MM 4X4 VEHICLE ELECTRONICS

www.mm4x4.com.au

auto-mate

Mitsubishi Pajero 2009+ NT, NW, NX

Operating Instructions

Rev F: 17 Jul 2020

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Watch our installation and operation videos on the MM 4X4 Channel

OWNERS COPY – Save these instructions for future reference

Thanks for purchasing **auto-mate**; a fantastic product to protect the transmission from over-heating, and to improve fuel economy.

auto-mate Features

Feature	*Benefit*
General Benefits of auto-mate	
Significantly reduces automatic transmission heat build-up	Prolong the life of the transmission oil and help avoid temperature related transmission failures
Improved fuel economy	Typically, a 10% improvement when towing. The unit will pay for itself in the long run
Micro-processor controlled	Provides advanced digital control and features
A new DRIVE mode, optimised to lock the Torque Converter Clutch (TCC) and gear changes	Easy to use. A driver may not even know it's there!
Fifth (5^{th}) gear lockout mode	When active, only gears 1-4 are used
Adjustable gear shift profile	Can be shifted up and down to tailor to your liking for vehicle modifications.
Doesn't change the factory ECU firmware	No re-mapping of the transmission ECU required
Comprehensive installation instructions aimed at DIY installation	DIY saves money, or reduces cost if installed by a professional
Still use your favourite OBD2 devices as it won't interfere with them	Doesn't use OBD2 messages and passively listens to the CANBus, so it's compatible with your existing Scan-gauge, GPS HUD etc
Avoids the 1^{st} gear quirk that affects Pajero NT+ when a lockup-kit is used.	Masks the quirk which causes the transmission to stay in 1^{st} gear until 30 kph
Integration with the instrument cluster to display the current gear number, even when in DRIVE mode	Driver knows the transmission's current gear, instead of just a 'D'
NEW SafeLock™ - Clutch Protection Technology TCC lockup using the same low slip criteria as factory ECU before engaging the clutch.	Protect the clutch from excessive wear for longer life and reliability

Feature	*Benefit*
auto-mate Operation	
auto-mate's computer uses vehicle parameters such as speed, RPM, pedal position, 4WD mode, transmission mode (SPORT or DRIVE), transmission temperature, and current gear for optimum performance and features.	Complex control logic to ensure the correct gear is selected to ensure the TCC is locked up whenever possible, and unlocked when it's not.
Vehicle status is obtained from the vehicle's internal vehicle digital network (CANBus), via connection to the car's existing OBD2 port.	Precise and reliable digital information Simpler installation – no cutting of wires to obtain vehicle information Immunity to electrical noise
Works when transmission is in either SPORT or DRIVE mode (4LLc is SPORT only)	Keeping the **blue** LED on helps keep the transmission **cool**!
Can be enabled or disabled using the LED/switch	Can be switched off if desired
Small custom LED/Switch	Discrete and simple installation and in the driver's sight
LED indication of the lockup status	Driver knows then the TCC is locked
Excessive Slip Alert (SPORT mode) LED flashes if the TCC is unlocked (3^{rd} gear an above), or when there is currently excessive slip to safely lockup the clutch	Informs the driver to change to a lower gear to enable lockup to occur, or to reduce engine power (RPM) to lockup the clutch without excessive wear
LED pulses during transmission warm up period	Driver knows **auto-mate** is working and is waiting for the transmission oil to warm-up before allowing TCC lockup and control.
Automatically adjusts for 4WD low-range use	Simple use
LED is visible in sunlight, and automatically dims for night use (headlights are on)	Avoids a glaring LED at night
Headlight dimming can be overridden by the driver	LED will be visible during the daytime when driving with the headlights on
Installation Features	
User initiated self-diagnostic mode, displaying results on the instrument cluster	Confirms correct installation and assists with fault finding
Automatic VIN check	Automatically disables if installed into an unsupported vehicle
Compact design	Simpler installation
Installed in 2-3 hours	DIY installation

Feature	*Benefit*
User Configurable Parameters	
1. Adjustable transmission shift pattern	Fine tune when the gear shift points occur.
2. Gear at which lockup commences	Select 1st, 2nd, 3rd, etc (default is 2nd)
3. LED brightness	Adjustable to your preference, for both day and night.
4. Warm-up Temperature	Lockup control and gear changes only commences when the transmission oil is above this temperature (40°C default).
5. Startup state (on or off)	Remembers the switch setting
Reset to factory defaults	Restore settings to the original
Stores user settings in micro-processor's non-volatile memory	Remembers setting when power is removed
Enters user configuration mode only when vehicle engine is off	Safety feature
Updates user settings using existing Instrument Cluster and Cruise Control switches as the user interface	No need for an extra display or to access the **auto-mate** controller to adjust the settings
Other Benefits	
Firmware upgrades	Unit will need to be returned to MM 4X4 for the update
Electrical control of the TCC clutch is the same as the factory ECU	Mimics the factory control for confidence, and smoother TCC engagement

✓ **Technical support**

✓ **Made in Australia**

✓ **12-month warranty**

30-day money back satisfaction guarantee

BASIC OPERATION

Put simply…

The aim is to keep the blue LED *ON* to achieve maximum fuel savings and heat reduction.

Keep the LED Blue, to "**Keep Cool and Save Fuel**"

COLD START

auto-mate monitors the transmission temperature and does not activate until it has reached the warmup temperature (default 40˚C). While warming up, the LED pulses gently so you know the unit is operating. The warmup temperature is user configurable.

DRIVE POSITION

In DRIVE it is fully automatic – just set and forget. It will lock the torque converter above 30 kph and thereafter keep it locked. When extra torque is needed, it will downshift a gear rather than unlocking the torque converter (as the factory ECU often does).

The driver can control how and when **auto-mate** changes gears by how much or little the pedal is pressed. For example, with your foot off the pedal and engine braking downhill, it will hold the current gear to improve engine braking – lightly touch it, and it will then change up a gear.

If you're finding the transmission is changing between 4th and 5th too often, use the 5th gear lockout feature, just double-click the LED to toggle this mode. Alternatively, use SPORT mode.

Want a SPORTIER feel? Adjust the shift profile to your preference.

If you personally find **auto-mate** holds onto a gear too long before changing down, adjust the shift profile up a little to your preference.

In 4LLc, **auto-mate** does not lockup the TCC when in DRIVE mode. Use SPORT mode instead.

SPORT POSITION

In SPORT mode, **auto-mate** will automatically lock the Torque Converter Clutch (TCC) from 2nd gear whenever the conditions are suitable (speed, gear, engine load, slip). The driver must ensure the right gear and engine load to enable lockup.

Excessive Slip Alert

When the **auto-mate** LED flashes, it is alerting you change to a lower gear because there is excessive torque converter slip and it cannot lockup safely. This is a reminder to select a lower gear and usually this is all that is required to enable lockup. If after changing down a gear and there is still excessive slip to safely engage the clutch, momentarily back off on the accelerator to reduce power, and the torque converter will then lockup. It will only flash in 3rd or above, when the accelerator pedal is depressed, and the RPM slip is above the slip protection limit.

Hybrid Sport/Drive

To avoid the 1st gear quirk, the transmission is placed into DRIVE mode when below ~30 kph. SPORT is a hybrid DRIVE/SPORT mode, and manual control of the gears will only occur when above ~30 kph. The green D will illuminate according to the current mode.

This means even though the shift lever position is in SPORT, the vehicle operates and changes gear as per factory DRIVE mode when speed is <30 kph.

Once the speed is above ~30 kph, the driver has control of the gear choice again

So, in **auto-mate** SPORT mode, the +/- shift lever is ignored until the speed is above 30 kph - This is normal.

If precise 1st and 2nd gear choice control is needed at speeds <30 kph, **auto-mate** can be simply turned OFF.

Tips when driving in SPORT mode

- ✓ It essentially turns the transmission into a clutch-less manual. This thought should guide how to best drive the vehicle when in this mode. Imagine it is a manual transmission, so you need to change gears according to the RPM. When driving gently, change gears at ~2000-2400 RPM. If accelerating quickly, around 2600-3000+ RPM.
- ✓ Change down a gear if the LED is flashing.
- ✓ Experiment with RPM and load to determine the right time for the gear changes.
- ✓ Choose the highest gear that allows the LED to stay **blue** without labouring the engine.
- ✓ **auto-mate** will improve downhill engine braking. Select an appropriate gear (typically S4 or S3)

auto-mate will unlock the torque converter if the RPM is too low to avoid shuddering, however if you change up a gear too early the factory transmission ECU may cause a CEL error (P2758).

HIGH RANGE (4H) OPERATION

auto-mate automatically detects if the transfer case is in 2H/4H or 4L, and adjusts accordingly. In 2H/4H, it uses a combination of speed, gear, RPM, slip and the accelerator pedal to determine when to lock the TCC.

4L MODE OPERATION

In low range 4WD, **auto-mate** only works in SPORT mode and uses RPM to determine when to lock the TCC (engages around 1500-2000 RPM and disengages @1200 RPM).

Because of the '1st gear quirk' see "**Entering 4LLc (low range) procedure**" later in this booklet.

NOTE : In 4L, if emergency braking is conducted at very low RPM in 2nd gear, the engine may stall. This is due to **auto-mate** and the vehicle not being able unlock the TCC in a timeframe to avoid the stall.

THINGS YOU NEED TO KNOW – HOW IT WORKS

The AISIN transmission in the Pajero cannot lock the TCC in 1st gear.

auto-mate will automatically lockup the torque converter in any speed and gear (2-5) according to the driving conditions. It constantly monitors the vehicle status including speed, current gear, RPM, accelerator pedal, torque converter slip, 2H/4H/4L position, and the SPORT gear choice. This information is used to determine when the TCC should be locked and when to change gerars. In DRIVE and SPORT modes, it locks only when above ~30 kph.

auto-mate works by locking the transmission TCC (when possible), and places the transmission into SPORT mode. It then changes gears just as if the driver was using the shift lever for + and – gear changes; fully automatically.

All the inbuilt protections of the factory computer remain. For example, it will not let you change into 2nd gear when the speed is too high. It does not reprogram the factory ECU.

1ST GEAR QUIRK

Because **auto-mate** avoids the quirks, there are still some things you need to understand about how it works.

When using any lockup kit in a Pajero, there are sometimes unusual behaviours.

The Pajero's AISIN transmission ECU has advanced diagnostics that continuously monitor the operation of the transmission. By locking the TCC it modifies the 'normal' behaviour of the transmission, and the diagnostics may detect this.

The result is unexpected behaviours (quirks):

1. When you're in SPORT mode it may prevent a gear change from 1st to 2nd until the speed is above 30 kph / 2800 RPM,
2. As you decelerate it may change into 1st gear at 30 kph causing you to lunge forward a little.
3. In 4LLc, it may become stuck with the 'quirks'.

In high range, these quirks don't occur when the transmission is moved to DRIVE mode.

auto-mate does the hard work and masks these quirks for you.

It works together with the factory transmission computer and automatically switches between DRIVE and SPORT modes at the right times to provide seamless operation and avoid the quirks. This provides a much nicer driving experience.

When DRIVE is selected the factory computer controls gear changes between 0-30 kph. Above 30 kph, **auto-mate** takes control and switches the transmission into SPORT mode, locks the TCC, and controls the gear changes with a shift profile optimised for lockup operation. Regardless, the instrument cluster remains displaying the green D, and the current gear number is displayed.

DOWNHILL ENGINE BRAKING

To increase downhill engine braking, move the shift lever to SPORT and select a lower gear. **auto-mate** will keep the torque converter locked when coasting to improve engine braking, and cool the transmission faster. It will not lock however, unless the RPM is above 1200, so if coasting downhill (800-900 RPM) you will need to increase the RPM to engage the TCC for lockup. Once the TCC has locked up, the increased RPM will be maintained.

If you change back to DRIVE (and still coasting) **auto-mate** will hold the chosen gear until you touch the accelerator again.

SAFETY FEATURE – Engine Braking

auto-mate does not shift into DRIVE at 30 kph when you are in 1st or 2nd gear (SPORT mode) and are decelerating using engine braking (foot off accelerator pedal). Shifting into DRIVE releases engine braking and has the potential to cause an accident if unexpected.

At 30 kph and below, the transmission may either stay in 2nd gear, or switch to 1st gear (ie, quirk is not avoided). Although the quirk is not avoided, unexpected switching into 1st gear has the effect of increased engine braking and is safer compared to the alternative of releasing engine braking by switching to DRIVE.

Alternatively, for predictable gear control and to avoid the 1st gear quirk, switch off **auto-mate** using the LED/switch. Down-hill descents that require engine braking will not over-heat the transmission

(NOTE: This change is effective from units MM-AM8-01-01-052 and later. Earlier units will switch to DRIVE in 2nd gear at 30 kph and will release engine braking. A free firmware update is available for these units and can be ordered via the website mm4x4.com.au.)

LOW RANGE OPERATION – 4LLC

When in 4LLc, the quirks described above aren't created during driving, however using the technique of selecting DRIVE will not avoid them. Instead, it may become 'stuck' with the quirks when in low range.

CLEARING THE QUIRK - ENTERING 4LLC (LOW RANGE) PROCEDURE

First, determine if the transmission has the quirk.

To know if the quirk mode is active:

Vehicle stationary - ignition or engine on - low or high range 4WD:

1. Turn off auto-mate
2. Put the transmission lever into SPORT
3. Try to change up to 2nd gear (shift lever +).

If the quirk mode is active it will not let you go into second gear.

NOTE: Restarting the vehicle DOES NOT clear the quirk.

PROCEDURE TO CLEAR THE QUIRK

There are two ways to 'clear' the quirk mode:

1. Clear the engine trouble codes. Put the transmission into PARK and use your OBD2 reader (ScanGauge, UltraGauge, Torque Pro, etc) to issue a CEL reset. It MUST be in PARK. Even though there may be no engine trouble codes reported, this works; or
2. In high range (2H, 4H, 4HLc) turn off **auto-mate** and drive normally to above 30 kph so that the torque converter slips. This clears the quirk. Once stopped, enter 4LLc and turn **auto-mate** back on.

CHECK ENGINE LIGHT (CEL) ERROR CODE

On rare occasions in some vehicles, the ECU may throw an error code (P2758), and the check engine light (CEL) illuminates. P2757 error is *Torque Converter Clutch Pressure Control Solenoid Ctrl Circuit Stuck On.*

This may also occur if the driver selects a gear when the engine RPM is too low for the newly chosen gear.

If this happens (a CEL), the factory computer may disable SPORT mode and cruise control operation. The green N will flash, or the green D and N may alternately flash. The error code needs to be reset using an OBD2 reader when the vehicle is in PARK.

No damage results.

It is often the case that the code may only occur within the first couple of weeks of use. Thereafter the adaptive learning adjusts for the TCC being locked up.

SafeLock™ - Clutch Protection Technology

Exclusive to MM4X4 is **SafeLock**, which prevents excessive wear that may occur if the torque converter clutch is engaged under high slip conditions. The Advanced Digital Control of **auto-mate** reads the real-time vehicle status and is able to determine the amount of slip in the torque converter. Using the same slip limits as the factory ECU, it will only engage the clutch when within this range giving maximum longevity and reliability of the clutch.

Under light acceleration, the lockup clutch will engage at a lower speed as there will be low slip. Under heavy acceleration it will lockup later as **SafeLock** is delaying engagement until the slip is low. If active (LED OFF or flashing) the driver need only back off on the accelerator a little to reduce the RPM (and slip) for the clutch to then engage (LED comes on).

OPERATING RECOMMENDATIONS

Driving Condition	*Recommendation*
City, country and highway	**auto-mate** ON **Reason**: Excellent protection from high transmission temperatures and better fuel economy. Use SPORT mode for better downhill engine braking. For country driving in the hills, SPORT mode is recommended with the gear chosen to maintain lockup (**keep the blue LED ON to "keep cool and save fuel"**).
Rocks and creek-beds	**auto-mate** OFF * * Leave OFF only unless the transmission oil becomes hot (eg, >80°C), then switch **auto-mate** ON to reduce the transmission temperature when conditions wont place high dynamic forces on the driveline. **Reason**: The torque converter absorbs driveline shock caused by the highly variable nature of rock driving, eg, lifting/dropping wheels or hitting rock ledges.
Steep hills (4L ascent)	**auto-mate** ON or OFF, use SPORT mode **Short hills:** Leave OFF unless the transmission oil becomes hot (eg, >80°C), then switch **auto-mate** ON to reduce the transmission temperature. Use SPORT mode and climb in 2nd gear where possible to allow the TCC to lockup. The transmission will not lockup in 1st gear. **Reason:** When OFF, the torque converter absorbs driveline shock. **Long hills:** Steep hill climbs will rapidly heat-up the transmission oil, so if conditions are suitable switch **auto-mate** ON and climb in 2nd gear.

Driving Condition	*Recommendation*
Steep hills (descent)	**auto-mate** ON or OFF Typically a 4L steep descent is conducted in 1st gear. Since the transmission cannot not lockup in 1st gear the use of **auto-mate** doesn't make a difference. For better 4H engine braking on the asphalt, switch **auto-mate ON** and use SPORT mode.
Sand **(beach run at higher speeds >40 kph)**	**auto-mate** ON Use SPORT mode - ensure the blue LED stays on. **Reason:** Keep the transmission cool and better fuel economy.
Sand **(dunes and deep sand)** **Mud**	**auto-mate** ON or OFF **ON** for sustain deep sand driving to avoid high transmission temperatures. Use SPORT mode to choose an appropriate gear and keep the revs high so when it needs the power and the RPM drops, the engine is still at high turbo boost. **OFF** for short sections. If transmission oil becomes hot (eg, >80ºC), then switch **auto-mate ON** to reduce the transmission temperature. Deep sand and mud are a highly variable situations. When a deep section is entered more power is urgently needed to maintain momentum. The torque converter slippage allows the RPM to quickly increase for more turbo boost and power. Avoid locking the torque converter where high dynamic forces may impact the driveline.

INTRODUCTION TO THE LED/SWITCH

The LED/switch has a blue LED in the centre. This is also a momentary switch which can be pressed.

Quick press and release to switch the unit on or off.

Press and hold or double click to access other features. The LED will respond according to the command.

LED STATUS SUMMARY

LED pulsing	Pulsing = (bright, dim bright, dim…)
	auto-mate is functioning correctly and waiting for the transmission is warm up.
LED ON	Torque converter is locked.
LED OFF	Torque converter is not locked
	NOTE: LED is also OFF when **auto-mate** is switched OFF.
LED flashing	Excessive slip alert informing the driver to change down a gear or reduce power momentarily to enable lockup clutch engagement.
Flickering	ERROR condition. Flickers for 30 seconds, then **auto-mate** restarts. The **auto-mate** built in test has detected an abnormal condition. Press the LED to switch the unit off and contact MM 4X4.

SWITCH COMMANDS

Momentary push	Toggle **auto-mate** ON and OFF
	Short flash (0.5 sec) = OFF
	Long flash (1.5 secs) = ON (and gear number is displayed in D)
Double-click	Toggle 5th gear lockout mode (gear number flickers 4 or 5 with the setting)
Hold 5 seconds	Toggle 1st gear quirk avoidance mode (SPORT only)
Hold 10 seconds	Toggle Protection Mode
	2 flashes = OFF
	5 flashes = ON (recommended)

ADJUSTING AUTO-MATE TO SUIT YOUR DRIVING PREFERENCES

During driving, **auto-mate** allows the driver to adjust the following parameters using the LED/Switch:

1. **On or Off** - When off, fully reverts to factory transmission ECU control.
2. **Protection Mode** – Protects the clutch for wear during engagement and unlocks the torque converter when driveline shudder could be experienced.
3. **Fifth (5th) Gear Lockout Mode** - Used only in DRIVE mode. When active, only gears 1-4 are used. Useful when driving through hilly countryside.
4. **LED Headlight Override** - The LED brightness automatically dims when the headlights are turned on. This can be overridden if full brightness is desired for day time use.
5. **Toggle Avoiding the 1st Gear Quirk** – In SPORT mode, the transmission is switched to DRIVE when below ~30 kph. This can be toggled on and off, however when OFF the quirks will occur.

With the engine off, the following parameters can be set using the cruise control buttons:

1. **Gear shift profile**, ie, increase or decrease the speeds when gear shifts will occur.
2. **Minimum gear that lockup override will occur** - Default is 2nd gear, ie, it will lockup in 2nd, 3rd, 4th and 5th gears. The default of 2nd is recommended.
3. **LED brightness** - The LED brightness is adjustable separately for day and night viewing.
4. **Warm-up temperature** - The transmission oil temperature before **auto-mate** operates. The default is 40°C.

The following sections describe these features in more detail.

LED/SWITCH OPERATIONS DURING DRIVING

1. SWITCHING AUTO-MATE ON AND OFF

auto-mate can be switched on and off by using the LED/Switch.

The LED can be pushed to activate the momentary switch.

Between engine starts, **auto-mate** remembers the previous switch status.

When pressed, ON = a long flash of the LED (1.5 secs duration)

OFF = a short flash (0.5 secs)

During driving, the LED is ON when the torque converter is locked.

The instrument cluster always displays the current transmission gear when auto-mate is switched ON.

2. PROTECTION MODE

To toggle between the Protection Mode ON and OFF, press and hold the LED/Switch for 10 seconds.

The LED will respond with:

5 flashes – Protection Mode is **O**N

2 flashes – Protection Mode is **O**FF (not recommended)

The unit saves the mode setting into non-volatile memory.

ON (default)

There are two protection features built into **auto-mate**.

1. ***Excessive Engine Load*** – The position of the pedal is used in the algorithm that determines when **auto-mate** will release the TCC. It unlocks the torque converter if the driveline could shudder due to the load.
2. ***Clutch Protection*** – **auto-mate** includes SafeLock™ which will delay locking the torque converter until the amount of slip is low. It uses the same criteria as the factory ECU before engaging the clutch. This ensures the wear of the clutch when it engages is no different to normal use, ensuring maximum life from the clutch.

OFF

This mode is provided for customers who want more manual control over lockup clutch engagement and disengagement, or have specific reason to do so.

When Protection Mode is OFF, **auto-mate** activates (locks) the TCC when it can, and thereafter keeps it locked regardless of the engine load (pedal position). It will only unlock again once the RPM drops below 1200.

It disables SafeLock™ and lockup will engage without delay.

CAUTION

Switching Protection Mode OFF is for the savvy/advanced driver who specifically wants full control. It relies on the driver making the right gear choices and under the right engine load to avoid excessive engine strain or clutch wear.

This mode may cause a small amount of extra wear on the torque converter clutch compared to the standard factory engagement limit, as the clutch can engage under high slip conditions (ie, when under medium to high acceleration). Applying too much power at low RPM may cause the driveline shudder.

3. 5TH GEAR LOCKOUT (DRIVE MODE ONLY)

Double-click the LED to toggle this mode.

When active, only gears 1-4 are used. 5th gear is locked out.

Useful when driving through hilly countryside or to avoid 4th -5th -4th hunting that can occur in some driving conditions (eg, strong head winds or undulating hills).

The gear number in the instrument cluster will flash a 4 or 5 (for 1 second) as this mode is toggled.

4. HEADLIGHT OVERRIDE (DAY-TIME AND NIGHT-TIME LED BRIGHTNESS)

Press and hold CANCEL for 3 seconds. The LED will momentarily illuminate with the LED intensity.

When driving with your headlights on in the day-time, you can override the 'night mode' LED intensity (which is too dim).

Night-time LED intensity operation is linked to the headlights.

The headlight override setting is retained in non-volatile memory.

5. TOGGLE AVOIDING THE 1TH GEAR QUIRKS

(SPORT mode, high range 4WD ONLY)

Push and hold the LED for ~5 seconds to toggle this mode. LED will flash twice to acknowledge toggling the mode.

To avoid the 1st gear quirk, the transmission is placed into DRIVE when below 30 kph. When ON (default) **auto-mate** does this for you automatically. Once you go above 30 kph it will to switch to SPORT mode.

When OFF, the transmission will remain in Sport mode, but the quirks may be experienced.

NOTE: If you are stationary (or <30 kph) and you move the switch lever to SPORT, it will display D until you're above 30 kph after which it will just display the gear number. This is normal. When driving in SPORT mode it's better to know which mode the transmission is currently in (ie, SPORT or DRIVE), and the D provides this feedback to the driver.

CONFIGURATION USING CRUISE CONTROL SWITCHES

auto-mate allows the driver to configure the following parameters:

1. **Gear shift profile** - ie, increase or decrease the speeds when gear shifts will occur.
2. **Minimum gear that lockup override will occur.** Default is 2nd gear, i.e. it will lockup in 2nd, 3rd, 4th and 5th gears. The default of 2nd is recommended.
3. **LED brightness** - The LED brightness is adjustable separately for day and night viewing.
4. **Warm-up Temperature** - The transmission oil temperature before auto-mate operates. The default is 40°C.

1. Switch Ignition ON, ENGINE OFF

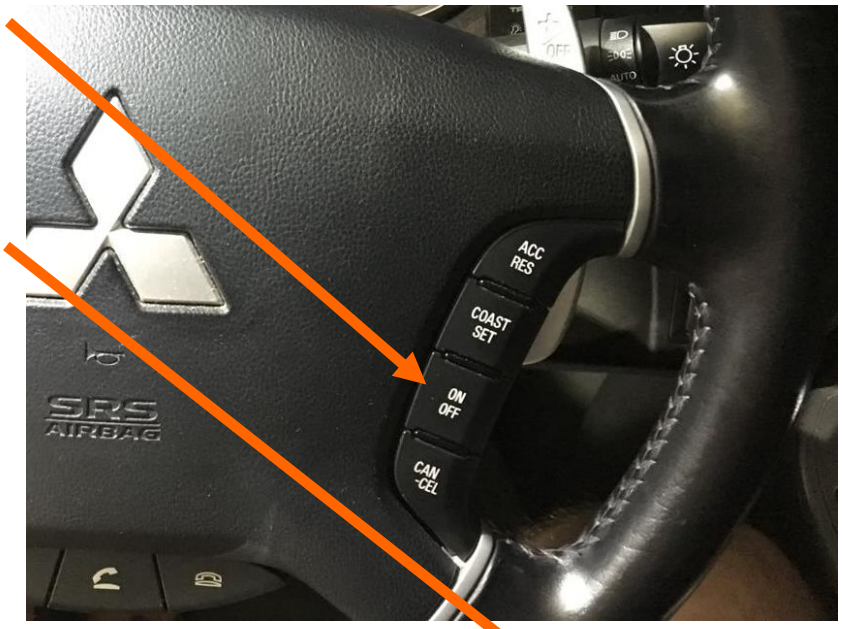
Engine must not be running

2. Press and hold ON/OFF button for 5 seconds.

(Wait until the instrument cluster displays a number on the speedo.)

Blue LED illuminates.

To reset to factory defaults, press and hold COAST/SET instead of ON/OFF button.



3. Shift Profile Adjustment

Default is 100.

For every increase or decrease of 10 kph, the shift point is adjusted by 100 RPM for all gears.

Adjust using the cruise control buttons ACC/RES (to increase) or COAST/SET (to reduce).

Avoid adjusting shift profile too low which results in drivetrain pulsing (shudder)

4. Press ON/OFF (ie, next)

The minimum gear is displayed on the Tacho.

Default is 2nd

Valid range is 1 to 5 (1st to 5th).

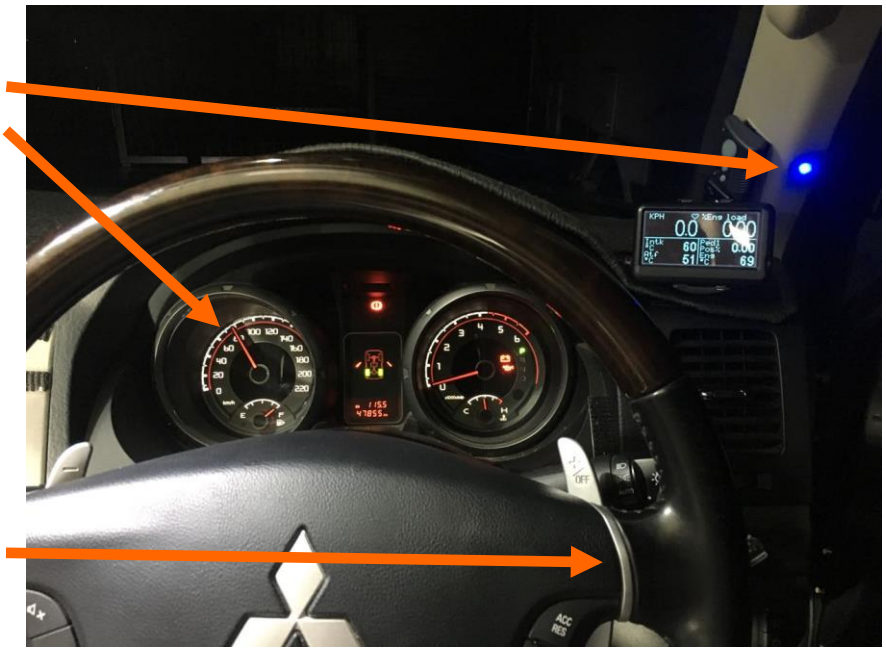
Use ACC/RES (+) and COAST/SET (-) to adjust

NOTE: The transmission from factory does not lockup in 1st gear.

Do not use 1st unless you have a Wholesale Automatics Nomad Valve Body fitted with the 1st gear lockup modification; otherwise it has no effect.

NOTE: 1st can also cause an AT ECU error code (CEL) when changing from 1st to 2nd gear.

5. Press ON/OFF (ie, next)



The LED brightness is displayed, and the LED intensity is adjusted to the current value.

Use ACC/RES (+) and COAST/SET (-) to adjust.

Use the headlights switch to toggle between night-time brightness and daytime brightness.

Night-time brightness is best adjusted when it's dark.

6. Press ON/OFF

The warm-up temperature is displayed on the speedo. 40 kph = 40°C.

Use ACC/RES (+) and COAST/SET (-) to adjust.

The allowable range is between 20°C to 100°C

The default is 40°C.

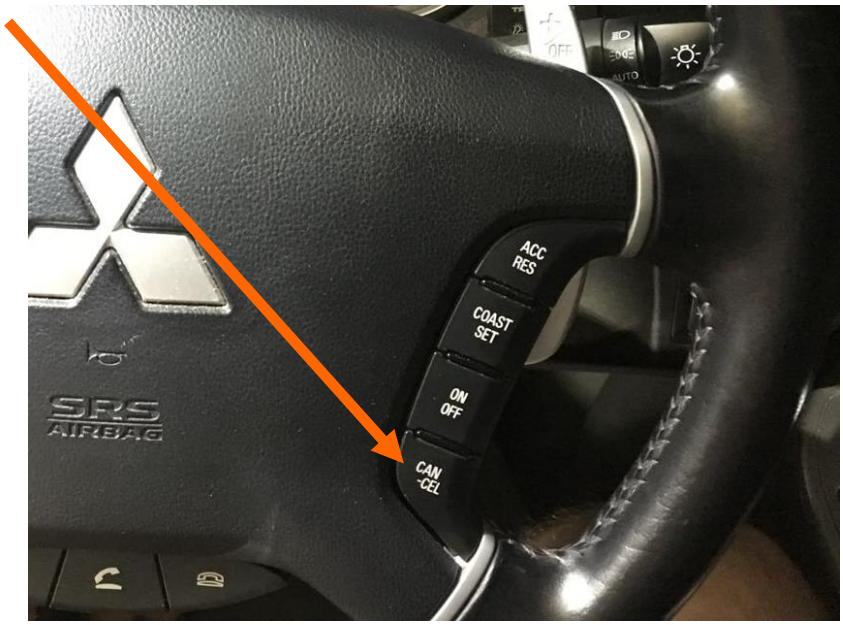
7. Press ON/OFF

Adjustments are now complete.

The speedo and tacho will go full deflection and return to zero.

The values are written into non-volatile memory.

At any time, CANCEL can be pressed to exit user settings mode. The settings adjusted will be stored.



<u>NOTE</u>: User settings cannot be adjusted when driving. The engine must be off.

WARRANTY POLICY

MM 4X4 is committed to providing quality products to you and this policy outlines our warranty against defective products manufactured by MM 4X4.

MM 4X4 warrants our manufactured products against defects in workmanship or materials for the Warranty Period. The warranty does not cover damage due to normal wear and tear (for example marks and scratches). This warranty is not applicable to products re-sold by MM 4X4. Warranties for these products are defined by the manufacturer.

MM 4X4 accepts no liability for damage to the vehicle as a result of product installation or use.

Warranty Period

MM 4X4 warrants MM 4X4 manufactured products for a period of 12 months commencing from the date of purchase.

Warranty Entitlement

To be entitled to claim a warranty claim, the customer must:

1. Fit the product according to the provided installations instructions;
2. Provide evidence of purchase;
3. Return the faulty product to MM 4X4 for assessment against the Warranty Entitlement Exclusions; and
4. Make a claim within the Warranty Period.

Warranty Entitlement Exclusions

The Customer is not entitled to a warranty claim if:

1. The defect is the result of misuse, inappropriate use, incorrect installation, or installation into a vehicle not supported by the product; or
2. The product has been modified; or
3. The product housing has been opened; or
4. The product has been damaged.

Making a Warranty Claim

To make a warranty claim:

1. Contact MM 4X4 (enquiries@mm4x4.com.au) to discuss the claim;
2. If directed by MM 4X4, return the product to the address provided by MM 4X4 (at the customer's expense) and ensure the product is accompanied with the following information:
    a. A copy of the proof of purchase;
    b. The return merchandise authorisation (RMA) number provided by MM 4X4;
    c. The customer's name and contact details;
    d. A return shipping address.

Upon receipt of the faulty product, MM 4X4 will assess the claim against the Warranty Entitlement and Exclusions.

For valid warranty claims, MM 4X4 will repair or replace the goods and ship them (free of charge) to the provided shipping address.

For warranty claims that are assessed as invalid, MM 4X4 will contact the customer to seek further direction, which may include:

1. Reasons for denying the warranty claim;
2. A quote to repair the fault product;
3. Returning the faulty or repaired product to the provided shipping address (at the customer's expense);
4. Agreement to dispose of the faulty product; or
5. A quote to supply a replacement product.

Warranty Complaints and Enquiries

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

ABN 95 625 092 091

Tea Tree Gully, South Australia

Online Shop mm4x4.com.au **Email** enquiries@mm4x4.com.au