

FM1 Valves

Manual Close / Manual Reset Butterfly Valves

Part of the F Series of easily installed, compact, air intake valves for diesel engine emergency shut down.



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Application

The FM1 version of the Wyndham Page F Series of engine air intake closure valves is designed to provide an emergency means for rapid shutdown of a diesel engine when tripped manually by a local push button or optionally via a mechanical cable and remote T Handle.

Once the FM1 valve has operated to stop the engine, a restart is only possible after manually resetting the valve to the run position.

The low intake air flow restriction through the open valve makes it generally compatible with the requirements of low emission diesel engines.

Corrosion resistant materials are used where applicable in the construction of the valve. This lightweight and compact valve design together with the availability of factory fitted hose adaptors selected from a wide range of optional sizes assists in easy installation.

The valve may be fitted to either turbocharged or naturally aspirated engines. In the case of turbocharged engines temperature limitations may restrict the position in which the valve may be installed in the intake system.

Description and Main Dimensions

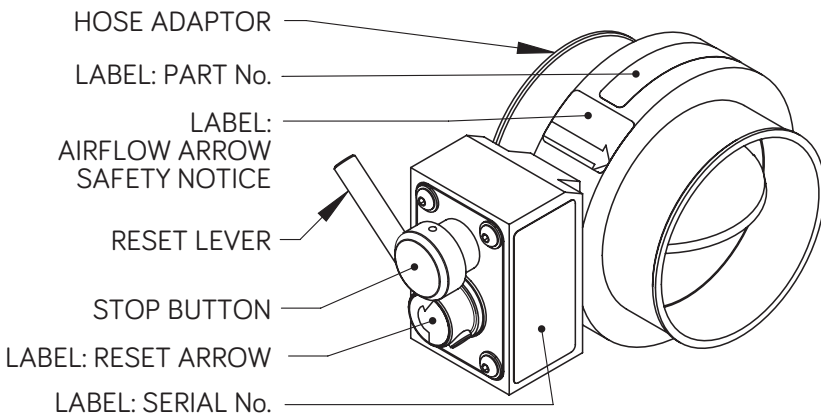
The FM1 butterfly valve is a latched open type. Operation of the manual engine shutdown button is required to trip the valve to the closed [engine stop] position. Following valve closure the manual reset lever on the valve is used to reset to the latched open position. Optionally the valve can be supplied with a cable and T handle to permit shutdown from a position remote from the engine. Additional to this option, the valve can also be supplied with a second cable and T handle to permit manual reset from a position remote from the engine.

In standard form the FM1 valve is supplied complete with hose adaptors as selected by the customer from a range of standard sizes – see diagram below and data on pages 4 and 5. Where a requirement exists for a non-standard adaptor size or other alternative form of pipe connection such as a bolted joint please pass details of requirement to Wyndham Page or your Wyndham Page supplier for investigation.

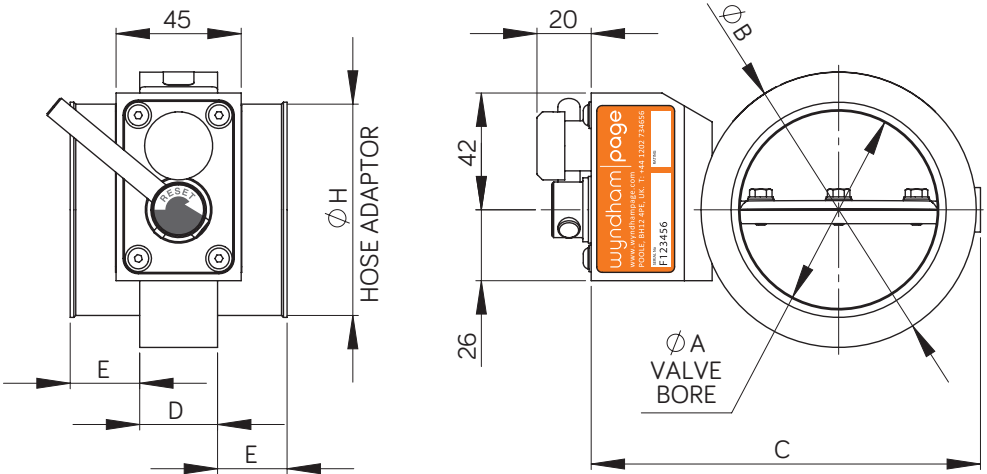
The valve has a metal to metal seal when closed. It is designed for low closing friction and long life of the sealing surfaces. The latching / release mechanism is configured to withstand high shock loads without malfunction.

The mechanism enclosure is to IP66.

The diagram below and the diagrams and data on pages 4 to 5 cover the main features and basic dimensions of the FM1 including selection of options and order coding.



METRIC TABLE		DIMENSIONS (MM)					WEIGHT KG	ORDER CODE
MODEL	H TO SUIT HOSE BORE	BORE A	B	C	D	E		
FM1	38	57	81	122	50	20	0.8	038
	44						0.8	044
	51						0.8	051
	57						0.8	057
	64						0.8	064
	70						0.83	070
	76	71	99	140	28	25	0.77	076
	83						0.85	083
	89						0.92	089
	95						1.11	095
	102	95	125	166	35	25	1.09	102
	108						1.18	108
	114						1.27	114
	121						1.54	121
	127						1.56	127
	133	120	154	195	42	25	1.66	133
	140						1.79	140
	146						2.11	146
	152						2.36	152
	159	145	185	227	49	25	2.5	159
165	2.63						165	
171	2.76						171	
178	3.27						178	



FM1 VALVE - PUSH BUTTON STOP

IMPERIAL TABLE		DIMENSIONS (INCHES)					WEIGHT LB	ORDER CODE
MODEL	H TO SUIT HOSE BORE	BORE A	B	C	D	E		
FM1	1.50	2.2	3.18	4.78	1.97	0.79	1.76	038
	1.73						1.76	044
	2.01						1.76	051
	2.24						1.76	057
	2.52						1.76	064
	2.76						1.83	070
	2.99	2.80	3.90	5.51	1.10	0.98	1.70	076
	3.27						1.87	083
	3.50						2.03	089
	3.74						2.45	095
	4.02	3.74	4.92	6.54	1.38	0.98	2.40	102
	4.25						2.60	108
	4.49						2.80	114
	4.76						3.40	121
	5.00	4.72	6.06	7.68	1.65	0.98	3.44	127
	5.24						3.66	133
	5.51						3.95	140
	5.75						4.65	146
	5.98						5.20	152
	6.26	5.71	7.28	8.94	1.93	0.98	5.51	159
6.50	5.80						165	
6.73	6.09						171	
7.01	7.21						178	

Valve Selection

To enable Wyndham Page to select the most suitable version of the FM1 valve for the customers application the following data is required:

- [1]. Bore size of the intake hose into which the intake valve is to be fitted - refer to section headed "Description and Main Dimensions".
- [2]. Whether a remote stop T handle cable is required
- [3]. Whether a remote reset T handle cable is required (only available if remote stop cable also selected).

Order Coding

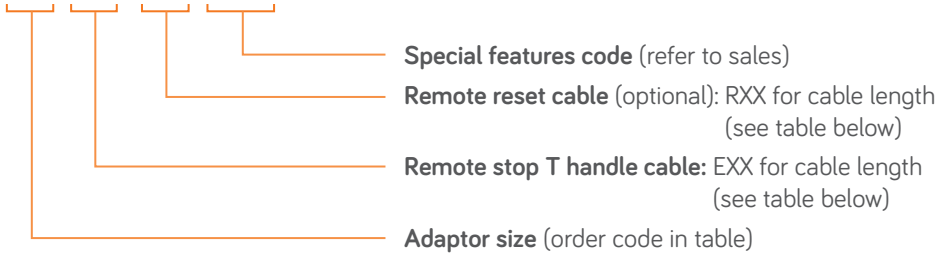
For FM1 valve with **Push Button Stop**:

FM1- XXX - S000



For FM1 valve with **Remote Stop T Handle Cable**:

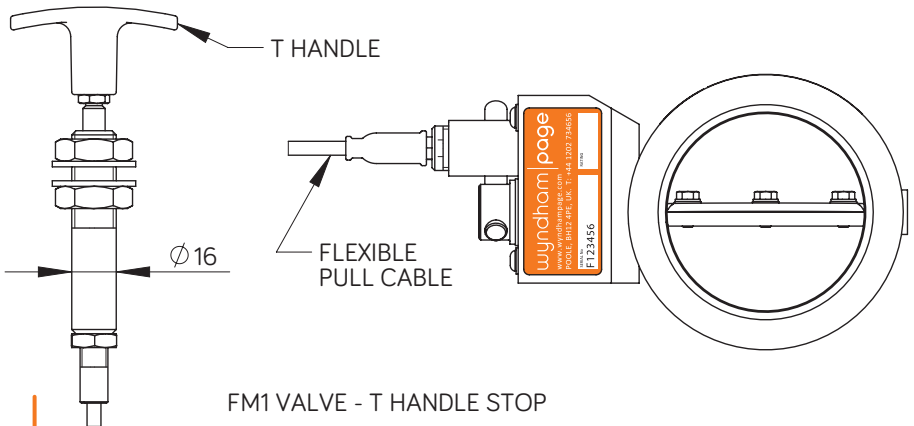
FM1- XXX - EXX - RXX - S000



STANDARD CABLE LENGTHS	
CABLE XX CODE	LENGTH (M)
05	0.5
10	1.0
15	1.5
20	2.0
25	2.5
30	3.0

Special Features:

By arrangement with Wyndham Page.



Installation

Select a position for the valve which enables safe access to operate the emergency stop button and reset lever and when applicable, also permits a suitable run for the mechanical manual stop and / or reset cables. Ensure that the direction of the engine intake airflow complies with that marked on the valve. If an engine air intake flametrap is also fitted, the valve must be installed upstream (air cleaner side) of the flametrap.

The valve may be fitted in any attitude from horizontal to vertical but not in a position where it is subjected to temperatures, internal or external, outside of the range -40°C to $+120^{\circ}\text{C}$.

Additionally in the case of naturally aspirated engines fit the valve as close as possible to the intake manifold.

For turbocharged engines fit the valve upstream of the turbocharger except where a charge cooler is fitted in which case it may be fitted downstream of the charge cooler subject to not exceeding the $+120^{\circ}\text{C}$ limit. **Do not** fit valve between the turbocharger and charge cooler.

The hose and associated intake system into which the valve is installed should be adequate to fully support the valve whilst not permitting excessive vibration of the valve. Generally ensure that there is sufficient flexibility in the finalised intake system to allow for the necessary relative movement between the intake system components over the full range of engine operating conditions to avoid excessive mechanical stresses. Ensure the quality and length of the sections of flexible intake pipe are such that when the intake valve closes with the engine at full rating hose collapse is avoided.

Any existing crankcase breather arrangement venting directly into the engine intake ports or into the intake system downstream of the FM1 valve, must be sealed and replaced by a crankcase breather arrangement connected into the intake system upstream of the FM1 valve or, if permitted at the operating site, vented to atmosphere.

Important note. Retain the standard fuel shut down stop fitted to the engine. The Wyndham Page FM1 air intake valve is designed for emergency stop only.

General Specification

GENERAL DESCRIPTION:	
A slim butterfly valve designed for emergency shutoff of the engine air intake.	
Mechanically latched open, manual close, manual reset by rotation of reset knob.	
GENERAL SPECIFICATION:	
Temperature:	Max ambient: 120°C Max intake air temp: 120°C
Construction:	Body and disk: Hard anodized aluminium Other main components: Stainless steel, aluminium Hose adaptors: Aluminium

Operation

The valve closure disc is sprung towards the engine stop [closed] position. It is latched in the engine run [open] position by rotating the reset lever as indicated on the valve body, or, where a remote manual reset is fitted, by pulling the reset 'T' handle. During engine operation the valve remains open until the manual emergency stop button or remote T handle is operated. This releases the valve disc from the run position to the stop position thereby shutting down the engine.

Note. Unless released to the closed position the valve disc will continue to remain in the latched open state and therefore following a normal engine stop by fuel shutdown it will not require reset.

Maintenance

The following maintenance schedule should be undertaken. Subject to experience of local operating conditions the frequency of the maintenance schedule may be varied. Carry out the proposed maintenance work when the equipment is in a safe area and record details of the work carried out. Rectify any problems identified before returning the diesel powered equipment back into service.

FOLLOWING INITIAL INSTALLATION AND THEREAFTER AT WEEKLY INTERVALS:

- [1]. Check all intake pipework between the FM1 valve and engine intake manifold to ensure all pipe fittings and any support brackets are properly fitted and secure and that the engine intake is leak free and shows no sign of significant deterioration or damage.
- [2]. Start engine. Carry out a shutdown, check that the valve snaps shut and brings the engine to a stop within a few seconds.

SIX MONTHLY:

Remove the FM1 valve. Wipe clean as necessary and visually inspect for damage or excessive wear. Bench test valve function. Refit and complete the "Weekly" maintenance as listed above.

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