

# DAVEY Torrium<sup>®</sup>2



Tested in compliance with  
**AS/NZS 4020**  
for use in contact with safe drinking water



Model Number: TT45 & TT70

## INTELLIGENT PRESSURE BOOSTING CONTROLLER

### APPLICATION

Ideal for pumps supplying clean, non-volatile liquids without fibres or solids in such applications as household water supply, irrigation, water transfer, washing systems and pressure boosting.

## FEATURES & BENEFITS

### CONSTANT FLOW AND EVEN WATER PRESSURE

To prevent annoying fluctuations in water temperature during showers, Torrium2 uses its intelligence to provide households with constant flow to give even water pressure. It does this with its innovative pressure and flow sensors to start the pump on a pressure drop and to stop it on low flow (~1 lpm). This avoids pump cycling when there is continuing household demand for water.

### QUICK CUT-IN FOR EVEN PRESSURE

To give you strong pressure right from the start, Torrium2 is designed to cut in quickly when it senses demand for water. It cuts in when the pressure has dropped to 80% of the previous top (shut-off) pressure. It uses its intelligence to automatically set this cut-in pressure each time the pump stops. In doing so, it allows the system to automatically accommodate for variations in pump performance or site conditions.

### ADAPTIVE STARTING

Torrium2 is clever enough to detect the difference between normal water demand and a small leak in the system, such as a dripping faucet or a leaking cistern. For very low flows, Torrium2 automatically adapts to reduce the cut-in pressure, which can be as low as 50% of its last shut-off pressure. This significantly reduces pump cycling to improve consumer satisfaction with the system. If normal flow is required in the house (>0.5 lpm), Torrium2 will sense this and revert to normal mode and initiate an immediate pump start.

### CONTROLLER

To easily check the system status, Torrium2 has three simple LED indicators.

- Red LED - the system is in standby mode
- Green LED - the pump is running
- Yellow LED - fault condition

# Pressure System Controls

## GREATER HYDRAULIC PERFORMANCE

For better hydraulic performance to supply more pressure with less wasted energy, Torrium2 has been designed with larger water pathways and no moving parts in the pathways. This performance versus loss equation is especially evident at higher flow rates.

## GREATER RELIABILITY

To diminish the likelihood of blockages, Torrium2 is designed with no moving control parts within the water pathways giving greater reliability and performance with varying water quality.

## DRY RUN PROTECTION AND AUTO RESTART

To protect the pump from damage due to dry running, Torrium2 stops the pump when it detects a loss of prime (no water supply) situation. To reduce system downtime, the Torrium2 waits 5 minutes then goes into auto retry mode, whereby it will restart the pump to see if prime can be re-established automatically. An auto restart occurs at 5 minutes, 30 minutes, 1 hour, 2, 4, 8, 16 and 32 hours. Torrium2 will also restart if it detects flow through the system (e.g. from mains water pressure returning with pressure boosting applications).

## PUMP PROTECTION – HIGH WATER TEMPERATURE CUT-OUT

For added security and longer life, a water over-temperature cut-out provides a second level of protection against closed head operation and repetitive cycling. For water temperatures above 70°C Torrium2 will shut the pump down and the amber LED will be lit. When the water temperature drops to below 60°C, the Torrium2 will allow the pump to restart.

## PUMP PROTECTION – EXCESSIVE ELECTRICAL CURRENT

To protect the pump motor, Torrium2 will shut the pump down and indicate a fault if it detects excessive electrical current being drawn. This occurs if the pump motor is subjected to locked rotor or if someone tries to manually override the Torrium2 by continually holding in the prime button.

## CORROSION AND SCALE RESISTANCE

To allow Torrium2 to be used with water of varying quality, its flow sensors are mounted on a high grade stainless steel plate with special anti-scaling electronic action, which only turns the flow sensors on during pump operation.

## EXTRA DRAW OFF CAPACITY

To accommodate small leaks and to reduce cycling, Torrium2 has an in-built spring loaded accumulator for extra draw off capacity. A spring loaded accumulator means low maintenance as there is no need for a pressure vessel with its regular air charging and checking. However, for increased draw off, an optional pressure tank, up to 18 litres, can be mounted on the vertical outlet.

## POWER SURGE PROTECTION FOR Torrium2

To protect the Torrium2 controller from electrical surges and spikes, thus extending its life, it has an in-built metal oxide varistor (MOV). The status of the MOV can be checked in the viewing window on the back of the Torrium2. The MOV is a sacrificial component and should it be consumed due to repeated power surges or spikes, it will almost always blacken the viewing port. This will indicate a non-warrantable Torrium2 failure.

## EASE OF INSTALLATION

For ease of installation, the plumbing can be connected to either the vertical or the right angle discharge outlet, which can rotate a full 360°. A spanner, sized to fit the coupling, is included in the box. Also, for increased draw off, an optional pressure tank, up to 18 litres, can be mounted on the vertical outlet.

## ELECTRICAL CONNECTION

For easy installation, Torrium2 comes with a 2 metre long power lead, fitted with an Australian three pin plug.

### OPERATING LIMITS

Maximum system pressure	1000 kPa
Capacities to	200 lpm
Recommended pump shut-off head range	
TT45	150 to 450 kPa
TT70	450 to 700 kPa
Torrium2 cut-in pressure is normally 80% of the pump's last shut-off head.	
Maximum ambient temperature	50° C
Maximum water temperature	70° C
Minimum water temperature	1° C

### MATERIALS OF CONSTRUCTION

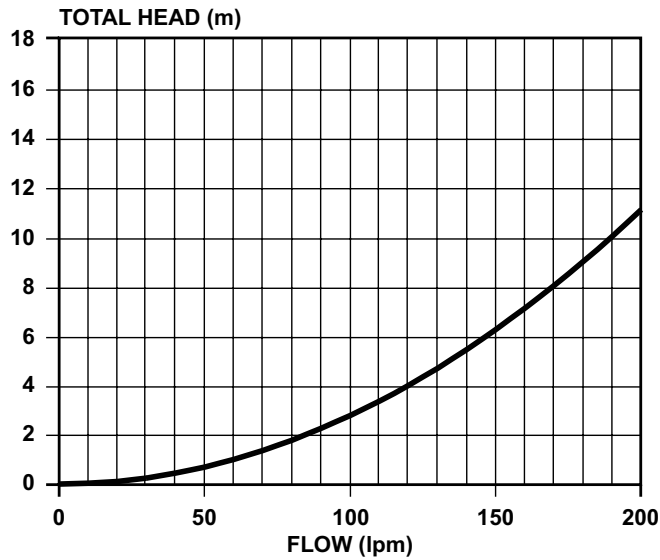
PART	MATERIAL
Housing	Glass fibre reinforced nylon
Pressure tank diaphragm	Santoprene 87
Pressure tank springs	Molybond coated tempered steel
Sensor plate	316 stainless steel
Inlet union	Glass fibre reinforced nylon
O-rings	Nitrile
Check valve poppet	Acetal
Check valve spring	304 stainless steel

### ELECTRICAL DATA

Model	TT45 & TT70
Voltage	110-240V ± 10%
Phase	Single
Hz	50 / 60
IP rating	56
Maximum load current	10A
Maximum motor size – 110V	0.9kW (1.2 hp)
Maximum motor size – 220V	1.8kW (2.4 hp)
Surge protection	Metal oxide varistor

# Pressure System Controls

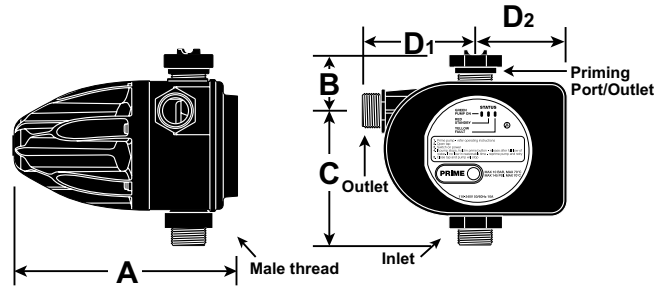
## HYDRAULIC PERFORMANCE



Note: Head loss through controller is for horizontal (90°) outlet and with integral check valve in place.

## DIMENSIONS (MM)

Model	A	B	C	D <sub>1</sub>	D <sub>2</sub>	Inlet Union BSP	Horizontal Outlet BSP	Vertical Outlet BSP	Net Weight kg
TT45 & TT70	211	52	127	107	85	1" M	1" M	1" M	1.75



\* Suction & delivery accept 1 1/2" PVC pipe on the I.D. and 2" fitting on the O.D.

## PUMP WITH Torrium2 MODELS

Model	kW (P2)	Flow Range Up to	Nominal Operating Pressure	Torrium2 Model	Pump Inlet	Torrium2 Outlet
<b>Standard</b>						
HP45-05T	0.55	4 taps	300kPa	TT45	1 1/4" F BSP	1" M BSP
HP65-06T	0.6	5 taps	300kPa	TT45	1 1/4" F BSP	1" M BSP
HP85-08T	0.8	6 taps	300kPa	TT45	1 1/4" F BSP	1" M BSP
<b>Standard with Higher Pressure</b>						
HS50-06T	0.6	4 taps	500kPa	TT70	1 1/4" F BSP	1" M BSP
HS60-08T	0.76	5 taps	500kPa	TT70	1 1/4" F BSP	1" M BSP
<b>Premium</b>						
HM60-06T	0.58	4 taps	500kPa	TT45	1 1/4" F BSP	1" M BSP
HM60-08T	0.72	4 taps	600kPa	TT70	1 1/4" F BSP	1" M BSP
HM60-10T	0.94	4 taps	700kPa	TT70	1 1/4" F BSP	1" M BSP
HM90-08T	0.78	5 taps	500kPa	TT45	1 1/4" F BSP	1" M BSP
HM90-11T	1.05	5 taps	600kPa	TT70	1 1/4" F BSP	1" M BSP
HM90-13T	1.4	5-6 taps	700kPa	TT70	1 1/4" F BSP	1" M BSP
HM160-15T	1.5	6-8 taps	500kPa	TT45	1 1/2" F BSP	1" M BSP
HM160-19T	1.8	6-8 taps	600kPa	TT70	1 1/2" F BSP	1" M BSP
<b>Jet Pumps</b>						
XP450T	0.45	3 taps	300kPa	TT45	1" F BSP	1" M BSP
XJ50T	0.58	4 taps	500kPa	TT45	1" F BSP	1" M BSP
XJ70T	0.8	5 taps	500kPa	TT70	1" F BSP	1" M BSP
XJ90T	1.1	6 taps	500kPa	TT45	1 1/4" F BSP	1" M BSP