1.4.2 Header specifications	1-18
1.4.3 Sickle specifications	1-18
1.4.4 Reel specifications	1-19
1.4.5 Draper specifications	1-19
1.4.6 Tire specifications	1-19
1.4.7 Lubrication specifications	1-19
1.5 Bolt torque values	1-20
1.6 Machine identification	1-22
1.6.1 Serial number plate	1-22
1.6.2 Serial number description	1-22
1.7 Draper header description	1-23
1.7.1 Header description	1-23
1.7.2 Draper description	1-23
1.7.3 Reel description	1-23

1.7.4	Open the end shield	1-24
1.7.5	Close the end shield	1-24
1.8	Bearing replacement	1-25
1.8.1	Remove an eccentric locking collar	1-25
1.8.2	Install an eccentric locking collar	1-25
2	Draper Assemblies	2-1
2.1	Draper troubleshooting	2-3
2.2	Introduction	2-4
2.2.1	Protect the drapers	2-4
2.3	Draper tension	2-5
2.3.1	Increase the draper tension	2-5
2.3.2	Decrease the draper tension	2-5
2.3.3	Adjust the draper tension pointer	2-6
2.4	Draper removal and installation	2-7
2.4.1	Remove a draper	2-7
2.4.2	Install a draper	2-8
2.5	Alignment and tracking	2-10
2.5.1	Align the rollers	2-10
2.5.2	Draper track	2-11
2.6	Idler roller	2-13
2.6.1	Remove the draper idler roller	2-13
2.6.2	Disassemble the draper idler roller	2-14
2.6.3	Assemble the draper idler roller	2-14
2.6.4	Install the draper idler roller	2-15
2.7	Drive roller	2-17
2.7.1	Remove the draper drive roller	2-17
2.7.2	Disassemble the draper drive roller	2-18
2.7.3	Assemble the draper drive roller	2-19
2.7.4	Install the draper drive roller	2-19
3	Cutterbar	3-1
3.1	Cutterbar troubleshooting	3-3
3.2	Sickle	3-5
3.2.1	General sickle maintenance	3-5
3.2.2	Replace the sickle	3-5
3.2.3	Standard sickle and guards	3-6
3.2.3.1	Replace sickle sections	3-6
3.2.3.2	Replace sickle guards	3-7
3.2.3.3	Adjust the sickle holddowns	3-8
3.2.4	Schumacher (SCH) sickle and guards	3-9
3.2.4.1	Replace sickle sections	3-9
3.2.4.2	Replace sickle guards	3-10
3.2.5	Examine the sickle register	3-10
3.2.6	Adjust the sickle register	3-11
3.3	Sickle drive gearbox	3-13
3.3.1	Examine the sickle vertical adjustment	3-13
3.3.2	Examine the sickle fore and aft adjustment	3-14
3.3.3	Remove the sickle drive gearbox	3-15
3.3.4	Install the sickle drive gearbox	3-15
3.3.5	Disassemble the sickle drive gearbox	3-17
3.3.6	Assemble the sickle drive gearbox	3-21
4	Hydraulic system	4-1
4.1	Change the hydraulic oil filter	4-3

4.2 Hydraulic testing	4-4
4.2.1 Test the sickle drive system pressure	4-4
4.2.2 Test the reel drive system pressure	4-6
4.2.3 Test the draper drive system pressure	4-7
4.3 Sickle drive motor	4-9
4.3.1 Sickle drive motor specifications	4-9
4.3.2 Remove the sickle drive motor	4-9
4.3.3 Install the sickle drive motor	4-11
4.4 Reel drive motor	4-14
4.4.1 Reel drive motor specifications	4-14
4.4.2 Remove the reel drive motor	4-14
4.4.3 Install the reel drive motor	4-15
4.5 Draper drive motor	4-17
4.5.1 Draper drive motor specifications	4-17
4.5.2 Remove the draper drive motor	4-17
4.5.3 Install the draper drive motor	4-18
4.5.4 Adjust the draper speed sensor	4-20
4.6 Main valve block	4-21
4.6.1 Main valve block	4-21
4.6.2 Remove the main valve block	4-21
4.6.3 Install the main valve block	4-22
4.7 Sickle drive relief valve	4-23
4.7.1 Sickle drive relief valve	4-23
4.7.2 Remove the sickle drive relief valve	4-23
4.7.3 Install the sickle drive relief valve	4-24
4.7.4 Disassemble the relief valve	4-25
4.7.5 Examine the relief valve housing	4-25
4.7.6 Assemble the relief valve	4-25
4.8 Reel drive control valve	4-26
4.8.1 Reel and draper drive control valve	4-26
4.8.2 Remove the reel and draper drive control valve	4-28
4.8.3 Install the reel and draper drive control valve	4-29
4.8.4 Examine the reel and draper drive control valve housing	4-29
4.9 Control valve cartridge	4-30
4.9.1 Remove the cartridge	4-30
4.9.2 Examine the cartridge	4-30
4.9.3 Install the cartridge	4-30
4.9.4 Test the solenoid valve coil	4-31
4.10 Reel lift master cylinder	4-33
4.10.1 Remove the reel lift master cylinder	4-33
4.10.2 Reel lift master cylinder components	4-34
4.10.3 Disassemble the reel lift master cylinder	4-35
4.10.4 Examine the cylinder assembly	4-35
4.10.5 Assemble the reel lift master cylinder	4-36
4.10.6 Install the reel lift master cylinder	4-37
4.11 Reel lift slave cylinder	4-38
4.11.1 Remove the reel lift slave cylinder	4-38
4.11.2 Install the reel lift slave cylinder	4-38
4.12 Reel lift cylinder phase	4-39
4.12.1 Put the reel lift cylinders into phase	4-39
4.12.2 Bleed the reel lift cylinders	4-39
4.13 Reel leveling	4-40
4.13.1 Level the reel	4-40
4.14 Draper shift	4-41
4.14.1 Adjust the draper opening - double swath header	4-41
4.14.2 Draper shift motor specifications	4-41

4.14.3	Remove the draper shift motor	4-41
4.14.4	Install the draper shift motor	4-42
4.15	Eaton 2000 series motor	4-45
4.15.1	Exploded view of the Eaton 2000 series motor	4-45
4.15.2	Disassemble the Eaton 2000 series motor	4-45
4.15.3	Examine the Eaton 2000 series motor	4-49
4.15.4	Assemble the Eaton 2000 series motor	4-50
4.16	Eaton H series motor	4-55
4.16.1	Exploded view of the Eaton H series motor	4-55
4.16.2	Disassemble the Eaton H series motor	4-55
4.16.3	Examine the Eaton H series motor	4-59
4.16.4	Assemble the Eaton H series motor	4-59
4.17	Accumulator	4-64
4.17.1	Remove the accumulator	4-64
4.17.2	Install the accumulator	4-64
5	Electrical system	5-1
5.1	Basic electrical troubleshooting	5-3
5.1.1	Basic troubleshooting procedures	5-3
5.1.2	Tools	5-4
5.1.3	Continuity check	5-4
5.1.4	Voltage check	5-5
5.2	Connectors	5-6
5.2.1	Examine a connector	5-6
5.2.2	Terminal numbers	5-6
5.2.3	Dielectric grease	5-7
5.2.4	Pins and sockets	5-7
5.2.5	Replace a Packard connector	5-8
5.2.6	Replace a Power Cord connector	5-8
5.2.7	Replace a Deutsch connector	5-9
5.3	Reel speed sensor	5-11
5.3.1	Adjust the reel speed sensor	5-11
5.4	Header speed sensor	5-13
5.4.1	Header speed sensor	5-13
5.5	Header speed jumper harness	5-14
6	Reels	6-1
6.1	Reel description	0
6.2	Reel troubleshooting	6-3
6.3	Reel drive gearbox	6-4
6.3.1	Examine the reel drive gearbox for lubricant	6-4
6.3.2	Remove the reel drive gearbox	6-4
6.3.3	Install the reel drive gearbox	6-5
6.3.4	Disassemble the reel drive gearbox	6-7
6.3.5	Examine the reel drive gearbox	6-9
6.3.6	Assemble the reel drive gearbox	6-9
6.4	Reel	6-12
6.4.1	Examine the machine when servicing	6-12
6.4.2	Examine the reel	6-12
6.4.3	Remove the reel	6-13
6.4.4	Install the reel	6-13
6.4.5	Tine pitch	6-14
6.4.6	Adjust the tine pitch	6-14
6.4.7	Replace a reel tine	6-15
6.4.8	Remove the tine tube	6-15
6.4.9	Install the tine tube	6-16

6.4.10 Adjust the tension rods	6-17
7 Accessories	7-1
7.1 Windrower tractor weights	7-3
8 Diagrams	8-1
8.1 How to read wiring schematics	8-3
8.1.1 Diagram numbers	8-3
8.1.2 Location grids	8-3
8.1.3 Wire breaks	8-4
8.2 Diagram symbols and abbreviations	8-6
8.2.1 Harness and connector identification	8-6
8.2.2 Splices	8-6
8.2.3 CAN signal	8-7
8.2.4 Optional components	8-7
8.2.5 Device identification numbers	8-7
8.3 Electrical diagrams	8-9
8.3.1 Harness abbreviations	8-9
8.3.2 Wire colors	8-9
8.3.3 Turn and hazard lamps with transport kit	8-11
8.3.4 Main electrical diagram	8-12
8.4 Circuit table	8-13
8.5 Connector tables	8-15
8.6 Hydraulic schematics	8-18
8.6.1 Double swath hydraulic schematic	8-19
8.6.2 Center delivery hydraulic schematic	8-21
9 Index	Index-1



1. General

1.1 General information	1-3
1.1.1 Introduction to this service manual	1-3
1.1.2 Units of measurement	1-3
1.1.3 Table of contents	1-3
1.1.4 Page numbers	1-3
1.1.5 Intended use	1-3
1.1.6 Proper disposal of waste	1-3
1.2 Safety	1-5
1.2.1 Safety symbol	1-5
1.2.2 Safety messages	1-5
1.2.3 Information messages	1-5
1.2.4 Safety signs	1-5
1.2.5 A word to the technician	1-6
1.2.6 The service manual	1-7
1.2.7 Operation	1-7
1.2.7.1 Prepare for operation	1-7
1.2.7.2 General information	1-8
1.2.7.3 Personal protective equipment	1-9
1.2.7.4 Seat instructions	1-9
1.2.7.5 Shield and guards	1-9
1.2.7.6 Exhaust warning	1-10
1.2.7.7 Flying debris	1-10
1.2.7.8 Handrails	1-11
1.2.7.9 Agricultural chemicals	1-11
1.2.8 Travel on public roads	1-11
1.2.9 Maintenance	1-12
1.2.9.1 General maintenance information	1-12
1.2.9.2 Fire prevention and first aid	1-14
1.2.9.3 High pressure leaks	1-15
1.2.9.4 Tire safety	1-15
1.2.9.5 Replacement parts	1-16
1.3 Cylinder stops	1-17
1.3.1 Engage the stop for the reel lift cylinder	1-17
1.3.2 Disengage the stop for the reel lift cylinder	1-17
1.4 Specifications	1-18
1.4.1 Dimensions and weights	1-18
1.4.2 Header specifications	1-18
1.4.3 Sickle specifications	1-18
1.4.4 Reel specifications	1-19
1.4.5 Draper specifications	1-19
1.4.6 Tire specifications	1-19
1.4.7 Lubrication specifications	1-19
1.5 Bolt torque values	1-20
1.6 Machine identification	1-22
1.6.1 Serial number plate	1-22
1.6.2 Serial number description	1-22
1.7 Draper header description	1-23
1.7.1 Header description	1-23
1.7.2 Draper description	1-23
1.7.3 Reel description	1-23

1.7.4	Open the end shield	1-24
1.7.5	Close the end shield	1-24
1.8	Bearing replacement	1-25
1.8.1	Remove an eccentric locking collar	1-25
1.8.2	Install an eccentric locking collar	1-25