



# Compressor Operation

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<b>AIM</b>	To instruct members in the safe and correct procedures for operating a high pressure air compressor; for filling cylinders from a compressor and from an air storage bank; and for good compressor management.
<b>DURATION</b>	One day. See Note 1.
<b>ENTRY GRADE</b>	BSAC Sports Diver.
<b>INSTRUCTORS</b>	Chief Instructor to be a BSAC Advanced Instructor and Advanced Diver of proven knowledge and ability in the subject: a professional engineering qualification is desirable. Assistant Instructors to the satisfaction of the Chief Instructor.  Ratio – One instructor for every eight students.
<b>FACILITIES</b>	A suitable classroom. Use of high pressure air compressor(s) and air storage bank if possible. Air purity testing apparatus.
<b>APPROVAL</b>	Skill Development Course Approval Procedure applies.
<b>QUALIFICATION</b>	Course Certification will be issued. BSAC Instructors who are also Advanced Divers may sign up Advanced Diver theory lesson AT 8 and practical lesson AS 5 in a member's qualification record book.

## SYLLABUS

Instructor briefing

Assemble, Introductions, Administration

1	Classroom Lesson	<b>Theory and design of Air Compressors</b> <ul style="list-style-type: none"><li>• Adiabatic/Isothermal compression</li><li>• Compressor design and layout</li><li>• Why multi-stage?</li><li>• Correct lubrication</li><li>• Prime movers</li></ul>	60 minutes
2	Classroom Lesson	<b>Air Filters</b> <ul style="list-style-type: none"><li>• Design criteria</li><li>• Water separators</li><li>• Filter chemicals</li><li>• Filter life</li><li>• Changing filters</li></ul>	45 minutes
3	Practical/Demo	<b>Compressor Operation</b> <ul style="list-style-type: none"><li>• Familiarisation with compressor(s)</li><li>• Pre start-up checks</li><li>• Starting and stopping the machine</li><li>• Compressor shut-down</li></ul>	30 minutes

**Compressor Operation** *(continued)*

- Compressor care and maintenance
- Log of compressor use and maintenance

4	Classroom Lesson	<b>Air Purity</b> <ul style="list-style-type: none"><li>• Factors affecting air purity: lubrication, filters</li><li>• How to measure air purity: air testing kits</li><li>• BSAC air purity standards</li></ul>	45 minutes
	Break		
5	Classroom Lesson	<b>Cylinder filling</b> <ul style="list-style-type: none"><li>• Accepting cylinders for filling: specification, test date, appearance</li><li>• H &amp; SE regulations</li><li>• Principles of filling from an air storage bank</li></ul>	30 minutes
6	Practical	<b>Using a compressor, filling cylinders, air testing</b> <ul style="list-style-type: none"><li>• Filling cylinders from compressor Each student to start up compressor, fill cylinders, and stop the compressor.</li><li>• Filling cylinders from an air storage bank Each student to fill cylinders from air storage bank</li><li>• Testing for air purity Each student to gain some experience in using a simple air purity test kit to measure any contamination in air produced by the compressor.</li></ul> <p><i>These activities can be run concurrently. Each must be supervised by an experienced instructor at all times.</i></p>	120 minutes
7	Classroom	<b>Open Forum</b> <ul style="list-style-type: none"><li>• Course debriefing</li><li>• Issue Student Notes, Course Certification, sign QRBs</li><li>• Disperse</li></ul> <p>Instructors debriefing</p>	30 minutes

**NOTES**

1. The course may be spread over a series of shorter (evening class) lessons if desired, in which case all theory lessons should be covered before practical experience is gained.
2. Student Packs are available and must be provided to all students.
3. Students should be asked to bring empty aqualung cylinders for filling.