General Information

Section 1-A

250/300 cc

Table of Contents

SPECIFICATIONS 250/300 CC

This manual contains service, maintenance, and troubleshooting information for the 2001 MASSEY FERGUSON AgTV models. The manual is designed to aid service personnel in service-oriented applications and may be used as a textbook for service training.

This manual is divided into sections. Each section covers a specific AgTV component or system and, in addition to the standard service procedures, includes disassembling, inspecting, and assembling instructions. When using this manual as a guide, the technician should use discretion as to how much disassembly is needed to correct any given condition. A troubleshooting section is also included in this manual.

The service technician should become familiar with the operation and construction of each component or system by carefully studying this manual. This manual will assist the service technician in becoming more aware of and efficient with servicing procedures. Such efficiency not only helps build consumer confidence but also saves time and labour.

All MASSEY FERGUSON AgTV publications and decals display the words Warning, Caution andNote, to emphasise important information. The symbol WARNING identifies personal safety-related information. Be sure to follow the directive because it deals with the possibility of severe personal injury or even death. The symbol CAUTION identifies unsafe practices which may result in AgTV-related damage. Follow the directive because it deals with the possibility of damaging part or parts of the AgTV. The symbol **NOTE** identifies supplementary information worthy of particular attention. At the time of publication, all information, photographs, and illustrations were technically correct. Some photographs used in this manual are used for clarity purposes only and are not designed to depict actual conditions. MASSEY FERGUSON constantly refines and improves its products, no retroactive obligation is incurred.

All materials and specifications are subject to change without notice.

Keep this manual accessible in the shop area for reference.

VALVES AND GUIDES

Valve Face Diameter	
(intake)	33 mm (1.3 in.)
(exhaust)	28 mm (1.1 in.)
Valve/Tappet Clearance (cold engine)	
(intake)	0.03-0.08 mm (0.001-0.003 in.)
(exhaust)	0.08-0.13 mm (0.003-0.005 in.)
Valve Guide/Stem Clearance	
(intake)	0.010-0.037 mm (0.0004-0.0015 in.)
(exhaust)	0.030-0.057 mm (0.0012-0.0024 in.)
Valve Guide/Valve Stem Deflection Wobble method (max)	0.35 mm (0.014 in.)
Valve Guide Inside Diameter	5.500-5.512 mm (0.2165-0.2170 in.)
Valve Stem Outside Diameter	
(intake)	5.475-5.490 mm (0.2156-0.2161 in.)
(exhaust)	5.455-5.470 mm (0.2148-0.2154 in.)
Valve Stem Runout (max)	0.05 mm (0.002 in.)
Valve Head Thickness (max)	0.5 mm (0.02 in.)
Valve Stem End Length (max)	2.7 mm (0.11 in.)
Valve Face/Seat Width	0.9-1.1 mm (0.035-0.043 in.)
Valve Seat Angle	
(intake)	45°
(exhaust)	45°
Valve Face Radial Runout (max)	0.03 mm (0.001 in.)
Valve Spring Free Length (max)	
(inner)	35.1 mm (1.38 in.)
(outer)	39.9 mm (1.57 in.)
Valve Spring Tension @ 32.5 mm (1.28 in.) (inner)	7.1-9.2 kg (15.7-20.3 lb.)
Valve Spring Tension @ 36.0 mm (1.42 in.) (outer)	17.3-21.3 kg (38.1-47.0 lb.)

CAMSHAFT AND CYLINDER HEAD

Cam Lobe Height (min.)	
(intake)	33.820 mm (1.331 in.)
(exhaust)	33.490 mm (1.318 in.)
Camshaft Journal Oil Clearance (max)	0.15 mm (0.0059 in.)
Camshaft Journal Holder Inside Diameter	22.012-22.025 mm (0.8666-0.8671 in.)
Camshaft Journal Outside Diameter	21.959-21.980 mm (0.8645-0.8654 in.)
Camshaft Runout (max)	0.10 mm (0.004 in.)
Rocker Arm Inside Diameter	12.000-12.018 mm (0.472-0.473 in.)
Rocker Arm Shaft Outside Diameter	11.977-11.995 mm (0.4715-0.4722 in.)
Cylinder Head Distortion (max)	0.05 mm (0.002 in.)
Cylinder Head Cover Distortion (max)	0.05 mm (0.002 in.)

CYLINDER, PISTON AND RINGS

Piston skirt/cylinder clearance (max)	0.12 mm (0.0047 in.)
Cylinder core (max)	66 mm (2.598 in.)
Piston diameter 18 mm (0.71 in.) from Skirt End	68.380 mm (2.6921 in.)
Piston ring Free end gap	
(1st Ring)	6.2-7.8 mm (0.24-0.31 in.)
(2nd Ring)	7.3-9.1 mm (0.29-0.36 in.)
Bore x stroke	66 x 72 mm (2.60 x 2.84 in.)
Cylinder trueness (max)	0.05 mm (0.002 in.)
Ring end gap	
(1st Ring)	0.70 mm (0.028 in.)
(2nd Ring)	1.0 mm (0.039 in.)
Piston ring to groove clearance (max)	
(1st)	0.180 mm (0.0071 in.)
(2nd)	0.150 mm (0.0059 in.)
Piston ring groove width	
(1st)	1.01-1.04 mm (0.040-0.041 in.)
(2nd)	1.22-1.24 mm (0.048-0.049 in.)
(oil)	2.01-2.03 mm (0.079-0.080 in.)
Piston ring thickness	
(1st)	0.97-0.99 mm (0.038-0.039 in.)
(2nd)	1.17-1.19 mm (0.046-0.047 in.)
Piston pin bore (max)	17.030 mm (0.6705 in.)
Piston pin outside diameter (min.)	16.980 mm (0.6685 in.)

CRANKSHAFT

Connecting rod (small end inside diameter) (max)	17.040 mm (0.6709 in.)
Connecting rod (big end side-to-side)	0.1-1.0 mm (0.004-0.039 in.)
Connecting rod (big end width)	17.95-18.00 mm (0.707-0.709 in.)
Connecting rod small end deflection (max)	3 mm (0.12 in.)
Crankshaft (web-to-web)	55 mm $\pm$ 0.1 mm (2.165 in.) $\pm$ 0.004 in.)
Crankshaft runout (max)	
left	0.05 mm (0.002 in.)
right	0.08 mm (0.003 in.)
Oil pump reduction ratio	1.566 (47/30)
Oil pressure at 60°C (140°F) @ 3000 RPM	
(above)	10 lbf/in^2
(below)	40 lbf/in^2

CLUTCH

Clutch release screw	1/8 turn back
Drive plate (fibre) thickness (min.)	2.42 mm (0.094 in.)
Drive plate (fibre) tab (min.)	11 mm (0.43 in.)
Driven plate (warpage) (max)	0.1 mm (0.004 in.)
Clutch spring length (min.)	27.5 mm (1.08 in.)
Clutch wheel inside diameter (max)	Scuffing of contact surface
Starter clutch shoe	No groove at any part
Clutch engagement - RPM	1900 $\pm$ 200
Clutch lock-up - RPM	3400 $\pm$ 300
Primary reduction ratio	3.150 (63/20)
Secondary reduction ratio	1.125 (18/16)
Final reduction ratio	
(front)	3.090 (34/11)
(rear)	3.647 (62/17)
Secondary transmission reduction ratio	
(super low)	3.176 (17/18 x 25/11 x 37/25)
(low)	1.480 (37/25)
(high)	1.112 (11/25 x 18/17 x 43/18)
Gear ratios	
(1st)	3.083 (37/12)
(2nd)	1.933 (29/15)
(3rd)	1.388 (25/18)
(4th)	1.095 (23/21)
(5th)	0.913 (21/23)
(reverse)	2.833 (29/12 x 34/29)
Shift fork to groove (side clearance)	0.10-0.50 mm (0.004-0.020 in.)
Secondary transmission fork to groove (side clearance)	0.05-0.50 mm (0.002-0.020 in.)
Reverse fork to groove (side clearance)	0.10-0.50 mm (0.004-0.020 in.)
Shift fork groove width	
1, 2 & 3	4.5-4.6 mm (0.177-0.181 in.)
Secondary transmission	
1 & 2	5.45-5.55 mm (0.215-0.219 in.)
(reverse)	4.0-4.1 mm (0.157-0.161 in.)
Shift fork thickness 1, 2 & 3	4.3-4.4 mm (0.169-0.173 in.)
Secondary transmission	
1 & 2	5.3-5.4 mm (0.209-0.213 in.)
(reverse)	3.8-3.9 mm (0.150-0.154 in.)

CARBURETTOR

Type	Mikuni BST31
Main jet	130
Pilot jet	45
Pilot screw setting (turns)	2 3/4
Jet needle	4D28-3
Needle jet	P-6M
Idle - RPM	1400-1600
Valve seat	2.0
Float arm height	13 mm (0.5 in.)
Throttle cable free-play (at lever)	3 - 6 mm (1/8 - 1/4 in.)

ELECTRICAL

Ignition timing	5° BTDC below 1800 RPM 35° BTDC above 3800 RPM
Spark plug type	NGK DR7EA
Spark plug gap	0.6-0.7 mm (0.024-0.028 in.)
Spark plug cap	8000-12,000 ohms
Ignition coil resistance	
(primary)	0.1-0.5 ohm (terminal to ground)
(secondary)	5200-7800 ohms (high tension -plug cap removed - to ground)
Magneto Coil Resistance	
(trigger)	90-140 ohms (Black/Yellow to Green/White)
(charging)	0.1-1.0 ohm (Yellow to Yellow)
Magneto Output (approx.)	220W @ 5000 RPM

CHASSIS

Dry weight (approx.)	248 kg (545 lb.) 263 kg (580 lb.)**
Length (overall)	202 cm (79.5 in.)
Height (overall)	114 cm (45 in.)
Width (overall)	114 cm (45 in.)
Suspension travel	16.5 cm (6.5 in.)
Ground clearance	20.3 cm (8.0 in.)
Brake type	Hydraulic w/Brake Lever Lock and Mechanical Foot Brake
Wheelbase	127 cm (50 in.)
Tracking	89 cm (35 in.)
Tyre size	
Front	AT23 x 8-12
Rear	AT24 x 9-12
Tyre inflation	0.35 kg/cm^2 (5 lb/in^2)
Turning radius	3.0 m (9.85 ft)

MISCELLANY

Petrol tank capacity (rated)	18.0 L
Reserve capacity	5.3 L
Engine oil capacity	3.9 L
Fuel (recommended)	87 Octane Regular Unleaded
Engine oil (recommended)	SAE 10W-40
Differential capacity (Front)	175 ml (5.8 fl oz)**
Differential lubricant	SAE Approved 80W-90 Hypoid**
Brake fluid	DOT 4
Taillight/Brakelight	12V/5W/27W
Headlight	12V/35W
Starting system	Electric w/Manual Recoil (Emergency)

* Specifications subject to change without notice.

** 4x4 Model

SPECIFICATIONS*(300 CC)

VALVES AND GUIDES

Valve face diameter	
(intake)	33 mm (1.3 in.)
(exhaust)	28 mm (1.1 in.)
Valve/Tappet clearance (cold engine)	
(intake)	0.03-0.08 mm (0.001-0.003 in.)
(exhaust)	0.17-0.22 mm (0.007-0.009 in.)
Valve guide/Stem clearance	
(intake)	0.010-0.037 mm (0.0004-0.0015 in.)
(exhaust)	0.030-0.057 mm (0.0012-0.0024 in.)
Valve guide/Valve stem deflection (wobble method) (max)	0.35 mm (0.014 in.)
Valve guide Inside diameter	5.500-5.512 mm (0.2165-0.2170 in.)
Valve Stem Outside diameter	
(intake)	5.475-5.490 mm (0.2156-0.2161 in.)
(exhaust)	5.455-5.470 mm (0.2148-0.2154 in.)
Valve stem runout(max)	0.05 mm (0.002 in.)
Valve head thickness (max)	0.5 mm (0.02 in.)
Valve stem end length (max)	2.7 mm (0.11 in.)
Valve face/Seat width	0.9-1.1 mm (0.035-0.043 in.)
Valve seat angle	
(intake)	45°
(exhaust)	45°
Valve face radial runout (max)	0.03 mm (0.001 in.)
Valve spring free length (max)	
(inner)	35.1 mm (1.38 in.)
(outer)	39.9 mm (1.57 in.)
Valve spring tension @ 32.5 mm (1.28 in.) (inner)	7.1-9.2 kg (15.7-20.3 lb)
Valve spring tension @ 36.0 mm (1.42 in.) (outer)	17.3-21.3 kg (38.1-47.0 lb)

CAMSHAFT AND CYLINDER HEAD

Cam lobe height (min)	
(intake)	33.820 mm (1.331 in.)
(exhaust)	33.490 mm (1.318 in.)
Camshaft journal oil clearance (max)	0.15 mm (0.0059 in.)
Camshaft journal holder inside diameter	22.012-22.025 mm(0.8666-0.8671 in.)
Camshaft journal outside diameter	21.959-21.980 mm (0.8645-0.8654 in.)
Camshaft runout (max)	0.10 mm (0.004 in.)
Rocker arm inside diameter	12.000-12.018 mm (0.472-0.473 in.)
Rocker arm shaft outside diameter	11.977-11.995 mm (0.4715-0.4722 in.)
Cylinder head distortion (max)	0.05 mm (0.002 in.)
Cylinder head cover distortion (max)	0.05 mm (0.002 in.)

CYLINDER, PISTON AND RINGS

Piston skirt/cylinder clearance (max)	0.12 mm (0.0047 in.)
Cylinder bore (max)	68.580 mm (2.700 in.)
Piston diameter 18 mm (0.71 in.) from Skirt End	68.380 mm (2.6921 in.)
Bore x Stroke	68.5 x 76 mm (2.69 x 2.99 in.)
Cylinder trueness (max)	0.05 mm (0.002 in.)
Piston ring free end gap	
(1st Ring)	6.2-7.8 mm (0.24-0.31 in.)
(2nd Ring)	7.3-9.1 mm (0.29-0.36 in.)
Ring End Gap	
(1st Ring)	0.70 mm (0.028 in.)
(2nd Ring)	1.0 mm (0.039 in.)
Piston ring to groove clearance (max)	
(1st)	0.180 mm (0.0071 in.)
(2nd)	0.150 mm (0.0059 in.)
Piston ring groove width	
(1st)	1.01-1.04 mm (0.040-0.041 in.)
(2nd)	1.22-1.24 mm (0.048-0.049 in.)
(oil)	2.01-2.03 mm (0.079-0.080 in.)
Piston ring thickness	
(1st)	0.97-0.99 mm (0.038-0.039 in.)
(2nd)	1.17-1.19 mm (0.046-0.047 in.)
Piston pin bore (max)	17.030 mm (0.6705 in.)
Piston pin outside diameter (min)	16.980 mm (0.6685 in.)

CRANKSHAFT

Connecting rod (small end inside diameter) (max)	17.040 mm (0.6709 in.)
Connecting rod (big end side-to-side)	0.1-1.0 mm (0.004-0.039 in.)
Connecting rod (big end width)	17.95-18.00 mm (0.707-0.709 in.)
Connecting rod small end deflection (max)	3 mm (0.12 in.)
Crankshaft (web-to-web)	55 mm $\pm$ 0.1 mm (2.165 in.) $\pm$ 0.004 in.)
Crankshaft runout (max)	
left	0.05 mm (0.002 in.)
right	0.08 mm (0.003 in.)
Oil pump reduction ratio	1.566 (47/30)
Oil pressure at 60°C (140°F) @3000 RPM	
(above)	10 lb/in^2
(below)	40 lb/in^2

CLUTCH

Clutch release screw	1/8 turn back
Drive plate (fibre) thickness (min)	2.42 mm (0.094 in.)
Drive plate (fibre) tab (min)	11 mm (0.43 in.)
Driven plate (warpage) (max)	0.1 mm (0.004 in.)
Clutch spring length (min)	27.5 mm (1.08 in.)
Clutch wheel inside diameter (max)	Scuffing of contact surface
Starter clutch shoe	No groove at any part
Clutch engagement - RPM	1900 $\pm$ 200
Clutch lock-up - RPM	3400 $\pm$ 300
Primary reduction ratio	3.150 (63/20)
Secondary reduction ratio	1.125 (18/16)
Final reduction ratio	
(front)	3.090 (34/11)
(rear)	3.647 (62/17)
Secondary transmission reduction ratio	
(super low)	3.176 (17/18 x 25/11 x 37/25)
(low)	1.480 (37/25)
(high)	1.112 (11/25 x 18/17 x 43/18)
Gear ratios	
(1st)	3.083 (37/12)
(2nd)	1.933 (29/15)
(3rd)	1.388 (25/18)
(4th)	1.095 (23/21)
(5th)	0.913 (21/23)
(reverse)	2.833 (29/12 x 34/29)
Shift fork to groove (side clearance)	0.10-0.50 mm (0.004-0.020 in.)
Secondary transmission fork to groove (side clearance)	0.05-0.50 mm (0.002-0.020 in.)
Reverse fork to groove (side clearance)	0.10-0.50 mm (0.004-0.020 in.)
Shift fork groove width 1, 2 & 3	4.5-4.6 mm (0.177-0.181 in.)
Secondary transmission	
1 & 2	5.45 - 5.55 mm (0.215-0.219 in.)
(reverse)	4.0-4.1 mm (0.157-0.161 in.)
Shift fork thickness 1, 2 & 3	4.3-4.4 mm (0.169-0.173 in.)
Secondary transmission 1 & 2	5.3-5.4 mm (0.209-0.213 in.)
(reverse)	3.8-3.9 mm (0.150-0.154 in.)
Engine oil thermo switch operating temperature	
(off - on)	160°C (320°F)
(on - off)	140°C (284°F)

CARBURETTOR

Type	Keihin
Main Jet	135
Slow Jet	38
Pilot Screw Setting (turns)	2 ¼
Jet Needle	N8-TT
Needle Jet	4.0/3.4
Idle RPM	1400-1600
Valve Seat	102
Float Arm Height	13 mm (0.5 in.)
Throttle Cable Free-Play (at lever)	3 - 6 mm (1/8 - 1/4 in.)

ELECTRICAL

Ignition Timing	5° BTDC below 1800 RPM 30° BTDC above 3800 RPM
Spark Plug Type	NGK DR7EA
Spark Plug Gap	0.6-0.7 mm(0.024-0.028 in.)
Spark Plug Cap	8000-12,000 ohms
Ignition Coil Resistance	
(primary)	0.1-0.5 ohm (terminal to ground)
(secondary)	5200-7800 ohms (high tension - plug cap removed - to ground)
Magneto Coil Resistance	
(trigger)	90-140 ohms (Black/Yellow to Green/White)
(charging)	0.1-1.0 ohm (Yellow to Yellow)
Magneto Output (approx.)	220W @ 5000 RPM

CHASSIS

Dry Weight (approx.)	
2x4 Model	250 kg (550 lb)
4x4 Model	266 kg (585 lb)
Length (overall)	202 cm (79.5 in.)
Height (overall)	114 cm (45 in.)
Width (overall)	114 cm (45 in.)
Suspension travel	16.5 cm (6.5 in.)
Ground clearance	20.3 cm (8.0 in.)
Brake type	Hydraulic w/Brake Lever Lock and Mechanical Foot Brake
Wheelbase	127 cm (50 in.)
Tracking	89 cm (35 in.)
Tyre size (2x4)	
Front	AT23 x 8-12
Rear	AT25 x 9-12
Tyre size (4x4)	
Front	AT24 x 9-12
Rear	AT25 x 10-12
Tyre inflation	0.35 kg/cm^2 (5 lb/in^2)
Turning radius	2.7 m (8.9 ft)

MISCELLANY

Petrol tank capacity (rated)	17.98 L
Reserve capacity	5.3 L
Differential capacity (front-4x4)	175 ml
Engine oil capacity	3.4 L
Fuel (recommended)	87 Octane Regular Unleaded
Engine Oil (recommended)	SAE 10W-40
Differential lubricant (front-4x4)	SAE Approved 80W-90 Hypoid
Brake fluid	DOT 4
Taillight/Brakelight	12V/5W/27W
Headlight	12V/35W
Starting system	Electric w/Manual Recoil (Emergency)

* Specifications subject to change without notice.

BREAK-IN PROCEDURE

A new AgTV and an overhauled AgTV engine require a break-in period. The first 10 hours (or 200 miles) are most critical to the life of this AgTV. Proper operation during this break-in period will help assure maximum life and performance from the AgTV.

During the first 10 hours (or 200 miles) of operation, always use less than 1/2 throttle. Varying the engine RPM during the break-in period allows the components to "load" (aiding the mating process) and then "unload" (allowing components to cool). Although it is essential to place some stress on the engine components during break-in, care should be taken not to overload the engine too often. Do not pull a trailer or carry heavy loads during the 10-hour break-in period.

When the engine starts, allow it to warm up properly. Idle the engine several minutes until the engine has reached normal operating temperature. Do not idle the engine for excessively long periods of time.

During the break-in period, a maximum of 1/2 throttle is recommended; however, brief full-throttle accelerations and variations in driving speeds contribute to good engine break-in.

During the break-in period (or whenever the brake pads are replaced), the hydraulic brake pads must be burnished. Slow disc-speed hydraulic brakes must be properly burnished in order to achieve maximum stopping power.

CAUTION: *Brake pads must be burnished to achieve full braking effectiveness. Braking distance will be extended until brake pads are properly burnished.*

To properly burnish the brakes, use following procedure:

- Choose an area sufficiently large to safely accelerate AgTV to 30 mph and to brake to a stop.
- Using third gear, accelerate to 30 mph; then compress brake lever to decelerate to 0-5 mph.
- Repeat procedure 20 times until brakes are burnished.
- This procedure burnishes the brake pads, stabilizes the pad material, and extends the life of the brake pads.

WARNING: Do not attempt sudden stops or put the AgTV into a situation where a sudden stop will be required until the brake pads are properly burnished.

NOTE: *Do not be reluctant to heat up the brake pads during the burnishing procedure.*

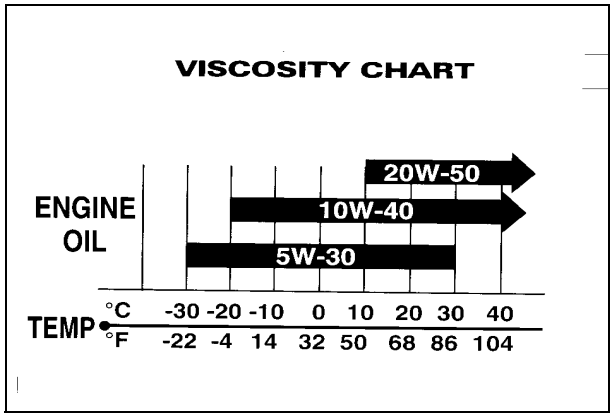

Fig. 1

NOTE: *After the completion of the break-in period, the engine oil and oil filter should be changed. Other maintenance after break-in should include checking of all prescribed adjustments and tightening of all fasteners.*

PETROL-OIL-LUBRICANT

Recommended fuel

The recommended petrol to use in this AgTV is 87 minimum octane regular unleaded. In many areas, oxygenates (either ethanol or MTBE) are added to the petrol. Oxygenated petrol containing up to 10% ethanol, 5% methane, or 5% MTBE are acceptable petrols.

When using ethanol blended petrol, it is not necessary to add a petrol antifreeze since ethanol will prevent the accumulation of moisture in the fuel system.

Recommended engine/transmission oil

CAUTION: *Any oil used in place of the recommended oil could cause serious engine damage. Do not use oils which contain graphite or molybdenum additives. These oils can adversely affect clutch operation. Also, not recommended are racing, vegetable, non-detergent, and castor-based oils.*

The recommended oil to use in this AgTV is MASSEY FERGUSON Engine Oil SAE 10W/40 (ATV0436-005) or an equivalent oil which is rated SE, SF, or SG under API service classification. These oils meet all of the lubrication requirements of the MASSEY FERGUSON AgTV engine. The recommended engine oil viscosity is SAE 10W-40. Ambient temperature should determine the correct weight of oil. See the viscosity chart for details, (Fig. 1).

Recommended front differential/rear drive lubricant

The recommended lubricant is MASSEY FERGUSON (ATV0436-007) or an equivalent gear lube which is SAE approved 80W-90 hypoid. This lubricant meets all of the lubrication requirements of the MASSEY FERGUSON AgTV differentials.

CAUTION: *Any lubricant used in place of the recommended lubricant could cause serious front differential/rear drive damage.*

Filling petrol tank

WARNING: Always fill the petrol tank in a well-ventilated area. Never add fuel to the AgTV petrol tank near any open flames or with the engine running. DO NOT SMOKE while filling the petrol tank, (Fig. 2).

Since petrol expands as its temperature rises, the petrol tank must be filled to its rated capacity only. Expansion room must be maintained in the tank particularly if the tank is filled with cold petrol and then moved to a warm area.

WARNING: Do not over-flow petrol when filling the petrol tank. A fire hazard could materialise. Always allow the engine to cool before filling the petrol tank.

Tighten the petrol tank cap securely after filling the tank.

WARNING: Do not over-fill the petrol tank.

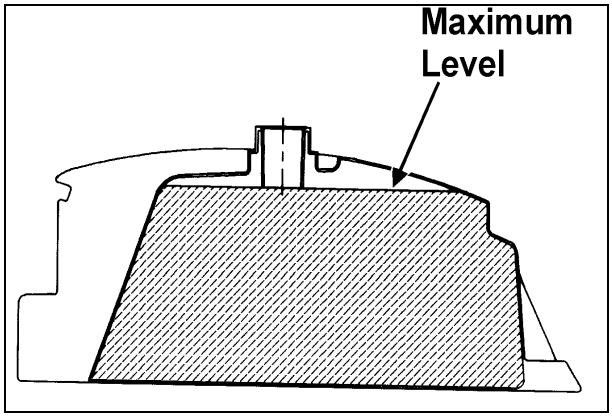

Fig. 2

GENUINE PARTS

When replacement of parts is necessary, use only genuine MASSEY FERGUSON AgTV parts. They are precision-made to ensure high quality and correct fit. Refer to the appropriate Illustrated Parts Manual for the correct part number, quantity, and description.

LOAD CAPACITY RATINGS CHARTS

MASSEY FERGUSON Load capacity ratings 250/300 cc		
Item	Specifications	
	(lb)	(Kg)*
Max load capacity	1050	477
Calculation		
Operator	200	91
Front rack (max)	75	34
Rear rack (max)	150	68
Accessories (i.e, winch, gun brackets, etc)	35	15
Maximum AgTV load capacity (w/ trailer & cargo)	1050	477

* Rounded off

PREPARATION FOR STORAGE

CAUTION: *Prior to storing the AgTV, it must be properly serviced to prevent rusting and component deterioration.*

MASSEY FERGUSON recommends the following procedure to prepare the AgTV for storage.

1. Clean the seat cushion with a damp cloth and allow it to dry.
2. Clean the AgTV thoroughly by hosing dirt, oil, grass, and other foreign matter from the entire AgTV. Allow the AgTV to dry thoroughly. DO NOT get water into any part of the engine.
3. Either drain the petrol tank or add Fuel Stabilistyreer (AgTV 0638-165) to the petrol in the tank. Remove the air cleaner cover and air filter. Start the engine and allow it to idle; then using MASSEY FERGUSON Engine Storage Preserver (ATV 0636-177), rapidly inject the preserver into the air filter opening for a period of 10 to 20 seconds; then stop the engine. Install the air filter and cover.
4. Plug the exhaust hole in the muffler with a clean cloth.
5. Apply light oil to the upper steering post bushing, plungers of the shock absorbers, and cable ends.
6. Tighten all nuts, cap screws, and screws. Make sure rivets holding components together are tight. Replace all loose rivets. Care must be taken that all calibrated nuts, cap screws, and screws are tightened to specifications.
7. On liquid cooled models, fill the cooling system to 1/2 in. above the radiator core with properly mixed coolant.
8. Polish the AgTV thoroughly.
9. Disconnect the battery cables; then clean the battery posts and cables. Remove the battery and store in a clean, dry area.
10. Store the AgTV indoors in a level position.

CAUTION: *Avoid storing outside in direct sunlight and avoid using a plastic cover as moisture will collect on the AgTV causing rusting.*

PREPARATION AFTER STORAGE

Taking the AgTV out of storage and correctly preparing it will assure many miles and hours of trouble-free riding. MASSEY FERGUSON recommends the following procedure to prepare the AgTV.

1. Clean the AgTV thoroughly.
2. Clean the engine. Remove the cloth from the muffler.
3. Check all control wires and cables for signs of wear or fraying. Replace if necessary.
4. Change the engine/transmission oil and filter and the front differential/rear drive lubricant.
5. On liquid cooled models, check the coolant level and add properly mixed coolant as necessary.
6. Charge the battery; then install. Connect the battery cables; then coat the terminals with grease.
7. Check the entire brake systems (fluid level, pads, etc.), all controls, headlight, taillight, brakelight, and headlight aim; adjust or replace as necessary.
8. Tighten all nuts, cap screws, and screws making sure all calibrated nuts, cap screws, and screws are tightened to specifications.
9. Make sure the steering moves freely and does not bind.
10. Check the spark plug. Clean or replace as necessary.
11. Inspect the air filter and air cleaner housing for obstructions.
12. Check and inflate tyres to recommended pressure.

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General Information

Section 1-B

400/500 cc

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SPECIFICATIONS*(400 CC)

VALVES AND GUIDES

Valve face diameter	
(intake)	30.6 mm (1.20 in.)
(exhaust)	27.0 mm (1.06 in.)
Valve/tappet clearance (cold engine)	
(intake)	0.05-0.10 mm (0.002-0.004 in.)
(exhaust)	0.17-0.22 mm (0.007-0.009 in.)
Valve guide/Stem clearance	
(intake)	0.010-0.037 mm (0.0004-0.0015 in.)
(exhaust)	0.030-0.057 mm (0.0012-0.0022 in.)
Valve guide valve stem deflection (wobble method) (max)	0.35 mm (0.014 in.)
Valve guide inside diameter	5.000-5.012 mm (0.1969-0.1973 in.)
Valve stem outside diameter	
(intake)	4.975-4.990 mm (0.1959-0.1965 in.)
(exhaust)	4.955-4.970 mm (0.1951-0.1957 in.)
Valve stem runout (max)	0.05 mm (0.002 in.)
Valve head thickness (max)	0.5 mm (0.02 in.)
Valve stem end length (max)	1.8 mm (0.07 in.)
Valve face/Seat width	0.9-1.1 mm (0.035-0.043 in.)
Valve seat angle	
(intake)	45°
(exhaust)	45°
Valve face radial runout (max)	0.03 mm (0.001 in.)
Valve spring free Length (max)	
(inner)	35 mm (1.38 in.)
(outer)	37.8 mm (1.49 in.)
Valve spring tension @ 28 mm (1.10 in.) (inner)	5.3-6.5 kg (11.7-14.3 lb.)
Valve spring tension @ 31.5 mm (1.24 in.) (outer)	13.1-15.1 kg (28.9-33.3 lb.)

CAMSHAFT AND CYLINDER HEAD

Cam lobe height (min.)	
(intake)	33.150 mm (1.305 in.)
(exhaust)	33.220 mm (1.308 in.)
Camshaft journal oil clearance (max)	0.15 mm (0.0059 in.)
Camshaft journal holder inside diameter	
(right and centre)	21.959-21.980 mm (0.8645-0.8654 in.)
(left)	17.512-17.525 mm (0.6894-0.6900 in.)
Camshaft journal outside diameter	
(right and centre)	21.959-21.980 mm (0.8645-0.8654 in.)
(left)	7.465-17.484 mm (0.6876-0.6883 in.)
Camshaft runout (max)	0.10 mm (0.004 in.)
Rocker arm inside diameter	12.000-12.018 mm (0.472-0.473 in.)
Rocker arm shaft outside diameter	11.973-11.984 mm (0.4714-0.4718 in.)
Cylinder head distortion (max)	0.05 mm (0.002 in.)
Cylinder head cover distortion (max)	0.05 mm (0.002 in.)

CYLINDER,PISTON AND RINGS

Piston skirt/Cylinder clearance	0.045-0.120 mm (0.0018-0.0047 in.)
Cylinder bore	84.000-84.085 mm (3.3071-3.3104 in.)
Piston diameter 15 mm (0.6 in.) from Skirt End	83.880-83.965 mm (3.3024-3.3057 in.)
Piston ring free end gap (approx.)	
(1st Ring)	8.4-10.5 mm (0.33-0.41 in.)
(2nd Ring)	9.5-11.8 mm (0.37-0.46 in.)
Bore x Stroke	84 x 67 mm (3.30 x 2.64 in.)
Cylinder trueness (max)	0.05 mm (0.002 in.)
Ring end gap (max)	0.50 mm (0.020 in.)
Piston ring to groove clearance (max)	
(1st)	0.180 mm (0.0071 in.)
(2nd)	0.150 mm (0.0059 in.)
Piston Ring Groove Width	
(1st)	1.21-1.23 mm (0.0476-0.0484 in.)
(2nd)	1.21-1.23 mm (0.0476-0.0484 in.)
(oil)	2.51-2.53 mm (0.0988-0.0996 in.)
Piston ring thickness	
(1st)	1.17-1.19 mm (0.046-0.047 in.)
(2nd)	1.17-1.19 mm (0.046-0.047 in.)
Piston pin bore (max)	21.03 mm (0.828 in.)
Piston pin outside diameter (min.)	20.98 mm (0.826 in.)

CRANKSHAFT

Connecting rod (small end inside diameter) (max)	21.04 mm (0.8283 in.)
Connecting rod (big end side-to-side)	0.1-1.0 mm (0.004-0.039 in.)
Connecting rod (big end width)	25.95-26.00 mm (1.022 - 1.024 in.)
Connecting rod small end deflection (max)	3 mm (0.12 in.)
Crankshaft (web-to-web)	70.9-71.1 mm (2.796-2.804 in.)
Crankshaft runout (max)	0.05 mm (0.002 in.)
Oil pump reduction ratio	1.45 (29/20)
Oil Pressure at 60°C (140°F) @3000 RPM	
(above)	(18 Ibf/in^2) 1.3 Kg/cm^2
(below)	(24 Ibf/in^2) 1.7 Kg/cm^2

CLUTCH

Clutch release screw	1/8 turn back
Drive plate (fibre) thickness (min.)	2.62 mm (0.103 in.)
Drive plate (fibre) tab (min.)	13-14 mm (0.50 -0.55in.)
Driven plate (warpage) (max)	0.1 mm (0.004 in.)
Clutch spring length (min.)	33.7 mm (1.33 in.)
Clutch wheel inside diameter (max)	139.8-140.2mm (5.504-5.520 in.)
Starter clutch shoe	No groove at any part
Clutch engagement - RPM	1700 $\pm$ 200
Clutch lock-up - RPM	3500 $\pm$ 300
Primary reduction ratio	2.392 (67/28)
Secondary reduction ratio	1.133 (17/15)
Final reduction ratio	
(front)	3.6 (36/10)
(rear)	3.6 (36/10)
Secondary transmission reduction ratio	
(low)	2.363 (22/23 x 28/17 x 42/28)
(high)	1.5 (42/28)
Gear ratios	
(1st)	3.9 (34/11)
(2nd)	1.75 (28/16)
(3rd)	1.2 (24/20)
(4th)	0.956 (22/23)
(5th)	0.8 (20/25)
(reverse)	2.636 (24/11 x 29/24)
Engine fork to groove (side clearance)	0.1-0.3 mm (0.004-0.012 in.)
Secondary transmission fork to groove (side clearance) (max)	0.2 mm (0.008 in.)
Reverse fork to groove (max) (side clearance)	0.3 mm (0.012 in.)
Shift fork groove width	
1 & 2	5.5-5.6 mm (0.217-0.220 in.)
Secondary transmission	5.4-5.5 mm (0.213-0.217 in.)
(reverse)	5.0-5.1 mm (0.197-0.201 in.)
Shift fork thickness	
1 & 2	5.3-5.4 mm (0.209-0.213 in.)
Secondary transmission	5.3-5.4 mm (0.209-0.213 in.)
(reverse)	4.8-4.9 mm (0.189-0.193 in.)
Thermostat valve opening temperature	48.5-51.5°C (119.3-124.7°F)
Thermostat valve lift	Over 3 mm (0.12 in.) at 65°C (149°F)
Cooling fan	Constant
Water temperature warningl light switch (off - on)	95°C (203°F)

CARBURETTOR

Type	Mikuni BST34
Main Jet	150
Pilot Jet	45
Pilot Screw Setting (turns)	2 ±1/8
Jet Needle	4E07-4
Needle Jet	P-7
Idle RPM	1400-1600
Valve Seat	2.0
Float Arm Height	14 mm (0.6 in.)
Throttle Cable Free-Play (at lever)	3 - 6 mm (1/8 - 1/4 in.)

ELECTRICAL

Ignition Timing	10° BTDC @ 1500 RPM
Spark Plug Type	NGK CR6E
Spark Plug Gap	0.7-0.8 mm (0.028-0.032)
Spark Plug Cap	8000-12,000 ohms
Ignition Coil Resistance	
(primary)	0.1-1.0 ohm (terminal to ground)
(secondary)	12,000-30,000 ohms (high tension - plug cap removed - to ground)
Magneto Coil Resistance	
(trigger)	150-300 ohms (green to blue)
(source/charge)	0.05-1.0 ohm (yellow to white
(charging)	0.1-1.0 ohm (black to black)
Magneto Output (approx.)	340W @ 5000 RPM

CHASSIS

Dry Weight (approx.)	
2x4 model	265 Kg (585lb)
4x4 model	284 Kg (626 lb.)
Length (overall)	204cm (80.5 in.)
Height (overall)	114 cm (45 in.)
Width (overall)	114 cm (45 in.)
Suspension Travel	18.2 cm (7.2 in.)
Ground Clearance	20.3 cm (8.0 in.)
Brake Type	Hydraulic Lever brake Lock and Mechanical Foot Brake
Wheelbase	127 cm (50 in.)
Tracking	89 cm (35 in.)
Tyre Size	
Front	AT25 x 8-12
Rear	AT25 x 10-12
Tire Inflation	0.35 kg/cm^2 (5 lbf/in^2)
Turning Radius	2.7 m (8.9 ft)

MISCELLANY

Petrol Tank Capacity (rated)	17.98 L
Reserve Capacity	5.3 L
Coolant Capacity	2.9 L
Rear drive capacity	300 ml
Differential capacity (4x4) model	175 ml
Engine oil capacity	3.4 L
Fuel (recommended)	87 Octane Regular Unleaded
Engine Oil (recommended)	SAE 10W-40
Differential/Rear drive lubricant	SAE Approved 80W-90 Hypoid**
Brake Fluid	DOT 4
Taillight/Brakelight	12V/5W/27W
Headlight	12V/35W
Starting System	Electric w/Manual Recoil (Emergency)

* Specifications subject to change without notice

SPECIFICATIONS*
(500 CC - MANUAL TRANSMISSION)
VALVES AND GUIDES

Valve Face Diameter	
(intake)	30.6 mm (1.20 in.)
(exhaust)	27.0 mm (1.06 in.)
Valve/Tappet Clearance (cold engine)	
(intake)	0.05-0.10 mm (0.002-0.004 in.)
(exhaust)	0.17-0.22 mm (0.007-0.009 in.)
Valve Guide/Stem Clearance	
(intake)	0.010-0.037 mm (0.0004-0.0015 in.)
(exhaust)	0.030-0.057 mm (0.0012-0.0022 in.)
Valve Guide/Valve Stem Deflection(wobble method) (max)	0.35 mm (0.014 in.)
Valve Guide Inside diameter	5.000-5.012 mm (0.1969-0.1973 in.)
Valve Stem Outside diameter	
(intake)	4.975-4.990 mm (0.1959-0.1965 in.)
(exhaust)	4.955-4.970 mm (0.1951-0.1957 in.)
Valve Stem Runout (max)	0.05 mm (0.002 in.)
Valve Head Thickness (max)	0.5 mm (0.02 in.)
Valve Stem End Length (max)	1.8 mm (0.07 in.)
Valve Face/Seat Width	0.9-1.1 mm (0.035-0.043 in.)
Valve Seat Angle	
(intake)	45°
(exhaust)	45°
Valve Face Radial Runout (max)	0.03 mm (0.001 in.)
Valve Spring Free Length (max)	
(inner)	35 mm (1.38 in.)
(outer)	37.8 mm (1.49 in.)
Valve Spring Tension @ 28 mm (1.10 in.) (inner)	5.3-6.5 kg (11.7-14.3 lb)
Valve Spring Tension @ 31.5 mm (1.24 in.) (outer)	13.1-15.1 kg (28.9-33.3 lb)

CAMSHAFT AND CYLINDER HEAD

Cam Lobe Height min.)	
(intake)	33.150 mm (1.305 in.)
(exhaust)	33.220 mm (1.308 in.)
Camshaft Journal Oil Clearance	
(max)	0.15 mm (0.0059 in.)
Camshaft Journal Holder inside Diameter	
(right and centre)	22.012-22.025 mm (0.8666-0.8671 in.)
(left)	17.512-17.525 mm (0.6894-0.6900 in.)
Camshaft Journal Outside Diameter	
(right and centre)	21.959-21.980 mm(0.8645-0.8654 in.)
(left)	17.465-17.484 mm(0.6876-0.6883 in.)
Camshaft Runout (max)	0.10 mm (0.004 in.)
Rocker Arm Inside Diameter	12.000-12.018 mm (0.472-0.473 in.)
Rocker Arm Shaft Outside Diameter	11.973-11.984 mm (0.4714-0.4718 in.)
Cylinder Head Distortion (max)	0.05 mm (0.002 in.)
Cylinder Head Cover Distortion (max)	0.05 mm (0.002 in.)

CYLINDER,PISTON AND RINGS

Piston Skirt/Cylinder Clearance	0.038-0.76 mm (0.0015-0.0030 in.)
Cylinder Bore	87.500-87.515 mm (3.4448-3.4454 in.)
Piston Diameter 15 mm (0.6 in.) from Skirt End	87.465-87.470 mm (3.4435-3.4437 in.)
Piston Ring Free End Gap (approx.)	
(1st Ring)	11.3 mm (0.4448 in.)
(2nd Ring)	97 mm (0.3818 in.)
Bore x Stroke	87.5 x 82 mm (3.40 x 3.22 in.)
Cylinder Trueness (max)	0.05 mm (0.002 in.)
Ring End Gap - Installed (max)	0.70 mm (0.0275 in.)
Piston Ring to Groove Clearance (max)	
(1st)	0.180 mm (0.0071 in.)
(2nd)	0.150 mm (0.0059 in.)
Piston Ring Groove Width	
(1st)	1.01-1.03 mm (0.0397-0.0405 in.)
(2nd)	1.21-1.23 mm (0.0476-0.0484 in.)
(oil)	2.51-2.53 mm (0.0988-0.0996 in.)
Piston Ring Thickness	
(1st)	0.97-0.99 mm (0.0382-0.0389 in.)
(2nd)	1.17-1.19 mm (0.046-0.047 in.)
Piston Pin Bore (max)	23.03 mm (0.907 in.)
Piston Pin Outside Diameter (min.)	22.98 mm (0.905 in.)

CRANKSHAFT

Connecting Rod (small end inside diameter) (max)	23.04 mm (0.9070 in.)
Connecting Rod (big end side-to-side)	0.1-1.0 mm (0.004-0.039 in.)
Connecting Rod (big end width)	24.95-25.00 mm (0.9822 - 0.9842 in.)
Connecting Rod Small End Deflection (max)	3 mm (0.12 in.)
Crankshaft (web-to-web)	70.9-71.1 mm (2.796-2.804 in.)
Crankshaft Runout (max)	0.08 mm (0.003 in.)
Oil Pump Reduction Ratio	1.45 (29/20)
Oil Pressure at 60°C (140°F) @3000 RPM	
(above)	1.3 Kg/cm^2
(below)	1.7 Kg/cm^2

CLUTCH

Clutch release screw	1/4 - 1/2 turn back
Drive plate (fibre) thickness (min.)	2.92 -3.08 mm (0.1149-0.1212 in.)
Drive plate (fibre) tab (min.)	13.05 mm (0.5137 in.)
Driven plate (warpage) (max)	0.1 mm (0.004 in.)
Clutch spring length (min.)	33.7 mm (1.33 in.)
Clutch wheel inside diameter (max)	140.0-140.2mm (5.511-5.520 in.)
Starter clutch shoe	No groove at any part
Clutch engagement - RPM	1700 $\pm$ 200
Clutch lock-up - RPM	3600 $\pm$ 300
Primary reduction ratio	2.392 (67/28)
Secondary reduction ratio	1.133 (17/15)
Final reduction ratio	
(front)	3.6 (36/10)
(rear)	3.6 (36/10)
Secondary transmission reduction ratio	
(low)	2.363 (22/23 x 28/17 x 42/28)
(high)	1.5 (42/28)
Gear ratios	
(1st)	3.09 (34/11)
(2nd)	1.75 (28/16)
(3rd)	1.2 (24/20)
(4th)	0.956 (22/23)
(5th)	0.8 (20/25)
(reverse)	2.636 (24/11 x 29/24)
Engine fork to groove (side clearance)	0.1-0.3 mm (0.004-0.012 in.)
Secondary transmission fork to groove (side clearance) (max)	0.2 mm (0.008 in.)
Reverse fork to groove (max) (side clearance)	0.3 mm (0.012 in.)
Shift fork groove width	
1 & 2	5.5-5.6 mm (0.217-0.220 in.)
Secondary transmission	5.4-5.5 mm (0.213-0.217 in.)
(reverse)	4.9-5.0 mm (0.193-0.197 in.)
Shift Fork thickness	
1 & 2	5.3-5.4 mm (0.209-0.213 in.)
Secondary transmission)	5.3-5.4 mm (0.209-0.213 in.)
(reverse)	4.8-4.9 mm (0.189-0.193 in.)
Thermostat valve opening temperature	73.5.5-76.5°C (164-170°F)
Thermostat Valve Lift	Over 3 mm (0.12 in.) at 65°C (149°F)
Cooling fan thermo switch operating temperature	
(off - on)	88-93°C (190 - 200°F)
(on - off)	81°C (177°F)

CARBURETTOR

Type	Keihin CVK34
Main jet	145
Slow jet	38
Pilot screw setting (turns)	2 1/4
Jet needle	N601
Needle jet	6.0/4.0
Idle RPM	12/00-1350
Starter jet	102
Float arm height	17 mm (0.67 in.)
Throttle cable free-play (at lever)	3 - 6 mm (1/8 - 1/4 in.)

ELECTRICAL

Ignition timing	10° BTDC @ 1500 RPM
Spark plug type	NGK CR6E
Spark plug gap	0.7-0.8 mm (0.028-0.032)
Spark plug cap	8000-12,000 ohms
Ignition coil resistance	
(primary)	0.1-0.8 ohm (terminal to ground)
(secondary)	10,000-15,000 ohms (high tension - plug cap removed - to ground)
Magneto coil resistance	
(trigger)	170-250 ohms (green to blue)
(source/charge)	0.05-1.0 ohm (yellow to white
(charging)	0.1-1.0 ohm (black to black)
Magneto output (approx.)	325W @ 5000 RPM

CHASSIS

Dry weight (approx.)	293 Kg (645 lb)
Length (overall)	204cm (80.5 in.)
Height (overall)	114 cm (45 in.)
Width (overall)	114 cm (45 in.)
Suspension travel	18.2 cm (7.2 in.)
Ground clearance	20.3 cm (8.0 in.)
Brake type	Hydraulic w/brake lever lock and mechanical foot brake
Wheelbase	127 cm (50 in.)
Tracking	89 cm (35 in.)
Tyre size	AT25 x 10-12
Tyre inflation	0.35 kg/cm^2 (5 lb/in^2)
Turning radius	2.7 m (8.9 ft)

MISCELLANY

Petrol tank capacity (rated)	17.98 L
Reserve capacity	5.3 L
Coolant capacity	2.9 L
Rear drive capacity	300 ml
Differential capacity (front) model	175 ml
Engine oil capacity	3.4 L
Fuel (recommended)	87 Octane Regular Unleaded
Engine oil (recommended)	SAE 10W-40
Differential/rear drive lubricant	SAE Approved 80W-90 Hypoid**
Brake fluid	DOT 4
Taillight/brakelight	12V/5W/27W
Headlight	12V/35W
Starting system	Electric w/Manual Recoil (Emergency)

* Specifications subject to change without notice.

SPECIFICATIONS*
(500 CC - AUTOMATIC TRANSMISSION)
VALVES AND GUIDES

Valve face diameter	
(intake)	30.6 mm (1.20 in.)
(exhaust)	27.0 mm (1.06 in.)
Valve/Tappet clearance (cold engine)	
(intake)	0.05-0.10 mm (0.002-0.004 in.)
(exhaust)	0.17-0.22 mm (0.007-0.009 in.)
Valve Guide/Stem clearance	
(intake)	0.010-0.037 mm (0.0004-0.0015 in.)
(exhaust)	0.030-0.057 mm (0.0012-0.0022 in.)
Valve Guide/Valve stem deflection(wobble method) (max)	0.35 mm (0.014 in.)
Valve Guide Iiside diameter	5.000-5.012 mm (0.1969-0.1973 in.)
Valve Stem outside diameter	
(intake)	4.975-4.990 mm (0.1959-0.1965 in.)
(exhaust)	4.955-4.970 mm (0.1951-0.1957 in.)
Valve stem runout (max)	0.05 mm (0.002 in.)
Valve head thickness (max)	0.5 mm (0.02 in.)
Valve stem end length (max)	1.8 mm (0.07 in.)
Valve Face/Seat width	0.9-1.1 mm (0.035-0.043 in.)
Valve seat angle	
(intake)	45°
(exhaust)	45°
Valve face radial runout (max)	0.03 mm (0.001 in.)
Valve spring free length (max)	
(inner)	35 mm (1.38 in.)
(outer)	37.8 mm (1.49 in.)
Valve spring tension @ 28 mm (1.10 in.) (inner)	5.3-6.5 kg (11.7-14.3 lb)
Valve spring tension @ 31.5 mm (1.24 in.) (outer)	13.1-15.1 kg (28.9-33.3 lb)

CAMSHAFT AND CYLINDER HEAD

Cam lobe height (min.)	
(intake)	33.150 mm (1.305 in.)
(exhaust)	33.220 mm (1.308 in.)
Camshaft journal oil clearance (max)	0.15 mm (0.0059 in.)
Camshaft journal holder inside diameter	
(right and centre)	22.012-22.025 mm (0.8666-0.8671 in.)
(left)	17.512-17.525 mm (0.6894-0.6900 in.)
Camshaft journal outside diameter	
(right and centre)	21.959-21.980 mm (0.8645-0.8654 in.)
(left)	17.465-17.484 mm (0.6876-0.6883 in.)
Camshaft runout (max)	0.10 mm (0.004 in.)
Rocker arm inside diameter	12.000-12.018 mm (0.472-0.473 in.)
Rocker arm shaft outside diameter	11.973-11.984 mm (0.4714-0.4718 in.)
Cylinder head distortion (max)	0.05 mm (0.002 in.)
Cylinder head cover distortion (max)	0.05 mm (0.002 in.)

CYLINDER,PISTON AND RINGS

Piston skirt/cylinder clearance	0.038-0.76 mm (0.0015-0.0030 in.)
Cylinder bore	87.500-87.515 mm (3.4448-3.4454 in.)
Piston diameter 15 mm (0.6 in.) from Skirt End	87.465-87.470 mm (3.4435-3.4437 in.)
Piston ring free end gap (approx.)	
(1st Ring)	11.3 mm (0.4448 in.)
(2nd Ring)	97 mm (0.3818 in.)
Bore x Stroke	87.5 x 82 mm (3.40 x 3.22 in.)
Cylinder trueness (max)	0.05 mm (0.002 in.)
Ring end gap - Installed (max)	0.70 mm (0.0275 in.)
Piston ring to groove clearance (max)	
(1st)	0.180 mm (0.0071 in.)
(2nd)	0.150 mm (0.0059 in.)
Piston ring groove width	
(1st)	1.01-1.03 mm (0.0397-0.0405 in.)
(2nd)	1.21-1.23 mm (0.0476-0.0484 in.)
(oil)	2.51-2.53 mm (0.0988-0.0996 in.)
Piston ring thickness	
(1st)	0.97-0.99 mm (0.0382-0.0389 in.)
(2nd)	1.17-1.19 mm (0.046-0.047 in.)
Piston pin bore (max)	23.03 mm (0.907 in.)
Piston pin outside diameter (min.)	22.98 mm (0.905 in.)

CRANKSHAFT

Connecting rod (small end inside diameter) (max)	23.04 mm (0.9070 in.)
Connecting rod (big end side-to-side)	0.1-1.0 mm (0.004-0.039 in.)
Connecting rod (big end width)	24.95-25.00 mm (0.9822 - 0.9842 in.)
Connecting rod small end deflection (max)	3 mm (0.12 in.)
Crankshaft (web-to-web)	70.9-71.1 mm (2.796-2.804 in.)
Crankshaft runout (max)	0.08 mm (0.003 in.)
Oil pump reduction ratio	1.45 (29/20)
Oil pressure at 60°C (140°F) @ 3000 RPM	
(above)	1.3 Kg/cm^2
(below)	1.7 Kg/cm^2

CARBURETTOR

Type	Keihin CVK34
Main jet	145
Slow jet	38
Pilot screw setting (turns)	2 1/4
Jet needle	N601
Needle jet	6.0/4.0
Idle RPM	12/00-1350
Starter jet	102
Float arm height	17 mm (0.67 in.)
Throttle cable free-play (at lever)	3 - 6 mm (1/8 - 1/4 in.)

ELECTRICAL

Ignition timing	10° BTDC @ 1500 RPM
Spark plug type	NGK CR6E
Spark plug gap	0.7-0.8 mm (0.028-0.032)
Spark plug cap	8000-12,000 ohms
Ignition coil resistance	
(primary)	0.1-0.8 ohm (terminal to ground)
(secondary)	10,000-15,000 ohms (high tension - plug cap removed - to ground)
Magneto coil resistance	
(trigger)	160-240 ohms (green to blue)
(source/charge)	0.05-1.0 ohm (yellow to white)
(charging)	0.1-1.0 ohm (black to black)
Magneto output (approx.)	325W @ 5000 RPM

CHASSIS

Dry weight (approx.)	294 Kg (648 lb)
Length (overall)	204cm (80.5 in.)
Height (overall)	114 cm (45 in.)
Width (overall)	114 cm (45 in.)
Suspension travel	18.2 cm (7.2 in.)
Ground clearance	20.3 cm (8.0 in.)
Brake type	Hydraulic hand brake w/brake LeverLock and Mechanical Foot Brake
Wheelbase	131 cm (51.6 in.)
Tracking	89 cm (35 in.)
Tyre size	AT25 x 10-12
Tyre inflation	0.35 kg/cm^2 (5 lb/in^2)
Turning radius	2.7 m (8.9 ft)

MISCELLANY

Petrol tank capacity (rated)	17.98 L
Reserve capacity	5.3 L
Coolant capacity	2.9 L
Rear drive capacity	300 ml
Differential capacity (front) model	175 ml
Engine oil capacity	2.5L
Fuel (recommended)	87 Octane Regular Unleaded
Engine Oil (recommended)	SAE 10W-40
Differential/Rear drive lubricant	SAE Approved 80W-90 Hypoid**
Brake Fluid	DOT 4
Taillight/Brakelight	12V/5W/27W
Headlight	12V/35W
Starting system	Electric w/Manual Recoil (Emergency)

BREAK-IN PROCEDURE

A new AgTV and an overhauled AgTV engine require a break-in period. The first 10 hours (or 200 miles) are most critical to the life of this AgTV. Proper operation during this break-in period will help assure maximum life and performance from the AgTV.

During the first 10 hours (or 200 miles) of operation, always use less than 1/2 throttle. Varying the engine RPM during the break-in period allows the components to "load" (aiding the mating process) and then "unload" (allowing components to cool). Although it is essential to place some stress on the engine components during break-in, care should be taken not to overload the engine too often. Do not pull a trailer or carry heavy loads during the 10-hour break-in period.

When the engine starts, allow it to warm up properly. Idle the engine several minutes until the engine has reached normal operating temperature. Do not idle the engine for excessively long periods of time.

During the break-in period, a maximum of 1/2 throttle is recommended; however, brief full-throttle accelerations and variations in driving speeds contribute to good engine break-in.

During the break-in period (or whenever the brake pads are replaced), the hydraulic brake pads must be burnished. Slow disc-speed hydraulic brakes must be properly burnished in order to achieve maximum stopping power.

CAUTION: *Brake pads must be burnished to achieve full braking effectiveness.Braking distance will be extended until brake pads are properly burnished.*

To properly burnish the brakes, use following procedure:

- Choose an area sufficiently large to safely accelerate AgTV to 30 mph and to brake to a stop.
- Using third gear, accelerate to 30 mph; then compress brake lever to decelerate to 0-5 mph.
- Repeat procedure 20 times until brakes are burnished.
- This procedure burnishes the brake pads, stabilises the pad material, and extends the life of the brake pads.

WARNING: Do not attempt sudden stops or put the AgTV into a situation where a sudden stop will be required until the brake pads are properly burnished.

NOTE: *Do not be reluctant to heat up the brake pads during the burnishing procedure.*

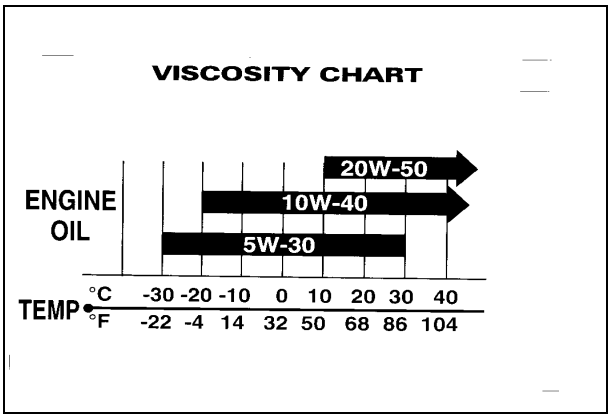

Fig. 1

NOTE: *After the completion of the break-in period, the engine oil and oil filter should be changed. Other maintenance after break-in should include checking of all prescribed adjustments and tightening of all fasteners.*

PETROL-OIL-LUBRICANT

Recommended petrol

The recommended petrol to use in this AgTV is 87 minimum octane regular unleaded. In many areas, oxygenates (either ethanol or MTBE) are added to the petrol. Oxygenated petrols containing up to 10% ethanol, 5% methane, or 5% MTBE are acceptable petrols.

When using ethanol blended petrol, it is not necessary to add a petrol antifreeze since ethanol will prevent the accumulation of moisture in the fuel system.

Recommended engine/transmission oil

CAUTION: *Any oil used in place of the recommended oil could cause serious engine damage. Do not use oils which contain graphite or molybdenum additives. These oils can adversely affect clutch operation. Also, not recommended are racing, vegetable, non-detergent, and castor-based oils.*

The recommended oil to use in this AgTV is MASSEY FERGUSON Engine Oil SAE 10W/40 (ATV0436-005) or an equivalent oil which is rated SE, SF, or SG under API service classification. These oils meet all of the lubrication requirements of the MASSEY FERGUSON AgTV engine. The recommended engine oil viscosity is SAE 10W-40. Ambient temperature should determine the correct weight of oil. See the viscosity chart for details, (Fig. 1).

Recommended front differential/rear drive lubricant

The recommended lubricant is MASSEY FERGUSON (ATV0436-007) or an equivalent gear lube which is SAE approved 80W-90 hypoid. This lubricant meets all of the lubrication requirements of the MASSEY FERGUSON AgTV differentials.

CAUTION: *Any lubricant used in place of the recommended lubricant could cause serious front differential/rear drive damage.*

Filling petrol tank

WARNING: Always fill the petrol tank in a well-ventilated area. Never add fuel to the AgTV petrol tank near any open flames or with the engine running. DO NOT SMOKE while filling the petrol tank.

Since petrol expands as its temperature rises, the petrol tank must be filled to its rated capacity only, (Fig. 2). Expansion room must be maintained in the tank particularly if the tank is filled with cold petrol and then moved to a warm area.

WARNING: Do not over-flow petrol when filling the petrol tank. A fire hazard could materialise. Always allow the engine to cool before filling the petrol tank.

Tighten the petrol tank cap securely after filling the tank.

WARNING: Do not over-fill the petrol tank.

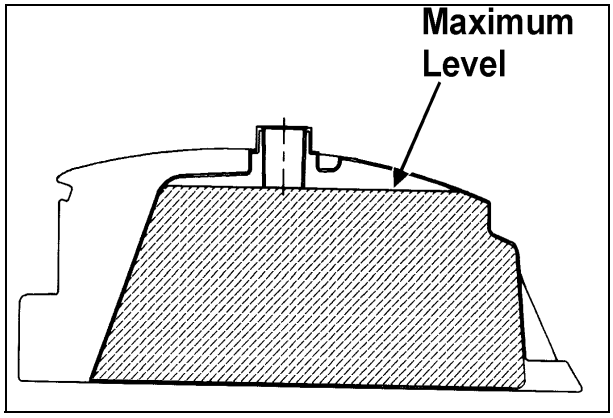

Fig. 2

GENUINE PARTS

When replacement of parts is necessary, use only genuine MASSEY FERGUSON AgTV parts. They are precision-made to ensure high quality and correct fit. Refer to the appropriate Illustrated Parts Manual for the correct part number, quantity, and description.

LOAD CAPACITY RATINGS CHARTS

MASSEY FERGUSON AgTV Load capacity ratings 400/500cc				
Item	4x4 specifications		2x4 specifications**	
	(lb)	(Kg)*	(lb)	(Kg)*
Max load capacity	1250	568	1220	554
Calculation				
Operator	200	91	200	91
Front rack (max)	100	45	90	41
Rear rack (max)	200	91	180	82
Accessories (i.e, winch, gun brackets etc)	35	15	35	15
Maximum AgTV load capacity (w/trailer & cargo)	1250	568	1220	554

* Rounded off

**For the 400 cc only; there is no 500cc 2x4 model

PREPARATION FOR STORAGE

CAUTION: *Prior to storing the AgTV, it must be properly serviced to prevent rusting and component deterioration.*

MASSEY FERGUSON recommends the following procedure to prepare the AgTV for storage.

1. Clean the seat cushion with a damp cloth and allow it to dry.
2. Clean the AgTV thoroughly by hosing dirt, oil, grass, and other foreign matter from the entire AgTV. Allow the AgTV to dry thoroughly. DO NOT get water into any part of the engine.
3. Either drain the petrol tank or add Fuel Stabiliser (ATV 0638-165) to the petrol in tank. Remove the air cleaner cover and air filter. Start the engine and allow it to idle; then using MASSEY FERGUSON Engine Storage Preserver (ATV 0636-177), rapidly inject the preserver into the air filter opening for a period of 10 to 20 seconds; then stop the engine. Install the air filter and cover.
4. Plug the exhaust hole in the muffler with a clean cloth.
5. Apply light oil to the upper steering post bushing, plungers of the shock absorbers, and cable ends.
6. Tighten all nuts, cap screws, and screws. Make sure rivets holding components together are tight. Replace all loose rivets. Care must be taken that all calibrated nuts, cap screws, and screws are tightened to specifications.
7. On liquid cooled models, fill the cooling system to 1/2 in. above the radiator core with properly mixed coolant.
8. Polish the AgTV thoroughly.
9. Disconnect the battery cables; then clean the battery posts and cables. Remove the battery and store in a clean, dry area.
10. Store the AgTV indoors in a level position.

CAUTION: *Avoid storing outside in direct sunlight and avoid using a plastic cover as moisture will collect on the AgTV causing rusting.*

PREPARATION AFTER STORAGE

Taking the AgTV out of storage and correctly preparing it will assure many miles and hours of trouble-free riding. MASSEY FERGUSON recommends the following procedure to prepare the AgTV.

1. Clean the AgTV thoroughly.
2. Clean the engine. Remove the cloth from the muffler.
3. Check all control wires and cables for signs of wear or fraying. Replace if necessary.
4. Change the engine/transmission oil and filter and the front differential/rear drive lubricant.
5. On liquid cooled models, check the coolant level and add properly mixed coolant as necessary.
6. Charge the battery; then install. Connect the battery cables; then coat the terminals with grease.
7. Check the entire brake systems (fluid level, pads, etc.), all controls, headlight, taillight, brakelight, and headlight aim; adjust or replace as necessary.
8. Tighten all nuts, cap screws, and screws making sure all calibrated nuts, cap screws, and screws are tightened to specifications.
9. Make sure the steering moves freely and does not bind.
10. Check the spark plug. Clean or replace as necessary.
11. Inspect the air filter and air cleaner housing for obstructions.
12. Check and inflate tyres to recommended pressure.

Maintenance

Section 2-A

250/300 cc

Table of Contents

PERIODIC MAINTENANCE CHART

A = Adjust I = Inspect
C = Clean L = Lubricate
D = Drain R = Replace

Item	Initial service after break-in (First month or 200 miles)	Everyday	Every month or every 100 miles	Every 3 months or every 300 miles	Every 6 months or every 600 miles	Every 9 months or every 900 miles	Every year or every 1500 miles	As needed
Battery	I		I					C
Fuses				I				R
Air filter/Drain tube	I	I	C*					R
Valve/tappet clearance	I				I			A
Engine compression							I	
Spark plug				I				R (4000 Miles or 18 Months)
Muffler/spark arrester						C		R
Fuel/vent hoses		I						C
Petrol tank valve							I	C
Throttle cable	I	I			C, L			A, R
Carb float chamber (bowl)				D*				
Engine RPM (idle)	I				I			A
Engine - Transmission oil level								A
Engine - Transmission oil/filter	R	I	I		R*			R
Oil strainer	I				I			C
Front differential/ rear drive lubricant	I		I			I	R	
Clutch	I					I		A
Tires				I				R
Steering components	I	I		I				R
Front axle Boots/ driveshaft Universal joint			I*					R

Suspension/ shock absorbers/ bushings						I*		R
Nuts/cap screws/ screws	I			I	I			A
Ignition timing							I	
Headlight/ taillight-brakelight	I	I						R
Switches		I						R
Reverse shift lever					I			A, L
Choke cable				I	C, L			R
Recoil starter		I						C/R
Handle grips		I						R
Handlebars		I						R
Gauges/ Indicators		I						R
Frame/Welds/ Racks			I			I		
Electrical connections						I		C
Complete brake system (Hydraulic & Mechanical)	I	I		C				L, R
Brake pads	I			I*				R
Brake fluid	I			I				R (2yrs)
Brake hoses	I			I				R (4 yrs.)
Coolant/ Cooling system	I		I					R (2 yrs.)
Upper arm/ knuckle (rear)	I				L**			

* Service/Inspect more frequently when operating in adverse conditions.

** If a rear arm grease fitting does not accept grease, do not force grease into fitting.

NOTE: *If a rear arm grease fitting does not accept grease, do not force grease into the fitting.*

LUBRICATION POINTS

It is advisable to lubricate certain components periodically to ensure free movement. Apply light oil to the components using the following list as reference.

A -Throttle Lever Pivot/Cable Ends.

B - Brake Lever Pivot/Cable Ends.

C - Mechanical Brake Cable Ends.

D - Choke Cable Upper End.

E - Reverse Lever Cable End

F - Idle RPM Screw (carburettor)

G - Upper/Lower Rear Arms (6 Locations - 250/300 cc)

BATTERY

The battery is located under the right rear fender.

The level of the battery fluid must be kept between the upper and lower level lines at all times. If the level drops below the lower level line, add only **distilled water** until it reaches upper level line.

WARNING: Battery acid is harmful if it contacts eyes, skin, or clothing. Care must be taken whenever handling a battery.

If the battery is discharged, remove the battery from the AgTV and charge the battery at the standard charging rate of 1.4A x 10 hr.

WARNING: Anytime service is performed on a battery, the following must be observed: keep sparks, open flame, cigarettes, or any other flame away. Always wear safety glasses. Protect skin and clothing when handling a battery. When servicing battery in enclosed space, keep the area well-ventilated. Make sure battery venting is not obstructed.

To remove and charge the battery, use the following procedure;

1. Remove the battery hold-down bracket.
2. Remove the negative battery cable; then remove the positive cable and the battery vent tube. Remove the battery from the AgTV. Care should be taken not to damage the vent tube.

WARNING: Avoid spillage and contact with skin, eyes, and clothing.

CAUTION: *Do not charge the battery while it is in the AgTV with the battery terminals connected.*

3. Remove the vent plugs; then (if necessary) fill the battery with **distilled water** to the upper level indicated on the battery.
4. Trickle charge the battery at 1.4 amps for 10 hours.

CAUTION: *Never exceed the standard charging rate.*

5. After charging, check fluid level and fill with **distilled water** as necessary; then install vent plugs.

CAUTION: *Before installing the battery, make sure the ignition switch is in the OFF position.*

Fig. 1

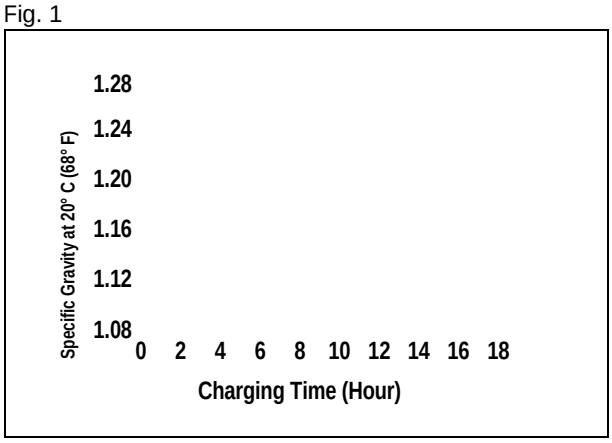

Fig. 2

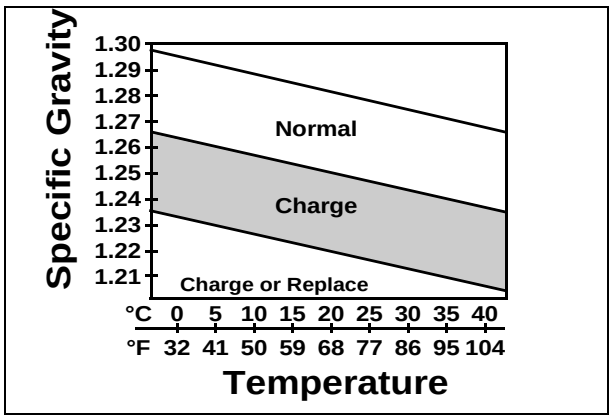

Fig. 3