

E05F to E20F Valves

Automatic Engine Overspeed Shut Down Valves with Integrated Air Cleaner and Manual Shut Down Option

A range of easily installed diesel engine air intake valves which automatically close on engine overspeed and incorporate an integrated air cleaner and optional manual shutdown for additional safety.



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Application

The Wyndham Page E05F, E10F and E20F diesel engine automatic overspeed shutdown valves, including the enhanced protection variants as listed below, are designed for situations where flammable gas or vapour may enter the atmosphere in an area in which a diesel engine is operating.

Should such flammable material be drawn into the engine intake this may result in uncontrolled engine overspeed and a situation in which shut down of the normal diesel fuel supply may fail to stop the engine.

Under these circumstances a rapid shut down of the engine is required by immediate closure of the engine air intake thereby reducing the potential for major damage and possible ignition of the flammable material in the surrounding atmosphere.

This series of Wyndham Page automatic engine air intake shutdown valve with integrated air cleaner are suitable for installation on either naturally aspirated or turbocharged engines.

Once installed and set, the repeatability of the actual engine automatic shutdown speed has a greater scatter in the case of turbocharged engines than for naturally aspirated types. However, unless there is a special requirement for a very precise shutdown speed, adequate protection from excessive engine overspeed is achieved.

NOTE. Please also see details of the Wyndham Page E03F / E03FM valves which offer an alternative package which may be more suited to some installations at the lower end of the engine rating range covered by this group of valves.

Enhanced Protection [Manual Shutdown]

Enhanced protection in the form of the addition of manual emergency shutdown operated remotely via a pull handle and mechanical cable is available for this range of valves. The valves which include this additional feature are designated E05FM, E10FM and E20FM.

Principle of Operation

The actuation force to close the valve is derived from the engine intake air flow passing through the valve. As the air flow increases this actuation force also increases. This force is resisted by an internal valve spring, the pre-load of which is adjusted via the “Trip Adjuster Screw”.

Once the actuation force exceeds the resisting force of the valve spring, the valve rapidly moves to the closed (engine stop) position. Once closed the valve remains shut until the engine has fully stopped. The valve then resets to the open position after a delay of some seconds.

Additionally, when the manual emergency stop system is also included in the valve build, actuation of the manual stop directly moves the valve to the closed position. Once the engines stops, and the manual stop is released, the valve will again automatically reset to the open position after a short delay.

Description & Main Dimensions

Principal dimensions for this range of Wyndham Page shutdown valves are given in the diagram and in the tabulated data on page 4.

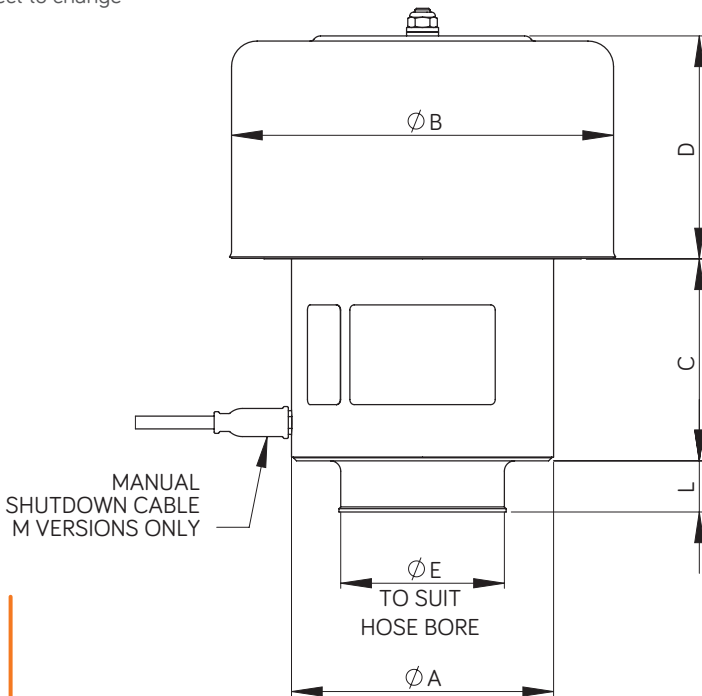
The valve is supplied complete with hose adaptors selected in consultation with the customer from a range typical for the rating of the engine to be protected. See tabulated information on page 4.

In the case of valves with the addition of manual shutdown, the required length of the shutdown cable may be selected from the list given on page 5. Alternative lengths may be available on application.

METRIC TABLE		ENGINE POWER (kW)		DIMENSIONS (MM)													
MODEL	MIN	MAX	A	B	C	D	L	MASS (KG)	STOCK HOSE ADAPTORS E (OTHER SIZES AVAILABLE ON REQUEST)								
E05F	4	27	81	138	51	87	20	0.73	35	38	41	45	48	51			
E05FM					63.5			0.85									
E10F	7.5	45	103	149	65	87	20	0.94	45	48	51	55	58	60	62	64	70
E10FM					79			1.07									
E20F	30	78	122	149	67.5	87	20	1.14	45	51	60	64	70	77			
E20FM					81.5			1.38									

IMPERIAL TABLE		ENGINE POWER (HP)		DIMENSIONS (INCHES)													
MODEL	MIN	MAX	A	B	C	D	L	MASS (LB)	STOCK HOSE ADAPTORS E (OTHER SIZES AVAILABLE ON REQUEST)								
E05F	5	36	3.19	5.43	2.01	3.43	0.79	1.61	1.4	1.5	1.6	1.8	1.9	2.0			
E05FM					2.50			1.87									
E10F	10	60	4.04	5.87	2.56	3.43	0.79	2.07	1.8	1.9	2.0	2.2	2.36	2.44	2.5	2.8	
E10FM					3.11			2.36									
E20F	40	105	4.78	5.87	2.66	3.43	0.79	2.51	1.8	2.0	2.4	2.5	2.8	3.0			
E20FM					3.21			3.04									

Data subject to change



Valve Selection

To enable Wyndham Page to select the most suitable shutdown valve for a given application the following data is required:

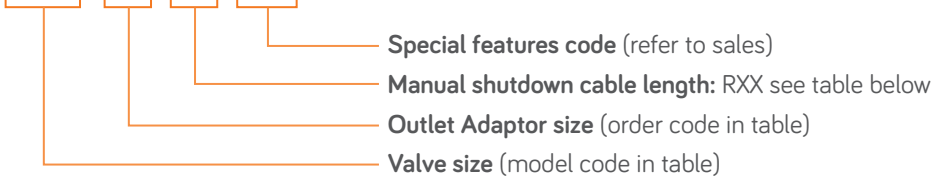
- Engine type and model.
- Engine rating and / or application details.
- The internal bore of the intake system hose at the position the valve is to be fitted.
- Where applicable the cable length for the manual shut down.

Order Coding

EXXF - XXX - S000



EXXFM - XXX - RXX - S000



Special Features:

By arrangement with Wyndham Page.

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

Valve Installation

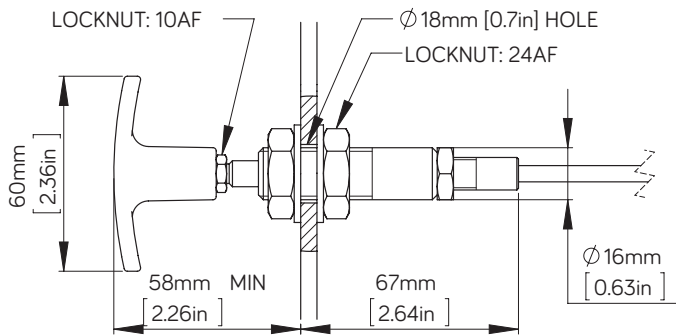
This range of Wyndham Page shutdown valves with integrated air cleaner are designed to fit in place of the existing engine air cleaner assembly.

Where applicable the valves are supplied complete with the manual shut down pull handle and selected length of shut down cable fitted and adjusted. It is recommended that the pull handle and cable are not separated from the valve when installing.

The valve assembly should ideally be installed such that the air cleaner cover can be removed to enable cleaner element change and valve setting adjustment without the need to detach the complete assembly from the engine. The valve may be fitted vertically [with the air cleaner cover uppermost] through to horizontally.

Additionally, in the case of valve assemblies supplied with a manual shutdown, ensure that a suitable run for the shutdown cable is accommodated when installing the valve assembly and that the manual emergency stop handle is fitted in a position that is readily accessible.

Details of the emergency stop handle are given in the diagram below. The stop handle assembly is designed to be located in a suitable bulkhead or mounting bracket by providing a 18mm diameter hole. To fit the pull handle assembly release the handle locknut and detach the handle. Remove the body locknut and washer at the handle end and push the handle body through the 18mm hole. Refit body washer and locknut adjusting both locknuts as required. Refit handle locknut and handle and tighten.

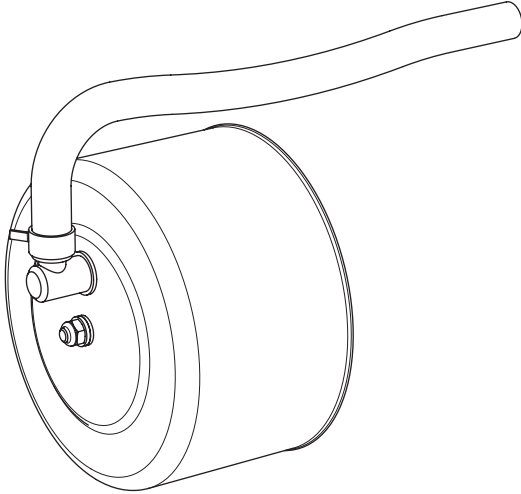


T HANDLE FOR EXXFM VALVES

The engine intake pipework and associated hose into which the shutdown valve's fitted hose adaptor is located should be adequate to fully support the valve whilst not permitting excessive vibration of the valve. Consider support brackets if necessary (contact Wyndham Page for additional details). Generally ensure that there is sufficient flexibility in the finalised intake system installation to allow for the relative movement between the system components over the full range of engine operating conditions thereby avoiding excessive mechanical stresses.

In the case of an engine with multiple intake systems requiring the fitting of more than one Wyndham Page shutdown valve, a suitable balance pipe must be installed between the intake system pipes to give a simultaneous shutdown of the fitted valves. Typically such a balance pipe should be 30% to 40% of the intake pipe diameter.

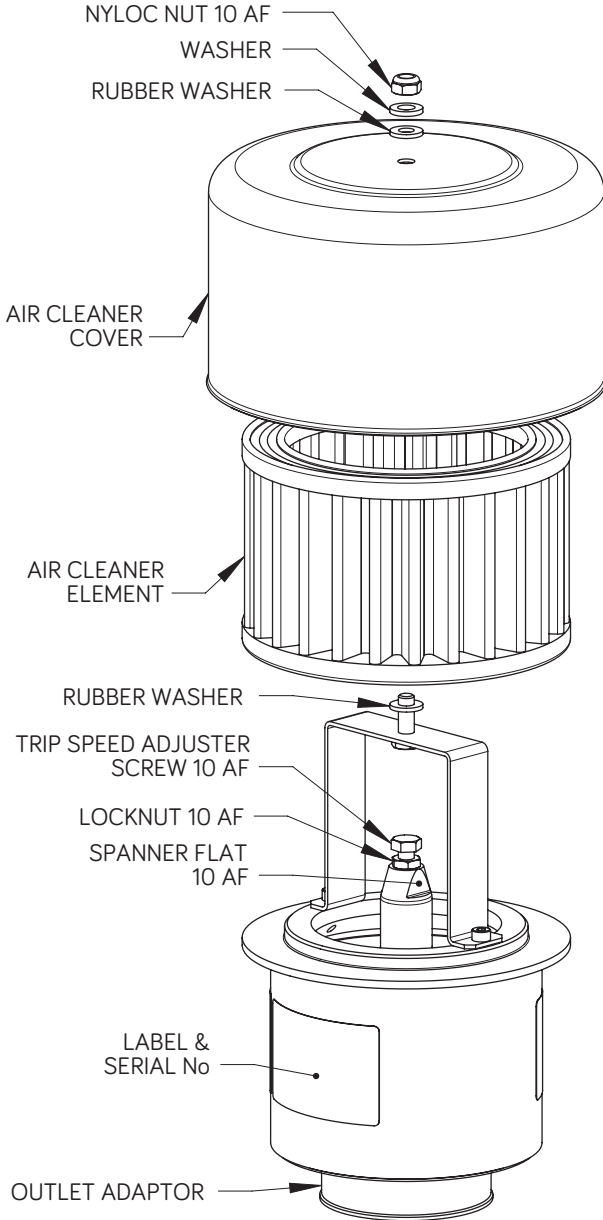
Any engine crankcase breather arrangement venting directly into the intake ports or into the air intake system downstream of the Wyndham Page shutdown valve must be sealed and replaced by an external breather system vented either to atmosphere [if permitted at the site the equipment is to operate] or into the shutdown valve air cleaner cover downstream of the air cleaner, via a suitable fitting and breather hose located as shown below.



Important Note. Always retain the standard fuel stop provided with the engine. The Wyndham Page valve manual stop option should never be used as the normal way to stop the engine. It is intended for emergency operation only or when checking for correct functioning.

Valve Trip Speed Setting

The Wyndham Page valve assemblies as supplied will normally be set to trip at a speed below that required. To adjust the trip speed use the trip adjuster screw and associated lock nut. See instructions and diagram below.



Rotating the adjuster screw clockwise increases the trip speed. Prior to attempting to set the trip speed check that where applicable the manual emergency stop pull handle is in the run condition i.e. fully pushed in. To set:

- [1]. Check adjuster screw locknut is tight and that the intake system from valve assembly [including air cleaner element and cover], to intake manifold is fitted and secured and is leak free.
- [2]. Start engine. Slowly increase speed until a shutdown occurs. [Note; if no shut down occurs up to the maximum available engine speed with maximum throttle, remove air cleaner cover and cleaner element from the Wyndham Page valve assembly to gain access to the setting screw and locknut. Release setting screw locknut and rotate the setting screw two turns anticlockwise. Tighten locknut, refit air cleaner and cover and recheck for shutdown].
- [3]. Following initial shut down remove air cleaner cover and cleaner element to gain access to the setting screw and lock nut.
- [4]. Release setting screw locknut and rotate setting screw one turn clockwise.
- [5]. Tighten locknut, refit air cleaner and cover, start engine and slowly increase speed up to the maximum available.
- [6]. Repeat steps [3], [4] and [5] until the first time that no shut down occurs up to the highest speed available. Then adjust the setting screw a further one half turn clockwise and tighten the locknut. With the intake system fully fitted and the engine fully warmed up slowly run up and down the engine speed range a number of times to check no further shut down occurs. If a further shut down occurs reset the adjuster screw one further half turn clockwise and check again until no shut down occurs.
- [7]. Finally in the case of EXXFM valves restart the engine and run at about half maximum speed [or higher if this not possible]. Operate the manual emergency stop pull to ensure engine stops within a few seconds.

Notes:

In the case of turbocharged engines it is important that the final check above is carried out with the engine under load.

A more precise method to set the trip speed is achieved by monitoring and recording the engine speed during adjustment and by temporarily raising the engine high idle speed [if safe to do so] to enable the final trip setting speed to be measured. Once the trip speed is set, the high idle must be reset to its standard setting.

Maintenance

The following maintenance schedule should be undertaken for all valve types covered in this handbook except where stated otherwise. Subject to experience of local operating conditions the frequency of the maintenance requirements may need to be varied.

- DAILY: Valves fitted with a manual emergency stop. Run engine at mid range speed [or higher if this if this not possible]. Operate the emergency pull stop. The engine should stop within a few seconds.
- MONTHLY:
- [1]. Check intake pipework between the Wyndham Page valve and engine to ensure all pipe fixings and any support brackets are properly fitted and secure and that the engine intake is leak free and shows no signs of significant damage.
 - [2]. Check the shutdown trip speed setting is correct by either:
 - [a] Carrying out the trip speed adjustment as outlined herein or;
 - [b] Temporarily raise the engine high idle and check trip speed using an engine tacho.
- 3 MONTHLY:
- [1]. Remove valve and air cleaner assembly and, where applicable, the manual emergency pull stop and cable.
 - [2]. Clean valve [not air cleaner element] as necessary using a soft brush/airline plus white spirit or similar if necessary taking all normal precautions. Dry valve.
 - [3]. Check that the valve moves smoothly over its complete operating stroke and that there are no signs of significant damage or excessive wear. Do not lubricate.
 - [4]. Where fitted check the manual pull stop and cable for damage and wear. Check it operates freely.
 - [5]. Refit valve and complete “monthly” checks as above plus daily check where applicable.

- NOTES:
- [a]. Carry out the above maintenance whilst the engine is in a non-hazardous area.
 - [b]. Where applicable ensure that the high idle speed of the engine is reset to the correct value.
 - [c]. Any problems identified must be rectified before returning the equipment to a hazardous area.
 - [d]. Air cleaner elements should be serviced in accordance with the engine manufacturers instructions.

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