reece
Plumbing Centres

ideal standard mainsflush urinal

INSTALLATION
&
SERVICE BOOKLET

June 2005

Ideal Standard

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PART 1

INTRODUCTION, INSTALLATION, COMMISSIONING OF FLUSH VALVE

INTRODUCTION

The Ideal Standard Mainsflush System is a sanitary flushing device, activated by either a ceiling mounted activity sensor or an electronic SonicSense Touch Pad that works directly from high-pressure *(mains)* water supplies.

Mainsflush also carries the following features:

- Watermark Approved to Spec 016 Lic W627
- AAA Water Conservation Rated
- Australian Designed & Manufactured
- Activated by either Ceiling Mounted Sensor or electronic SonicSense Touch Pad
- Strong durable valve, touch pads and sensors control units.
- No need for a cistern
- Only one moving part
- Built in backflow prevention
- Capable of flushing a minimum 3-4 wall hung urinals or a large trough urinal
- Distributed exclusively by Reece Plumbing

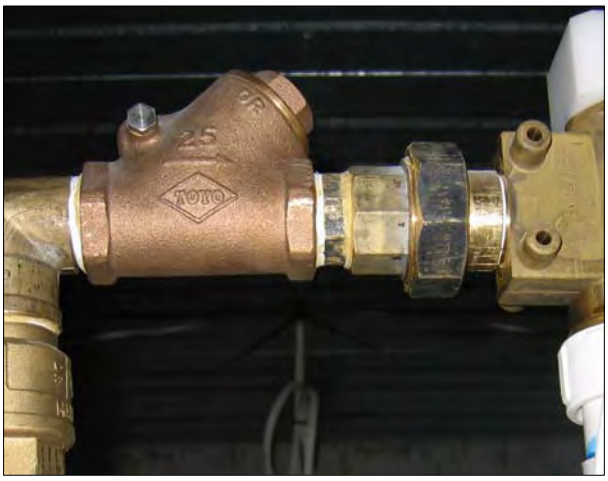
The 25mm Mainsflush Valve combined with the Rada Sensor Control Unit, provides sufficient water to flush large trough urinals up to 3 metres in length. Depending on the following : >3 metre troughs are possible:

Factors that will affect this are: 1. Design of trough urinal. 2. Water feed pipe size. 3. Use of pressure vessel. 4. Incoming flow rate. 5. Water pressure. 6. Length, height and size of flush pipes. If in doubt allow one valve and one sensor per 3 metres or consult Reece Water Technology.

MAINS FLUSH URINAL VALVES – INSTALLATION

Water supply and pipe work capable of delivery at least 1 l/s and a minimum flow pressure of 350 kPa. When valve is used for urinals use ball valve to control volume, i.e. slowly close ball valve until sufficient amount of water flows to urinal when activated.
For single stall urinals allow between 1.5 and 2.5 litres per urinal. For trough urinals allow 2.5 litres for each 600mm of length.

- The valve may be installed in ceiling void, wall cavity or wall duct. Access for service is essential.
- Urinal – installed as per manufacturers instructions.
- Flush lines into bucket to clean swarf, dirt etc. Failure to comply may void warranty.
- A line strainer and isolation ball valve must be installed.
- Make up pipe work to connect to 25mm inlet of valve.
- Attach pipe work to valve.
- Fixing screws are provided with the valve. Please use them, as the valve must be firmly fixed for maximum performance. Ensure pipe work is securely fixed to wall or frame adjacent to valve.
- Connect 40mm cap & lining over the outlet nut of valve. 40mm flush pipe attaches to cap and lining.
- Cut flush pipe to length required. Flush pipe must have a minimum 450mm (up to 2 metres is acceptable) vertical run of 40mm pipe then reduce to 25mm if necessary and run a further 150mm. (Minimum 600mm in total). Horizontal run of the flush pipe is acceptable providing you have this drop first (see drawings page 6). Tee off once vertical drop is over 450mm.
- Ensure flush pipe does not protrude too far into sparge pipe.
- Use ball valve and flow adjustment screw positioned in the middle of the white bonnet to control flow and volume of water.
- Attach electric leads (from touch switch or detector) to terminals.
- Place foam cover around valve, snap off section of foam to expose male thread for flush pipe connection.
- If water pressure exceeds 500kPa install a 500kPa Adjustable Pressure Reduction Valve.
- Pressure vessels can be used to provide a boost of water to the available water pipe supply line; they are particular useful in areas of small pipe sizes, long pipe runs or multiple urinals & toilet installations.
- The number of valves and simultaneous demand must be considered when sizing pipes. If other fixtures are connected to the supply line feeding the urinals e.g. toilet/shower. Calculations of flow rate and pressures must be undertaken to ensure adequate water supply. If in doubt a Hydraulic Consultant should be engaged.



GENERAL INSTALLATION REQUIREMENTS

Australian Standard	The requirements of AS3500.1: 2003 must be met.
Acoustic Insulation	It is recommended that acoustic plumbing noise dampening materials be used in dwellings where increased levels of sound protection may be required. Due to water velocity noise avoid using copper flush pipes. A Water Hammer Arrestor may be required in some applications.
Ceiling Sensor Controls	If a ceiling sensor control unit is to be installed, refer to installation instructions on page 11 of this book. The electronic control module (ECM) has 3 x 2 spade connections they are *solenoid valve, power & sensor*. Connect power and sensor leads supplied, and then plug control modules "solenoid valve" directly onto the spade connections of the Mainsflush Valve. If the spade connections are too large use a metal file and remove excess (approx 1mm) from each connector. A 240 Volt – standard power point is required.
SonicSense Touch Pad	Should be installed vertically, centred, at a practical height (approx. 1100mm) from the floor. Allen Key screws provided with the 110 x 70mm S/S rectangular single button touch pad (code 1806801), screw directly onto an electrical backing plate (not supplied). All touch pads are 24 Volt. A 240 Volt – standard power point is required.
Wet Areas	If touch pad is installed in a "wet area" care must be taken to seal electronics from any moisture.
Touch Pad Connections	Connect power lead to touch pad, and then valve (lead with spade connection) to touch pad, male and female connections will only allow connection the correct way. If longer leads are required they are available in sets of 2 and extend 2m, 5m, 7m & 10m. If extension leads are to be installed into wall cavity prior to plastering, ensure that both the male and female ends are located at the top and bottom.
Access for Service	Suitable easy access for service must be provided, by way of ceiling manhole or wall access by using 300mm x 300mm Stainless Steel Touch Pad (code 1806808) or install a front/rear access panel that as a minimum is 300mm x 300mm. A minimum of 70mm is required above the white valve bonnet to allow access to flow adjustment screw.

HANDY PLUMBING HINTS

- If plastic pipe is to be used please refer to table 1.1 AS3500.1: 2003 for equivalent pipe sizes to copper.
- If valves are to be installed in a multi-storey building allow for additional pressure loss of 10kPa per metre.
- The number of valves and simultaneous demand must be considered when sizing pipes. If other fixtures are connected to the supply line feeding the urinals e.g. toilet/shower. Calculations of flow rate and pressures must be undertaken to ensure adequate water supply. If in doubt a Hydraulic Consultant should be engaged. Pressure vessels can be used to provide a boost to the available supply line, they are particular useful in areas of small pipe sizes, long pipe runs or multiple toilets.
- Limit the number of changes of directions in pipe work. This will result in less friction loss, better valve performance and reduce the possible water cavitation noise.
- If using wall hung urinals in a multiple set up that is designed to flush simultaneously, the installation of a Ballofix Ball Valve on the inlet to the top or rear of each urinal will allow simple flow adjustment at point of installation to ensure even flow of water. If external pipe work is used remove the Ballofix handle for added security. If a large trough urinal is being installed, ball valves or gate valves equivalent to the flush pipe size can also be used to achieve the same result.

If you require any help contact Reece Water Technology. Depending on location a site inspection service may be available.

Ideal Standard

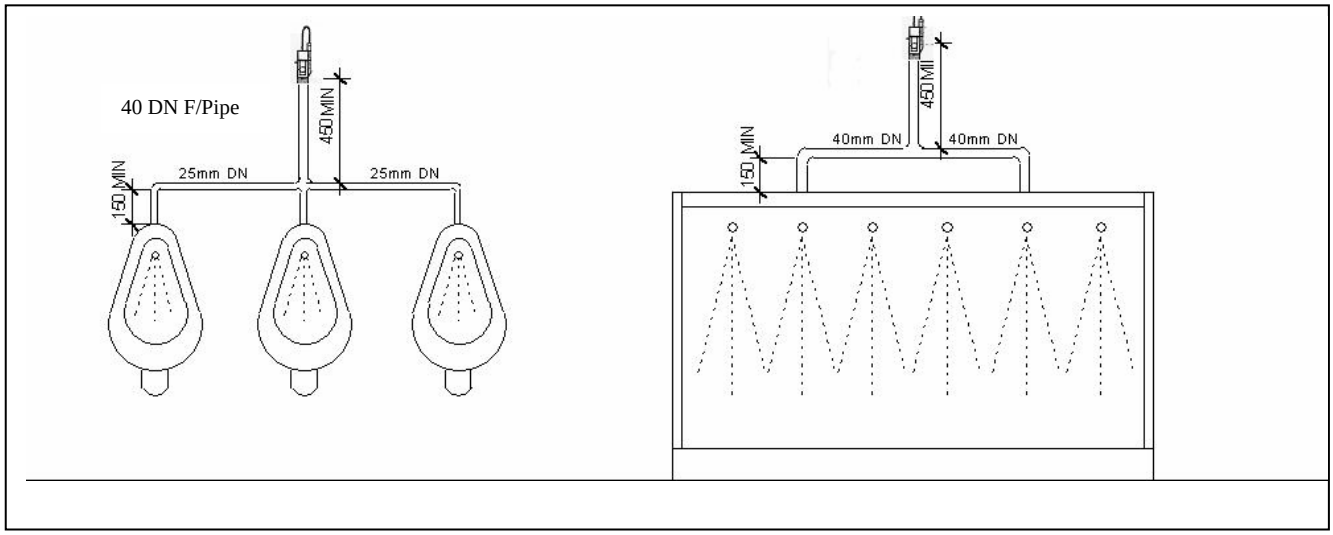
COMMISSIONING OF FLUSH VALVE

To test and set the Mainsflush Valve you will need a small blade screwdriver.

Turn “set screw” to adjust flow

- To set valve: Activate system by waving hand underneath ceiling sensor or by touching the single button on the SonicSense Touch Pad.
- To adjust volume: Adjust inlet ball valve, then use blade screw driver and adjust the “set screw” located in the centre of the white bonnet (pictured) of the valve. screw anticlockwise (up) to increase volume, clockwise (down) to reduce volume.
- In low-pressure areas the “set screw” may need to be fully screwed in, until the water stops then screwed out again before the valve can be set & tested.
- If the valve has been installed and not used for an extended period of time the valve may require a maintenance service. Then recommissioned.

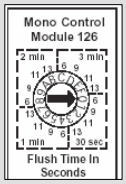
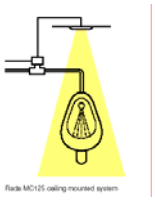
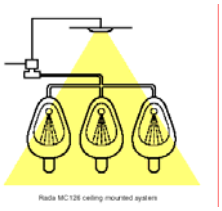
TYPICAL INSTALLATIONS OF MAINSFLUSH VALVES



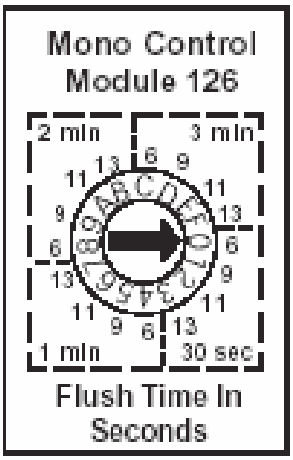
PART 2

MAINSFLUSH URINAL SENSOR CONTROLLED UNITS

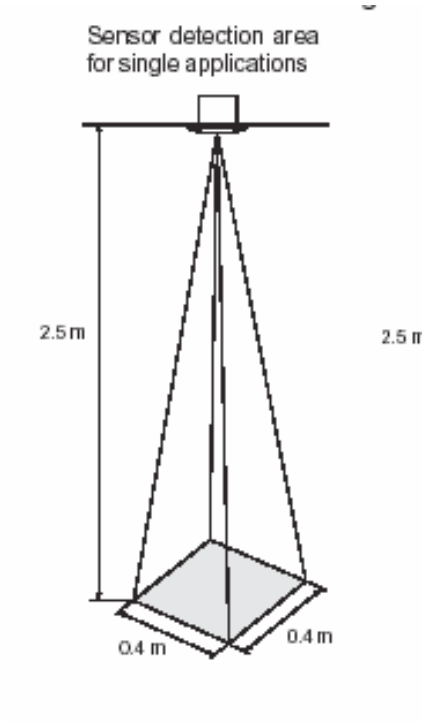
MAINSFLUSH SENSOR URINAL PRODUCTS GUIDE

Mainsflush Sensor Urinal Complete Kits		  **Flush Times:** 6,9,11 & 13 Seconds **Flush Delays:** 30 sec, 1, 2, & 3 Minutes
	1860231	**Mainsflush Sensor Urinal Valve Kit 400** C/W: (Codes 1860211 & 1806815) Mainsflush Sensor Urinal Valve & Fittings Pack Mainsflush 400 Ceiling Sensor Control Unit
	1860230	**Mainsflush Sensor Urinal Valve Kit 3000** C/W:(Codes 1860211 & 1806816) Mainsflush Sensor Urinal Valve & Fittings Pack Mainsflush 3000 Ceiling Sensor Control Unit
Mainsflush Sensor Urinal Products Key Components		
	1806829*	**Mainsflush 25mm Sensor Urinal Valve – 12 Volt (**suits sensor control units for urinals immediately below)
	1860211*	**Mainsflush Sensor Urinal Valve 12 Volt & Fittings Pack - 25mm** (Includes 25mm Mainsflush Valve , Barrel Union, Elbow, Cap & Lining, Ball Valve & Strainer) **(**suits sensor control units for urinals immediately below)
 **Sensing Area 2.5m high, x 0.4m long x 0.4m wide**	1806815*	**Mainsflush 400 Ceiling Sensor Control Unit Suits Installation of Mainsflush on Single or Dual Stall Urinals** Contents: Sensor, Electronic Control Module 12 Volt Transformer
	1806818	**Mainsflush 400 Exposed Ceiling Sensor Control Unit suits installation of Mainsflush on single or dual stall urinals where there is no ceiling cavity** Contents: Sensor, Electronic Control Module 12 Volt Transformer
 **Sensing Area 2.5m high, x 3m long x 0.4m wide**	1806816*	**Mainsflush 3000 Ceiling Sensor Control Unit Suits installation of Mainsflush on 3-4 stall or 3 metre trough Urinals** Contents: Sensor, Electronic Control Module 12 Volt Transformer
	1806819	**Mainsflush 3000 Exposed Ceiling Sensor Control Unit suits installation of Mainsflush on 3-4 Stall or 3 metre trough urinals where there is no ceiling cavity** Contents: Sensor, Electronic Control Module 12 Volt Transformer
		* Stock held in Reece Warehouse

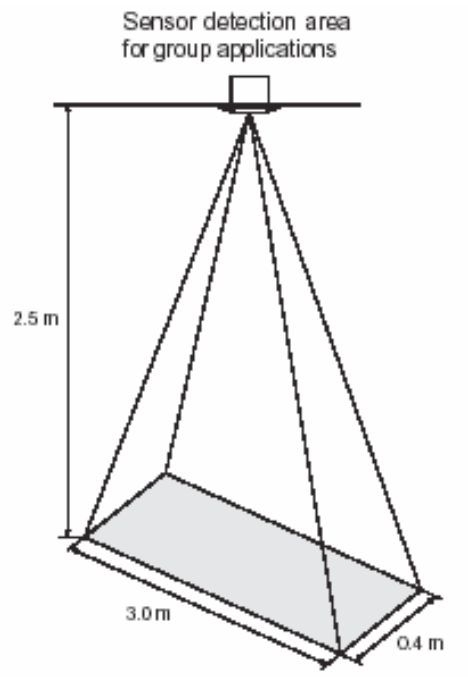
SENSOR TIME CLOCK CONTROL & SENSING AREAS



Position	Flush Time (Seconds)	Delay (Seconds/Minutes)
0	6	30 Secs
1	9	30 Secs
2	11	30 Secs
3	13	30 Secs
4	6	1 Min
5	9	1 Min
6	11	1 Min
7	13	1 Min
8	6	2 Min
9	9	2 Min
A	11	2 Min
B	13	2 Min
C	6	3 Min
D	9	3 Min
E	11	3 Min
F	13	3 Min



Mainsflush 400



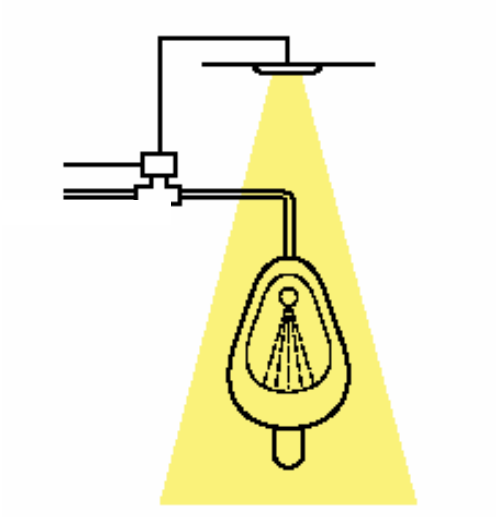
Mainsflush 3000

MAINSFLUSH 400 & 3000 SENSOR CONTROL UNITS

Installation Instructions Supplied with sensor control kit must be followed.

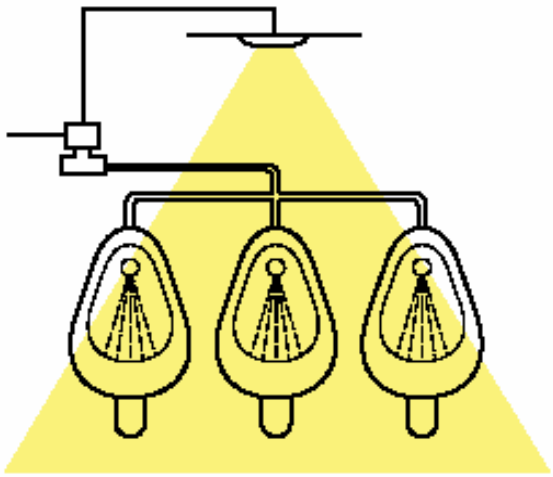
Mainsflush 400

Sensing Area 0.4m x 0.4m 2.5m



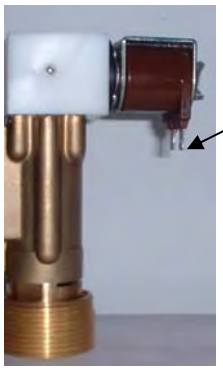
Mainsflush 3000

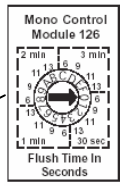
Sensing 3m x 0.4m x 2.5

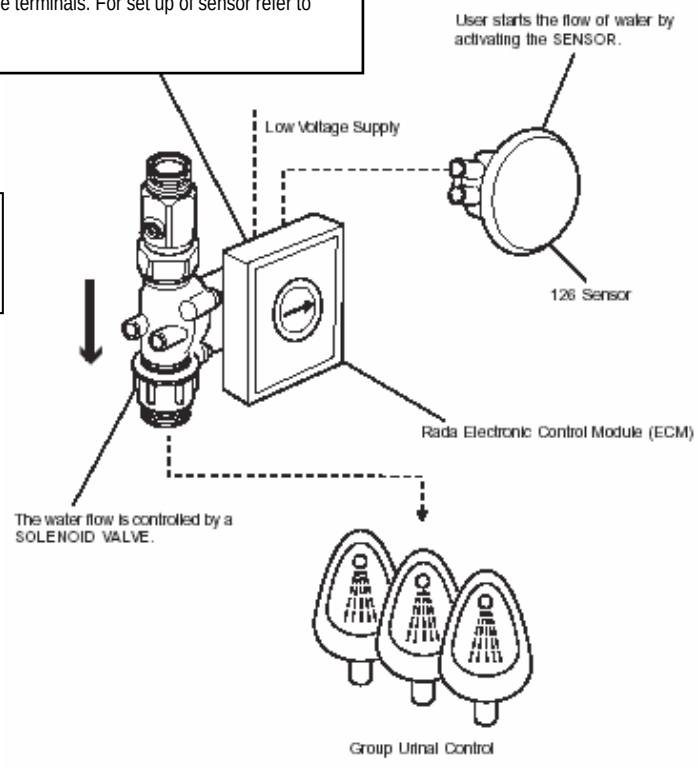


Water flows for the length of the time set on the ECM, after which the flow of the water is automatically shut off (programmable between 6 & 13 seconds). Delays of between 30 seconds and 3 minutes are programmable. ECM is installed onto the solenoid valve by a simple plug in procedure onto spade terminals. For set up of sensor refer to page 11.

Important Note:
Electronic Control Module ECM attaches directly onto spade connections of Mainsflush Valve







PULSE CEILING SENSOR

Alignment/Sensitivity Adjustment

1. Grip the cover and rotate anticlockwise and lower cover away from Sensor unit.

2. The sensor alignment is adjusted by gently swiveling the sensor on its mounting bracket. The delay/flush cycle should be activated by the presence of a user within the urinal area.

Note! There is a delay between sensor detection and flush cycle. You may wish to reset the delay to minimum whilst directing and testing the sensor.

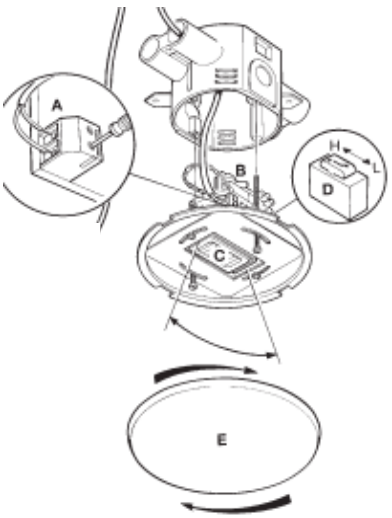
3. The sensitivity is adjustable via a two- position (H=high / L=low) switch (D, see illustration) on the Sensor internal circuit board, which will need to be separated from the base unit. The unit is supplied with this set at "H" (high). Slide the switch to the "L" position, if required.

4. Refit the cover, ensuring that the sensor window is correctly aligned toward the urinal area.

COMMISSIONING CONTROL UNIT

Switch on power to sensor control unit. Wait a minimum of ten seconds.

- Check that delay flush cycle is initiated only when a user moves into the desired detection area.
- Check that cycle is not initiated by source outside the desired detection area (e.g. passers-by).
- (With delayed-timing set to a minimum activate cycle and then move out of the detection area. Check that flush timing allows sufficient water to flush the urinal.
- The target detection area should cover the immediate front area of each urinal in the group.



Installation General

The distance from the sensor to the front edge of the urinal must be a minimum 0.5m, maximum 2.5m

The sensor should be placed at least 0.5m away from any heat source.

Steam or condensation can affect sensitivity of the sensor, and may damage electronics.
The sensor must be positioned so that it's view of the urinal is unobstructed: - soap dishes, towel rack etc. should be placed out of the sensor detection path.

Installation of the Rada Pulse Ceiling Sensor

The Sensor should be fitted in a dry position, allowing access for adjustment or maintenance.

Mark the selected position for the sensor, and cut a circular hole of 78mm diameter. Note depth of the mounting surface, and adjust base unit depth tabs to nearest setting below actual depth (minimum setting 9.5mm, maximum 25mm). Install the cable from the Rada Pulse Control Box via chosen route, extending if necessary. If required, cabling may be housed within conduit piping (the base unit accepts nominal 16mm ext.). Feed cable through the bases unit. Pass base unit through monitoring hole, and place in position as shown in main illustration, fixing to conduit as necessary.

Connect the two-core cable to the connector block (A) on the Sensor Internal circuit board (B). Wiring polarity is not important.

Align and offer up the Sensor unit to the base unit (see illustration), and retain with bolts supplied (but do not tighten these yet).

The Sensor (C) is retained on a swivel bracket, which enables the sensor to be directed towards the target area.
Rotate the Sensor unit until the sensor is directed at, and aligned with, the required target area.
Tighten bolts to secure sensor unit to base unit. Align tabs on cover (E) with slots around base unit, and rotate clockwise to secure.

Connect the Rada Pulse Control Box. Refer to the control box product manual for connection details.

rada CONTROLS

PART 3

MAINSFLUSH TOUCH PAD CONTROLLED UNITS

MAINSFLUSH URINAL PRODUCTS GUIDE

Valve & Touch Pads for Urinals		
	1806799*	**Mainsflush Mains Pressure Flush Valve - 25mm Valve** (suits touch pad for urinals, immediately below)
	1860212*	**Mainsflush Urinal Valve & Fittings Pack - 25mm (Includes 25mm Mainsflush Valve , Barrel Union, Elbow, Cap & Lining, Ball Valve & Strainer)** (suits touch pad for urinals, immediately below)
	1806801*	**Mainsflush S/S Single Flush Touch Pad 110mm x 70mm**. (suits valve for urinals above) Contents: touchpad/electronics, screws, power pack, installation instructions and leads. **2.5 second flush time**
	1806808*	**Mainsflush S/S Single Flush Touch Pad 300mm x 300mm.** (suits valve for urinals above) Contents: touchpad/electronics, screws, power pack, installation instructions and leads. **2.5 second flush time**
	1860213	**Mainsflush Urinal Single Button Aqua/White Glass Touch Pad 98mm x 98mm** (suits valve for urinals above) Contents: touchpad/electronics, power pack, installation instructions and leads. **2.5 second flush time**
		* Stock held in Reece Warehouse

GENERAL INSTALLATION REQUIREMENTS

Australian Standard	The requirements of AS3500.1: 2003 must be met.
Access for Service	Suitable easy access for service must be provided, by way of ceiling manhole or wall access by using front touch pad or front/rear access panel that as a minimum is 300mm x 300mm. A minimum of 70mm is required above the white valve bonnet to allow access to flow adjustment screw.
SonicSense Touch Pad	Should be installed vertically, centred, at a practical height from the floor. Special Allen Key screws provided with the touch plate screw directly onto an electrical backing plate (not supplied). If touch pad is installed in a "wet area" care must be taken to seal electronics from any moisture.
Power Supply	Mains supply 240 Volt – standard power point.
Lead Connections	Each SonicSense touch pad is supplied with 2 metres of electrical leads with male and female connectors plus power-pack transformer. "Connect power lead to touch pad, and then valve (lead with spade connection) to touch pad, male and female connections will only allow connection the correct way". If longer leads are required they are in sets of 2 and extend 2m, 5m, 7m & 10m.
Trough Urinals	Stock touch pads for urinals are timed at 2.5 seconds, this suits a trough urinal up to 600mm, if larger troughs are to be used. Increase timing will need to be ordered from Mainsflush. Recommendation is as follows: 1 metre – 5 seconds, 1.8 metres - 7.5 seconds, 2.4 metres 10 seconds over 2.4 metres please use ceiling sensor models.

PART 4

MAINTENANCE & SERVICING

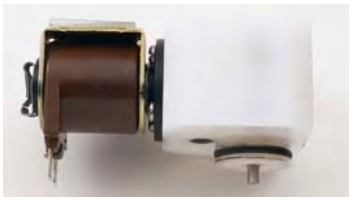
Once commissioned the Mainsflush Valve will provide years of trouble free operation. Regular maintenance may be required in areas of high usage, high water pressure, poor water quality and where customer requires regular interval service. The following will assist service personal when conducting maintenance service.

Method 1

- Turn water and power off.
- Check and clean incoming strainer.
- Check operation of ball valve/s and all other plumbing components.
- Undo top two screws ③ located left and right of centre screw and remove white bonnet② from body of valve. Inspect white bonnet and all o'rings ⑥, ⑦, ⑨for any wear & tear or any damage replace rubber components as required.
- Use a pair of long nosed pliers to remove piston (careful not to drop it), inspect for debris, damage or worn piston rubbers. Remove flow control nut from top of piston and check for debris. Reassemble then either regrease with Rocol or replace.
- Reassemble valve, recommission and re-test. Refer above
- Rocol Silicone must be used when regreasing valve. See page 15.

Method 2

- Alternately remove valve by unscrewing inlet and outlet connections.
- Turn valve upside down, place blade screwdriver through black rubber boot ⑤ and push piston out ⑧. Check piston and piston rubbers for any debris, wear and tear.
- Unscrew flow control from top of piston, check clean and remove any debris. Replace all rubber washer components as required, replace flow control or piston if required.
- Reassemble valve, recommission and re-test.
- Rocol Silicone must be used when regreasing valve. See page 15.



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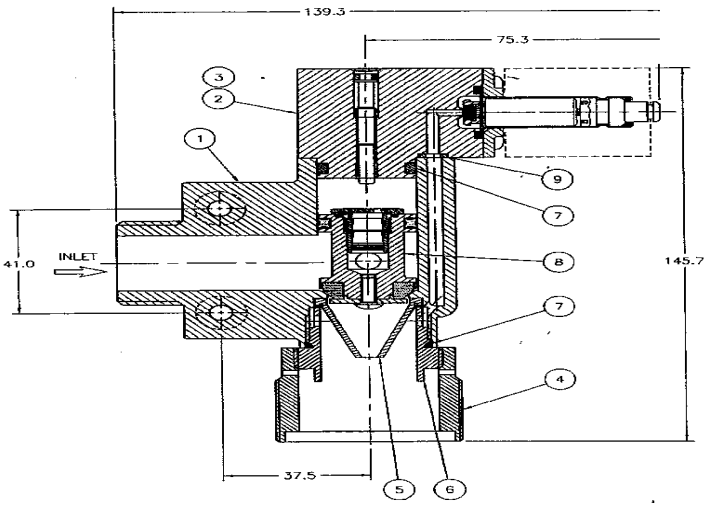

ITEM	PART NO	DESCRIPTION	QTY
9	6227-3	O'RING BS008 NITRILE	1
8	623015	PISTON ASSEMBLY	1
7	M2974	O'RING BS117 NITRILE	2
6	623003	FLUSHER PIPE NUT NITRILE	1
5	623012	RUBBER BOOT	1
4	623006	FLUSHER PIPE NUT	1
3	M2969	SCREW S/STEEL M5X25	2
2	623008	PILOT END ASS. (WHITE BONNET) IINCLUDES FLOW ADJUSTMENT SCREW	1
1	623001	VALVE BODY	1

MAINSFLUSH VALVE SPARE PARTS

Rubbers Kit

Code 1806852 MFL130 20mm
Code 1806855 MFL140 25mm

Solenoid Valve Coil

Code 1806858 24 Volt Coil suit Touch Pad
Code 1806878 12 Volt Coil suit Ceiling Sensor

Mainsflush Valve Lubricant

Code 1903702

Flow Control Kit

Code 1806853 MFL130 20mm
Code 1806856 MFL140 25mm

Mainsflush Valve Kit Components

Code 1806829	Mainsflush Sensor Urinal Valve 12 Volt
Code 1405560	40mm Cap & Lining
Code 210025	25mm Brass Barrel Union
Code 207925	25mm Brass M/F Elbow
Code 1003609	25mm Ballofix M/F Ball Valve
Code 1004010	25mm Line Strainer

Piston Kit

Code 1806851 MFL130 20mm
Code 1806854 MFL140 25mm

SENSOR FAULT DIAGNOSIS

If the system does not operate, carry out checks 1 to 3.

1. Check if ball valves are open and a minimum pressure drop across the solenoid valve of 15 kPa is present.
2. Check if all electrical connections are correct and tight.
3. Check that 12 V AC ±10% us present at the electronic control module supply connectors.

If the system is still not operating continue fault diagnosis by following the instructions below:-

Symptom	Action	Yes/No	Remedial Action
Solenoid does not work	Connect 12V AC Supply direct to solenoid connectors.	No No Yes	Remove Solenoid coil and check resistance (should be approx 17 ohms +/- 10%). Renew solenoid if necessary. Clean solenoid diaphragm, renew solenoid if necessary, clean all filters and flush system through. Continue below.
Does the ECM work?	Check that 10 – 12 V DC is present at the ECM sensor connectors.	No Yes	Renew ECM Continue below.
Does Sensor work	Does sensor voltage drop momentarily when sensor is operated	No Yes	Renew sensor Renew ECM

Symptom	Action	Yes/No	Remedial Action
Is water flow continuous	Disconnect the 12 V AC supply from the ECM. Does the water stop?	 Yes No	 Renew ECM Continue below

Remarks:

The ECM has a built-in protection against malfunction.
If there is a malfunction, disconnect the 12V AC connection for approximately 5 seconds to reset module

MAINSFLUSH VALVE & TOUCH PAD TROUBLE SHOOTING

PROBLEM	SOLUTION
Urinal doesn't flush properly	Check adjustment screw is set correctly, check that water pressure, and pipe sizes and flow rates fall within guidelines set out in this booklet.
Valve won't shut off	Turn off power if water stops valve is Ok, check electronics. If water continues to run turn set screw clockwise until water stops. Turn set screw anti clockwise 4-6 turns and retest. If water continues to flow remove valve and conduct service. See page 14 & 15.
The Touch Pad is not sensitive enough or doesn't work anymore.	Test valve first, plug power lead directly onto valve lead, bypassing touch pad. The valve should activate automatically. If it does, turn power off. Reconnect touch pad and retest. If still faulty replace touchpad. Check that the coil is 24 Volt and not 12 Volt. Rectify if required. If the touchpad is in a "wet area" and has been exposed to water, the touch pad cycles on and off every 4 seconds, the pad should be removed, Mainsflush need to be contacted for advice (03 544 223 367). Upon reinstallation ensure that moisture is stopped from damaging the board again.
How do I test solenoid valve?	Plug power lead directly onto valve lead, bypassing touch pad. The valve should activate automatically. If it does, solenoid is OK. Turn power off to stop water flow.
How do I increase/decrease water flow?	Use ball valve or isolation valve on inlet to valve to reduce flow. Then use blade screw driver and adjust the "set screw" located in the centre of the white bonnet (pictured) of the valve to fine tune. Screw anticlockwise (up) to increase volume, clockwise (down) to reduce volume
Water is coming out of the airgap in valve, why is it happening and how do I stop it?	Check length and width of flush pipe. If within specification outlined within this booklet , remove valve and check black rubber boot, check for debris. If boot is damaged replace. If boot is facing toward the relief vents turn 180º so it faces away from the vents. Ensure that rubber seat still seals. Reassemble and test. Water flow is too high: Reduce water flow by manipulating ball valve and flow control screw. Test
The Sensor Control Units is not operating correctly.	Re-Read Instructions, check coil is 12 Volt & not 24 Volt. Replace if required. If OK refer to page 16 of this booklet for fault diagnosis.

WARRANTY

The Ideal Standard Mainsflush Valve & SonicSense Touch Pad is guaranteed to be free from manufacturing defects for a period of 1 year subject to the following conditions:

Mainsflush Product Warranty: Mainsflush or Reece Plumbing can only provide all warranties. Reece provides this warranty and associated after sales service only to purchasers of the product from Reece or Reece trade customers. It is not available to persons who purchase the product from another retailer or wholesaler.

Conditions:

a) A licensed plumber must install the valve.
b) The valve must be installed under the current AS3500 National Plumbing & Drainage Code. All service is to be arranged through Reece After Sales Service 1800 080 055.
c) Warranty will not be honoured if any of the following occurs:

Damage has been caused by misuse or the unit has been incorrectly installed.
Steps outlined in this booklet have not been undertaken correctly.
Failure of the valve is due to foreign matter from either installation or water supply.
Subject to any statutory provisions to the contrary, claims for damaged walls, carpets, furniture, foundation or any other consequential loss either directly to due leakage of the valve are also excluded from the warranty cover.

rada CONTROLS

Mainsflush Sensor Control Units are supplied by Thornthwaite Technologies under the brand name of Rada. The Mainsflush Valve is compatible with the Rada Sensor Control System. All warranties for the Sensor Control Systems are provided by Thornthwaite Technologies. 02 9417 4466.

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