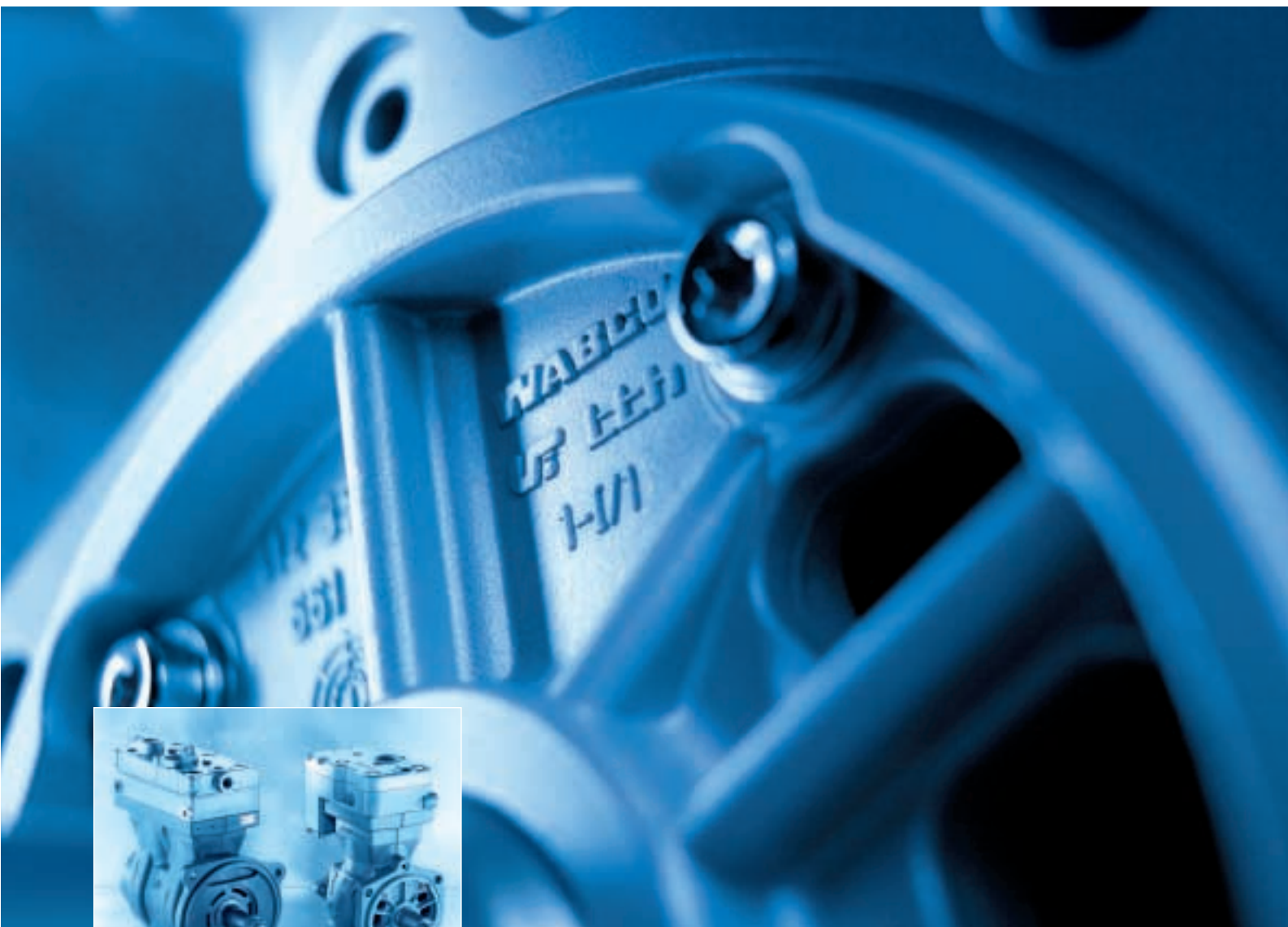


# COMPRESSORS

Single and Twin Cylinder



# WABCO

## High-performance compressors

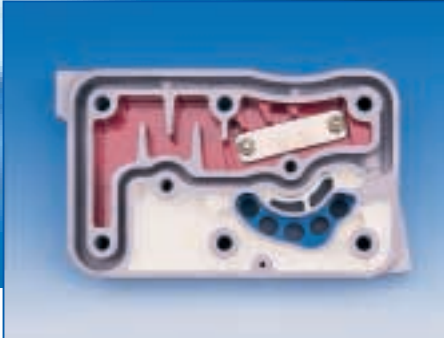
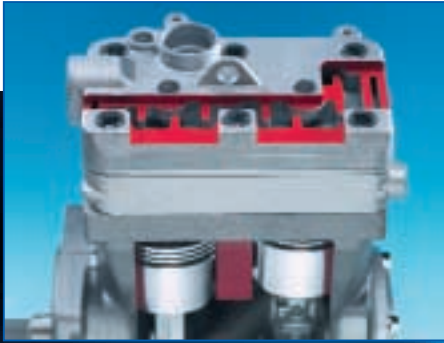
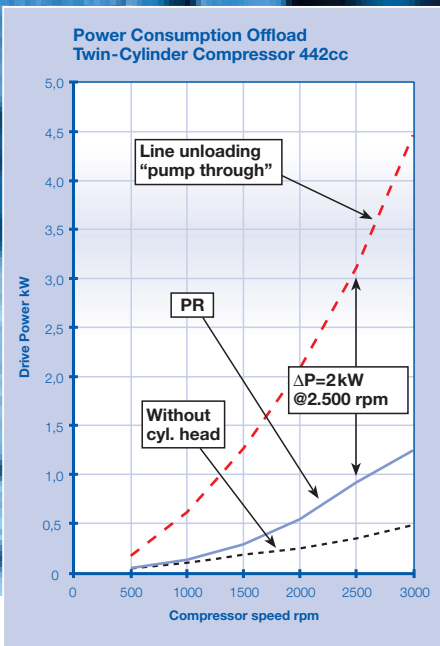


### Technology

- Significant reduction of power drainage during the off-load phase from the PR system (Power Reduction, 2nd generation) integrated into cylinder head
- Lower temperatures of the delivered air from the TR system (Temperature Reduction, enhanced cooling capacity of cylinder head)
- Protection against excessive pressure from the (optional) relief valve integrated into cylinder head

### Proven design

- Mono-block construction of the crankcase with excellent torsional resistance
- Fully hardened steel crankshaft
- Extended lifetime
- Maintenance-free



PR = Power Reduction

**Benefits of PR system**

- Power saving
- Oil carry-over reduction
- Temperature reduction during offload phase
- Scavenging of delivery line, prevents freeze-ups
- Reduction of noise level

**Operation of PR system**

**Pump phase:**

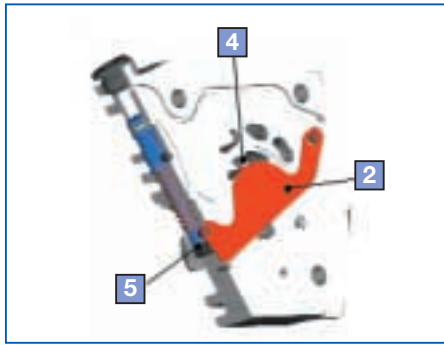
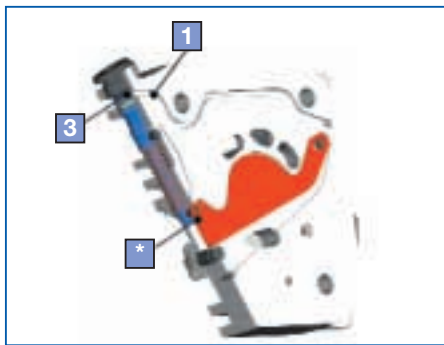
- PR line (1) vented to atmosphere
- Spring keeps the piston together with both sliding leaf valves (2) at the outer stop (3)

- Sliding leaf valves cover slots to additional dead volume (1-cyl.)/ PR channel (2-cyl.) (4)

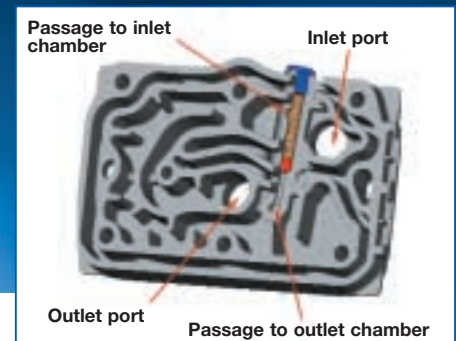
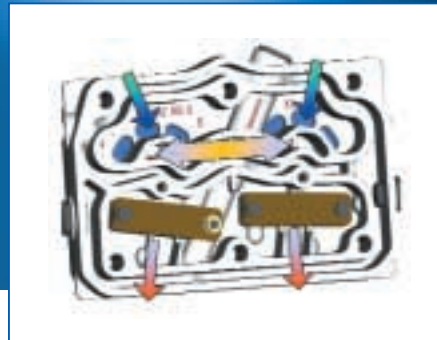
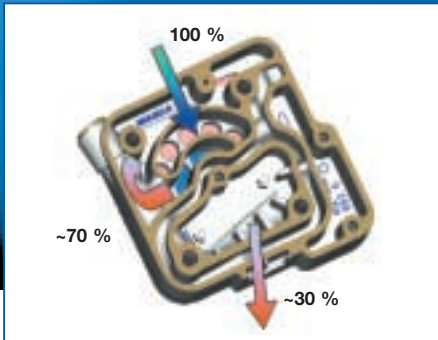
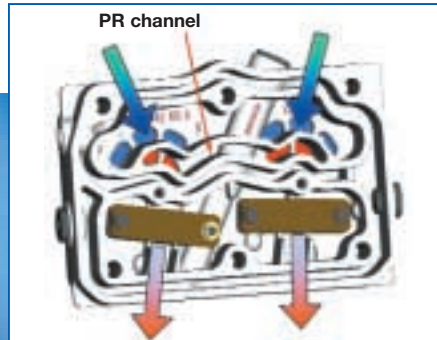
**Offload phase:**

- PR line (1) pressurized with system pressure by the air dryer
- Piston at inner stop (5), actuating both sliding leaf valves (2)
- Sliding leaf valves open slots to additional dead volume (1-cyl.)/ PR-channel (2-cyl.) (4)

(\*) Pin linking sliding leaf valve and piston



# Power reduction (PR) system in single- and twin-cylinder compressors



## PR system (single cylinder)

### Pump phase:

- Sliding leaf in closed position, additional dead volume disconnected
- Air passage via inlet and outlet valves

### Offload position:

- Sliding leaf valve opens slot to chamber (additional dead volume)
- Additional volume leads to lower compression pressure
- Reduced airflow for scavenging of delivery line (airflow split depending on ratio of dead volume and swept volume)

## PR system (twin cylinder)

### Loading position:

- PR channel deactivated by sliding leaf valves
- Air passes through compressor via inlet and outlet valves

### Offload position:

- Sliding leaf valves connecting PR channel to cylinders
- Air flows back and forth between both cylinders via PR channel
- Reduced airflow for scavenging of delivery line

## Safety valve:

- Valve seat is blocked by spring-loaded ball
- If the pressure in the outlet cavity exceeds the preset value, the safety valve opens and releases the air back into the inlet chamber

# Temperature reduction (TR) system in single- and twin-cylinder compressors



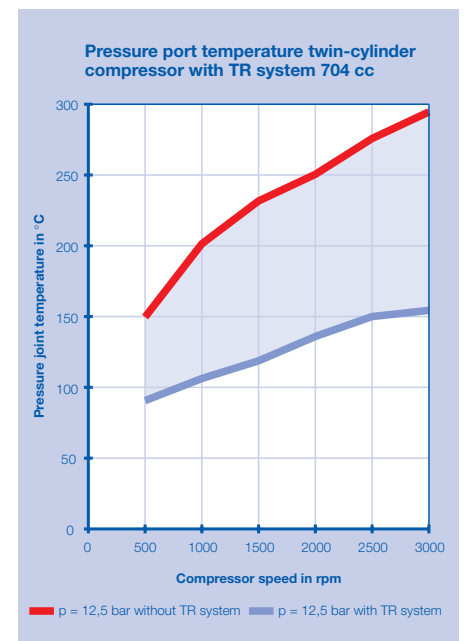
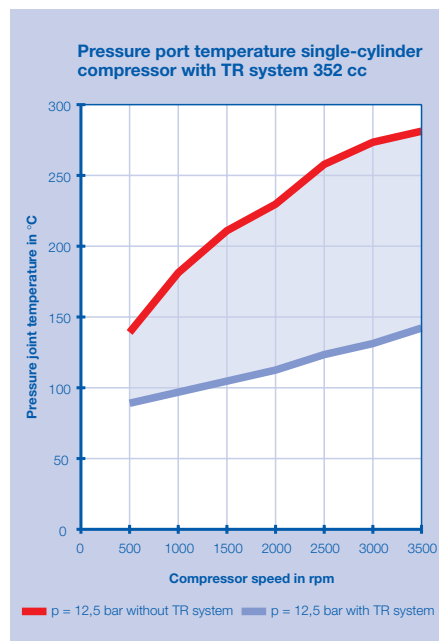
## Design and operation

The integration of an additional plate effectively enlarges the active cooling surface in the compressor's cylinder head.

The extended flow path and dwell time of the heated, compressed air in the cylinder head leads to a considerable reduction of temperature.

## Benefits

- More effective cooling of the air stream
- Reduction of the length of discharge pipe possible
- Elimination of discharge pipe cooling coils possible



The temperature reduction in the pressure port of a single-cylinder compressor with a working volume of 352 cc and a twin-cylinder compressor with working volume of 704 cc is shown in the temperature diagrams.



WABCO, the vehicle control systems business of American Standard Companies, is the world's leading producer of electronic braking, stability, suspension and transmission control systems for heavy duty commercial vehicles. WABCO products are also increasingly used in luxury cars and sport utility vehicles (SUVs). Customers include the world's leading commercial truck, trailer, bus and passenger car manufacturers. Founded in the US 135 years

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