

KAWASAKI ELECTRO-HYDRAULIC STEERING GEAR SERVICE NEWS

DATE : May 25, 2023

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Subject:
Standard replacement parts for periodic maintenance of steering gear

Regarding periodic maintenance of Kawasaki steering gear, Kawasaki has selected some electric/electronic parts and mechanical parts as new standard replacement parts for vessels that have been in service for more than 10 years. Please see Tables 1 and 2 below for details.

Table 1. New standard replacement electric/electronic parts

Standard replacement parts	Reason for selection
Solenoid valve (assembly)	Aging deterioration of electric/electronic parts. (In the past, only sealing parts of solenoid valve was replaced.)
Torque motor for E series ※1	Aging deterioration of electric/electronic parts.
LVDT for E series ※1	Aging deterioration of electric/electronic parts.
Circuit board for HYD. lock detector (for V series ※2)	Aging deterioration of electric/electronic parts.
Position sensor for V series ※2	Aging deterioration of electric/electronic parts.
Limit switch	Aging deterioration of electric/electronic parts.

Table 2. New standard replacement mechanical parts

Standard replacement parts	Reason for selection
Hardened steel plate	Progress of wear was observed on many vessels that had been in service for more than 10 years. (In the past, the wear condition of hardened steel plate was checked during maintenance, and parts were replaced depending on the condition.)
Roller chain coupling	Progress of wear was observed on many vessels that had been in service for more than 10 years.
Spaflex coupling for E series ※1	Progress of wear was observed on many vessels that had been in service for more than 10 years.

※1 E series : Electrical pump control steering gear ※2 V series : Valve control steering gear

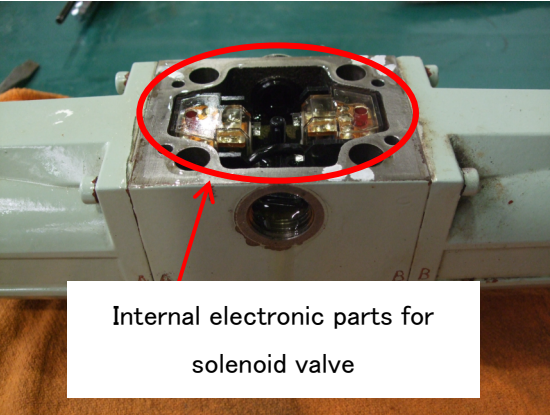
Kawasaki recommend these parts be replaced during periodic maintenance. This is because of the risks shown in Table 3 in attachment 1. It is also recommended to have spare parts in case of unexpected problems. For reference, Table 4 in attachment 2 shows details of the standard replacement parts for each steering gear series. Please refer to it.

Note : Replacement parts may not be supplied depending on stocks. Please contact us as soon as possible after the maintenance period is decided.

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Table 3. Possible defects

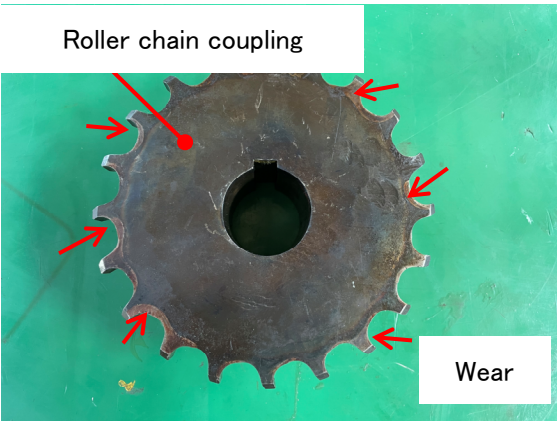
Standard replacement parts	Malfunction factor	Possible defects
Solenoid valve (assembly)	Deterioration of internal electronic parts over time	Poor steering, steering failure
Torque motor	Deterioration of internal electronic parts over time	Poor steering
LVDT	Deterioration of internal electronic parts over time	Poor steering
Circuit board for HYD. lock detector	Deterioration of electronic parts over time	Hydraulic-locking alarm system Malfunction
Position sensor	Deterioration of internal electronic parts over time	Hydraulic-locking alarm system Malfunction
Hardened steel plate	Wear of mechanical parts	Vibration and Abnormal noise, poor steering
Roller chain coupling	Deterioration of mechanical parts over time	Steering failure
Spaflex coupling	Deterioration of mechanical parts over time	Steering failure
Limit switch	Deterioration of internal electronic parts over time	Steering failure



Deterioration of internal
electronic parts for
solenoid valve



Wear of hardened steel plate



Wear of roller chain coupling

Table 4. Standard replacement parts list

Symbols in the table 3 ○:Applicable × Not applicable

Standard replacement parts		In service for more than 5 years			In service for more than 10 years		
		Steering gear series			Steering gear series		
		Mechanical Pump Control M series	Electrical Pump Control E series	Valve Control V series	Mechanical Pump Control M series	Electrical Pump Control E series	Valve Control V series
Conventional standard replacement parts	Repair kit for hydraulic pump	○	○	○	×	×	×
	Drive shaft assembly & repair parts for hydraulic pump	Option※1	Option※1	Option※1	○	○	○
	Seal kit for solenoid valve	○	○	○	×	×	×
	Trochoid pump (assembly)		○※2			○※2	
	Reper kit for gear pump		○※2			○※2	
	Spider for coupling of servo pump		○			○	
	Pressure gauge	○	○	○	○	○	○
	Element for filter		○			○	
	V-packing	○	○	○	○	○	○
	Rubber ring	○※3	○※3	○※3	○※3	○※3	○※3
	Seal for piping	○	○	○	○	○	○
	Sheet packing	○	○	○	○	○	○
New standard replacement parts	Repear parts for M series	○					
	Solenoid valve (assembly)	×	×	×	○	○	○
	Torque motor		×			○	
	LVDT		×			○	
	Circuit board for HYD. lock detector			×			○※4
	Position sensor			×			○※4
	Hardened steel plate	×	×	×	○	○	○
	Roller chain coupling	×	×	×	○	○	○
	Spaflex coupling		×			○	
	Limit switch	×	×	×	○※5	○	○※5

※1 Regarding the drive shaft assembly of hydraulic pump, replacement may be required even for vessels that have been in service for less than 10 years.

※2 Depend on the model of E series steering gear.

※3 Depend on the specs of steering gear.

※4 Depend on the model of V series steering gear.

※5 Depend on the specs of steering gear.