## Section B: Engine

1. **Tillotson TPP225RS-02 Engine:**

1.1 The engine must remain as original from factory.

1.2 No after-market parts are permitted unless stated in TPP225RS-02 engine fiche document.

1.3 No machining or other modification of interior engine surfaces (deburring, honing, grinding, polishing, sanding, media blasting, heat treatment) is permitted.

1.4 All parts are subject to visual comparison and must remain in substantially unaltered form when compared to an original part.

1.5 Engine and all components must comply with engine fiche document.

1.6 Engine fairings / covers must remain as original with no aftermarket stickers permitted. It is allowed to run without the original stickers if removed for any reason.

2. **Sealing:**

2.1 TPP225RS-02 engines must be fitted with the original engine ID Seal correlating with the engine ID number as supplied from the Tillotson factory. If an alternative seal number is identified the engine is not valid for competition.

2.2 Tillotson are the only sealing agent permitted to open the engines and re-seal as necessary unless there is an appointed sealing agent in the designated country.

2.3 Sealing agent must notify Tillotson immediately after changes are made to any engine seal numbers.

2.4 Two seal types which are currently in use:

2021 onwards Production


2020 Production


2.5 Starting from Engine Serial Number 20110001 only the 2021 Production Engine seal is permitted. Any engine from this Serial Number using the previous model engine seal will not be allowed in competition.

3. **Material Permitted to Manipulate:**

The following areas of adjustment and cleaning are permitted within reason. Any effect that alters the integrity of the components or which in the sole opinion of the scrutineer extends beyond reasonable cleaning is prohibited.

3.1 Valve clearances may be adjusted, and valves may be cleaned. Re-surfacing of

the valve seat is permitted but it must remain as per the original valve seat angles. Valve seats of additional angles and/or angles not comparable to the factory stock of 30-45-60 degrees are not permitted.

3.2 Spark plugs may be cleaned to remove carbon.

3.3 The piston and combustion chamber may be cleaned to remove carbon.

3.4 Damaged thread repair: It is permitted to use Heli-coil or a similar thread repair insert as long as the part, after repair, is within the dimension, weight or measurements set on the engine fiche document.

3.5 The inlet manifold gasket can be trimmed to match the head shape. Use of silicone is permitted with gasket to aid sealing.

4. **Engine Components:**

4.1 Engine ignition switch and wires must remain in original location. It is not permitted to alter the wiring.

4.2 It is mandatory to use the original Air filter, P/N: T-AIRFILTER-01. No modification to the filter element is permitted.

4.3 The rain sock or rain shield is only permitted to be used when the track is declared wet or open. It is not permitted to be used when the track is declared as a dry race.

4.4 Oil breather valve cover: It is recommended to connect the oil breather pipe to a catch container. The container must be vented to the atmosphere.

4.5 Pulse signal from the engine must be taken from the inlet manifold to the fuel pump connection. The length of the pulse hose is recommended not to exceed 28cm.

4.6 Only original Fuel Pump is permitted. P/N: FP-10A

4.7 It is recommended to use the latest clutch guard as supplied (T-CLU-GRD-01). A minimum of two bolts must be used to mount the supplied chain guard.

4.8 A maximum of one in-line fuel filter is mandatory to ensure that dirt and contamination within the fuel system does not affect engine performance. We recommended the supplied FS-1P.

4.9 Blower housing / starter assembly must be original and properly installed. No taping, covering, or restricting of air of any part of this assembly is permitted.

4.10 No aftermarket kill switch may be allowed and the OEM kill switch must be as supplied by manufacture.

4.11 modifications are allowed to be made to the crankshaft, or crankshaft gear which includes twisting or manipulation.

4.12 Only one version of the Intake Manifold is now allowed which is 138220034. The previous model 138220034-PLATE with the machined adapter plate is no longer permitted. No modiNo fications to the intake manifold is permitted.

4.13 There are two versions of Cylinder Head permitted – 138220094 and 138220098

4.14 There are two versions of Inlet Valve and Exhaust Valve permitted:

- Inlet Valves: 138210101 / 138210144
- Exhaust Valves: 138210102 / 138210145

4.15 Only one Head Gasket is now permitted which is the Copper Head Gasket 138220101

4.16 For mounting the cylinder head it is heavily recommended to use the new Stud and Nut system but it is permitted to also fix using the previous cylinder head bolt.

4.17 The PVL Ignition Coil must be fitted with only spark plug cap 401267 which is compatible to run with the Brisk D08IR Spark Plug

4.18 There are two types of Valve Cover Gasket permitted which are the existing part 138220038 and upgraded optional gasket 138220103.

4.19 It is mandatory to run with the Air Duct System from the 2025 T4 Nations Cup onwards. No modifications are permitted and only the original part / fixing is permitted to be used (T-COOLDUCT-ASY-01).

5. **Exhaust System:**

5.1 The Exhaust System is mandatory as supplied by Tillotson with the engine.

5.2 Exhaust System comprises of the following three parts:

- Manifold - P/N: T-EXH-MAN-01
- Silencer – P/N: T-EXH-SIL-01
- Flex – P/N: T-FLEX-01

5.3 All parts must remain as originally supplied. No tuning, modification or manipulating of material is permitted.

5.4 Exhaust gasket must be original Tillotson P/N 138190058, and one and only one piece must be used. Use of silicone is permitted with gasket to aid sealing.

5.5 Use of an O2, EGT or CO2 sensor is NOT permitted.

5.6 Exhaust protection is recommended. The Manifold should be completely wrapped with a non- asbestos insulation material or sleeve.

5.7 It is not grounds for disqualification if the exhaust nuts loosen during a race so long as the exhaust remains attached to the head with at least two nuts.

5.8 It is recommended to use at least three springs to secure the Silencer to the Manifold. It is permitted to install one additional safety cable between the exhaust manifold and silencer to secure in case of spring breakage.

5.9 The Exhaust Flex must be supplied as original from Tillotson with no modification allowed or shortening of the length permitted.

5.10 It is permitted to mount an additional jubilee clip around the 3 exhaust springs to secure them from springing off on track.

6. **Clutch: (See updated Tri-C Karters supplemental)**

6.1 The following clutch model is supplied as standard.

- T-CLU-NS-19T-01 (ONLY OPTION PERMITTED FOR T4 NATIONS CUP)

6.2 No tuning, modification or manipulating of material of the clutch is permitted.

6.3 The following front sprockets can be allowed, if permitted, in competition including 18T (T-CLU-NS SPK-18T), 19T (T-CLU-NS-SPK-19T), 20T (T-CLU-NS SPK-20T) and 21T (T-CLU-NS-SPK-21T).

6.4 There are two types of original Noram Stinger Clutch Spring allowed for use in competition which are Blue (T-CLU-NS-SPR-01) or Orange (T-CLU-NS-SPR-02).

7. **Spark Plugs: (See updated Tri-C Karters supplemental)**

7.1 Only one Spark Plug is permitted for use:
- BRISK D08IR T-SPK-PLUG-01

7.2 Sealing washer must be in place and remain original on the stock spark plug used. Temperature thermocouple is permitted but the unaltered sealing washer must be in place.

***During technical inspections, a new stock part can be used as reference to compare a competitor's part for legality.***

## Section C: Carburettor

1. Tillotson FM22-1A / FM22-2A / FM22-4A

1.1 The carburettor must remain as originally supplied from Tillotson.
1.2 No after-market parts are permitted.
1.3 No machining or other modification of the surface finish is permitted.
1.4 Only the Tillotson supplied jets and slides are permitted for use.
1.5 All parts are subject to visual comparison and must remain in substantially unaltered form when compared with an original part.
1.6 Carburettor and all components must comply with carburettor fiche.

## ~~Section D: Tyres~~

~~1. Maxxis T4 Tyres are mandatory for T4 Series:~~

~~1.1. Only the following Maxxis tyres supplied by Tillotson are permitted for use.~~
- ~~Slick Tyre: P/N: T-MAX-DRY3~~
- ~~Wet Tyre: P/N: T-MAX-WET1~~

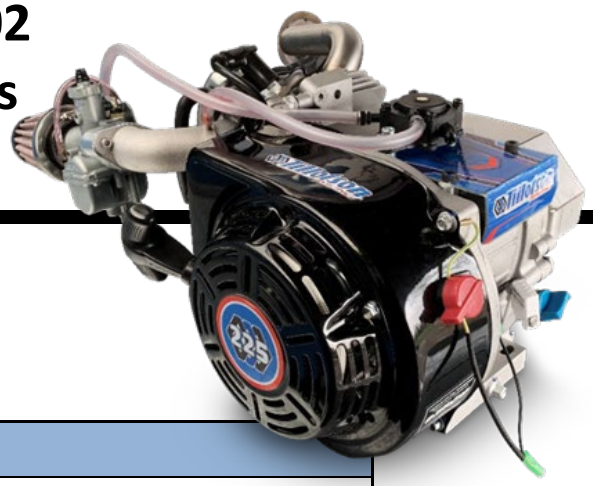
## Section E: Oil (See updated Tri-C Karters supplemental)

1. Tillotson Racing Xeramic Oil: P/N: T-OIL-001
   1.1. Tillotson Racing Xeramic Oil is the only oil permitted for use in the TPP-225RS engine.
   1.2. Minimum volume of oil to be filled is 500ml. On technical inspection a minimum quantity of 400ml of Oil must be present in each engine if drained.
   1.3. No oil additives or foreign substances are permitted to use along with the oil.
   1.4. Xeramic have developed with Tillotson a DYE test which can be carried out during technical inspection on race day.
   1.5. Failure of the DYE test will result in exclusion and/or other penalties issued by the event organisers.
   1.6.

**APPENDIX 2**

**Engine Fiche**

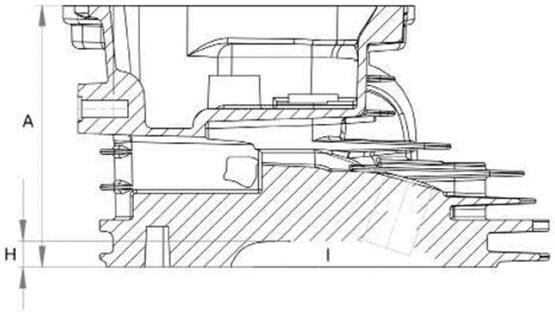
# Tillotson TPP-225RS-02 Engine Fiche T4 Series Global Rules 2026

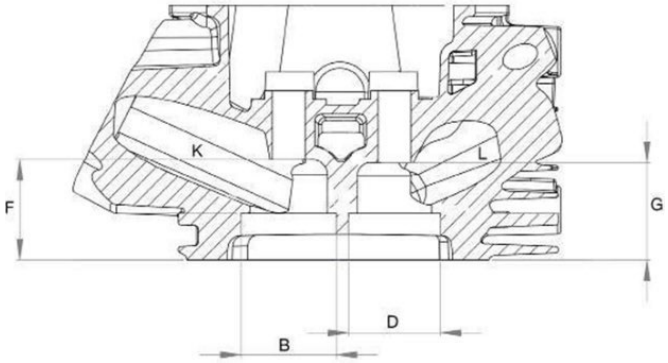


| FEATURE | SPECIFICATIONS |
|---|---|
| Engine Type | 2 Valve 4-Stroke |
| Fuel Type | Unleaded Petrol |
| Cylinder | Single/35° Heavy Reinforced Aluminum Block w/Cast Iron Sleeve |
| Cylinder Volume | 225cc |
| Bore | 72 mm/2.84in maximum |
| Stroke | 55 mm/2.165in maximum |
| Piston – Deck Clearance | 0.25mm +/- 0.23mm (0.00984” +/- 0.00905”) |
| Cooling System | Air |
| Carburetor | FM22-1A / FM22-2A / FM22-4A |
| Cylinder Head | Aluminum Alloy 2-Valve Over Head Valve |
| Ignition | PVL Digital Built in Limiter 7,500rpm |
| Flywheel | Billet Aluminium |
| Connecting Rod | Race Spec w/Bearing Inserts |
| Rod Length | 88 mm/3.4646 in |
| Camshaft | Race Cam with Built-in Compression Release |
| Engine Oil | Tillotson T4 Racing Oil |

Engines must conform to the technical data provided with no modification or machining allowed. Parts must be original as supplied by the manufacturer.

| | Cylinder Head PN 138220094 / 138220098 | | Tillotson Tech Tool |
|---|---|---|---|
| **A.** | Overall Height | 72.8mm min | T-TT-TE73 |
| **B.** | Intake Seat ID | 24.9mm max | T-TT-TE7 |
| **C.** | Intake Seat Angle | 60-45-30 | |
| **D.** | Exhaust Seat ID | 22.8mm max | T-TT-TE3 |
| **E.** | Exhaust Seat Angle | 60-45-30 | |
| **F.** | Bowl Depth Intake | 28.3mm ± 0.2mm | T-TT-TE50 |
| **G.** | Bowl Depth Exhaust | 27.4mm ± 0.2mm | T-TT-TE60 |
| **H.** | Combustion Chamber Depth | 5.5mm ± 0.3mm | |
| **I.** | Valve Head Height from Gasket Surface | 6.5mm ± 0.3mm | |
| **J.** | Intake Port Volume | 30cc maximum | |
| **K.** | Exhaust Port Volume | 24cc maximum | |

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| Cylinder Head Gasket PN138220101 | |
|---|---|
| Material | Copper |
| Thickness | 1.1 mm min |
| | |
| | |
| | |

| Rocker Arm PN138190033 | |
|---|---|
| Material | Steel |
| Ratio | 1:1 max |
| Length | 54.9 mm minimum |
| Tip Shape | Rectangular |
| Weight | 16.5g ± .5g |

| Guide Plate PN138190031 | |
|---|---|
| Material | Steel |
| | |
| | |
| | |
| | |

| Valve Lifter / Tappet PN138190013 | |
|---|---|
| Material | Mild Steel |
| Overall Length | 34.7 mm ± 0.2mm |
| Ø Stem | 8 mm ± 0.2mm |
| Ø Head | 23.6 mm ± 0.2mm |
| Weight | 19.5 g ± 1 g |

| Valve Spring PN138220029 | |
|---|---|
| Material | Steel |
| Relaxed Height | Max 26.2mm / Min 25.2mm |
| Wire Ø | 2.5 mm ± 0.2mm |
| Overall O.D | 21.1 mm ± 0.2mm |
| Spring Force | 26 lbs max @0.815 in (20.7mm) height |

| Guide Plate PN138190031 | |
|---|---|
| Material | Steel |
| Overall Height | 7.9 mm min |
| Overall O.D | 20.7 mm ± 0.2mm |
| Retainer Weight | 6.4 g min |
| | |

| Push Rod PN 138190032 | |
|---|---|
| Material | Steel |
| Overall Length | 134 mm ± 0.25 mm |
| Ball End Ø | 5 mm ± 0.2mm |
| Rod Ø | 4 mm ± 0.2mm |
| Weight | 11 g ± 1 g |
| | |
| | |

| Intake Valve PN 138210101 / 138210144 | |
|---|---|
| Material | Steel |
| Overall Length | 663.8 mm min |
| Ø Stem | 4.8 mm min |
| Ø Head | 27 mm ± 0.2mm |
| Valve Margin | 2.3 mm ± 0.5mm |
| Valve Angle | 45° |
| Weight | 21 g ± 0.25 g |

| Exhaust Valve PN 138210145 | |
|---|---|
| Material | Aloy Steel |
| Overall Length | 63.8 mm min |
| Ø Stem | 4.8mm min |
| Ø Head | 25 mm ± 0.2mm |
| Valve Margin | 2.3 mm ± 0.5mm |
| Valve Angle | 45° |
| Weight | 19.5 g ± 0.5 g |

## Ignition Coil 138220095

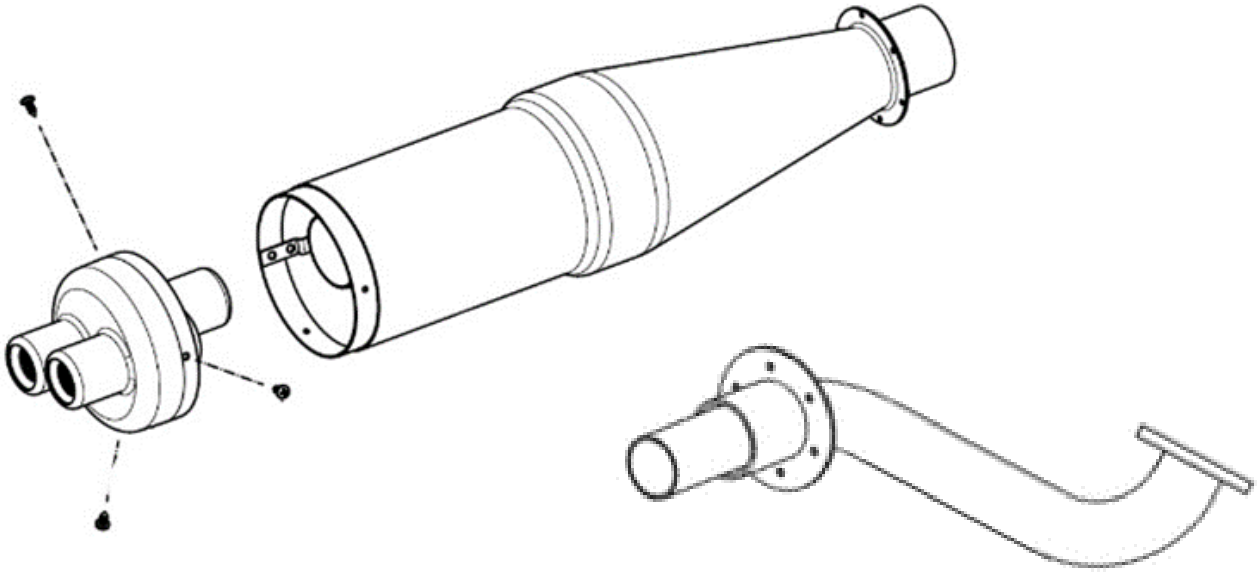
RPM Limit 7500
Brand PVL
Type Digital

## Flywheel PN:138220018

Material Billet Aluminum
Diameter 165mm ± .2mm
Weight 1.43 kg ± .1 kg

## Exhaust

Manifold - P/N: T-EXH-MAN-01
Silencer – P/N: T-EXH-SIL-01
Flex – P/N: T-FLEX-01



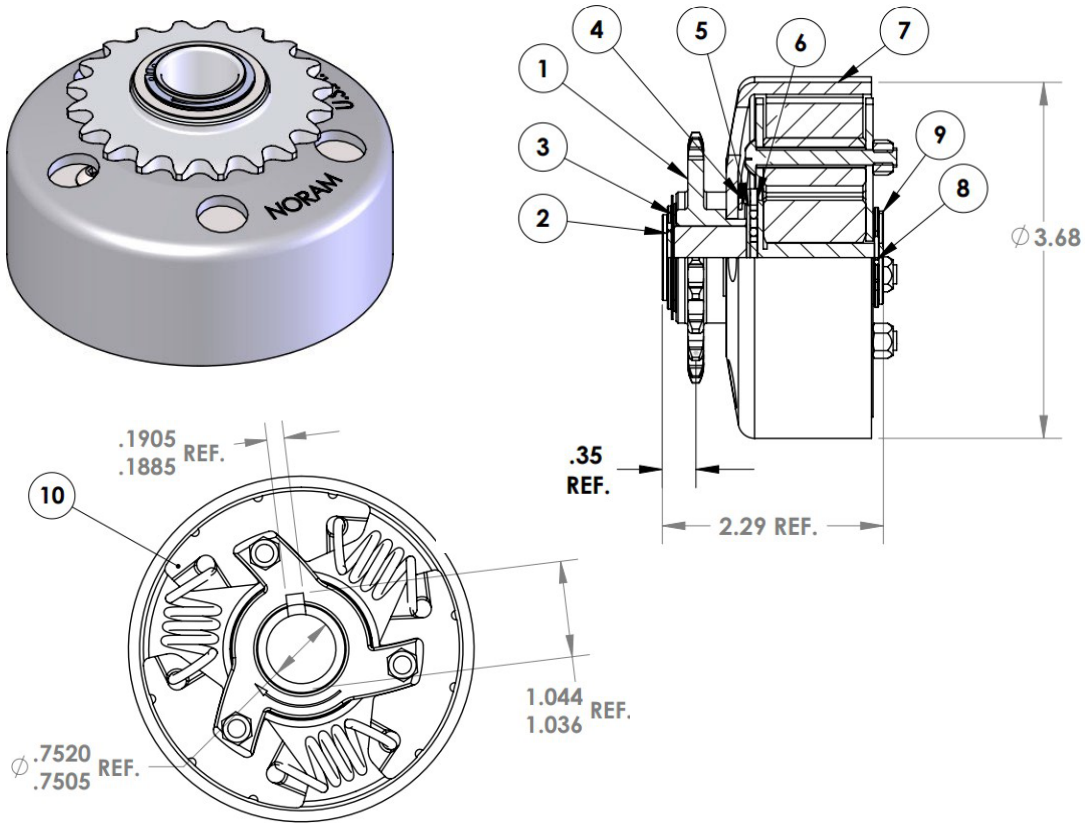
**Flywheel Keyway PN: T-FLY-KEY-01**

Max Height: 5.45mm Max
Length: 18mm
Width: 4mm ± 0.2mm

**Exhaust Flex**

Length: 65mm min

# Noram Stinger Clutch




| Item No. | Tillotson PN | Description |
|---|---|---|
| | T-CLU-NS-19T-01 | Stinger clutch 19T |
| 1 | T-CLU-NS-SPK-18T | 18T 219 F. Sprocket with bearing |
| 1 | T-CLU-NS-SPK-19T | 19T 219 F. Sprocket with bearing |
| 1 | T-CLU-NS-SPK-20T | 20T 219 F. Sprocket with bearing |
| 1 | T-CLU-NS-SPK-21T | 21T 219 F. Sprocket with bearing |
| 4 | T-CLU-NS-SPK-CLIP-01 | Sprocket circlip |
| 5 | T-CLU-NS-SPK-WAS-01 | Sprocket washer |
| 2 | T-CLU-NS-RING-HUB-01 | Retaining ring hub |
| 3 | T-CLU-NS-HUB-WAS-01 | Hub washer |
| 6 | T-CLU-NS-HUB-BRG-01 | Thrust bearing hub |
| 7 | T-CLU-NS-DRUM-01 | Drum |
| 8 | T-CLU-NS-CLIP-01 | Retaining circlip |
| 9 | T-CLU-NS-SHAFT-01 | Shaft |
| 10 | T-CLU-NS-SPR-02 | Stinger clutch spring ORANGE |
| | T-CLU-NS-BOLT-04 | Bolt (Phillips head) |
| | T-CLU-NS--NUT-01 | Bolt (Allen key head) |

# Recommended Torque Values

| Description | Socket Size | Torque (Nm) |
|---|---|---|
| Cylinder Head | 13mm | 30Nm |
| Flywheel | 21mm | 70Nm |
| Rocker Arm Support | 12mm | 24Nm |
| Valve Locking Nut | 10mm | 10Nm |
| Spark Plug | 21mm | 24Nm |
| Crankcase Side Cover | 10mm | 33Nm |
| Blower Housing | 8mm | 10Nm |
| Carburetor to Manifold | 10mm | 10Nm |
| Connecting Rod | 10mm | 19Nm |
| Exhaust to Engine | 13mm | 28Nm |
| Intake Manifold to Engine | 10mm | 10Nm |
| Oil Drain Plug | 10mm | 22Nm |
| Valve Cover | 8mm | 7Nm |

**APPENDIX 3**

**Carburetor Fiche**

| CARBURETOR<br>Tillotson FM22-1A | |
|---|---|
|  |  |
|  |  |

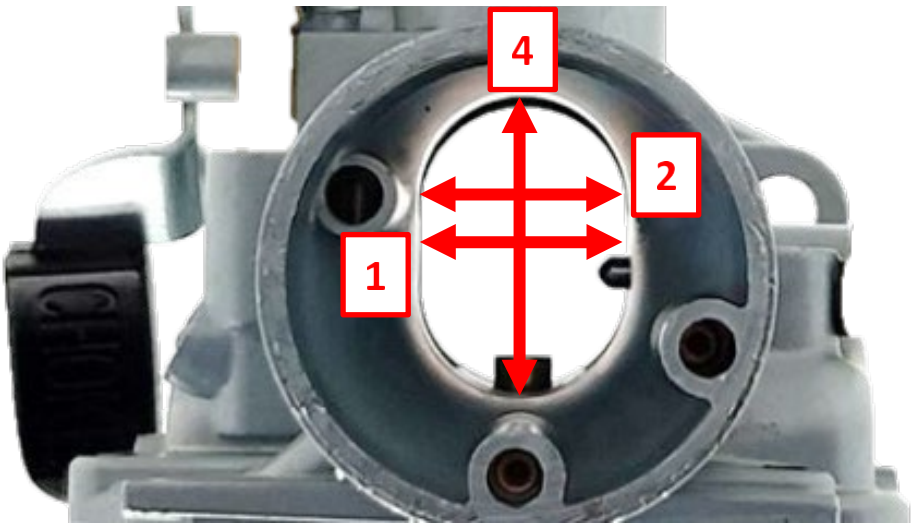
| | |
|---|---|
| Manufacturer | **TILLOTSON LTD.** |
| Make | **TILLOTSON** |
| Model | **FM22-1A** |

# Measurements & Tolerance Index

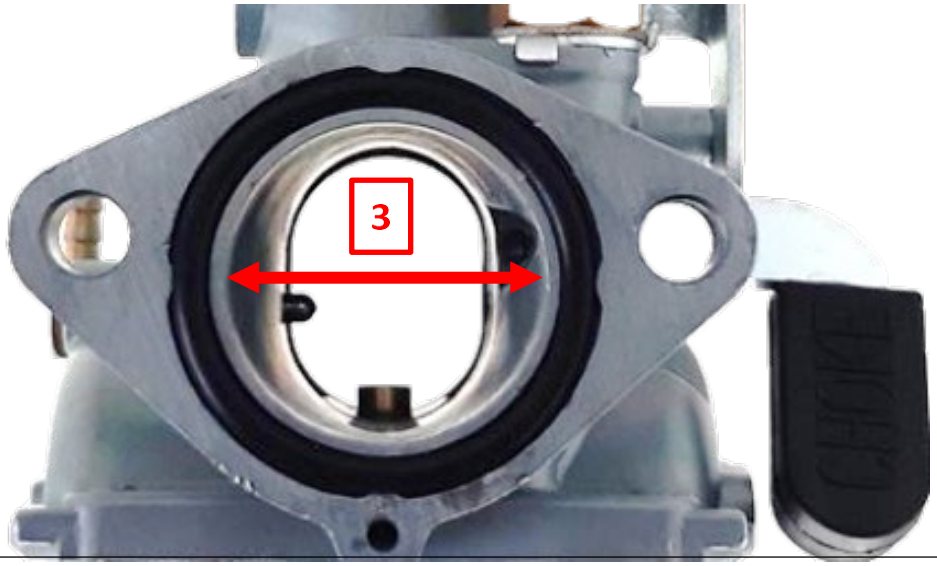
| ITEM | DESCRIPTION | TOLERANCE | Tillotson Tech Tool |
|---|---|---|---|
| 1 | Venturi Horizontal Measurement Centre | 18.22mm Max (0.717") | T-TT-TC1 |
| 2 | Venturi Horizontal Measurement Max | 18.72mm Max (0.737") | T-TT-TC2 |
| 3 | Throttle Bore Diameter | 26.25mm Max (1.034") | T-TT-TC3 |
| 4 | Venturi Vertical Measurement | 25.05mm Max (0.986") | T-TT-TC4 |
| 5 | Air Pick Off Hole | 1.9mm +/- 0.1mm (0.075" +/- 0.004") | T-TT-TC5 / T-TT-TC6 |
| 6 | Venturi Idle Air Hole | 1.9mm +/- 0.1mm (0.075" +/- 0.004") | T-TT-TC5 / T-TT-TC6 |
| 7 | Fuel In | 1.65mm Max (0.065") | T-TT-TC7 |
| 8 | Main Feed Hole | 2.65mm Max (0.104") | T-TT-TC8 |
| 9 | Pilot Feed Hole | 0.97mm +/- 0.06mm (0.038" +/- 0.002") | T-TT-TC9 / T-TT-TC9-1 |
| 10 | Idle Feed Hole | 0.80mm +/- 0.05mm (0.32" +/- 0.002") | T-TT-TC10 / T-TT-TC10-1 |
| 11 | Choke Feed Hole | 0.65mm Max (0.26") | T-TT-TC11 |
| 12 | Emulsion Tube & Main Jet Length | 39.0mm +/- 0.15mm (1.536" +/- 0.007") | |
| 13 | Main Jet Orifice | 1.20mm +/-0.03mm (0.046" +/- 0.0015") | T-TT-TC13 / T-TT-TC13-1 |
| 14 | Main Jet Emulsion Orifice x12 | 0.86mm Max (0.034") | T-TT-TC14 |
| 15 | Pilot Jet Length | 29.05 +/- 0.15mm (1.144" +/- 0.007") | |
| 16 | Pilot Jet Orifice | 0.36mm +/- 0.04mm (0.014" +/- 0.0015") | T-TT-TC18 / T-TT-TC18-1 |
| 17 | Pilot Jet Emulsion x6 | 0.73mm Max (0.029") | T-TT-TC17 |
| 18 | Slide Length Max | 37mm +/- 0.15mm (1.457” +/- 0.007”) | |
| 19 | Slide Diameter | 20.4mm +/- 0.15mm (0.804" +/- 0.007") | |
| 20 | Needle Length | 50.0mm +/- 0.2mm (1.970” +/- 0.01") | |

# Measurement Diagrams

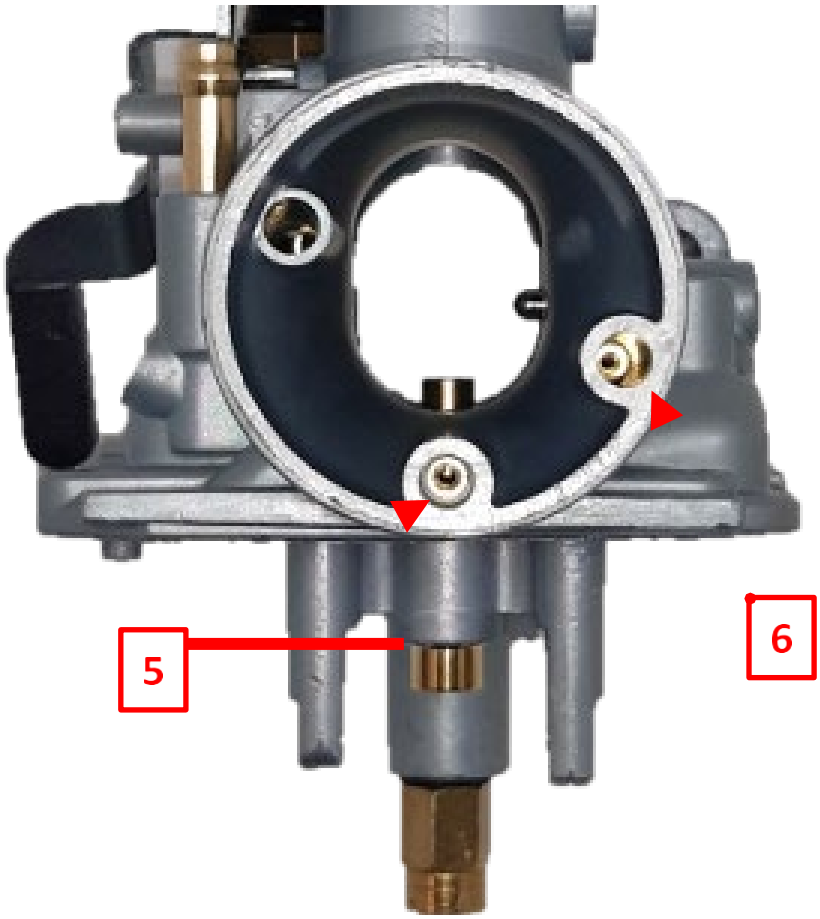
**1. Venturi Horizontal Measurement Centre**
**2. Venturi Horizontal Measurement Max**
**4. Venturi Vertical Measurement**



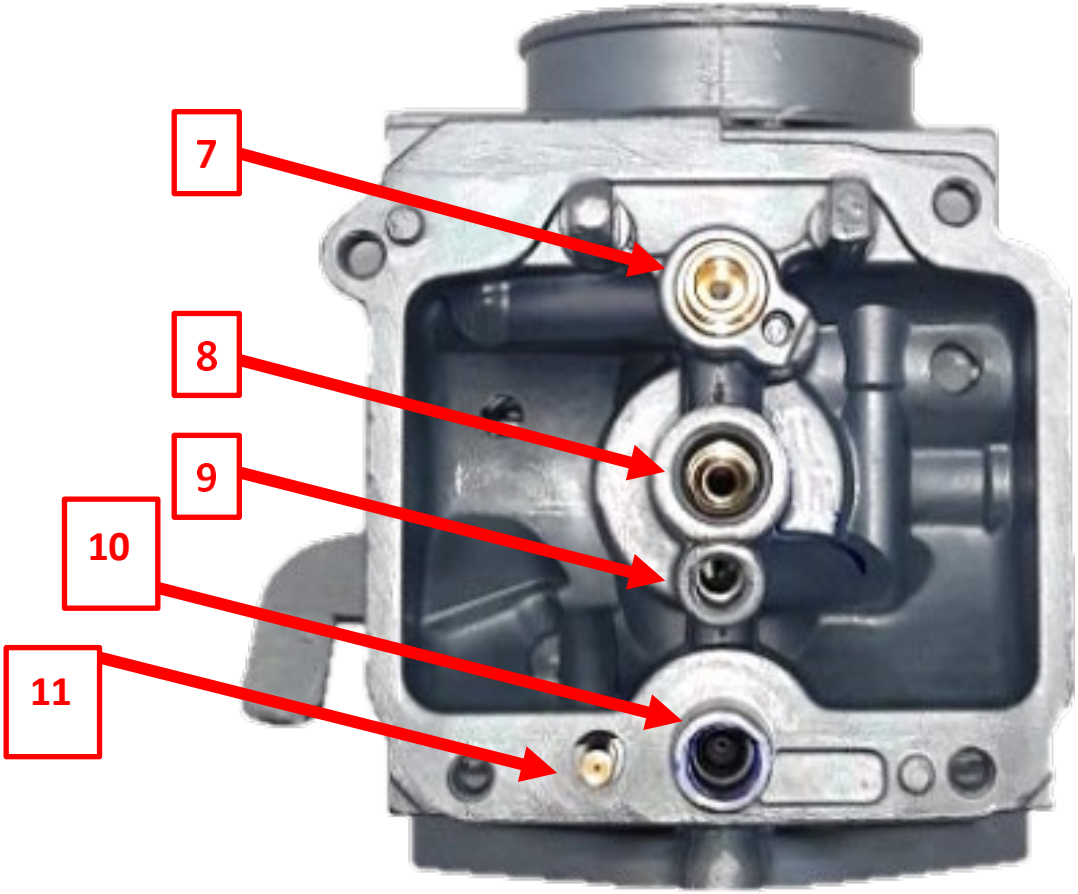
### 3. Throttle Bore Diameter



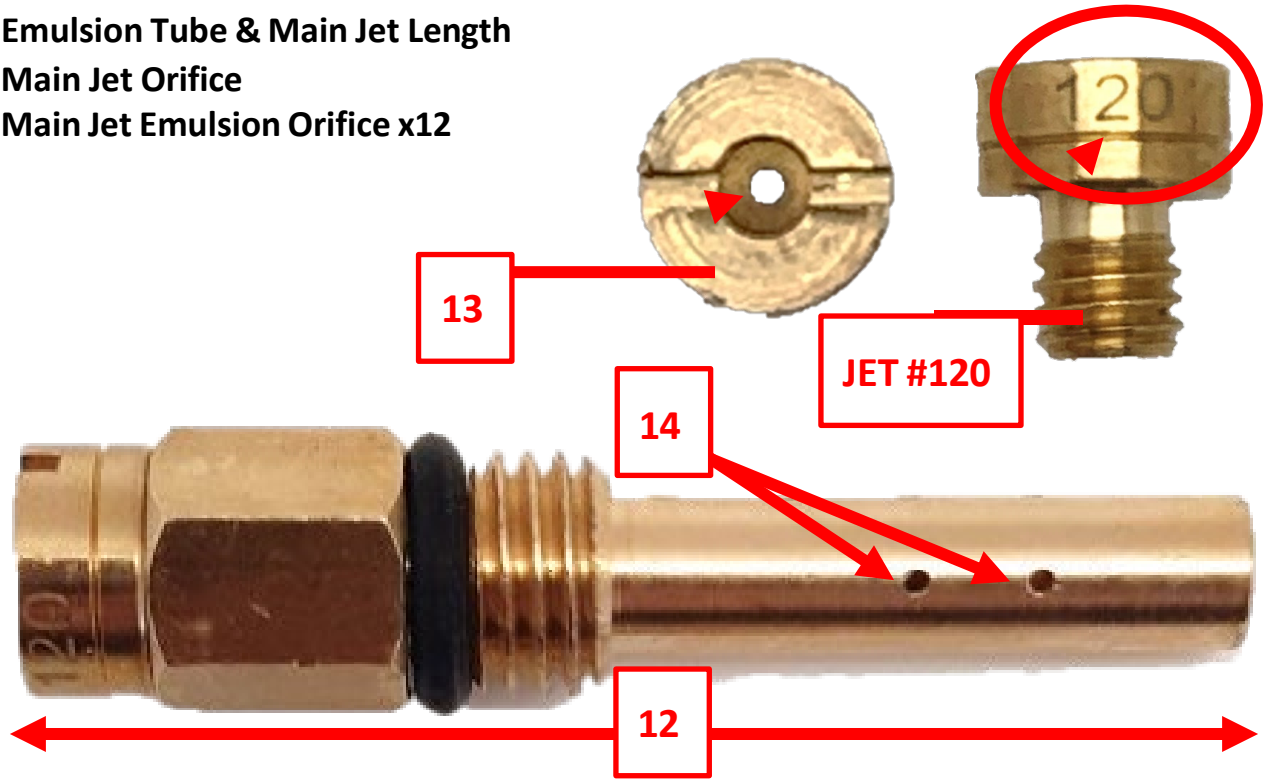

### 5. Air Pick Off Hole
### 6. Venturi Idle Air Hole



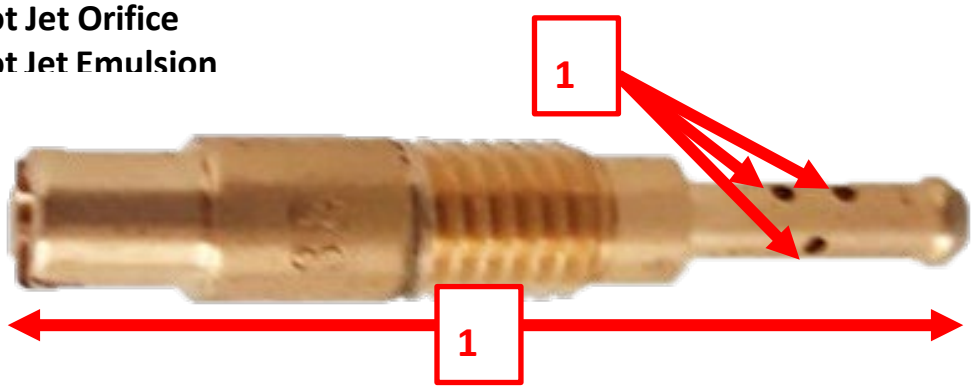
**7. Fuel In**
**8. Main Feed Hole**
**9. Pilot Hole**
**10. Idle Hole**
**11. Choke Feed Hole**



**12. Emulsion Tube & Main Jet Length**
**13. Main Jet Orifice**
**14. Main Jet Emulsion Orifice x12**




**15. Pilot Jet Length**
**16. Pilot Jet Orifice**
**17. Pilot Jet Emulsion**



**18. Slide Length Max**
**19. Slide Diameter**
**20. Needle Length**


## Contact Information and Resources

**Email:** sales@tillotson.ie **Website:** www.tillotson.ie
**YouTube Page:** https://youtube.com/channel/UCZgldHZl8EBj93WnvcKFRHA