

# 川崎重工业株式会社

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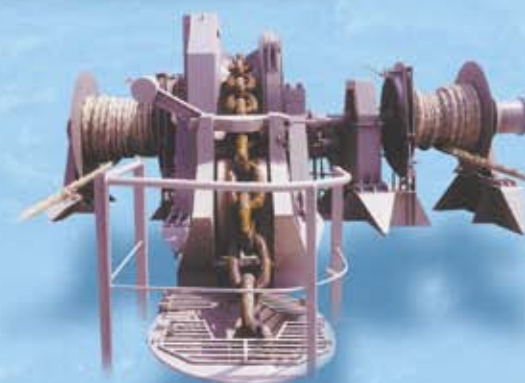
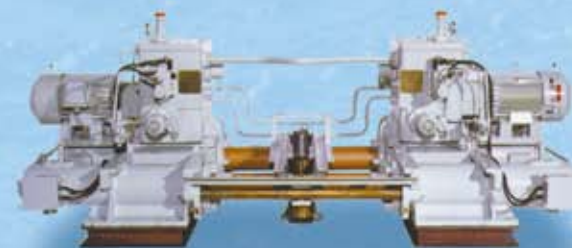
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# 船用液压机械

## Hydraulic Marine Machinery



川崎重工业株式会社



# 川崎液压技术能够满足任何船舶用动力与控制方面的需求。

川崎精機 (KPM) 已积累了 一个多世纪的造船业之专门经验与技能, 以及超过八十年的液压技术, 并不断努力开发与保持这些技术成就。这些年来, 我们交付了难以数计的液压船用机械, 并且始终响应了每一个时代的需要。尤其突出的是, 我们的电液压操舵装置已在超过16,000条船舶上得到采用并继续保持着世界第一的地位。我们还以先进的液压控制技术为在货物处理及泊船工作中节省劳动力做出了贡献。近来, 液压系统中的低噪音技术得到了极高评价。KPM对于自身在先进液压技术方面的长期经验与渊博知识具有充足的信心, 我们相信, 随着船舶自动化与精密化的进一步发展, 敝公司能够从容应对未来可能出现的各种需求。

## 川崎液压船用机械之简史

- 1924 完成电液压操舵装置
- 1956 在日本海上自卫队的驱逐舰护卫舰上安装液压起锚机 (日本首次)
- 1963 开始全面生产液压甲板机械
- 1966 开始交付作业船用液压甲板机械
- 1975 为一477,000吨载重量超大型油轮完成特大操舵装置
- 1980 交付单一主型甲板机械
- 1982 开始销售恒定马力控制静声液压绞盘
- 1983 开始交付液压甲板起重机
- 1991 开始销售油轮用货物处理系统
- 1992 开发出细长型甲板起重机
- 1997 交付130吨双臂型液压甲板起重机

# Kawasaki hydraulic technology can respond to any needs of power and control required for ships.

Kawasaki Precision Machinery Ltd. (KPM) has accumulated the shipbuilding expertise and know-how for more than a century and also the hydraulic technology for more than 80 years, studying hard and piling up those technology and achievement. During those years, we have delivered numerous Hydraulic Marine Machinery, and always responded to the needs of each era. Especially the Electro Hydraulic Steering Gear has been adopted to more than 16,000 ships and still remains No.1 in the world. We also contribute to labor-saving in cargo handling and mooring work with advanced hydraulic control technology. Recently the low noise technology of the hydraulic system has been highly evaluated. We, KPM, are confident with our many years of experience and profound knowledge of advanced hydraulic technology that we can easily respond to any needs that may arise in the future with the advance of further automation and sophistication of ships.

## A Brief History of Kawasaki's Hydraulic Marine Machinery

- 1924 Completed electro-hydraulic steering gear
- 1956 Installed the hydraulic windlass (first in Japan) on destroyer-escort of Japan Marine Self Defense Force.
- 1963 Began full-scale production of hydraulic deck machinery
- 1966 Delivery start of the hydraulic deck machinery for the work vessel
- 1975 Completed an extra-large steering gear for 477,000DWT ULCC
- 1980 Delivered single main type deck machinery
- 1982 Commenced sales of constant horsepower controlled silent hydraulic winches
- 1983 Delivery start of the hydraulic deck crane
- 1991 Commenced sales of cargo handling systems for oil tankers
- 1992 Development of a slim type deck crane
- 1997 Delivered 130t twin type hydraulic deck cranes





# 货船

## Cargo Vessel

新开发出的液动力组与低噪音绞盘系统彻底改变了高压型液压甲板机械的“噪音”形象。单一主系统与遥控系统适应了货物处理与泊船中节省劳动力的需求。此外，川崎液压甲板起重机通过改善可靠性及气候适应性改变了甲板起重机的概念。这些设备已交付世界各地的货船使用，其中操舵装置创造了世界交付纪录。

The newly developed hydraulic power unit and winch system of the low noise has completely changed the image of the noise of high pressure type Hydraulic Deck Machinery. The single main system and remote control system have responded to the labor-saving of cargo handling and mooring. Furthermore, Kawasaki-Hydraulic Deck Crane has changed the concept of the Deck Crane with the improvement of reliability and weather resistance. Those equipment have been delivered to worldwide cargo vessels together with the Steering Gear that has the world record of delivery.

### ●甲板起重机 / Deck Crane



# 油轮

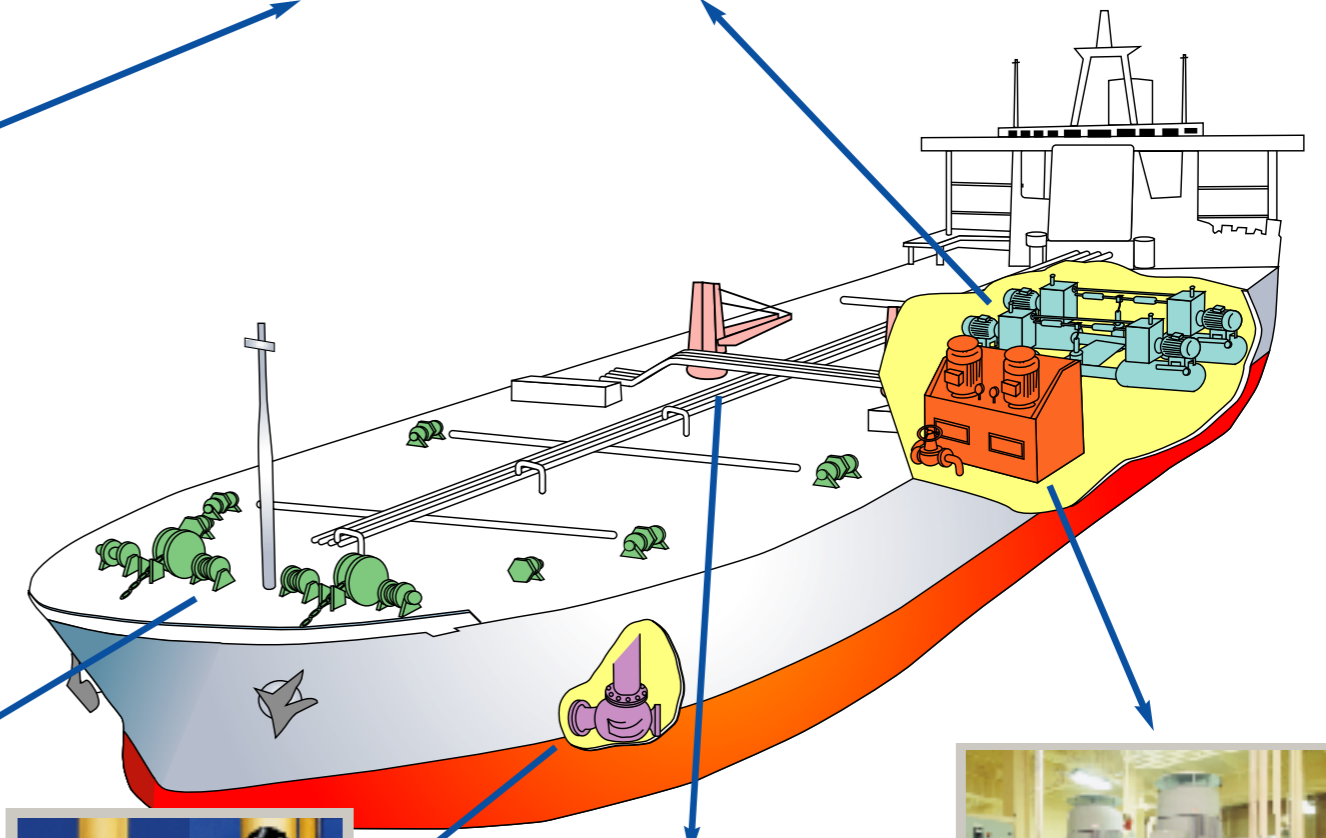
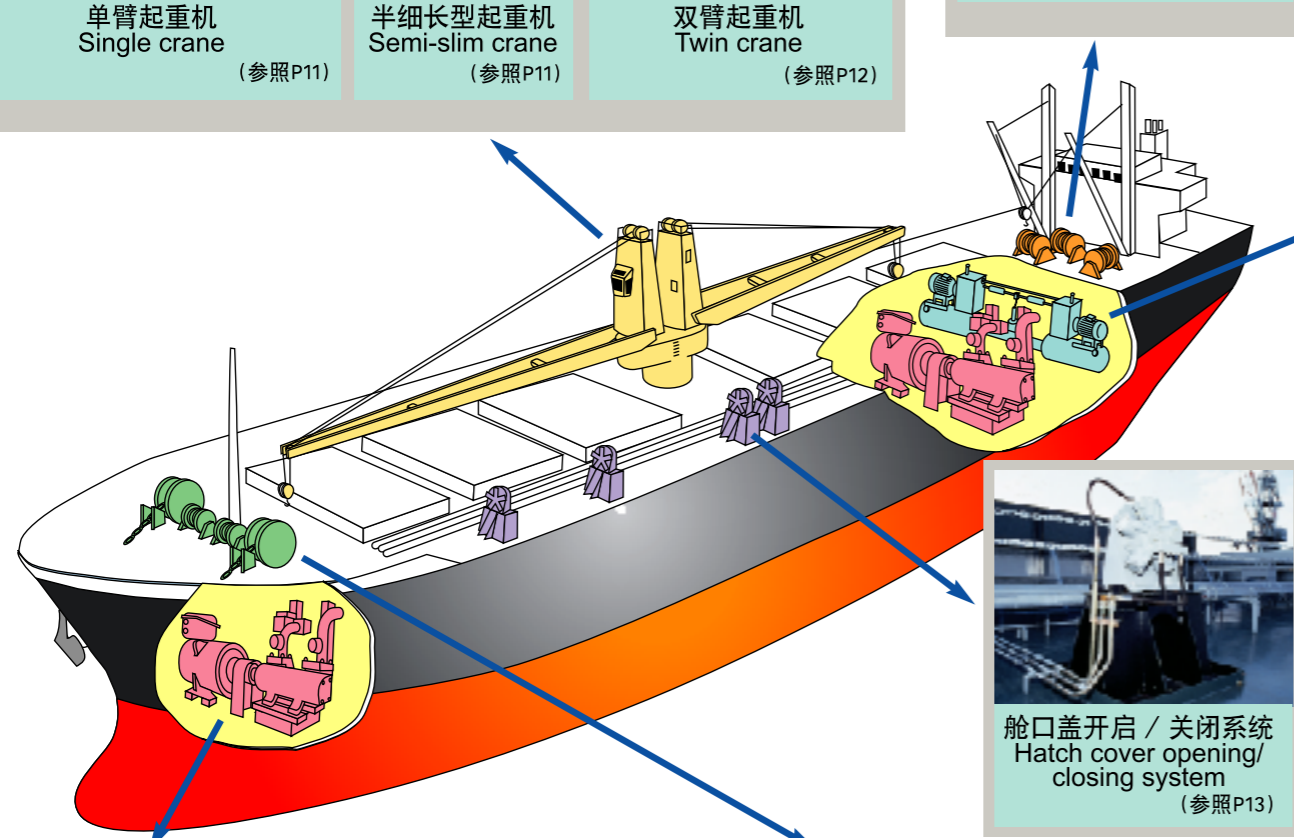
## Oil Tanker

川崎牌操舵装置已在世界各地的油轮上得到采用，包括安装在500,000吨载重量级油轮上的世界最大的电液压操舵装置（1,650t·m输出）。我们还完成了高压（29兆帕）系统，其总卸排油速度超过10,000升/分钟以适应装油泵与压载泵的液压驱动。

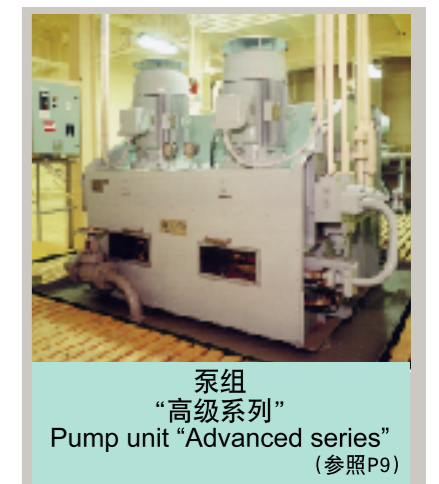
The Steering Gear of Kawasaki brand has been adopted to worldwide oil tankers from the world largest level of the Electro Hydraulic Steering Gear (the output 1,650t·m) that was installed to the oil tanker of 500,000 DWT class.

We have also completed the high pressure (29MPa) system that exceeds the total discharge rate of 10,000L/min responding to the hydraulic driven of cargo oil and ballast pump.

### ●电液压操舵装置 / Electro-Hydraulic Steering Gear



### ●泊船机械 / Mooring Machinery





# 滚装拖车船

## Ro/Ro Trailer Carrier

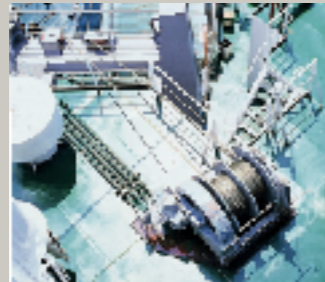
我们的强项还包括滚式上下的货船与车辆渡船之开启、关闭与固定坡道的液压系统，以使拖车及轿车可自行行驶出入。为满足高可靠性与优异可操作性的要求，我们提供由甲板机械中的“高级系列”泵组驱动的滚式上下设备与坡道绞盘，该泵组可作为一个普通的液压源。

The hydraulic system to open, close and fix the ramp way is also our strong field for cargo vessels and car ferries with roll on and roll off where trailer and passenger cars go directly in and out by themselves. To comply with the requirements of high reliability and excellent operability, we are supplying Ro/Ro equipment and Ramp Winch that can be driven by Advanced Series pump unit for Deck Machinery as a common hydraulic source.

### ● 滚式上下装置 / Ro/Ro Device



滚式上下装置  
Ro/Ro device

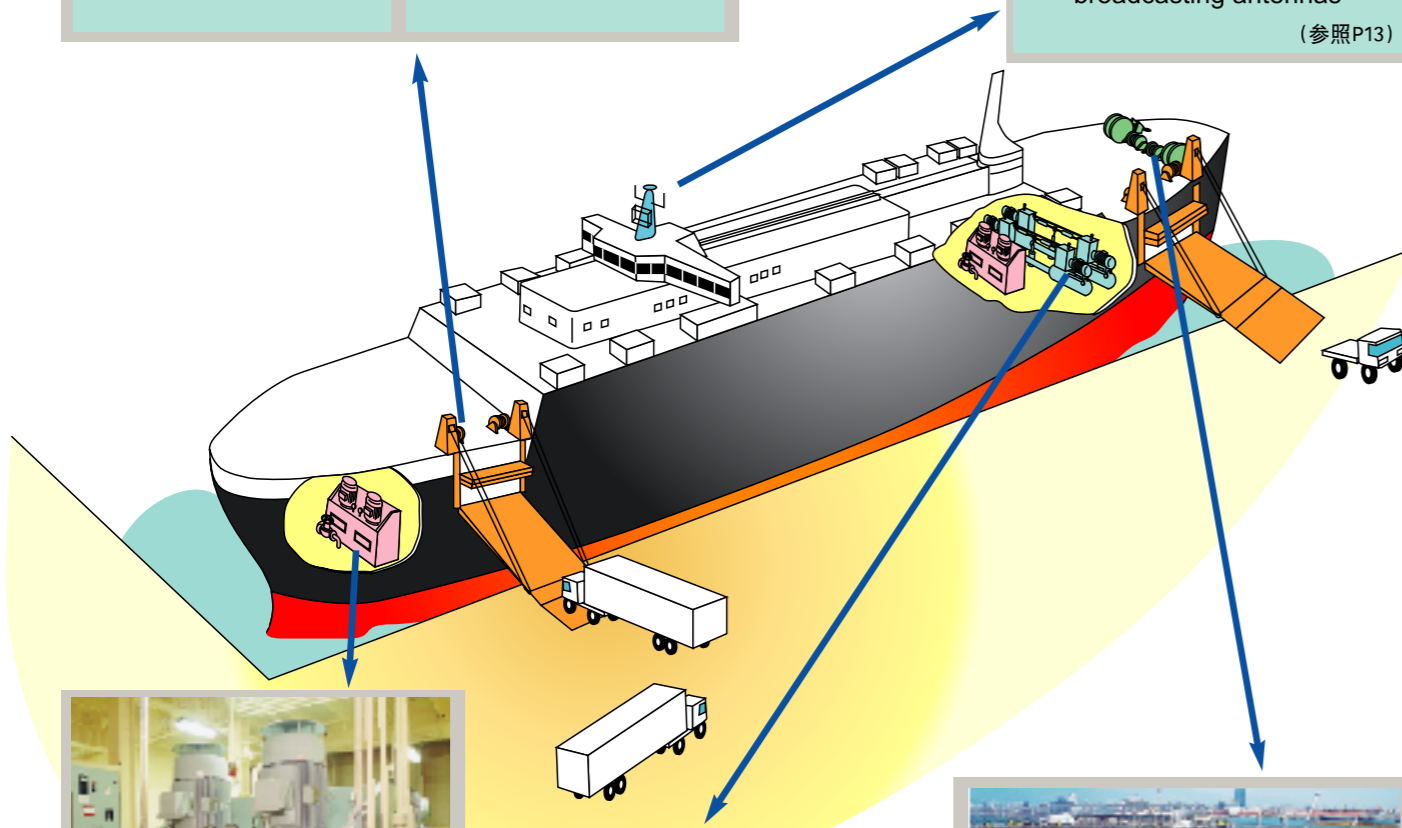


坡道绞盘  
Ramp winch



陆栖广播天线  
Terrestrial  
broadcasting antennas

(参照P13)



泵组  
“高级系列”  
Pump unit “Advanced series”  
(参照P9)



大型操舵装置  
Large size steering gear  
RE型

(参照P8)



泊船绞盘  
Mooring winch

(参照P9)

# 作业船

## Work Vessels

海洋与港口公共工程中使用的各种作业船对液压系统有不同的要求，以实现其各自的功能。除强大动力之外，起重船还要求悬吊货物落地控制时的高准确性，而砂井船也需要沙堆推进推出控制的先进技术。川崎液压系统以隔音与振动吸收技术、遥控技术等一并响应这些不同要求。

Various Work Vessels that are engaged in the ocean and harbor public works have various needs for the hydraulic system, in order to accomplish each function. In addition to strong power, floating cranes require high accuracy for landing control of a hanging cargo and sand drain ships also require advanced technology for push-in and pull-out control of a pile.

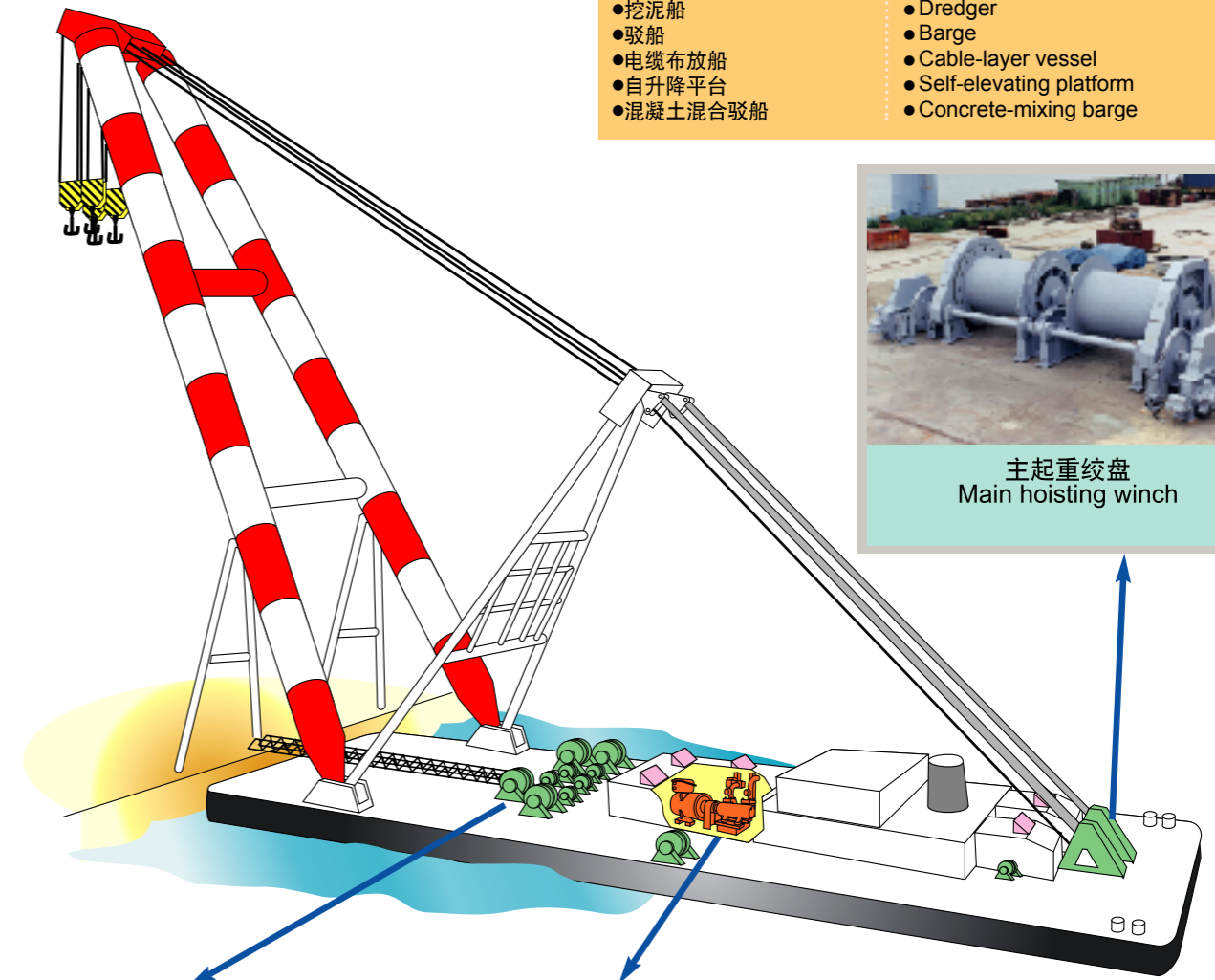
The hydraulic system of Kawasaki responds to these various needs together with soundproof and vibration absorption technology, remote control technology etc.

### 已安装川崎液压设备的作业船

- 土壤改良船
- 起重船
- 回收船
- 打桩驳船
- 挖泥船
- 驳船
- 电缆布放船
- 自升降平台
- 混凝土混合驳船

### Work vessels already installed with Kawasaki hydraulic equipment

- Soil improving ship
- Floating crane
- Reclaimer vessel
- Pile-driving barge
- Dredger
- Barge
- Cable-layer vessel
- Self-elevating platform
- Concrete-mixing barge



主起重绞盘  
Main hoisting winch



锚绞盘  
Anchor winch



泵组  
Pump unit



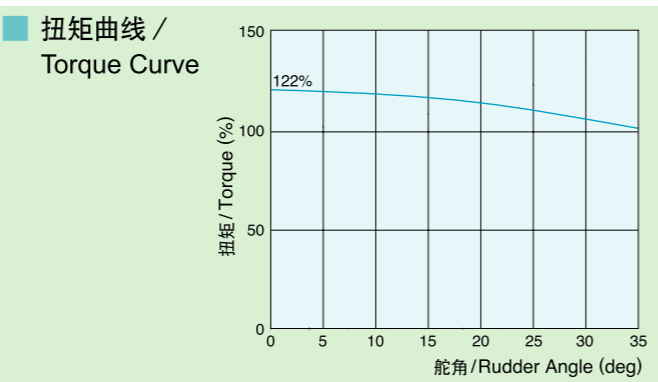
# 操舵装置 Steering Gear

操舵装置尤其需要具备以下四种特性，即“高可靠性”、“高耐用性”、“高准确性”以及符合实际舵负载的“扭矩特性”。具有此四种特性的川崎电液压操舵装置已交付全世界各种大小的船舶使用并得到了高度评价。

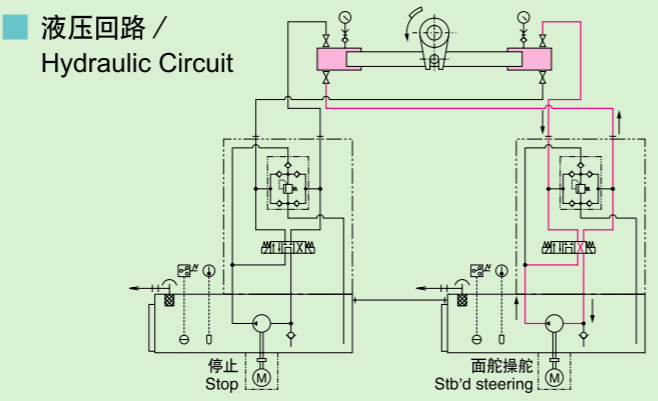
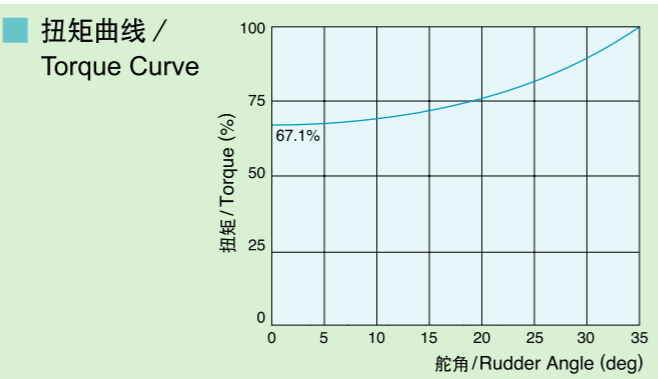
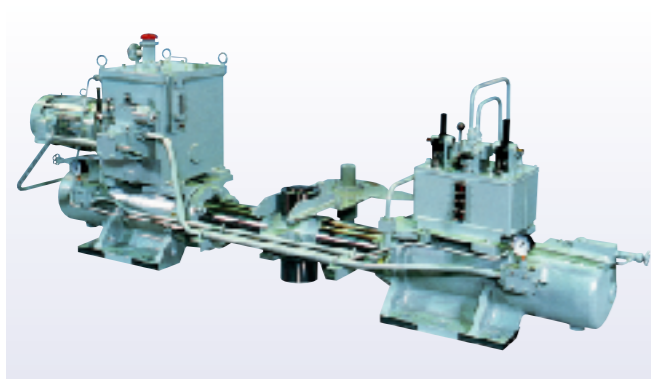
The following four characteristics are especially required of the steering gears — They are high reliability high durability high accuracy and torque characteristic in line with actual rudder load. The Electro Hydraulic Steering Gear of Kawasaki with such four characteristics has been delivered to various sized ships all over the world and highly evaluated.

型号 Model	扭矩 / Torque kN·m																					
	10	20	30	50	100	200	500	1,000	2,000	5,000	10,000											
筒状活塞型 Trunk piston type		■	■	■	■																	
小型 (RV 型) Small size (RV type)				■	■	■	■	■														
大型 (RM, RE, RV 型) Large size (RM, RE, RV type)							■	■	■	■												
大型 (FM, FE 型) Large size (FM, FE type)										■	■	■	■	■	■	■	■	■	■	■	■	■

## 筒状活塞型操舵装置 / Trunk piston type steering gear

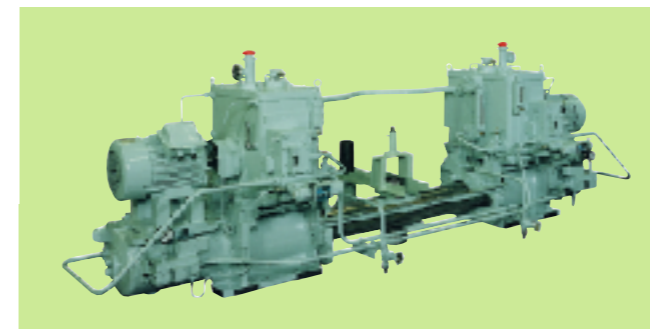


## 小型操舵装置 / Small size steering gear (RV型)

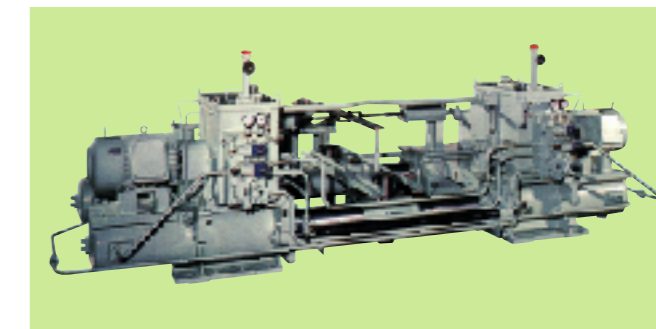


## 大型操舵装置 / Large size steering gear

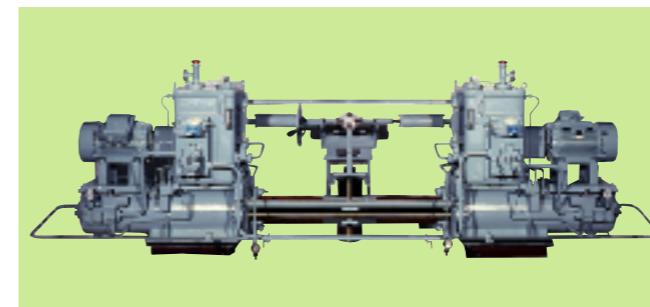
### RV型



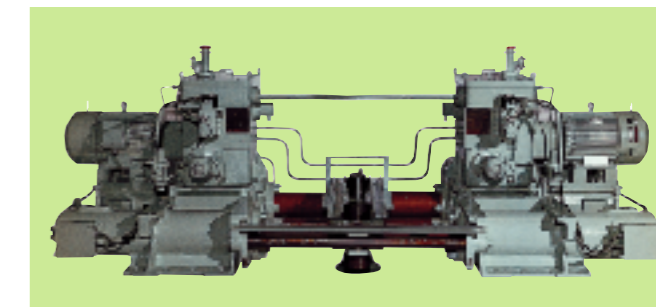
### FM型



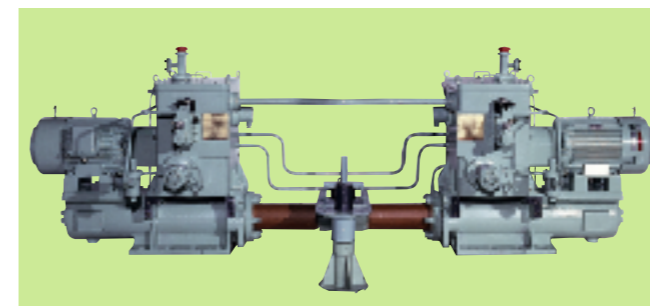
### RM型



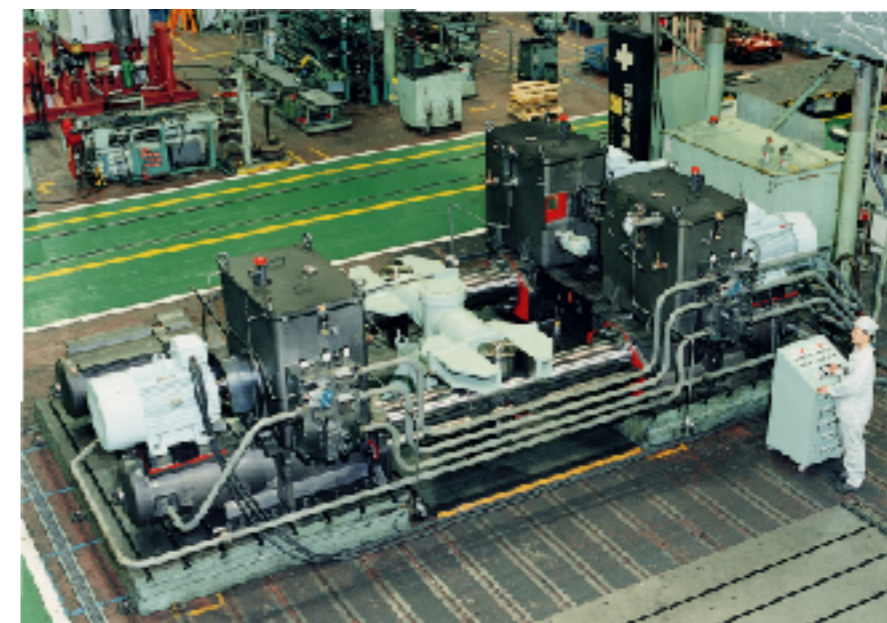
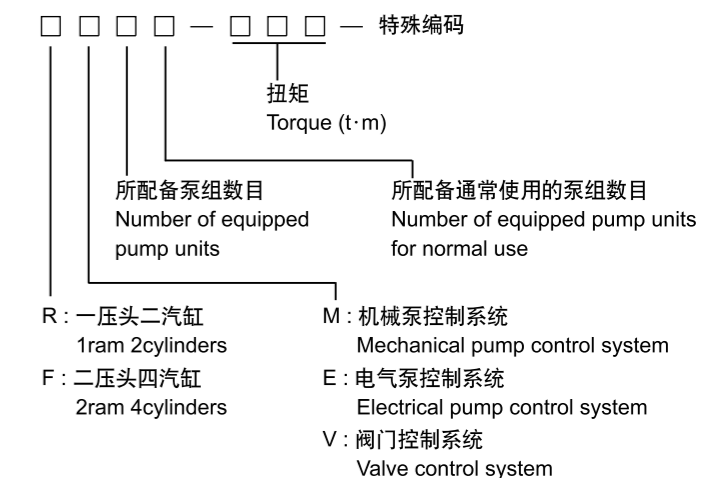
### FE型



### RE型



### 订货编码 / Ordering Code





# 甲板机械 Deck Machinery

我们提供液压甲板机械，如达到更低噪音的“川崎静音系统”型液压甲板机械与“高级系列”，在满足高压力的要求之外还实现了低噪音，从而提前进入了下一个时代。

We have offered the Hydraulic Deck Machinery, taking the next era in advance, such as Kawasaki Silent system achieving further low noise type Hydraulic Deck Machinery and Advanced Series realizing low noise, in addition to responding to the needs of high pressure.

型号 Model	负载 / Load kN					
	100	200	300	400	500	600
起锚机 Windlass	[Bar chart showing load capacity for Windlass]					
泊船绞盘 Mooring winch	[Bar chart showing load capacity for Mooring winch]					
货物绞盘 Cargo winch	[Bar chart showing load capacity for Cargo winch]					

## ●起锚机 / Windlass



## ●泊船绞盘 / Mooring winch



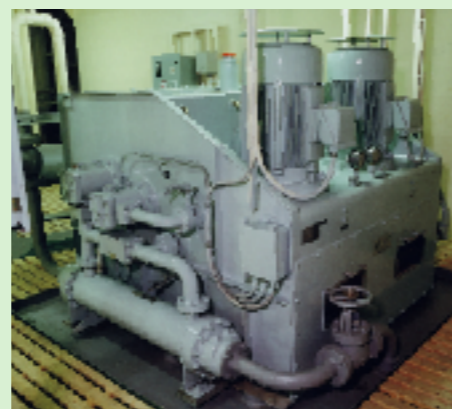
## ●货物绞盘 / Cargo winch



## ●泵组 / Pump unit

### ◆高级系列 Advanced series

- 基本系统  
Basic system
- 单一主系统  
Single main system

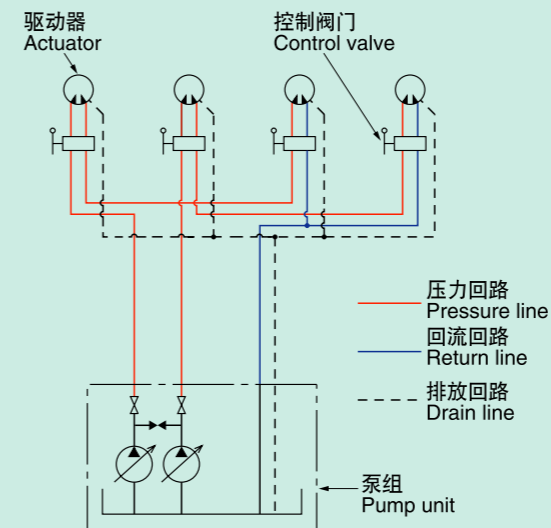


### ◆静音系统 Silent system

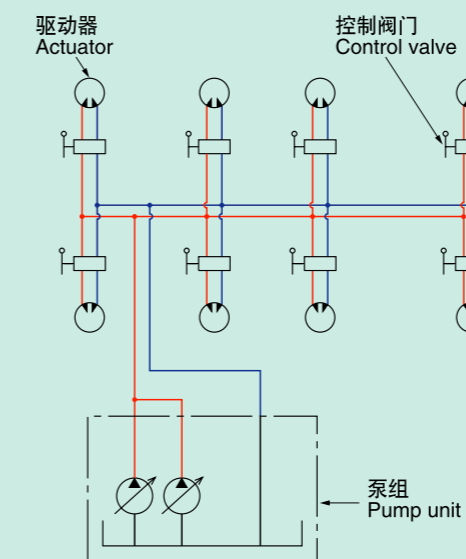


## 高级系列 / Advanced series

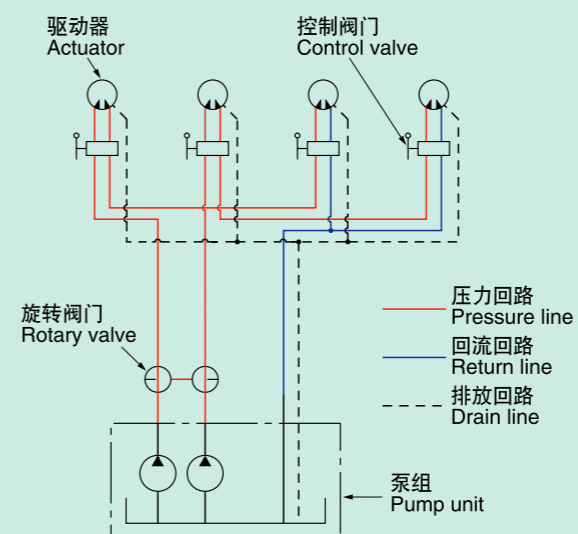
### ●基本系统 / Basic system



### ●单一主系统 / Single main system



## 静音系统 / Silent system





# 甲板起重机 Deck Crane

“川崎液压甲板起重机”为提高装载与卸载效率做出了贡献，最大体现了液压装置的特点，即“轻而易举的控制”。较小的安装空间与扩展了的装载及卸载工作区让您可以有效地使用甲板空间。

The Kawasaki-Hydraulic Deck Crane has contributed to the efficiency improvement of loading and unloading work making the most of the characteristic of hydraulics, that is, extreme easiness of control.

Small installation space and expansion of the loading and unloading work area enable you to use the space of deck efficiently.

型号 Model	负载 / Load kN									
	100	200	300	400	500	600	700	800	900	1,000
单臂起重机 Single crane		■	■	■	■					
双臂起重机 Twin crane				■	■	■	■	■	■	■
半细长型起重机 Semi-slim crane			■	■						
软管处理起重机 Hose handling crane	■	■								

## ●单臂起重机 / Single crane



## ●半细长型起重机 / Semi-slim crane



## ●双臂起重机 / Twin crane



## ●双臂起重机 (圆筒型) Twin crane (Cylinder type)



## ●软管处理起重机 Hose handling crane



## ●软管处理起重机 (圆筒型) Hose handling crane (Cylinder type)





# 渔业机械 Fishing Machinery



●渔场科研船 / Fisheries research vessel

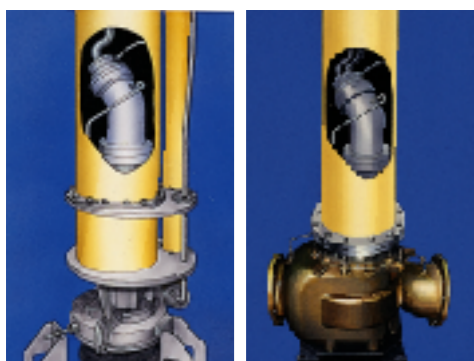


●双卷筒型海洋绞盘 / Two-drum type oceanographic winch

有保证的可靠性与创新的技术 —— 我们已向渔船以及政府船只提供了超过三千套的渔业机械及与油压装置相关的设备，为在渔船上节省劳动力并提供现代渔业技术、以及为其配备海洋调查技术做出了贡献。

Assured Reliability and Innovative Technology — we have supplied more than 3,000 sets of fishing machinery and equipment associated with oil hydraulics, for fishing boats as well as for government vessels, to contribute in saving labor on fishing boats and modernizing fishing technologies, as well as equipping with marine investigation technologies.

# 其他船用机械系统 Other Systems for Marine Machinery



## ●驱动装油泵与压载泵 Driving Cargo Oil Pump and Ballast Pump

液压系统最适于用于驱动装油泵与压载泵的遥控。我们的川崎单一主系统可以一个泵站驱动各种驱动器，尤其适合作为液压驱动大容量泵。

Hydraulic system is most suitable for remote control of the cargo oil pumps and the ballast pumps. Our Kawasaki Single Main System that is able to drive the various kinds of actuators with 1 pump station is particularly suitable for hydraulic driving large-capacity pumps.



## ●陆栖广播天线 Terrestrial Broadcasting Antennas

我们采用一具定向天线以在船上接收清晰的电视图像。该天线能接收清晰而稳定的图像，因为即使当船改变方向时，它也能自动朝向电视广播地面站的方向。

We adopted a directive antenna to catch a clear television image on the ship.

The antenna is able to receive the clear and stabilized image, because automatically faces in the direction of the ground television broadcasting station even if the ship changes its direction.



## ●船载照相机稳定器 Camera Stabilizer on Ships

照相机稳定器制止光轴的移动并甚至在船身颠簸晃动时仍保持船上照相机的图像清晰。

在一公里距离上小于五厘米的移动使其具有极佳的稳定性。

The Camera Stabilizer restrains the movement of the optical axis and keeps image clear of the camera on board even during the turbulence and oscillation of the ship.

The stability, with only less than 5cm of the movement in the distance of 1km, is quite excellent.

## 川崎牌船用机械液压系统亦于韩国与中国诞生。

The Hydraulic Systems for Marine Machinery of Kawasaki brand are also born in Korea and China.

自1976年以来我们一直向韩国东明重工有限公司提供我们的电液压操舵装置技术并供应液压泵（LV系列）的关键部件。

自1981年以来我们也向CSIC / 中国武汉船用机械厂提供电液压操舵装置技术，自那时起他们已开始了生产。此外最近我们还在甲板机械与甲板起重机方面与其联合并扩展了生产合作的范围。

We have been providing Tong Myung Heavy Industries Co., Ltd., Korea with our technology of the Electro Hydraulic Steering Gear since 1976 and supplying the key parts of hydraulic pump (the LV series). We have also been providing with the technology of the Electro Hydraulic Steering Gear CSIC/Wuhan Marine Machinery Plant, China since 1981 and they have started the production since then. Furthermore we have recently, tied up each other concerning the Deck Machinery and Deck Crane and have been expanding the range of cooperation in production.