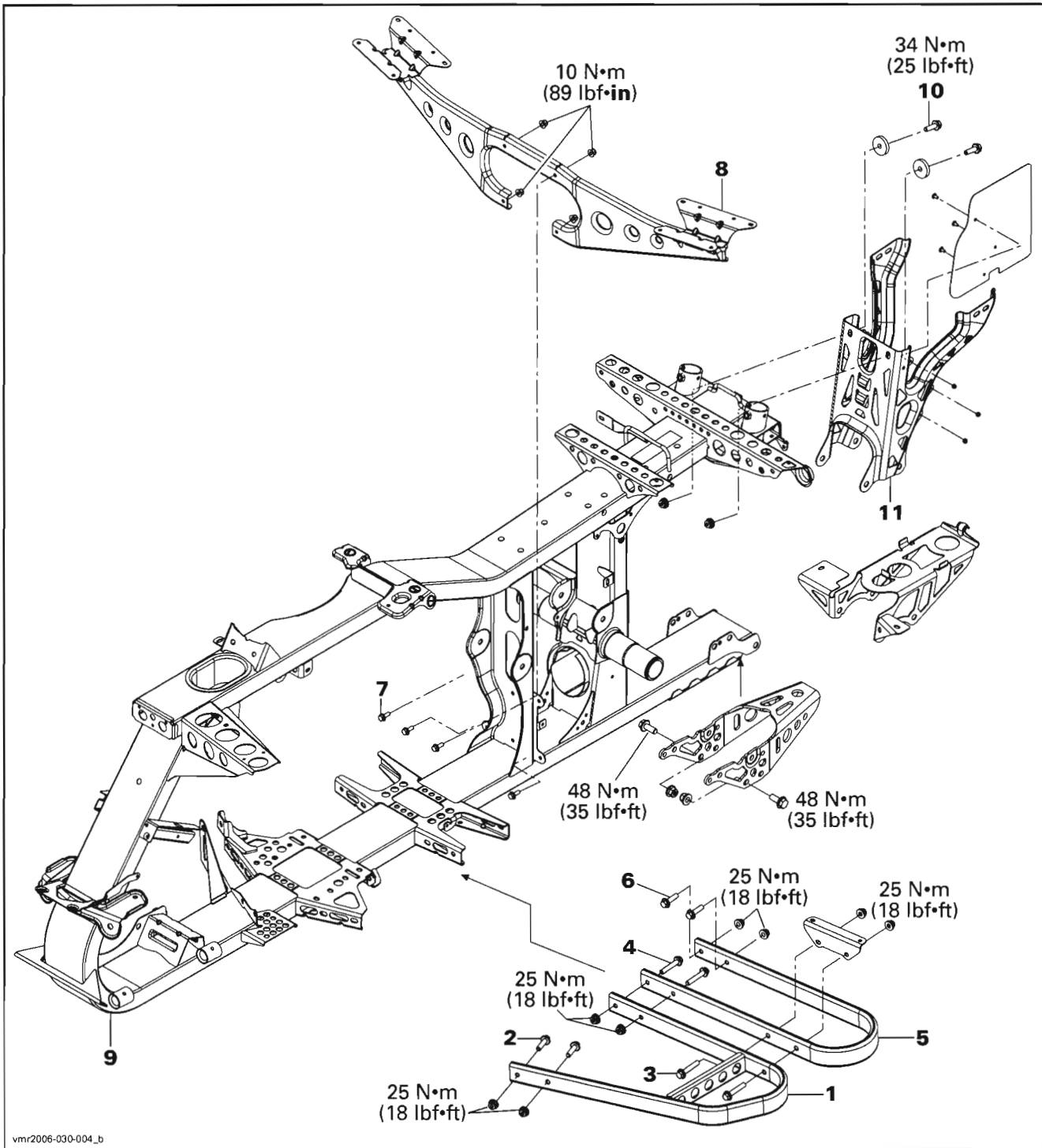


Section 12 BODY/FRAME

Subsection 02 (FRAME)

Outlander MAX 500/650/800 Series



GENERAL

During assembly/installation, use the torque values and service products as in the exploded views.

Clean threads before applying a threadlocker. Refer to *SELF-LOCKING FASTENERS* and *LOCTITE APPLICATION* at the beginning of this manual for complete procedure.

WARNING

Torque wrench tightening specifications must strictly be adhered to.

Locking devices (e.g.: locking tabs, elastic stop nuts, cotter pins, etc.) must be replaced with new ones.

PROCEDURES

FOOTREST SUPPORT

NOTE: Use the same procedure for RH or LH footrest supports.

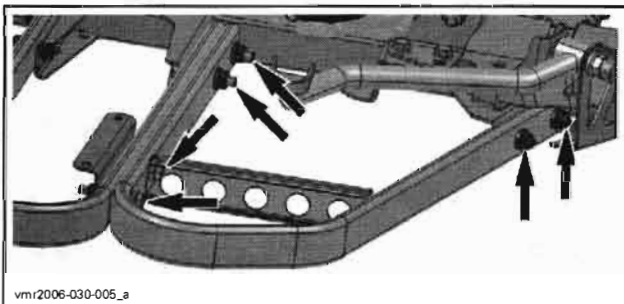
Footrest Support Removal

Front Footrest Support

To remove the front support no. 1, do the following.

Remove the appropriate footrest.

Unscrew bolts no. 2, no. 3 and no. 4.



Remove the front footrest support.

Rear Footrest Support

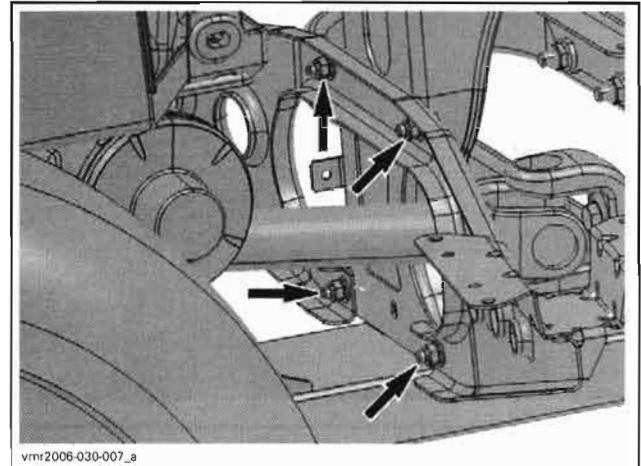
To remove the rear footrest support no. 5, use same procedure than front footrest support but remove bolts no. 6 instead of bolts no. 2.

Passenger Footrest Support

All MAX/MAX XT Models

Remove both footrests.

Unscrew bolts no. 7 then remove passenger footrest support(s) no. 8.



OUTLANDER MAX

Footrest Support Inspection

Check footrest support(s) for cracks, bending or other damages. Replace if necessary.

Footrest Support Installation

The installation is the reverse of removal procedure.

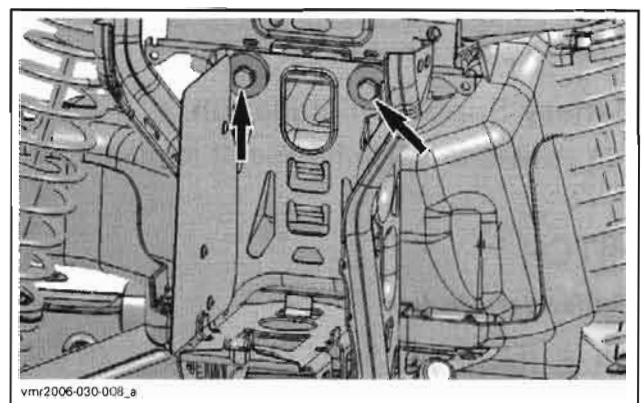
NOTE: Install all bolts before tightening.

BATTERY SUPPORT

Battery Support Removal

Remove battery (refer to *STARTING SYSTEM*).

Remove bolts no. 10 retaining the battery support no. 11 to frame no. 9.

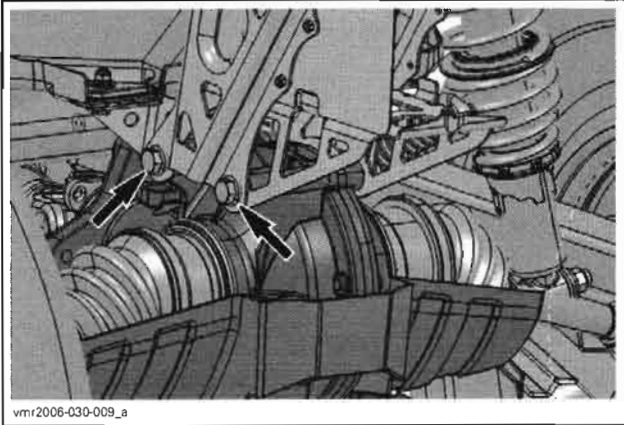


TYPICAL

Remove upper differential bolts.

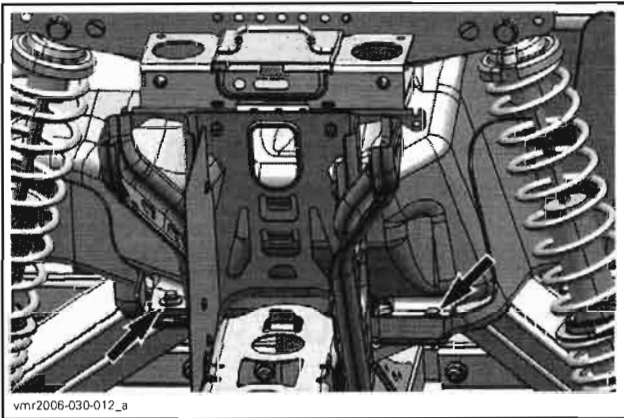
Section 12 BODY/FRAME

Subsection 02 (FRAME)



TYPICAL

Remove bolts that attach fuel tank and its protector to frame.



Remove battery support from vehicle.

Battery Support Inspection

Check battery support for cracks or other damages. Replace if necessary.

Battery Support Installation

The installation is the reverse of removal procedure.

HITCH

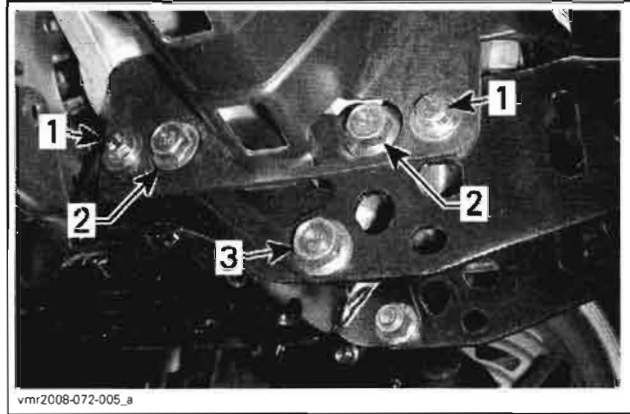
Outlander Models

Hitch Removal

Remove the differential protector.

Unscrew bolts retaining the hitch to frame.

Remove lower differential bolts.



1. Differential protector bolts
2. Lower differential bolts
3. Hitch bolt

Remove hitch from vehicle.

Hitch Inspection

Check hitch for cracks, bending or other damages. Replace if necessary.

Hitch Installation

The installation is the reverse of removal procedure.

RECOVERY HOOK

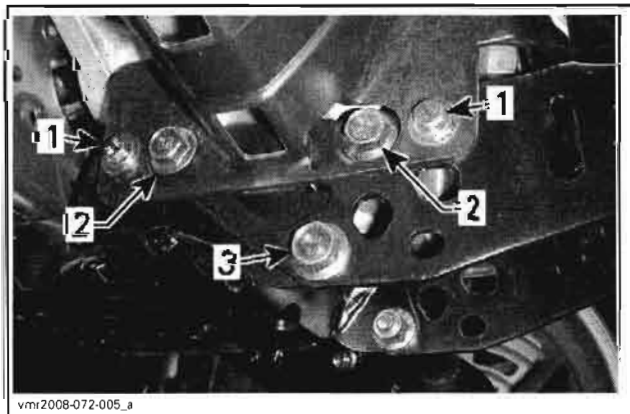
Renegade Models

Hook Removal

Remove the differential protector.

Unscrew bolts retaining the recovery hook to frame.

Remove lower differential bolts.



TYPICAL

1. Differential protector bolts
2. Lower differential bolts
3. Hitch bolt

Remove recovery hook from vehicle.

Hook Inspection

Check hitch for cracks, bending or other damages. Replace if necessary.

Hook Installation

The installation is the reverse of removal procedure.

FRAME

Frame Cleaning

Clean frame no. 9 with appropriate cleaners and rinse with high pressure hose.

NOTE: Clean the draining holes under frame. The drain holes are located at the rear of bottom side of frame.

Touch up all metal spots where paint has been scratched off. Spray all bare metal parts of vehicle with metal protector.

Frame Welding

CAUTION: Before performing electrical welding anywhere on the vehicle, unplug the multiple connector at the electronic module connector. Also unplug the negative cable and the voltage regulator. This will protect the electronic module and battery against damage caused by flowing current when welding.

Use the following specifications for electric welding:

- amperage: 70 - 110 A
- voltage: 20 - 24 V
- rod: E-7014 (3/32 in).

NOTE: Install the ground as close as possible from the reparation area.

CAUTION: If welding is to be done near plastic material, it is recommended to either remove the part from the area or to protect it with aluminum foil to prevent damage.

OUTLANDER SERIES

MODEL		OUTLANDER™ 500	OUTLANDER™ 650	OUTLANDER™ 800
ENGINE				
Engine type		ROTAX® V490	ROTAX® V660	ROTAX® V810
		4-stroke, Single Over Head Camshaft (SOHC), liquid cooled		
Number of cylinders		2		
Number of valves		8 valves (mechanical adjustment)		
Bore	mm (in)	82.03 (3.23)		91 (3.58)
Stroke	mm (in)	47.3 (1.86)	61.5 (2.42)	
Displacement	cm ³ (in ³)	500 (30.51)	650 (39.67)	800 (48.82)
Compression ratio		10.7:1	10.3:1	10.3:1
Decompressor type		N.A.		
Maximum HP RPM		7250		6750
Lubrication	Type	Wet sump. Replaceable oil filter		
	Oil filter	BRP Rotax paper type, replaceable		
	Engine oil pressure	Minimum	350 kPa (51 PSI) at 6000 RPM	
	Engine oil	Capacity (oil change with filter)	2 L (2.11 quarts)	
Recommended		SAE 5W30 API classification SM, SL or SJ see <i>OIL VISCOSITY CHART</i> in <i>LUBRICATION SYSTEM</i>		
Intake valve opening		3° BTDC	5° BTDC	
Intake valve closing		34° ABDC	45° ABDC	
Exhaust valve opening		39° BBDC	50° BBDC	
Exhaust valve closing		2° ATDC	0° ATDC	
Chain tensioner plunger protrusion		Service limit	mm (in) 20.0 (.7874)	
Valve clearance	Intake	mm (in)	0.06 to 0.14 (.0024 to .0055)	
	Exhaust	mm (in)	0.11 to 0.19 (.0043 to .0075)	
Valve stem diameter	Intake	New	mm (in) 4.966 to 4.980 (.1955 to .1960)	
		Service limit	mm (in) 4.930 (.1941)	
	Exhaust	New	mm (in) 4.956 to 4.970 (.1951 to .1957)	
		Service limit	mm (in) 4.930 (.1941)	
Valve out of round	Intake and exhaust	New	mm (in) 0.005 (.0002)	
		Service limit	mm (in) 0.06 (.0024)	
Valve guide diameter		New	mm (in) 4.998 to 5.018 (.1968 to .1976)	
		Service limit	mm (in) 5.050 (.1988)	
Valve spring free length		New	mm (in) 40.81 (1.607)	
		Service limit	mm (in) 39.00 (1.535)	
Valve seat contact width	Intake	New	mm (in) 1.05 to 1.35 (.041 to .053)	
		Service limit	mm (in) 1.8 (.070)	
	Exhaust	New	mm (in) 1.25 to 1.55 (.049 to .061)	
		Service limit	mm (in) 2 (.078)	

Section 13 TECHNICAL SPECIFICATIONS

Subsection 01 (OUTLANDER SERIES)

MODEL		OUTLANDER™ 500	OUTLANDER™ 650	OUTLANDER™ 800	
ENGINE (cont'd)					
Rocker arm bore diameter	New	mm (in)	12.036 to 12.050 (.4739 to .4744)		
	Service limit	mm (in)	12.060 (.4748)		
Rocker arm shaft diameter	New	mm (in)	12.000 to 12.018 (.4724 to .4731)		
	Service limit	mm (in)	11.990 (.4720)		
Piston measurement	New	mm (in)	81.950 to 81.966 (3.2264 to 3.2270)	90.950 to 90.966 (3.5807 to 3.5813)	
	Service limit	mm (in)	81.850 (3.2224)	90.850 (3.577)	
Piston/cylinder clearance	New	mm (in)	0.057 (.0022)	0.027 (.0011)	
	Service limit	mm (in)	0.130 (.0051)	0.100 (.0040)	
Piston ring type	1 st		Upper compression ring, rectangular		
	2 nd		Lower compression ring, tapered face		
	3 rd		Oil scraper ring		
Ring end gap	Rectangular	New	mm (in)	0.20 to 0.40 (.008 to .016)	
	Tapered face			0.20 to 0.40 (.008 to .016)	
	Oil scraper ring	Service limit	mm (in)	0.20 to 0.70 (.008 to .028)	
	All			1.5 (.059)	
Ring/piston groove clearance	Rectangular	New	mm (in)	0.03 to 0.070 (.0012 to .0028)	
	Tapered face			0.02 to 0.060 (.0008 to .0024)	
	Oil scraper ring			0.01 to 0.018 (.0004 to .0007)	
	Rectangular	Service limit	mm (in)	0.15 (.0059)	
	Tapered face			0.15 (.0059)	
	Oil scraper ring			0.25 (.0098)	
Cylinder bore	New	mm (in)	82.023 to 82.037 (3.2292 to 3.2298)	90.993 to 91.007 (3.5823 to 3.5829)	
Cylinder taper	Maximum New	mm (in)	0.038 (.0015)		
	Service limit	mm (in)	0.090 (.0035)		
Cylinder out of round	Maximum New	mm (in)	0.015 (.0006)		
	Service limit	mm (in)	0.020 (.0008)		
Camshaft main bearing journal	Timing chain side	New	mm (in)	34.959 to 34.975 (1.3763 to 1.3770)	
		Service limit	mm (in)	34.950 (1.3760)	
	Spark plug side	New	mm (in)	21.959 to 21.980 (.8645 to .8654)	
		Service limit	mm (in)	21.950 (.8642)	
Camshaft main bearing journal bore	Timing chain side	New	mm (in)	35.000 to 35.025 (1.3780 to 1.3789)	
		Service limit	mm (in)	35.040 (1.3795)	
	Spark plug side	New	mm (in)	22.000 to 22.021 (.8661 to .8670)	
		Wear limit	mm (in)	22.040 (.8677)	
Camshaft lobe	Intake valve	New	mm (in)	31.830 to 32.030 (1.2531 to 1.2610)	
		Service limit	mm (in)	31.810 (1.2524)	
	Exhaust valve	New	mm (in)	31.730 to 31.930 (1.2492 to 1.2571)	31.94 to 32.14 (1.2575 to 1.2654)
		Service limit	mm (in)	31.710 (1.2484)	31.92 (1.2567)