Process compressors, integral equipment of plants, in a variety of applications, must be very reliable and efficient. Hitachi balanced-opposed compressors have been manufactured based on accumulated experience of over 100 years of compressor technology development, as well as based on our continued research efforts. With a background of reliable technologies built on achievements in a variety of fields, we are able to satisfy diverse customer needs.

Hitachi Highly Reliable Balanced-Opposed Reciprocating Compressors, Based on Accumulation of Technology and Applicability to Wide Areas

Hitachi Reciprocating Compressor Installations Around the World

Hitachi Reciprocating Compressors Cover a Wide Range

Hitachi balanced-opposed Reciprocating compressors cover the wide range illustrated in the right chart as lubricated type and non-lubricated compressors for oil refining, petrochemicals and other industries. And Hitachi is one of the few companies in the world that, besides conventional compressors, manufactures super-high pressure compressors capable of a maximum discharge pressure of 350 MPa.
Since the compressor is a balanced-opposed type in which a pair of cylinders is arranged in opposed position, vibration-free operation is ensured.

1. Simple foundation
2. Economical operation-small-sized, light-weight compressor and electric motor
3. Easy installation and maintenance
4. Economical design - usable as multipurpose compressor
The sliding part such as piston ring, rider ring and rod packing is designed at the most suitable shape and material by taking account of lube condition, gas composition, gas pressure and temperature etc.

Hitachi Sliding Parts

- Rider ring: Made of PTFE / special plastics
- Piston ring: Made of PTFE / special plastics
- Rod packing (Radial cut): Made of PTFE / special plastics
- Rod packing (Tangential cut): Made of PTFE / special plastics
- Gland cover
- Packing case
- Pressure breaker box
- Piston rod
- Lube oil
- Cylinder

Hitachi Non-Metallic Valve

- Valve guard
- Valve nut
- Valve spring
- Valve plate
- Valve seat
- Valve bolt
- Set pin

Hitachi Reciprocating Compressors
Main Bearing and Large end Bearing made of Aluminum Alloy Lining

High Load Capacity

Excellent Temperature Characteristic

Long Life

Hydraulic Tightening Method For Piston Nut And Piston Rod Nut

It can be proper management for vital-parts by hydraulic tightening method.

- Proper tightening force
- High reliability at assembly work
- Easy maintenance work

Hydraulic Pressure

Reduction of Oil leakage

Decrease of refilling oil

Decrease of Waste oil

Prevention of deteriorate of crank oil

High Performance Oil Scraper Ring Assembly

Return oil (to frame oil pan)
Hitachi Reciprocating Compressor Series

Hitachi reciprocating compressor model numbers comprises of 9 blocks (letters) as follows:

315S - BTD2 - NICC

(1) This prefix number indicates the frame number.
(2) The letter indicates the type of compressor like as Balanced-opposed type, Horizontal type or Vertical type.
(3) The letter indicates the number of stages like as Single stage, Two stage, 3, 4, 5, 6 — stage or Multi-service (combined) compressor.
(4) The letter indicates the acting type of compressor like as Double acting, Single acting or Tandem cylinder arrangement.
(5) The letter indicates number of cylinder like as No letter: 2 cylinders, 1: 3 cylinders, 2: 4 cylinders, 3: 6 cylinders or 4: 8 cylinders.
(6) The letter indicates type of cylinder like as No letter: Lubricated or N: Non-lubricated.
(7) The letter indicates type of cooling like as W: Water cooled cylinder without intercooler, I: Water cooled cylinder with Intercooler or A: Air cooled.
(8) The letter indicates type of driving method like as C: Direct coupled with driver, R: Driven through V-belt or G: Driven through gear reducer.
(9) The final letter indicates Compressor.

For Example:
400S-BMD2-ICC  This model means;
Frame size: 400S
Type: Balanced-opposed, Combined Service (Makeup & Recycle Gas) type
Cylinder: Double acting 4 cylinders
Cooling: Water cooled and with Intercooler
Driving: Directly coupled with motor driver

Standard Dimensions

Eight (8) sizes of standard frames are available for Hitachi balanced-opposed process compressors to allow selection of the optimum compressor for specific operating conditions. Efficient and economical process compressors can be chosen based on the best combination of cylinders properly designed for the capacity, operating pressure and gas.
The application range and standard external dimensions of Hitachi balanced-opposed process compressor series are shown in the table below.

<table>
<thead>
<tr>
<th>Frame No.</th>
<th>Max. motor power (kW)</th>
<th>No. of Throw</th>
<th>A (mm)</th>
<th>B* (mm)</th>
<th>C* (mm)</th>
<th>D** (mm)</th>
<th>E*** (mm)</th>
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* Depends on the motor to be used.
** Indicates standard dimensions in case of the single distance piece.
*** Piston assembly removal dimension (Single distance piece case)
Oil Refinery Plants

3100kW 400S-BMD2-ICC Recycle and Makeup Gas Combined Compressor for HDS Plant

1600kW 280S-BTD-NICC Hydrogen Booster Compressor for Catalytic Reformer Plant

3400kW 400S-BTD2-ICC Net Gas Compressor for CCR Reformer Plant

3100kW 400S-BTD2-ICC Net Gas Compressor for CCR Reformer Plant
Oil Refinery Plants

**760kW 315S-BTD-ICC Off Gas Compressor for Hydrogen Plant**

Petrochemical Plants

**LDPE PLANT**

**1300kW 280S-B6Df-ICC Primary Compressor**

**610kW 280S-BSD-WCC Off Gas Compressor for Off Gas Recovery Plant**

**6400kW F-8 Hyper Compressor**
Petrochemical Plants

**BDO (BUTANEDIOL) PLANT**
- 815kW 280S-BTD-NICC Hydrogen Compressor
- 400kW 200S-BTD-NICC Hydrogen Compressor

**ETHYLENE PLANT**
- 4300kW 400S-BMD4-IMC Ethylene/Propylene Cascade Refrigeration Compressor

**SYNTHESIS PLANT**
- 5500kW 400S-B3D3-IMC Ammonia Syn-Gas Compressor

Hitachi Reciprocating Compressors
Various Applications

- 780kW 250S-BTD-NICC Fuel Gas Compressor for Gas Turbine
- 850kW High Speed Fuel Gas Compressor for Gas Turbine
- 450kW 200S-B3Dt-NICC Air Compressor for PET Bottle Plant
- 1200kW 250S-B3D2-NICC Oxygen Compressor for Air Separation Plant
- 1400kW 355S-BTD-ICC Natural Gas Compressor for City Gas (SNG) Plant
- 780kW 200S-BSD2-WCC Diesel Engine & Electric Motor Drive Compressor for City Gas Plant