

# eSG76 Electronic Straight Gate



The StraightGate76 from Turbosmart is the world's highest flowing external wastegate! The StraightGate76 is a zero-offset butterfly style wastegate which allows enormous flow and almost linear control with unparalleled boost control throughout the entire operating range.

- Liquid cooling provision
- Strap type V-band clamps
- User adjustable actuator position
- Full Electronic control
- Endless Boost Control Strategies

### Mechanical Data

|                            |                                                                             |
|----------------------------|-----------------------------------------------------------------------------|
| Flow Diameter              | 76mm (3in)                                                                  |
| Mass                       | 1816g                                                                       |
| Safe working pressure max. | 220 psig / 1520 kPa / 15 bar                                                |
| Actuator life              | 550k cycles @ 150°C (302 °F) ambient<br>800k cycles @ 80°C (176 °F) ambient |
| Port fittings type         | Liquid Cooling: 2x 1/8" NPT                                                 |

### Thermal Data

|                                   |                               |
|-----------------------------------|-------------------------------|
| Max. thermal stress (non-cooled)* | >45min @ 800°C EGT continuous |
| Max. thermal stress (h2O cooled)* | >24hr @ 800°C EGT continuous  |
| Max. ambient/compartment temp.    | 200°C / 392°F                 |
| Max. actuator temp.               | 150 °C / 257°F                |

### Electrical Data

|                          |                                                                                                         |
|--------------------------|---------------------------------------------------------------------------------------------------------|
| Sensor Operating voltage | 5V±0.5V                                                                                                 |
| Outputs                  | <ul style="list-style-type: none"> <li>• Analog 0-5V</li> <li>• Pulse Width Modulated signal</li> </ul> |
| Operating Temperature    | -40 °C to 150 °C (-40 °F to 302 °F)                                                                     |
| Sensor Supply Current    | 21mA                                                                                                    |
| PWM Frequency Output     | 220-268 Hz                                                                                              |

### Temp Sensor Data

|                       |                                |
|-----------------------|--------------------------------|
| Accuracy              | ±2.7°C                         |
| Voltage offset at 0°C | 2630mV                         |
| Gain                  | -13.6mV/°C                     |
| <b>Deg C (Deg F)</b>  | <b>Temp Sensor Output (mV)</b> |
| 0 °C (32 °F)          | 2630                           |
| 150 °C (302 °F)       | 538                            |

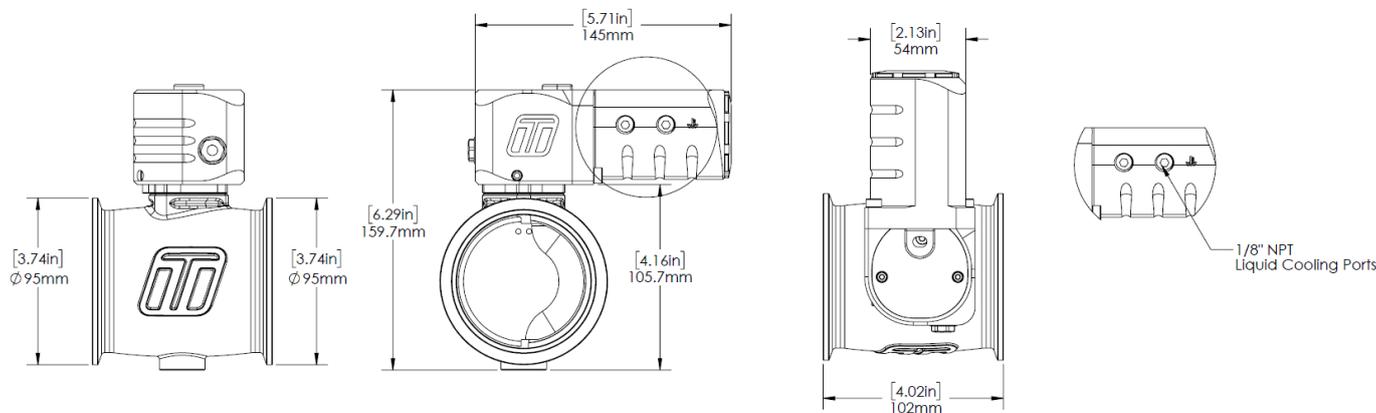
### Position Sensor Data

| Position | Target Voltage (V) | Duty Cycle |
|----------|--------------------|------------|
| 100%     | 0.20-0.60V         | ~16%       |
| 0%       | 4.40-4.80V         | ~84%       |

### Connection Data

|              |                                      |
|--------------|--------------------------------------|
| Red 22AWG    | 5V                                   |
| Black 22AWG  | 0V                                   |
| White 22AWG  | Valve Position                       |
| Blue 22AWG   | *Unfiltered Signal (Position Output) |
| Yellow 22AWG | Sensor Temperature                   |
| Red 14AWG    | Motor A (Positive Closed)            |
| Black 14AWG  | Motor B (Positive Open)              |

**\*Note: The Blue (unfiltered position signal) is not required for use & is for development purposes only.**



\*Continual source of minimum 1250°C exhaust gas, with no cool down periods for at least 30minutes and no external air cooling on actuator, this is a destructive test that an ICE engine cannot support. Contact tech support for further information.

### Material Data

|                  |                                 |
|------------------|---------------------------------|
| Beryllium (Be)   | 0%                              |
| Main Body        | High temp 347 SS                |
| Actuator housing | 6262 T6 anodised Al.            |
| Butterfly Shaft  | 630ss                           |
| Butterfly Valve  | 630ss                           |
| V-Band           | Heat treated 431 SS w/ 18-8 nut |
| Weld Flanges     | 304 Stainless Steel             |

### Motor Data

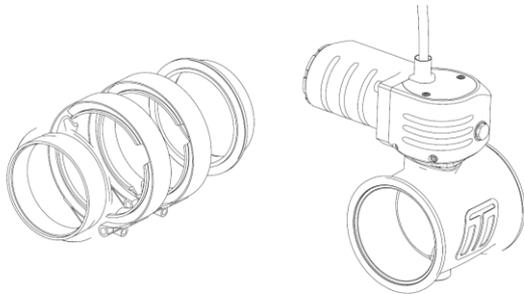
|                  |                                   |
|------------------|-----------------------------------|
| Wire Size        | 14AWG                             |
| Direction        | Red wire positive closed          |
| Stall Current**  | 60A                               |
| Hold Current     | 0A (Short motor wire for braking) |
| Max Force @stall | 4085N                             |
| Max Force @power | 2042N                             |
| Speed (Opening)  | 750%/s (130ms)                    |

### Water Cooling

|                   |                                          |
|-------------------|------------------------------------------|
| Temperature Range | -40 to 120degC / -40 to 248degF          |
| Pressure Range    | 0 to 100psi / 0 to 689kPa / 0 to 6.9 Bar |
| Coolant Safe      | Yes                                      |

### Included in the Box

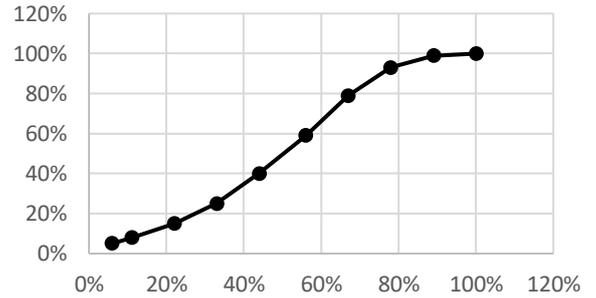
- Wastegate unit
- Outlet V-Band
- Outlet V-Band
- Outlet SS304 weld flange
- Outlet SS304 weld flange
- Sticker
- Instruction card



### Flow Characteristics

|                |                                            |
|----------------|--------------------------------------------|
| Max. Flow      | 723.7 CFM/20.5 m <sup>3</sup> /min @1psidP |
| Flow Linearity | -2.6% of full lift (BFSL)                  |

### Flow Linearity



### Order Data

|              |                                |
|--------------|--------------------------------|
| TS-0567-1002 | eSG76 Electronic Straight Gate |
|--------------|--------------------------------|

### Accessories

|              |                                            |
|--------------|--------------------------------------------|
| TS-0550-3124 | Electronic Straight Gate Motor Replacement |
| TS-0550-3123 | eStraight Gate Replacement Sensor          |

*Refer to catalogue for further accessories*

### Install Req.

|                         |                                          |
|-------------------------|------------------------------------------|
| Inlet Pipe              | Suits 76.2mm/3" OD                       |
| Outlet Pipe             | Suits 76.2mm/3" OD                       |
| Water Port Tube Min. ID | 6mm / 0.236" (Recommended -4 AN Fitting) |

\*\* High amperage for prolonged periods will damage the motor, keep high Amperage operation to short bursts.