



AT POWER ELECTRONIC THROTTLE ACTUATOR



Overview:

The AT Power Electronic Throttle Actuator provides a fast and responsive Drive-By-Wire solution for both our direct to head & universal individual throttle systems.

All major components, except for the electric motor, have been designed, developed and manufactured by AT Power.

Our Electronic Actuator consists of a DC motor and reduction gearing to provide the maximum torque and operational speed. The actuator has an angular sweep of 110 degrees and can be operated in both directions.

AT Power can provide various installation options for both our standard central mounting position with a linkage arm connection. This has been designed to give 360 degrees of radial positioning for fine tuning. Alternatively, the Actuator can be positioned at the end of the throttles and will drive the throttles directly through AT Power's layshaft, (please contact us for specific options available).

Advantage of electronic actuation include: (If supported by ECU)

- Auto-blip for paddle shift
- Launch control
- Anti-lag
- Switchable pedal map
- Controllable push to pass strategy
- Pit lane speed control
- Traction control.
- Variable bank to bank control
- Warm up (increased air flow)

In all applications, it is necessary to seek advice from the ECU supplier regarding essential tuning of the actuator control system (normally a PID or PI control) and the associated safety systems. Ultimately electronic throttle applications are safer than mechanical cable applications due to evaluation of the pedal position against throttle position and the ability to power the throttles closed.

Actuator specification:

Temperature range of operation: -20 to 130 degrees C

Voltage range: 10V to 14V

Gear ratio: 14.66/1

Maximum torque: 775Ncm

Maximum continuous torque: 115Ncm at the output shaft.

Linkage levers on our throttles are spaced at 25mm center's which equates to 287.5N / 29.3Kg force

Maximum current: 18.6 amps

Maximum continuous current: 3.13 Amps

Rotation: 110 degrees

Unit Weight: 1065 grams

Speed: Approximate operating speed over 82 degrees of throttle movement: 0.062 second.

(Electronic soft stops must be programed into ECU which may increase time for blade movement).

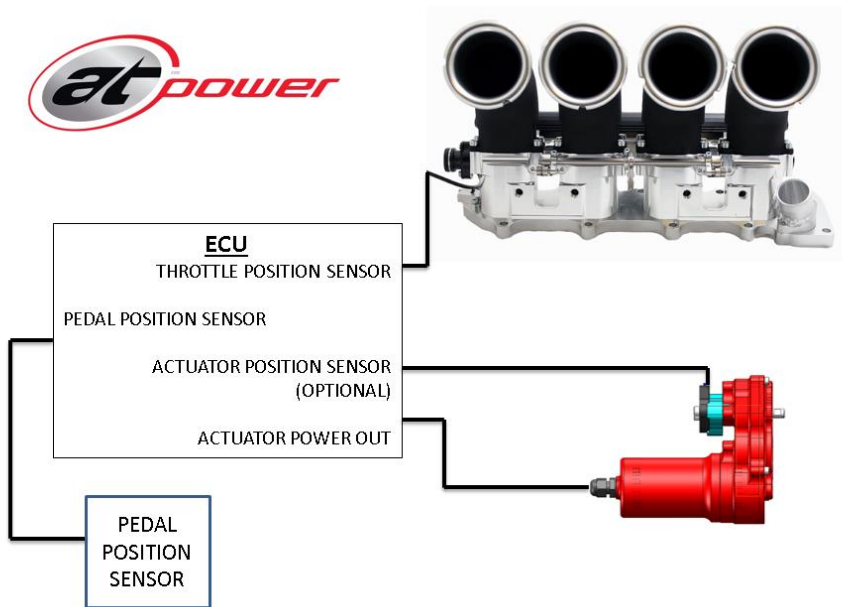
Electronic connector:

Stand-alone unit: 2 pin AMP Super-seal male & female connector, available separately.

With TPS: 6 pin Sealed male & female connector, available separately.

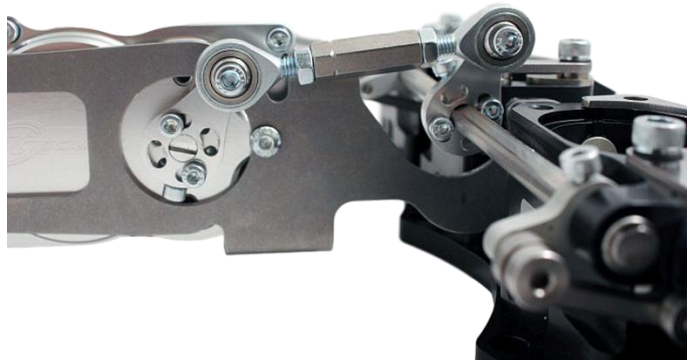
PLEASE NOTE: AT Power recommends that the set-up and tuning is only undertaken in conjunction with ECU suppliers and/or their recommended agents.

Typical installations:



Standard Mounting:

Linkage driven from the underside of AT Power throttles as shown. Actuator can be mounted on the opposite hand for package requirements.



The linkage assembly supplied has been specifically designed to operate AT Power throttles, giving full 360 degrees of rotational positioning and fine adjustment.

Optional Mounting:

The Actuator can be mounted at the end of AT Power throttles with a direct connection onto the layshaft. (This option is only available upon request) please contact either Ben or Paul at AT Power for full details.



Actuator Positional Sensor :- (Optional)

AT Power offers a dual fully redundant contactless Throttle Position Sensor (TPS) which can be programmed and wired to suite individual applications. The TPS can be mounted on either side of the actuator with the linkage assembly being mounted on the opposite side.



TPS – Outside housing



TPS – Inside housing

AT Power throttles are designed for cable pull systems and have a built in fully open mechanical stop and a mechanically adjustable idle position stop. The mechanical adjustable idle stop should be positioned to give a fully closed position stop and the ECU calibrated to give electronic soft stops both on open and closed positions.

Some systems may require 2 independent position sensors (dual redundancy). Please contact AT Power for further details.

Set up and calibration info:

IMPORTANT: *Damage will occur if the unit is driven dynamically into the mechanical stops of the throttles or the actuator. Or, is used before the correct tuning is undertaken. Please remember that the throttle is working as soon as the ignition is switched on and If the system has not been calibrated before the ignition is switched on then, it is likely to lead to immediate failure. Please contact your ECU supplier for guidance.*

Limp Home Mode explained:

On a standard OEM single DBW Throttle the blade is held partially open by a mechanical spring plunger to provide a limp home mode only, this is not related to or have any effect on idle or idle control.

When the ignition is switched on the ECU closes the throttle fully in-order to set the ECU 0% throttle blade position and then returns to the partially open position set by the limp mode spring plunger. When the engine is started the ECU uses the MAF (Mass Air Flow), engine temperature and oxygen sensors to open the throttle by X-degrees, giving the correct idle speed.

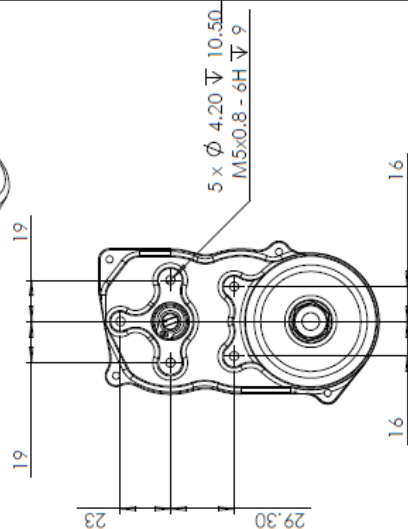
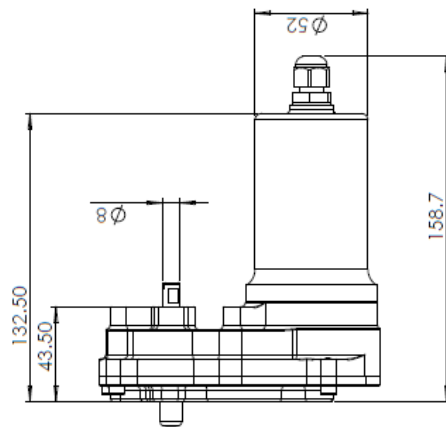
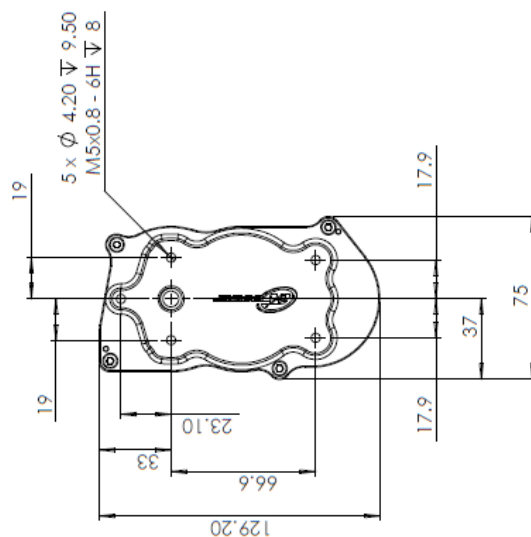
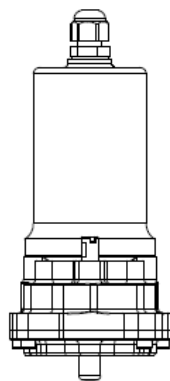
If there is a fault with the electrical system the ECU will go into Limp Mode which means the ECU stops operating the throttle which is now fixed in the partially open position by the spring plunger allowing sufficient bypass of air to limp the car home.

With our direct to head throttles we do not currently provide a Limp Home mode option and our throttles will rest at the fully closed position. When the engine is started the ECU will control the idle position the same as it does for the OEM throttle using the MAF, engine temperature and oxygen sensors to open the throttle by X-degrees, giving the correct idle speed.





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<p>The AT Power Electronic Actuator has been designed to operate our universal & direct to head throttles.</p> <p>All major components, except for the motor, have been designed, developed and manufactured at AT Power.</p>	<p>8</p>	<p>7</p>	<p>6</p>	<p>5</p>	<p>4</p>	<p>3</p>	<p>2</p>	<p>1</p>			MATERIAL SEE COMPONENT PARTS	B	
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