CHALWYN
DIESEL PROTECTION SYSTEMS

D-Series Automatic Engine Overspeed Shut Down Valves (Bendix Types with Integral Air Cleaners)

SELECTION, APPLICATION AND MAINTENANCE

Valve Numbers
D40BF D45BF D51BF
D57BF D64BF

DESCRIPTION

A range of spring loaded poppet valves designed to automatically stop an engine by closing down the air intake should excessive overspeeding occur. Fitted with integral air cleaner.

The closing force on the valve is provided by the intake air flow passing through. As the air flow increases, the closing force builds up. This is resisted by a spring, the pre-load of which is adjustable such that at a given air flow the resulting force overcomes the spring resistance and causes the valve to close. Once closed the valve will not reset to the open condition until the engine stops.

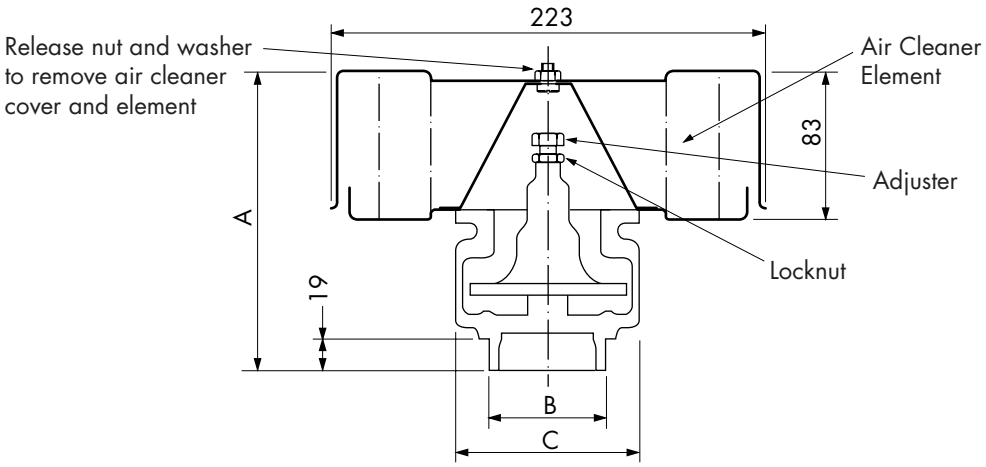
This type of valve may be fitted to either naturally aspirated or turbocharged engines. It should be noted however that for a given valve setting the repeatability of the actual automatic shut down speed has a greater scatter in the case of a turbocharged engine. However, unless for special reasons a precisely repeatable shut down speed is required, adequate protection from excessive overspeed and potential resulting damage is still achieved.

Manual shut down is available as an option.

SELECTION

Valve dimensions are as below:

Valve Type	A mm	B Dia. Min mm	B Dia. Max mm	C Dia. mm	WEIGHT Kg
D40BF	167	43	48	86	2.0
D45BF	167	48	70	86	2.0
D51BF	170	54	80	94	2.0
D57BF	173	60	83	104	2.3
D64BF	175	67	96	114	2.5



Diameter 'B' is selected within the range available to suit the hose bore into which the valve is to be fitted. The air cleaner element should have equal or greater surface area than the manufacturer's original air cleaner for the engine type.

For valves without an integral air cleaner see Chalwyn data for Mini Valves, Bendix Valves, Spindle Valves and D200 types.

For manual shutdown option see Chalwyn auto/manual data sheets.

In order to select the correct valve build, the following information is required.

a) Engine type
b) Engine rating for the application (power and speed)
c) Bore of the hose connection between valve and engine intake system.

Note: The air cleaner fitted to this range of valves is designed for light/medium duty applications. It should not be used for heavy duty applications as unacceptable short air cleaner service intervals may result. Further advice is available from the Chalwyn Sales Office.

FITTING

1. Remove the existing engine air cleaner. Using a short re-inforced rubber cuff and clips mount the Chalwyn valve. The valve may be mounted with the direction of the air flow anywhere between vertically down and horizontal.

2. The method of attachment of the D valve must give adequate support for the valve and prevent excessive vibration. Use suitable support brackets if necessary.

3. Particular care must be taken to ensure the integrity of the pipework between the Chalwyn valve and engine intake manifold. Ideally metal pipework should be used. Where unavoidable, gaps in the metal pipework should be as short as possible, taking into account any relative movement, and connected by re-inforced rubber hose. The possibility of hose collapse on closure of the valve should be avoided.

4. Any engine crankcase breather connections into the engine air intake system, or any internal breather connections to the engine air intake ports, must be sealed and replaced by an external breather system venting to atmosphere. (External breather system kits for various engine types are available from Chalwyn.)

5. Where more than one Chalwyn valve is fitted to an engine, as in the case of an engine with multiple intake pipes, a balance pipe arrangement must be fitted to link the various intake pipes together downstream of the shut down valves. Typically the diameter of the balance pipe should be about 30% of the individual intake pipes.

ADJUSTMENT

Once the Chalwyn valve is installed, adjustment of the overspeed trip setting is carried out using the adjuster and locknut (refer to diagram). Basically rotating the adjuster clockwise will increase the engine speed at which automatic shut down occurs.

As supplied, the valve will be adjusted such that shut down will generally occur well below the engine high idle speed. To increase the speed at which automatic shut down occurs, proceed as follows:

1. Start engine. Slowly accelerate. Note speed at which shut down occurs.

2. Remove the air cleaner cover and element to expose the adjuster and locknut (see diagram).

3. Release locknut. Turn adjuster clockwise one turn. Tighten locknut.

4. Refit air cleaner cover and element.

5. Start engine. Slowly accelerate. Note speed at which shut down occurs.

6. Repeat steps '**2**' to '**5**' until the first setting at which the engine does not shut down at high idle speed (i.e. maximum throttle, no load).
Then either:

a) *Use the results of shut down speed versus adjuster setting as a calibration check to make a final adjustment to give the required setting (typically 10% to 15% over high idle).*
or

b) *If a very precise setting is not required, turn the adjuster a further one turn clockwise to take the shut down above high idle speed by a suitable margin. When using this setting procedure it may be found that the engine occasionally shuts down during the normal operation. If so, turn the adjuster clockwise by a further one half turn.*

7. Ensure the adjuster locknut is fully tightened. (Use a thread lock adhesive on the locknut threads).

Notes:

Turbocharged Engines.
When setting a valve fitted to a turbocharged engine using the preceding method, it may be found that at high engine power outputs, the engine will shut down at a lower speed than required. If this occurs, further small adjustments in steps of one half turn clockwise should be made until the problem is eliminated.

Insufficient Adjustment.
Should there be insufficient adjustment to set the shut down speed at the required level contact your Chalwyn agent for a supply of a stronger valve spring.

Jammed Valve.
If in the course of adjusting the valve it jams on its seat, release by turning **CLOCKWISE** viewed from adjuster end

MAINTENANCE

Shut Down Valve and Mechanism

The recommended routine maintenance period is three months. This period is dependent on the operating conditions of the engine and, by experience, may need to be varied.

Routine Maintenance

1. Disconnect intake pipework and release the valve from any support brackets etc. to allow it to be removed.

2. Inspect the valve internally for cleanliness. If necessary clean in paraffin or white spirit taking normal precautions. Dry the valve thoroughly.

3. Check there is no excessive wear and that the valve moves smoothly over its complete operating stroke. **DO NOT LUBRICATE.**

4. Refit valve. Check valve setting based on the "Adjustment" instructions given herein.

Note:
When excessive wear is apparent, or the valve damaged, it should be returned to Chalwyn Equipment for appraisal and reconditioning. (All such work is dealt with on an urgent basis.)

Air Cleaner Element

Replace air cleaner element at the periods recommended by the engine manufacturer. (Spare elements are available from Chalwyn.)

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