CHAPTER 3

OXYGEN REGULATORS, MK. 16 SERIES

LIST OF SUB-CHAPTERS

Chapter 3

OXYGEN REGULATORS, MK. 16 SERIES

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Introduction

1. The Mk. 16 series oxygen regulators are of the constant flow type, the high-pressure oxygen supply from the storage cylinders being reduced and a constant flow of low-pressure oxygen passed through fixed orifices. These regulators are intended primarily for use in pressure cabin aircraft and permit a normal maximum cabin altitude of 30000 ft. They are used in conjunction with an oxygen economizer Mk. 4 or with pressure breathing equipment. A typical Mk. 16 series regulator is shown in fig. 1.

2. The regulator provides a NORMAL flow of oxygen up to a cabin altitude of 30000 ft, the oxygen delivery being changed automatically to HIGH flow in the event of loss of cabin pressure. It is possible, therefore, to provide a normal flow of oxygen under normal conditions of flight, the change to high flow occurring only if the cabin altitude exceeds 30000 ft. Hence, an economy in oxygen consumption is achieved with a consequent reduction in the number of storage cylinders required.

3. An emergency flow valve is incorporated in the regulator and gives a greatly increased oxygen flow for emergency use, this being additional to the high flow provided for use at cabin altitudes above 30000 ft.

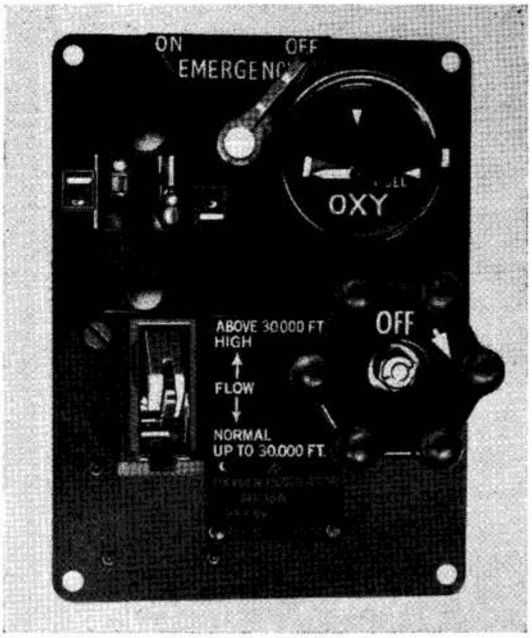


Fig. 1. Typical Mk. 16 Series regulator

DESCRIPTION

4. The principal assemblies and components of a Mk. 16 series regulator (fig. 2 and 3) are housed in, or located on, the regulator body. A panel assembly attached to the body mounts the controls and indicators. The components and assemblies are as follows :—

(1) High-pressure on-off valve

(2) High-pressure contents gauge

(3) Reducing valve

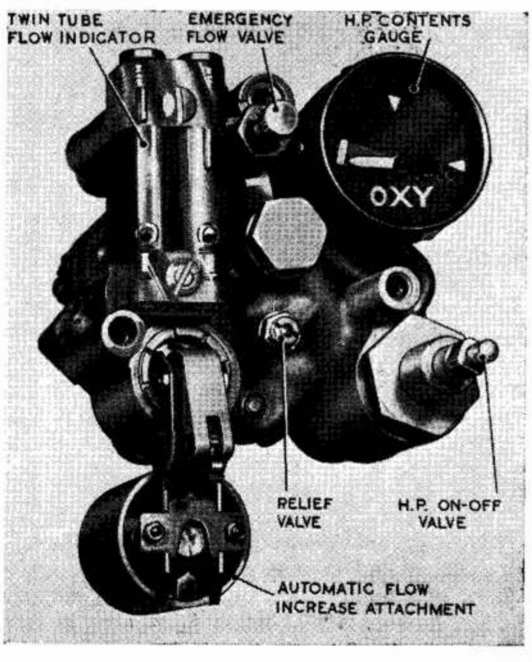


Fig. 2. Regulator with front panel removed

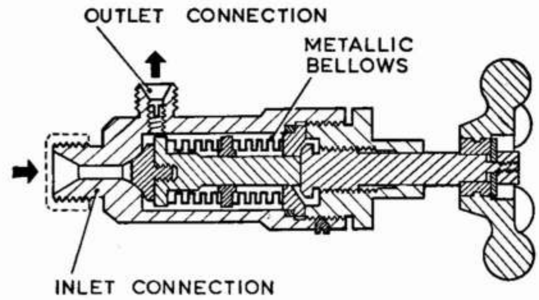


Fig. 3. High-pressure on-off valve

(4) Automatic flow increase attachment

(5) Twin-tube flow indicator assembly

(6) Emergency flow valve

(7) Relief valve

High-pressure on-off valve

5. A sectional view of this unit is shown in fig. 3. The valve is of the glandless type, the usual gland and gland washer being replaced by a metallic bellows. The oxygen enters at high pressure through the inlet connection (fig. 3) and passes through connecting passages and a filter to the reducing valve. A passage also leads from the valve body to a pipe connecting with the contents gauge.

High-pressure contents gauge

6. A high-pressure contents gauge is provided in the regulator assembly to indicate the amount of oxygen remaining in the cylinders. The dial is marked at pressures corresponding to full, half-full and empty; these are indicated by the word FULL, a mark and a red sector, respectively.

Reducing valve

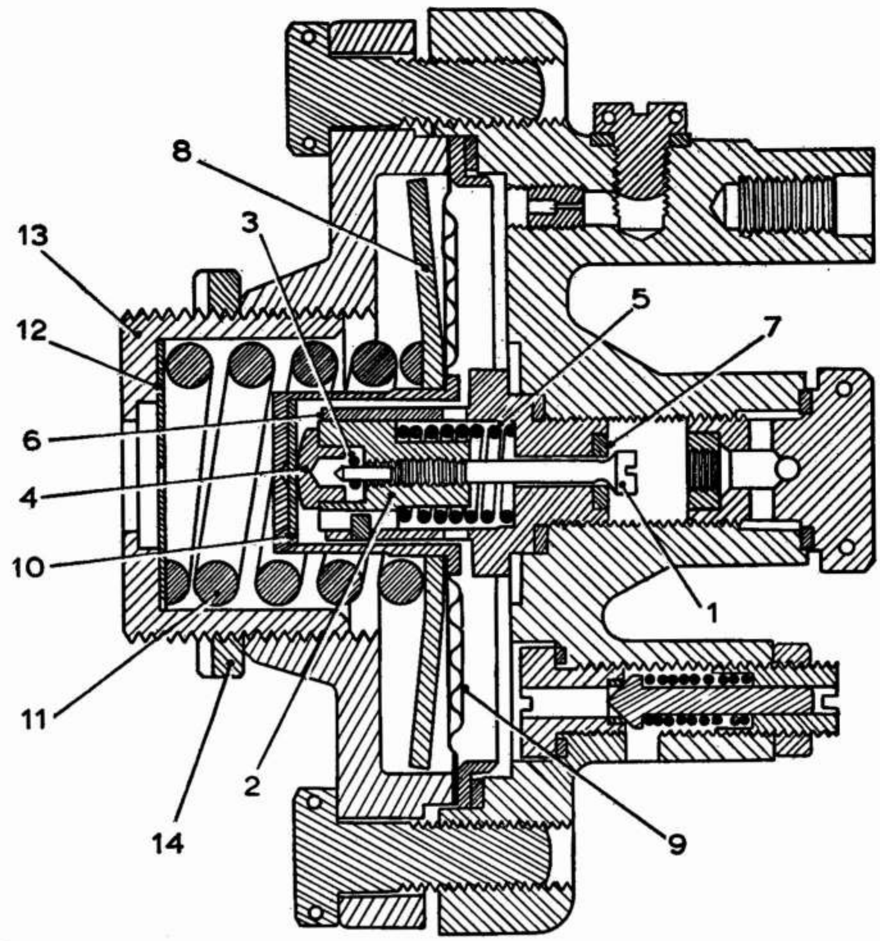
7. This valve (fig. 4) reduces the oxygen supply pressure from the high-pressure oxygen cylinders to a constant pressure of approximately 40 lb/in² The reducing valve is of the inverted type; that is, one in which the valve stem passes through the valve seat orifice. For descriptive purposes, the valve can be divided into a valve group and a chamber group.

Valve group

8. The valve group comprises a valve stem (1), valve plunger (2) containing a valve clip (3) and end pad (4), and a valve return spring (5). These components are assembled in a valve guide (6) which houses a valve seat (7).

Chamber group

9. The chamber group consists of a diaphragm plate (8), diaphragm (9), diaphragm thrust washer (10), regulating spring (11), end plate (12), regulating adjusting screw (13) and adjusting screw locknut (14); these components are assembled in the main body of the regulator.



1 VALVE STEM
2 VALVE PLUNGER
3 VALVE CLIP
4 END PAD
5 VALVE RETURN SPRING
6 VALVE GUIDE
7 VALVE SEAT
8 DIAPHRAGM PLATE
9 DIAPHRAGM
10 DIAPHRAGM THRUST WASHER
11 REGULATING SPRING
12 END PLATE
13 REGULATING ADJUSTING SCREW
14 ADJUSTING SCREW LOCKNUT

Fig. 4. Reducing valve

Automatic flow increase attachment

10. This component is shown separately in fig. 5, and sectional views of the mechanism assembled to the regulator body are shown in fig. 6. The automatic flow increase attachment consists of a bellows unit and a switch unit, each with independent adjusting screws. A screwed ring (31) and a washer are assembled to the attachment for the purpose of securing it to the flow-change housing. The bellows is protected by a cylindrical light-alloy case which is secured to the panel by screws.

Bellows unit

11. This unit contains an evacuated bellows (25) which is secured by three screws to the closed end of a light-alloy cylindrical casing (24). A push rod (25A) is secured to the free end of the bellows and operates a trip lever (18) against the pressure of a light return spring (19) when the bellows expands.

Switch unit

12. One arm of a bell-crank retaining piece (16) bears against the end of the trip lever under the influence of a torsion spring (13), when the latch (15) on a switch lever (12) is engaging the other arm of the retaining piece (fig. 6 NORMAL FLOW). The other end of the switch lever is pivoted to a switch plunger (28) which carries a self-centring flow-change valve (27), held in position by a retaining washer. The valve is held on a valve seat (32) by a valve spring (29) when the switch lever is in the NORMAL flow position. The valve spring and switch plunger are enclosed in a rubber sleeve (26) with an integrally moulded flange to provide a seal. The other end of the rubber sleeve is clamped to the plunger body by a brass strap.

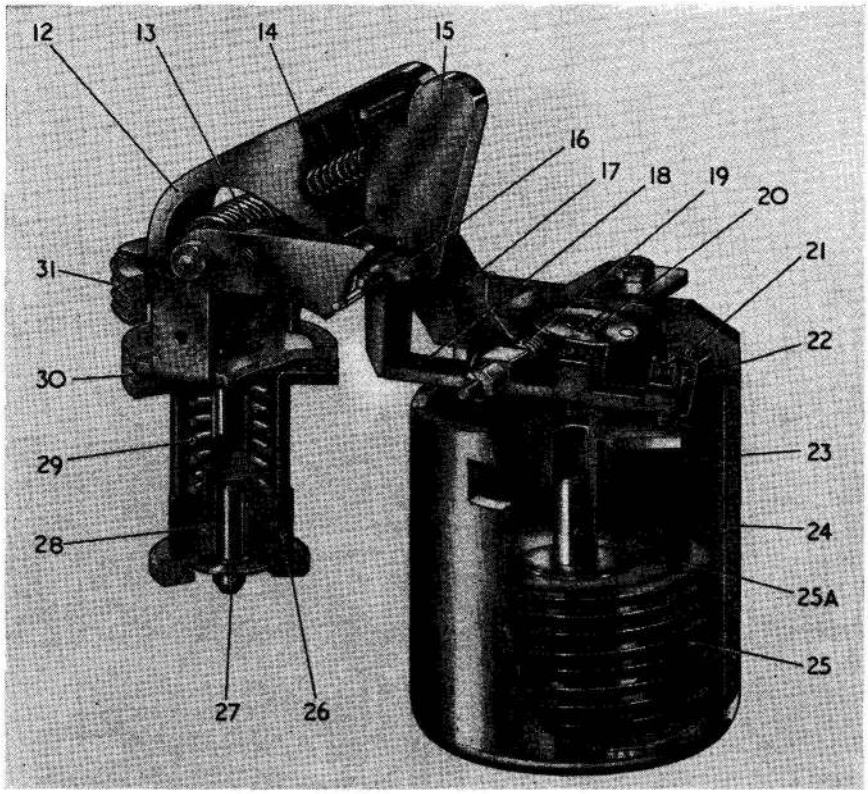


Fig. 5. Automatic flow increase attachment, general arrangement

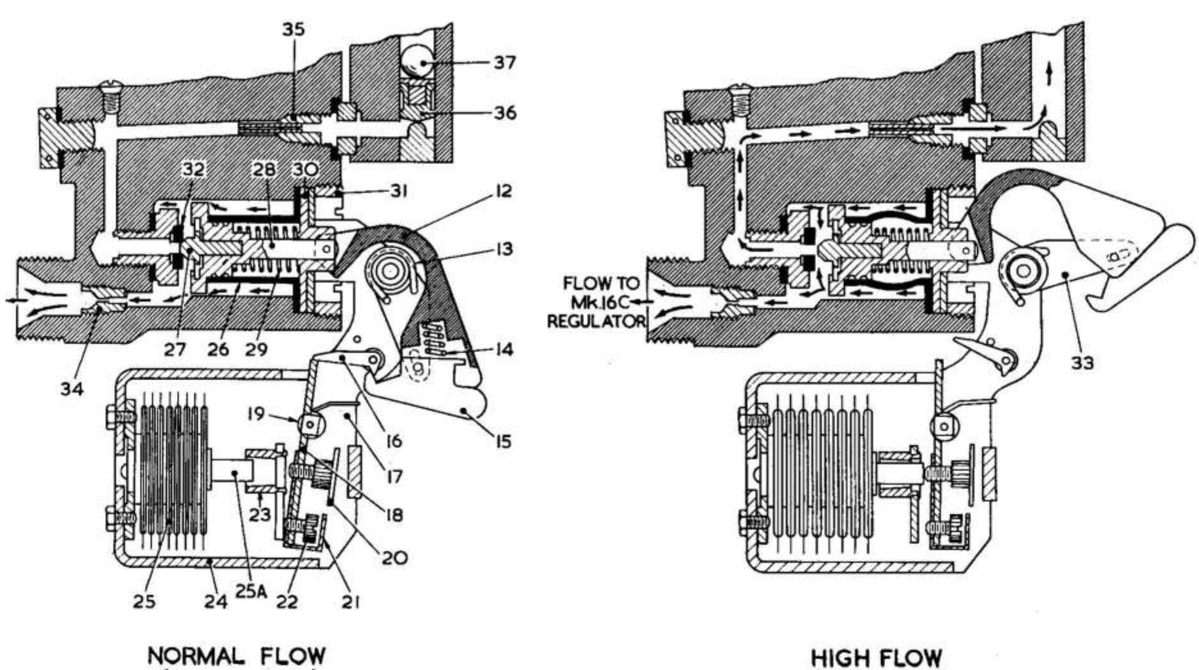


Fig. 6. Sectional views showing operation of automatic flow increase attachment

Key to Fig. 5

12 SWITCH LEVER
13 TORSION SPRING (SWITCH LEVER)
14 LATCH SPRING
15 LATCH
16 RETAINING PIECE
17 SIDE PLATE
18 TRIP LEVER
19 SPRING (TRIP LEVER)
20 ADJUSTING SCREW
21 INDEX FOR ITEM 20
22 ADJUSTING SCREW
23 GUIDE BUSH
24 CASING (BELLOWS UNIT)
25 BELLOWS
25A PUSH ROD
26 RUBBER SLEEVE
27 FLOW-CHANGE VALVE
28 SWITCH PLUNGER
29 VALVE SPRING
30 GUIDE PLATE AND BUSH (SWITCH PLUNGER)
31 SCREWED RING

Key to Fig. 6

12 SWITCH LEVER
13 TORSION SPRING (SWITCH LEVER)
14 LATCH SPRING
15 LATCH
16 RETAINING PIECE
17 SIDE PLATE
18 TRIP LEVER
19 SPRING (TRIP LEVER)
20 ADJUSTING SCREW
21 INDEX FOR ITEM 20
22 ADJUSTING SCREW
23 GUIDE BUSH
24 CASING (BELLOWS UNIT)
25 BELLOWS
25A PUSH ROD
26 RUBBER SLEEVE
27 FLOW-CHANGE VALVE
28 SWITCH PLUNGER
29 VALVE SPRING
30 GUIDE PLATE AND BUSH (SWITCH PLUNGER)
31 SCREWED RING
32 TUFNOL VALVE SEAT
33 LINK
34 LIMITING FLOW JET
35 HIGH FLOW JET
36 PERSPEX FLOAT
37 TITANIUM BALL

Adjusting screws

13. Adjusting screws (20 and 22), with a spring-detent locking device, are provided for calibration. The trip mechanism is set to operate at a cabin altitude of 30000 $\pm$ 1500 ft. Adjustment of the change-over altitude is effected by the adjusting screw (20) which governs the amount of free expansion of the bellows before tripping action occurs. One complete turn of this adjusting screw corresponds to an altitude change of approximately 2500 ft. A secondary adjustment by the adjusting screw (22) controls the depth of engagement of the trip lever with the retaining piece.

Note . . .

The secondary adjustment is made only when the mechanism is assembled initially and should not be disturbed.

Twin-tube flow indicator assembly

14. The indicator assembly is located in a housing on the regulator body, between two filtered jet positions and drillings to the regulator outlet. The assembly consists of a perspex body in the form of two tubes. Each tube accommodates a perspex bobbin-shaped float with a metal ball resting on the float to provide a control force. The ball in the left-hand tube is made of titanium and the tube is used for HIGH flow indication. The ball in the right-hand tube is made of phosphor-bronze and this tube is used for NORMAL flow indication. The outlets from the two tubes combine in a common outlet in the regulator body. The lower portion of each tube is covered by a front plate which obscures the floats when there is no flow. Two plates with luminous horizontal markings are fitted to the front panel by the side of each flow tube; these indicate the correct positions of the floats when oxygen is flowing in each tube.

Emergency flow valve

15. The emergency flow valve is located in a housing on the regulator body, between the twin-tube flow indicator and the high-pressure contents gauge. The assembly consists of a valve screw, which has serrations at its outer end to accommodate a control lever, and a valve nose which is secured to the base of the screw. The valve nose forms a seal with the base of the valve housing when in the closed position. A gland nut and gland washer seal the spindle portion of the valve screw in the housing, and a pinch bolt secures the control lever to the valve screw. A plate secured to the regulator panel indicates the EMERGENCY, ON and OFF positions of the control lever.

Relief valve

16. The relief valve is located in a recess in the housing that connects with the reduced pressure chamber. A drilling in the side of the housing affords a means of escape for the excess pressure. Adjustment of relief pressure is by means of an adjusting screw which projects through the housing, the adjusting screw being locked by a locknut.

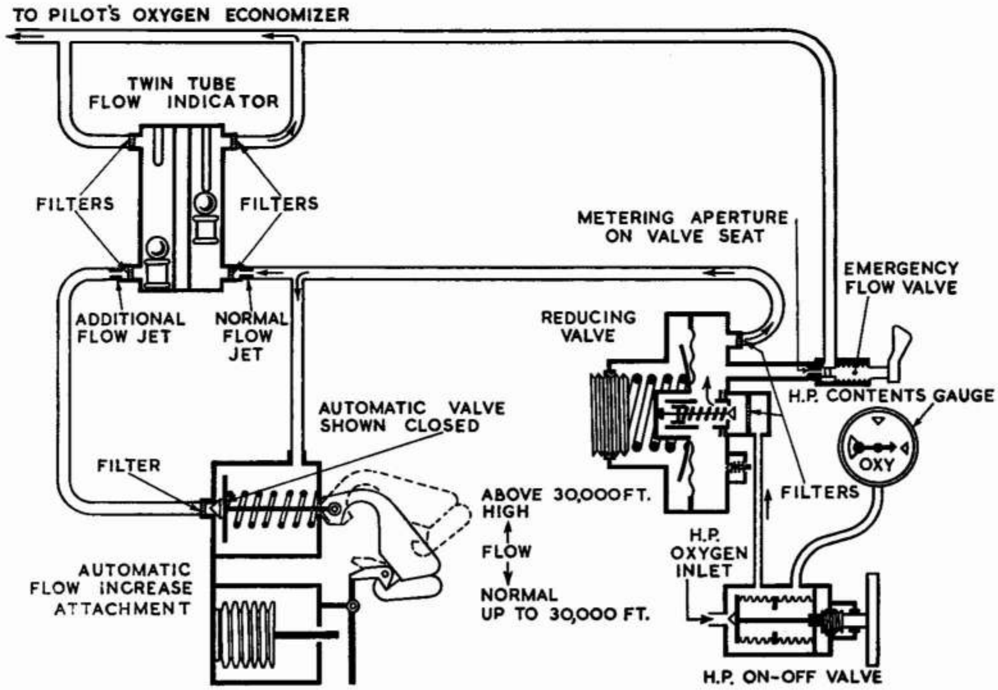


Fig. 7. Schematic diagram of regulator

OPERATION

Normal flow

17. The following description should be read in conjunction with fig. 7. Movement of the control on the high-pressure on-off valve to ON lifts the valve stem off its seating and allows high-pressure oxygen to pass, through a filter, to the reducing valve. This high-pressure supply also passes, through a pipe assembly, to the high-pressure contents gauge. Oxygen passes through the reducing valve, enters the reduced pressure chamber and continues to flow until the pressure in the chamber, acting on the diaphragm, overcomes the loading of the regulating spring and closes the pressure reducing valve. The oxygen in the chamber is then at a predetermined reduced pressure which is dependent on the adjustment of the spring. The oxygen flows from the reduced pressure chamber through two passageways, one leading to the normal flow jet and its flow indication tube, while the other leads to the automatic flow increase attachment housing. At altitudes below 30000 ft, the flow is through the NORMAL flow jet and flow indicator only, and thence to the regulator outlet. As oxygen flows from the chamber, the pressure in the chamber falls and the spring pressure overcomes the reduced pressure on the diaphragm; the diaphragm opens the valve and more oxygen passes into the chamber until the pressure reaches the predetermined reduced value (40 lb/in^2).

18. When oxygen is drawn off at a constant rate, the valve takes up a position of equilibrium such that the pressure in the chamber is maintained at an almost constant value, independent of the pressure of the supply.

High flow

19. When the cabin attains an altitude of approximately 30000 ft, the bellows of the automatic flow increase attachment has expanded sufficiently for the push rod to move the trip lever and retaining piece until the switch lever is disengaged, and the spring action causes the lever to move back to the limit of its travel. The forked end of the switch lever, which is cam-shaped, bears on to a fixed plate and, as the lever moves back, raises the plunger, thus lifting the valve off its seating and allowing oxygen to flow through the HIGH flow jet and flow indicator. This flow combines with that from the normal flow indicator.

20. To operate the automatic flow increase attachment manually, a light finger pressure on the latch is sufficient to disengage the switch lever and thus override the action of the bellows mechanism. Resetting the switch is done manually by depressing the switch lever to re-engage the latch. It is not possible for the switch to be set at NORMAL flow when the cabin altitude exceeds 30000 ft.

Emergency flow

21. When the emergency flow control lever is set to ON, oxygen flows through the metering aperture of the valve seat and through passageways to the downstream side of the twin-tube flow indicator where it combines with the flow from the flow indicator. The control lever has a movement of approximately 90° and the total flow from the regulator increases approximately in proportion to the angular rotation of the control lever from the OFF position, after the first 10° to 20° of movement. An increased flow is not obtained initially as this 10° to 20° of movement is required to overcome the sealing property of the valve seat. When the emergency flow control is turned to ON, the existing flow from the regulator is increased to approximately 27 litres/min; the positions of the floats in the twin-tube flow indicator, however, are unaltered.

Note . . .

The use of the emergency setting should be confined to the duration of the emergency. This is essential in order to minimise the period of excessive flow which will be reflected in the duration of the supply.

INSTALLATION

22. If it is required to test the regulator prior to installation, apply the standard serviceability tests (App. 1). The regulator is to be installed in accordance with the instructions contained in the relevant aircraft air publication. Attention should be paid to the following :—

(1) The regulator should be mounted with the axis of the twin-tube flow indicator within 15° of the vertical. The dial of the contents gauge and the flow indicator should be readily visible from the crew position, and all operating controls on the panel should be within easy reach.

(2) The high-pressure inlet connection and the outlet connection should be accessible from the back of the mounting panel to facilitate leakage testing and tightening.

Note . . .

The cut-off valve, Mk. 1, *cannot be used with Mk.* 16*A or* 16*B regulators. A suitable stowage clip for the Mk.* 4 *bayonet socket is provided in the aircraft in lieu of the cut-off valve.*

23. After the regulator has been installed, apply the in situ tests (para. 25).

OPERATING INSTRUCTIONS

Normal use

24. To obtain oxygen, it is necessary only to set the high-pressure on-off valve to ON. Oxygen will then flow from the regulator to the economizer or pressure-breathing equipment, and the oxygen mask.

Before flight

25. (1) Set the on-off valve to ON. The float in the right-hand tube of the twin-tube flow indicator (NORMAL flow) should rise to its index mark.

(2) The contents gauge should indicate sufficient oxygen for the flight.

(3) Operate the flow-change switch of the automatic flow attachment. The float in the left-hand tube of the twin-tube flow indicator (HIGH flow) should rise and fall correspondingly.

(4) Set the on-off valve to OFF. Both floats in the flow indicator should drop out of sight as soon as the contents gauge pointer has fallen to zero.

(5) Ensure that the flow-change switch is set to NORMAL and the emergency control is set to OFF.

During flight

26. When undertaking a flight for which oxygen will be required, ensure that the flow-change switch is set to NORMAL. When oxygen is required, turn the on-off valve to ON.

After flight

27. Ensure that the on-off valve is set to OFF.

Emergency use

28. The emergency setting must be used in any emergency which demands an additional supply of oxygen. This may occur under the following circumstances :—

(1) At high altitudes if lack of oxygen is suspected.

(2) At any altitude if, as a result of enemy action or from other causes, the cabin has become contaminated with noxious fumes.

(3) At any altitude if a temporary breakdown of the normal oxygen supply occurs.

Suspected lack of oxygen at high altitudes

29. If lack of oxygen is suspected at high altitudes, proceed as follows :—

(1) Turn the emergency control lever to ON.

(2) Leave the emergency control in the ON position until the cause of the loss of oxygen has been established. Descend to below 10000 ft and rectify the fault if this can be done in the air.

Cabin contamination

30. If contamination occurs, proceed as follows:—

(1) Turn the emergency control lever to ON.

(2) Descend to below 10000 ft and land at the earliest possible moment.

Temporary breakdown of the normal oxygen supply

31. The procedure in the event of a temporary breakdown of the normal supply is as follows :—

(1) Turn the emergency control lever to ON.

(2) Descend to below 10000 ft and endeavour to ascertain the cause of failure. If the fault cannot be found or remedied in the air, return to base.

(3) When using the emergency oxygen setting, observe the contents gauge frequently and ensure that the supply remaining is sufficient for the flight.

SERVICING

WARNING . . .

Many materials, particularly oil and grease, are subject to spontaneous combustion when exposed to undiluted oxygen under pressure. Precautions must be taken therefore, to exclude oil, grease, dust and metal particles from the regulator.

In situ tests

32. The in situ regulator tests are as follows :—

(1) Apply the tests detailed in para. 25.

(2) Set the high-pressure, on-off valve to ON and set the flow-change switch to HIGH. Using soap solution, check the pipe connections, valve glands and flow indicator joints for leakage.

(3) Set the on-off valve to OFF and operate the flow-change switch to NORMAL.

Note . . .

Soap solution should be prepared in accordance with the instructions contained in Part 1, *Sect.* 2, *Chap.* 1. *On completion of the leak test, all traces of soap solution must be removed and the regulator dried thoroughly.*

(4) Set the on-off valve to ON. Connect a Mk. 5A* flow tester to the regulator outlet and check the flow from the regulator at the NORMAL and HIGH flow settings. The flow should be between 3·4 and 4·6 NTP litres/min at NORMAL and between 5·1 and 7·4 NTP litres/min at the HIGH flow setting. On completion of the check, turn the on-off valve to OFF and ensure that the flow-change switch is set to NORMAL.

Routine servicing

33. Routine servicing consists of examining the unit for security of installation and freedom from damage. The pipeline filter, Mk. 2A, in the high-pressure pipeline should be renewed at the periods specified in the aircraft servicing schedule. If the on-off valve is found to be excessively stiff in operation, the regulator should be disposed of in accordance with current Service procedure.

34. The following components can be renewed in service :—

(1) High pressure-contents gauge. After renewal, use soap solution and check for leakage at the pipe connections.

(2) The choke fitted to the inlet connection of the contents gauge or on the pressure gauge connection of the on-off valve.

(3) A defective or damaged flow indicator. Ensure that the four sealing washers fitted at the top and bottom connections of each flow tube are inserted in the recesses provided in the regulator body. The two securing screws must be locked by smearing Bakelite varnish (33B/9426171) on the threads.

(4) Automatic flow increase attachment. After renewal, the setting of the barometric flow-change mechanism is to be checked in an altitude chamber (App. 1). A special spanner is required for removing the attachment.

Appendix 1

STANDARD SERVICEABILITY TESTS
for
OXYGEN REGULATORS, MK. 16 SERIES

Introduction

1. The tests detailed in this appendix should be applied before the regulator is fitted to an aircraft, when the serviceability of the regulator is in doubt and at the appropriate examination periods at Equipment Depots.

TEST EQUIPMENT

2. The equipment required is as follows :—

(1) High-pressure oxygen supply, 2000 lb/in² (50 lb/in² for Mk. 16C regulators).

(2) Valve, master, Mk. 10A (Ref. No. 6D/2313)

(3) Filter H.P. pipeline, Mk. 2A (Ref. No. 6D/1660)

(4) Pressure gauge 0 to 2000 lb/in² (Ref. No. 6C/264)

(5) Flow tester, Mk. 5A* (Ref. No. 6C/475)

(6) Leak tester, Mk. 1 (Ref. No. 6D/1417)

(7) Leak tester, Mk. 2 (Ref. No. 6D/1418)

(8) Vacuum chamber, Mk. 6 (Ref. No. 6C/684) with control panel and vacuum indicator, Mk. 2A (Ref. No. 6C/526).

(9) Blanking Cap (Ref. No. 6C/428)

PARTICULARS OF TESTS

3. The tests are to be applied under normal room temperature (+15°C) and pressure (29·92 in. Hg.) conditions. The gas supply for the tests must be breathing oxygen. Unless otherwise specified, the regulator is to be mounted with the front panel upright and in the vertical plane. The regulator should be lightly tapped when test readings are taken.

4. Soap solution for leak testing must be prepared in accordance with the instructions contained in Part 1, Sect. 2, Chap. 1. Precautions must be taken to prevent the solution entering the regulator, and all traces of the solution must be removed when each test is completed.

5. Regulators not conforming to the test requirements are to be disposed of in accordance with current Service procedure.

WARNING . . .

Many materials, particularly oil and grease, are subject to spontaneous combustion when exposed to undiluted oxygen under pressure. Precautions must be taken, therefore, to exclude oil, grease, dust and metal particles from the regulator and the test equipment.

TEST PROCEDURE

Mk. 16B regulators only

6. Before commencing the tests detailed in this appendix, the second outlet on Mk. 16B regulators (for interconnection with Mk. 16C regulators) must be blanked.

Mk. 16C regulators only

7. The inlet pressure for testing Mk. 16C regulators must be between 40 and 50 lb/in². The tests applicable to these regulators are as follows :—

(1) Normal functioning (para. 9).

(2) Emergency flow (para. 10).

(3) Automatic flow change operation (para. 12).

(4) Regulator leak test (para. 14).

Zero error

8. Check the zero error of the contents gauge pointer. The error should not exceed $\frac{1}{16}$ in.

Normal functioning

9. To test the normal functioning of the regulator, proceed as follows :—

(1) Connect the high-pressure oxygen supply, through the test rig valve and filter, to the regulator inlet. The pressure gauge should be connected in the line at a point about 6·0 in. from the regulator inlet.

(2) Connect the flow tester to the regulator outlet.

(3) Adjust the inlet pressure to between 1700 and 1800 lb/in² (40 lb/in² for Mk. 16C regulators). With the emergency valve set to OFF and the flow-change switch at NORMAL, turn the high-pressure, on-off valve to ON. The regulator contents gauge should correspond with the master gauge, and the float in the right-hand flow indicator tube should rise.

(4) Operate the flow-change switch several times between the NORMAL and HIGH positions. The float in the left-hand indicator tube should rise and fall with the movement of the switch.

Note . . .

There must not be any audible leakage from the regulator during these tests.

(5) With the emergency valve set to OFF and the high-pressure supply maintained between 1700 and 1800 lb/in² (40 lb/in² for Mk. 16C regulators), measure the flow at the regulator outlet. The flow should be between 3·4 and 4·6 litres/min with the flow-change switch set to NORMAL, and between 5·1 and 7·4 litres/min with the switch set to HIGH.

Emergency flow

10. When the emergency lever is moved to the ON position, a considerable increase in flow should occur and should be sufficient to move the float in the flow tester to its upper stop.

Contents gauge calibration

11. With the emergency lever at ON and the flow-change switch at HIGH, reduce the inlet supply until the regulator contents gauge pointer has fallen to the half indication. The standard pressure gauge should then indicate between 890 to 1000 lb/in².

Automatic flow change operation

12. Set the emergency control to OFF and the flow-change switch to NORMAL. Mount the regulator in a vacuum chamber and evacuate the chamber at a rate not exceeding 500 ft/min. The flow change switch should move to the HIGH position at an altitude between 28500 and 31500 ft. Apply the test three times and determine the mean operating altitude.

ADDITIONAL TESTS ON USED REGULATORS

High-pressure, on-off valve seal

13. The on-off valve should be tightly closed on its seating and the leak tester, Mk. 2 connected to the regulator outlet. With the pressure supply connected to the regulator inlet, the time taken for eight bubbles to escape should be not less than 10 seconds (equivalent to a maximum permissible leakage of 0·02 litres/min).

Regulator leak test

14. To test the regulator for general leakage, proceed as follows :—

(1) Blank the regulator outlet by means of a blanking cap.

(2) Note the position of the emergency control lever and then remove the lever from its spindle.

(3) Remove the front panel from the regulator.

(4) With the supply pressure to the regulator inlet maintained between 1700 and 1800 lb/in² (50 lb/in² for Mk. 16C regulators), turn the on-off valve to ON. There should be no leakage from any part of the regulator when the flow-change switch is set to NORMAL and then to HIGH.

Note . . .

Leakage should be detected by applying soap solution to the pipe connections, all valve glands, the filter plug (front centre), around the switch gland, around the square flange joint, at the pressure adjusting screws, small screw plugs and at the flow indicator joints.

Relief valve seal

15. Set the flow-change switch to NORMAL and, using the leak tester Mk. 1, check the leakage from the relief valve; this should not exceed 0·2 litres/min. The outlet hole in the underside of the boss should be sealed while the reading is being taken, either by means of a finger or by the rubber tube of the tester.

Note . . .

When refitting the front panel, ensure that the emergency lever is correctly positioned (para. 14(2)). The initial opening position at which the flow starts to increase is 10 to 20 deg counter-clockwise from the OFF mark.

Chapter 3A

OXYGEN REGULATOR, MK. 16A

LEADING PARTICULARS

Ref. No.	*6D/1587*
Inlet pressure (maximum)	1800 *lb/in*^{2}
Reduced pressure (nominal)	40 *lb/in*^{2}
Delivery characteristics—	
Normal flow (up to 30000 ft)	3·4 *to* 4·6 *litres/min*
High flow (above 30000 ft)	5·1 *to* 7·4 *litres/min*
Emergency flow (total flow)	27 *litres/min (approx)*

Introduction

1. This unit is identical to the unit described in Chap. 3.

Chapter 3B

OXYGEN REGULATOR, MK. 16B

LEADING PARTICULARS

Ref. No.	6*D*/1588
Inlet pressure (maximum)	1800 lb/in^2
Reduced pressure (nominal)	40 lb/in^2
Delivery characteristics—	
Normal flow (up to 30000 ft)	3·4 *to* 4·6 *litres/min*
High flow (above 30000 ft)	5·1 *to* 7·4 *litres/min*
Emergency flow (total flow)	27 *litres/min (approx)*

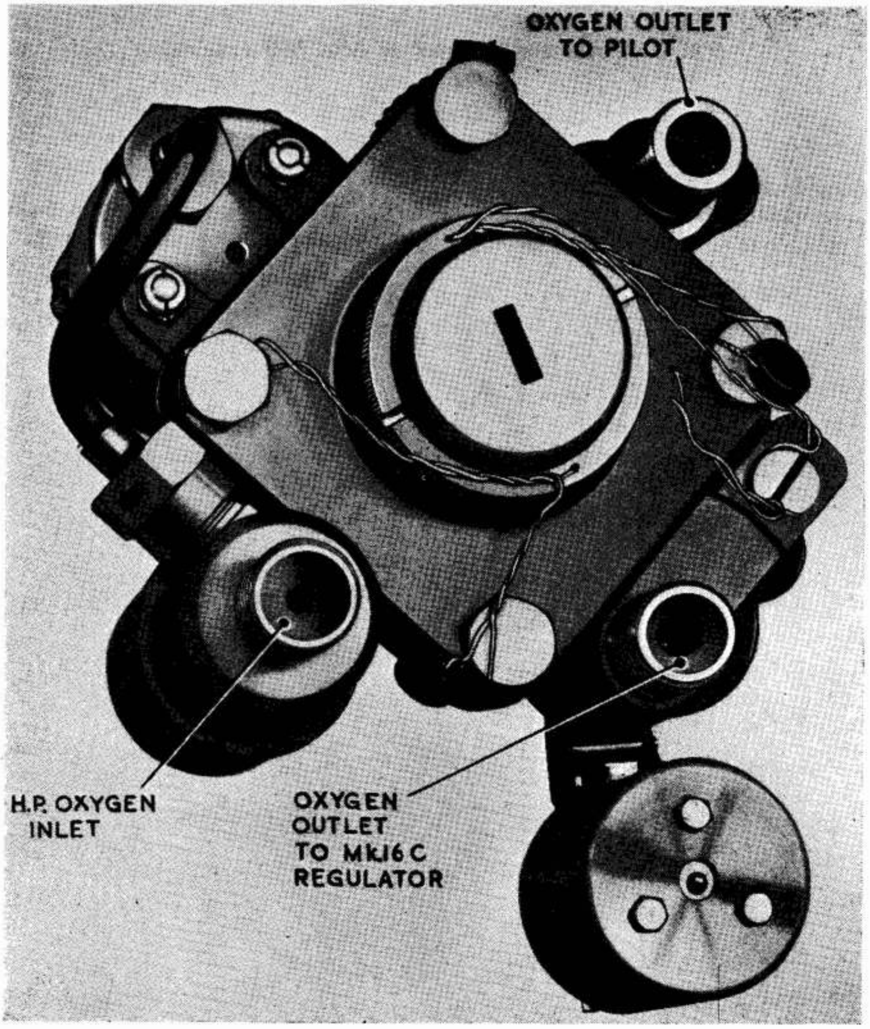


Fig. 1. Mk. 16B regulator, rear view

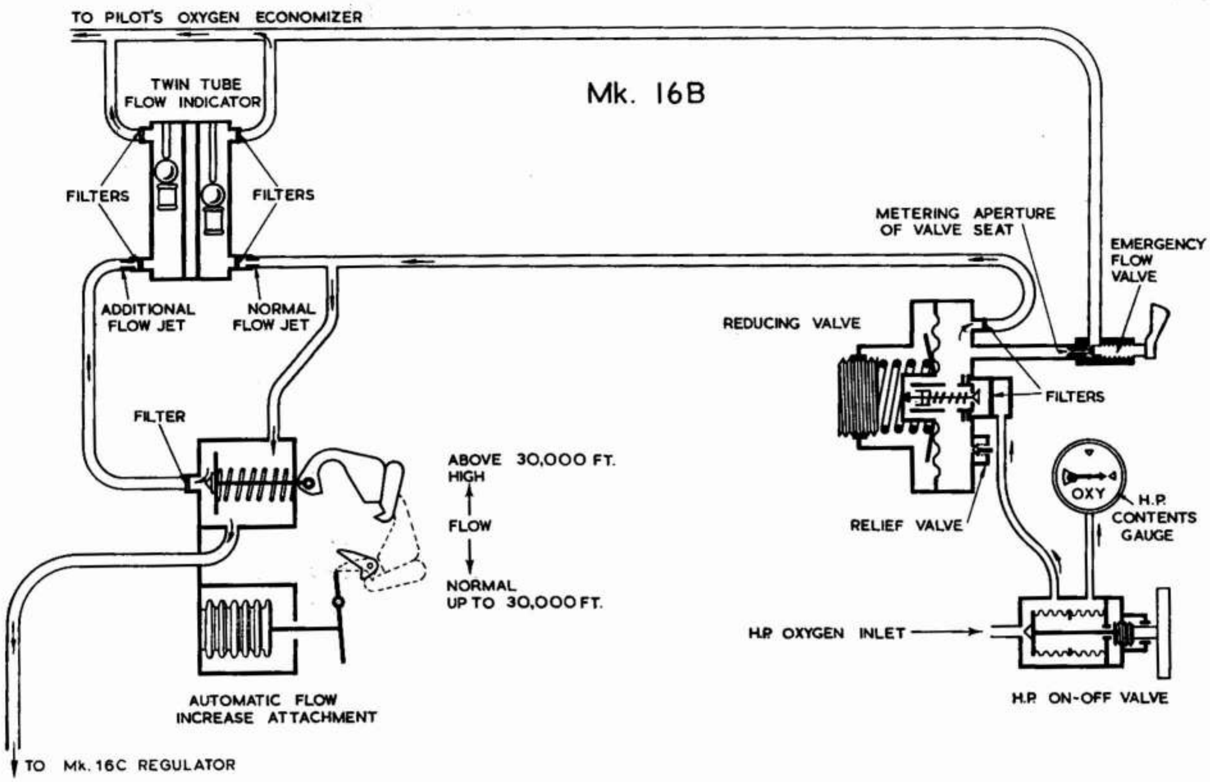


Fig. 2. Schematic diagram of Mk. 16B regulator

Introduction

1. This unit differs from the unit described in Chapter 3 in that the regulator has a second outlet connection (fig. 1 and 2) which is used to supply oxygen at reduced pressure, from the reducing chamber, to a second regulator.

2. The regulator is used in two-seater aircraft in conjunction with a regulator Mk. 16C (Chap. 3C).

Chapter 3C

OXYGEN REGULATOR, MK. 16C

LEADING PARTICULARS

Ref. No.	6*D*/1589
Inlet pressure (nominal)	40 *lb/in*^{2}
Delivery characteristics—	
Normal flow (up to 30000 ft)	3·4 *to* 4·6 *litres/min*
High flow (above 30000 ft)	5·1 *to* 7·4 *litres/min*
Emergency flow (total flow)	27 *litres/min (approx)*

Introduction

1. This regulator (fig. 1) is employed in two-seater aircraft for use by the second crew member and is used in conjunction with a regulator, Mk. 16B (Chap. 3B). An oxygen supply, at reduced pressure, is fed to the inlet connection (fig. 2 and 3) from the second outlet on the Mk. 16B regulator.

2. The unit is similar to that described in Chapter 3 except that the following components are not incorporated :—

(1) High-pressure on-off valve

(2) High-pressure contents gauge

(3) Reducing valve

(4) Relief valve

3. A detachable sintered bronze filtei is fitted inside the inlet connection to prevent ingress of foreign matter from the connecting pipe.

Fig. 1. Mk. 16C regulator, front view

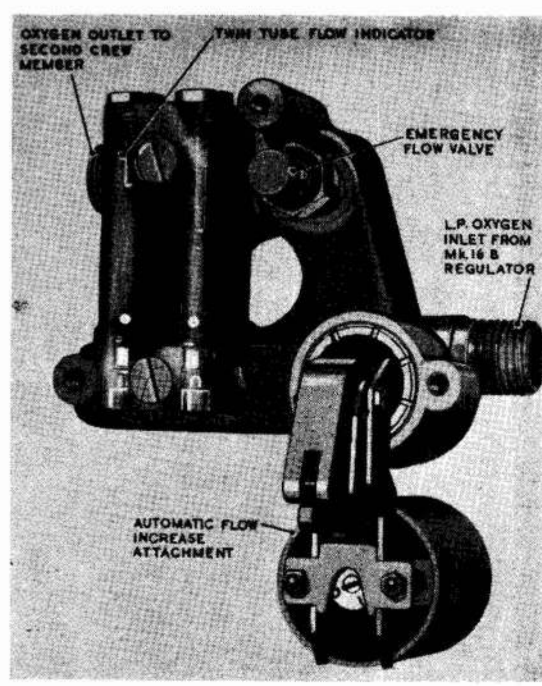


Fig. 2. Mk. 16C regulator, panel removed

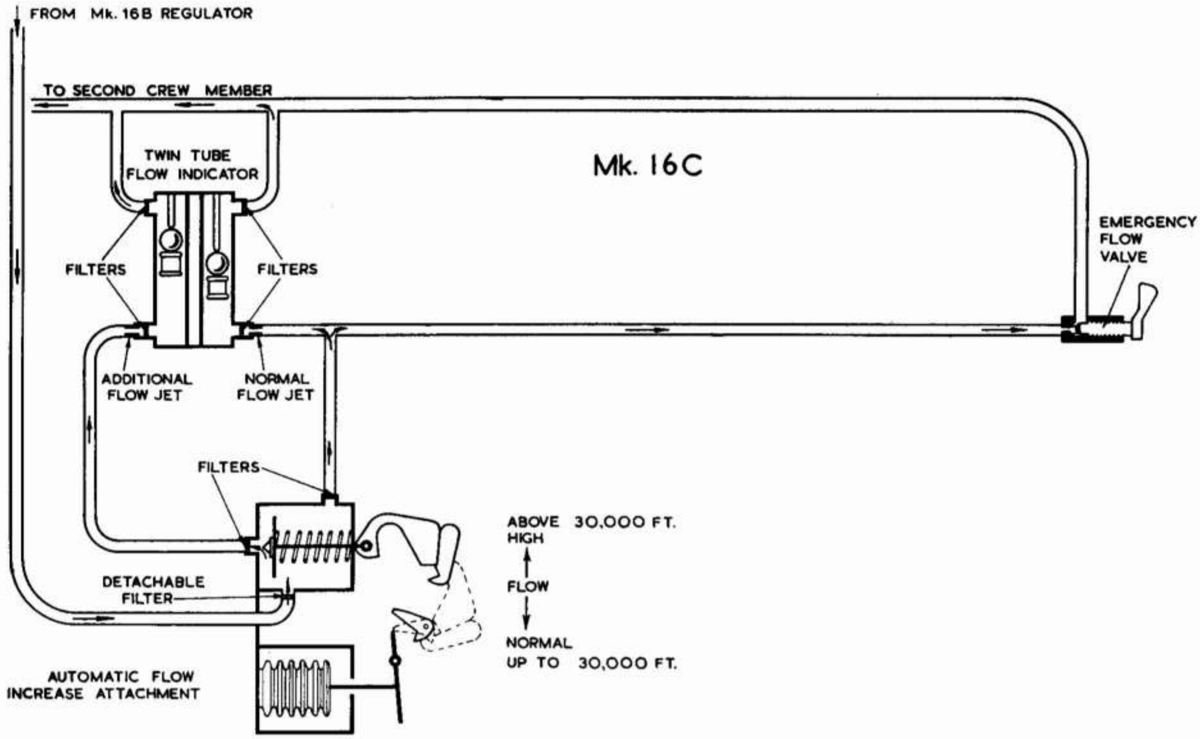


Fig. 3. Schematic diagram of Mk. 16C regulator

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