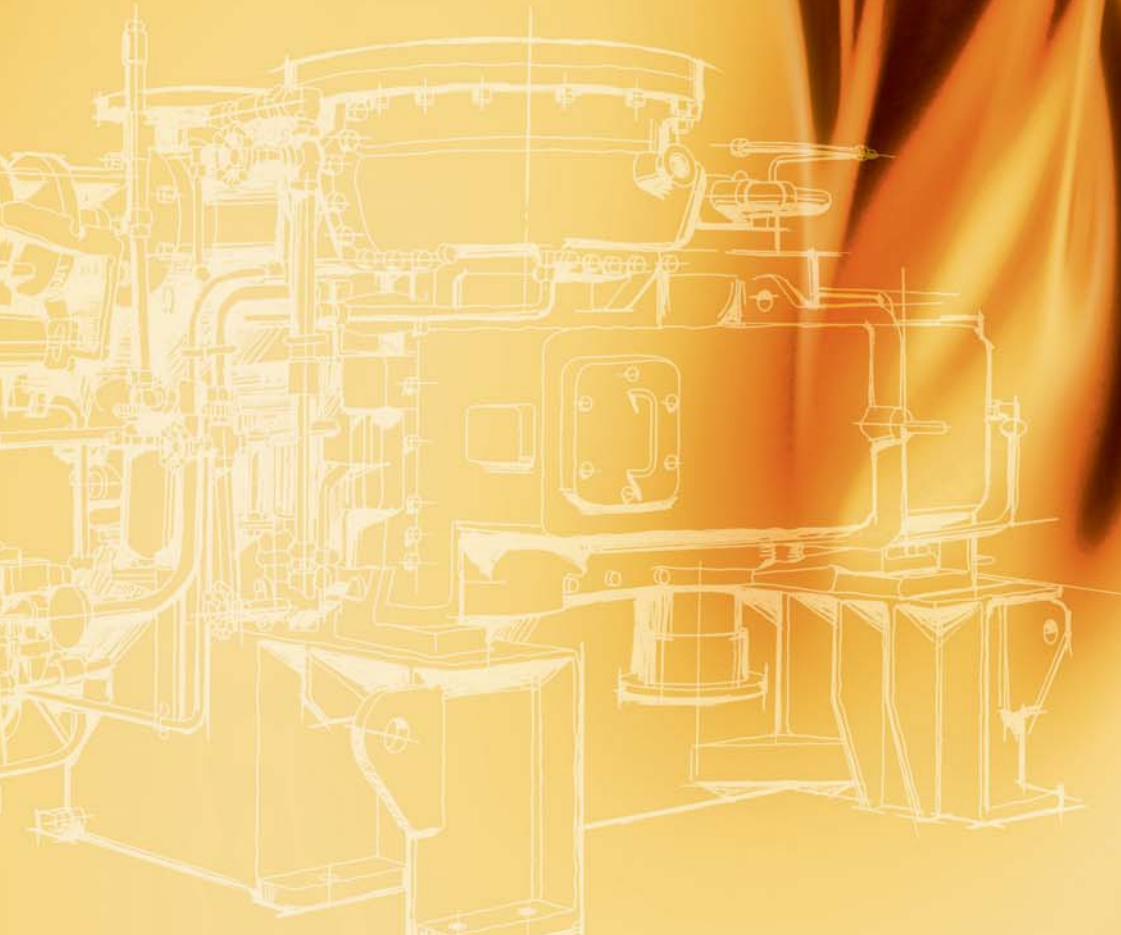


NANIWA

CARGO PUMP & CARGO PUMP TURBINE



CARGO PUMP

The C series of heavy-duty cargo pumps have been developed for high performance and long life. Naniwa Pump has been manufacturing such pumps in series for more than 30 years, many of which are in use in a large number of tankers, giving excellent services.



▲
Naniwa Cargo Pump
model CV

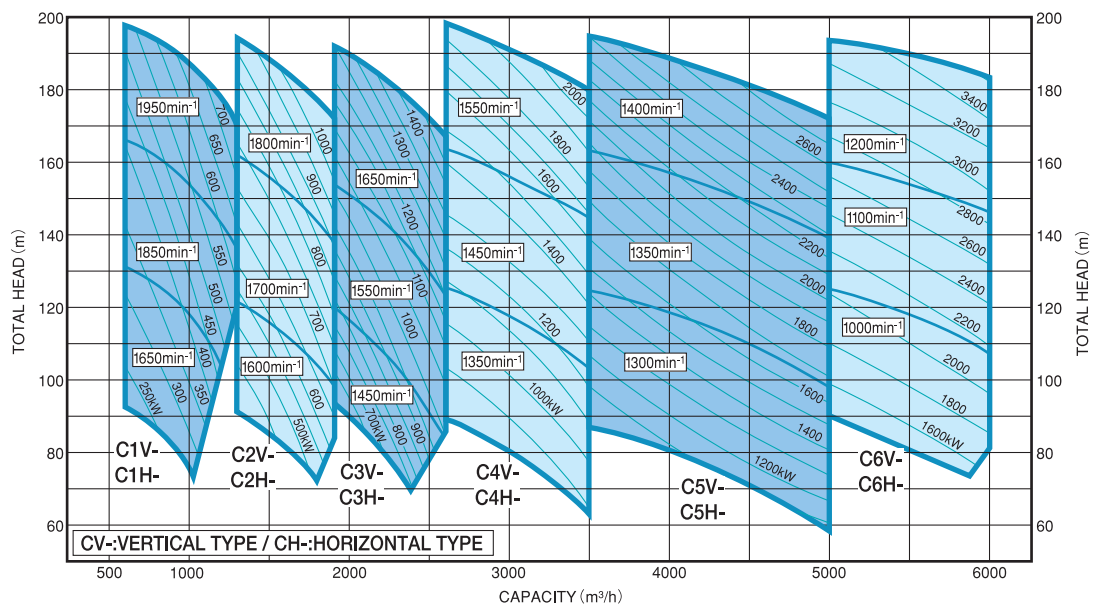
FEATURES

- The centrifugal, axially split casing has a hydrodynamically well-balanced shape and excellent pumping efficiency and suction performance.
- Compactness and light weight simplify pump room arrangement.
- A relatively short shaft combines with a well-balanced integrated rotor unit to ensure low vibration. Corrosion is prevented since no part of the shaft comes into direct contact with the cargo oil.
- The standard Ni-Ai-Bronze casing and impeller material has a tensile strength 2.4 times higher, 2.3 times harder and 4.8 times stronger in anti-corrosion properties than ordinary bronze.
- A lubricating fluid system for mechanical seals protects the pump from accidental dry operation and maintains the optimum condition in any mode of operation. An oil pot is provided for filling of lubricating oil as well as for inspection of the mechanical seals.
- Heavy-duty ball bearings are used due to heavy radial and thrust load of the impeller. Fans cool the bearings and the mechanical seal lubricating oil for safe operation over a long period.
- The axially split casing allows overhaul without removing the intermediate shaft or piping. Replacement of the mechanical seals and bearings without removing the casing cover will result in quick and easy maintenance.
- The pumps are normally delivered with high efficiency and high performing Naniwa-Mitsubishi steam turbines.

CV/CH

REMARKS

In selecting the suitable size pump from the performance chart, if the specified H-Q point is positioned just on the boundary line, please select the type of pump with a lower reading. The outputs stated in the following table are the max. shaft power of each H-Q point.



CARGO PUMP TURBINE

Standard model (ENV·EN·CNV)

ENV- 1 12 G

EN : Horizontal model
ENV : Vertical type
CNV : Vertical type

1: Single stage
3: 3 stages

Classification by rotor dia.
12: 305 mm (12 in)
16: 406 mm (16 in)
20: 508 mm (20 in)
25: 635 mm (25 in)

Geared

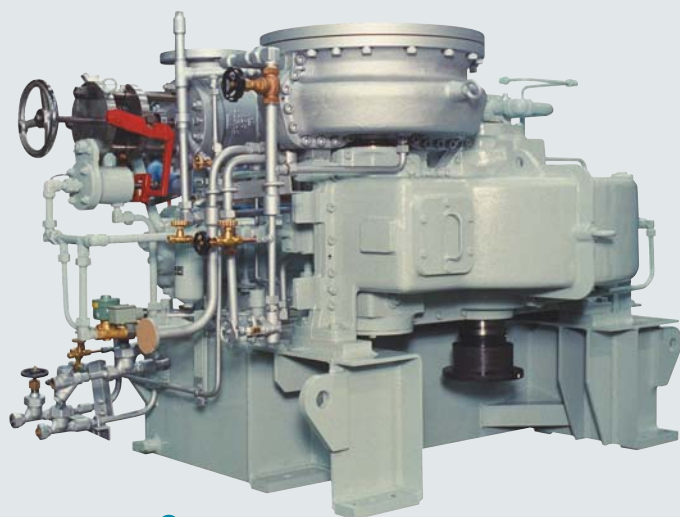
Standard model (ERV)

ERV- 3 2

Multi-stage model

Classification by rotor bass dia.
3: 300 mm

Number of stages



▲
Naniwa-Mitsubishi Cargo Pump Turbine model ERV-N

FEATURES (ENV, EN & ERV)

- High efficiency
- Excellent performance
- Simple construction and easy maintenance
- Compact light weight design
- Dual electric overspeed trip
- Separate trip & throttle valve and governing valve

FEATURES (CNV)

- Compared with single stage type, steam consumption is reduced by about 20 % through adoption of high performance nozzle and blade.
- Running fee (fuel fee) can be paid within 5 years.
- Due to reduction of steam consumption, mini-mization of boiler capacities can be realized.
- Safety device with independent trip values achieves high reliability.
- Nozzle and blade materials are highly resistant to erosion and thereby enable longer life.
- Simple construction facilitates easy maintenance.
- Dual electric overspeed trip.
- Separate trip & throttle valve and governing valve.

Principal Particulars

Model		ENV-112GN EN-112GN	ENV-116GN EN-116GN	ENV-120GN EN-120GN		ENV-125GN EN-125GN		ERV-32N	CNV-320GN		
Type		Vertical (Horizontal) curtis single stage						Vertical 2-rateau stage	Vertical 3-rateau stage		
Rotating direction of gear shaft		Clockwise, Counter-clockwise viewed from governor side									
Max. output	kW	600	1,200	4,000		5,000		1,300	2,000	3,000	
Max. turbine speed	rpm	12,000	12,500	11,000		9,500		11,000	8,500		
Gear size		38×15	46×20	53×25	60×29	67×36	60×29	67×36	40×18	53×25	60×29
Max. gear shaft speed	rpm	3,500	2,500	2,000	1,850	1,550	1,850	1,550	2,500	2,500	2,000
Max. inlet pressure	kg/cm ² G	22	63.3						30		
Max. inlet temperature	°C	350	425 (523.8 for SCPH21, ANSI 900#)						425		
Max. exhaust pressure	kg/cm ² G	1.0									
Steam inlet bore	mm	JIS 20K-65φ/80φ	JIS 20K-150φ	JIS 20K--150φ		JIS 20K-150φ		JIS 20K-125φ	JIS 20K-125φ/150φ		
Steam exhaust bore	mm	JIS 5K-250φ	JIS 5K-300φ	JIS 5K-400φ		JIS 5K-450φ		JIS 5K-400φ	JIS 5K-500φ		
Speed governor		Woodward PSG		Woodward PSG or UG8			Woodward PSG	Woodward PSG or UG8			
Lubrication system		Forced lubrication (turbine oil #140-200)									
Cooling water required		8m ³ /h×Max 32°C		16m ³ /h ×Max 32°C	25m ³ /h×Max 32°C			8m ³ /h×Max 32°C	20m ³ /h×Max 32°C		
Weight	Horizontal	kg	1,400	2,900	4,000	4,900	5,700	5,100	5,900	—	—
	Vertical	kg	1,500	2,800	3,900	4,800	5,600	5,000	5,800	1,500	4,900



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Overseas office

Shanghai·Hamburg