

5. Wear and tear assessment of piston rings, pistons and cylinders

5.1. Procedure

After approximately 4000 hours (8000 operating hours for CNG stations) pistons and cylinders should be checked by performing a **blow-by test**.

What is Blow-By?

Blow-by is defined as the leakage from the compression chambers of each compression stage into the crankcase caused by wear and tear of piston rings and cylinders.

On **BAUER** compressors it is measured with a **flowmeter*** in **liters/minute** and a **backpressure** of **200 bar**. Test point is the crankcase venting outlet. The blow-by test is a simple method to determine the degree of wear of cylinders and pistons without having to dismantle the cylinders.

If during this test increased values outside the specified tolerances should be encountered, it can be assumed that the piston rings and cylinders are excessively worn out. Consequently, those cylinders and piston rings have then to be exchanged. The blow-by values for the different compressor models are listed in the table in 5.3.

Initially, perform the blow-by test for the complete compressor block. If the blow-by is too high, check each single stage to finally find out the faulty cylinder. Start the tests with the last stage. The portion per stage is 1/3rd for three stage blocks, 1/4th for 4 stage blocks, and 1/5th for 5 stage blocks of the values according to the blow-by table.

5.2. Blow-By Test

Blow-By Test Procedure (Fig. 63)

- Warm up compressor for **15 min.**
- Adjust pressure maintaining valve to **200 bar ±10%**.
- Disconnect vent line from crankcase vent opening and connect flowmeter.
- Perform test (t = 2 min.)
- Compare measured value with blow-by table
- Remove flowmeter and reconnect vent line to 1st stage valve head
- If measured value is above the indicated max. value in the table, replace piston rings of all stages and, if required cylinders and the free-floating piston of the last stage.

* available through BAUER service dept.; 0-50 l/min :part no. 81187-KD; 0-100 l/min :part no. 81188 -KD

Workshop Manual

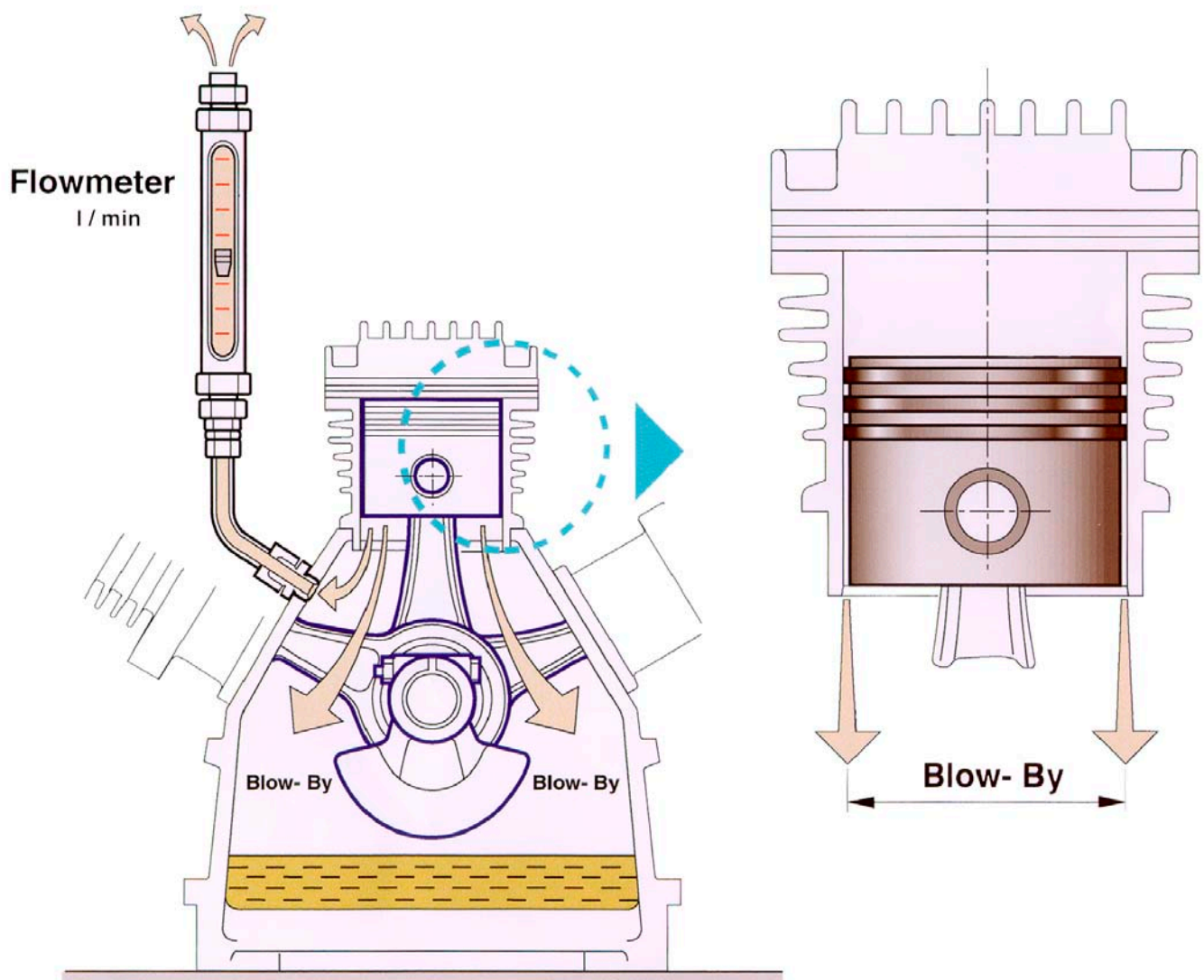


Fig. 63 Blowby test

5.3. Blow-By Table

Flowmeter *: 50 l/min; atm.; 20°C ambient temperature

Note: the lower the blow-By, the better run in are cylinder and piston rings

Compressor block model	Modification no. (state of construction)	Blow-By [ltr./min]		Pressure maintaining valve set pressure [bar] ±10%
		<i>standard</i>	<i>max.</i>	
UTILUS II	04	18	25	200
CAPITANO II	04	18	25	200
MARINER II	04	25	35	200
K100	03	10	15	200
IK100 II	04	18	25	200
K120	03	10	15	200
IK120 II	04	25	35	200
K14	08	25	40	200
IK12.14 II	01	44	60	200
K15	06	30	45	200
K150	09	30	45	200
IK150 II	10	25	40	200
IK15.11	01	25	40	200
K180	04	30	45	200
IK180 II	05	30	45	200
K18.1	03	90	130	200
IK18.1 II	04	65	100	200
2Ö	04	20	35	200
3Ö	09	20	35	200
3,5Ö	01	25	40	200
3,7Ö	02	45	70	200
4Ö	01	60	90	200

For all booster compressor blocks the Blow-By is depending from the intake pressure (please contact the BAUER service dept.)

* available through BAUER technical service