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The company name  
was changed to  
**TOKYO KEIKI INC.**

2-16-46, Minami-Kamata, Ohta-Ku,  
Tokyo 144-8551, JAPAN  
TEL.+81-3-3732-2111  
FAX.+81-3-3736-0261  
<http://www.tokyo-keiki.co.jp/>

NEW RESCO  
**PR-2000**  
SERIES

**AUTOPILOT**



# FEATURES

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The PR-2000 series autopilot, widely regarded as a system with stable performance and easy-operation for fishing boats, coastal vessels and merchant ships, has long enjoyed great popularity among all users, with more than 17 000 units sold over.

Those PR-2000 series progressed to new series coupled with new modeled ES gyro-compass with various options and our downsized new steering gear system.

It is available in a stand type which is connected with a separately installed gyro-compass or magnetic compass, and a GYLOT<sup>®</sup> type which combines gyrocompass and autopilot into a single system. And a console type integrating gyrocompass, radar made by TOKIMEC and all other necessary nautical equipment is also available. In addition, it is possible to connect with steering gear unit made by TOKIMEC or other manufactures.

This wide choice range permits the user to select the type best suited to all of the ships.

The new PR-2000 series becomes to be easy to use and helps your safety and economical voyage.

## Easy to use system design

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Because the sophisticated design takes into account all important ergonomic aspects, the system is easy to use and see.

## Upgraded economic efficiency and course stability

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The PID (Proportional+Integral+Differential) control and dual gain-based weather adjustment minimize propulsion power losses with improved course stability, so that steering can be carried out with greater savings in fuel costs.

## Light weight and compact size power unit

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Downsizing of the power unit is satisfied with TOKIMEC's hydraulic instruments cramming TOKIMEC's superior technology of electro-hydraulics. The space and weight become 30% less.

## Silent & long life solenoid valve

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High performed wet type solenoid valves are employed. The noise of switch selection becomes small and oil leak is shut out from push pin.

Noise reduction and easy maintenance are satisfied.

## Easy installation

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The connection between power unit and steering unit is standardized with high pressure hose.

High pressure hose connection helps easy installation compare with former steel pipe connection.

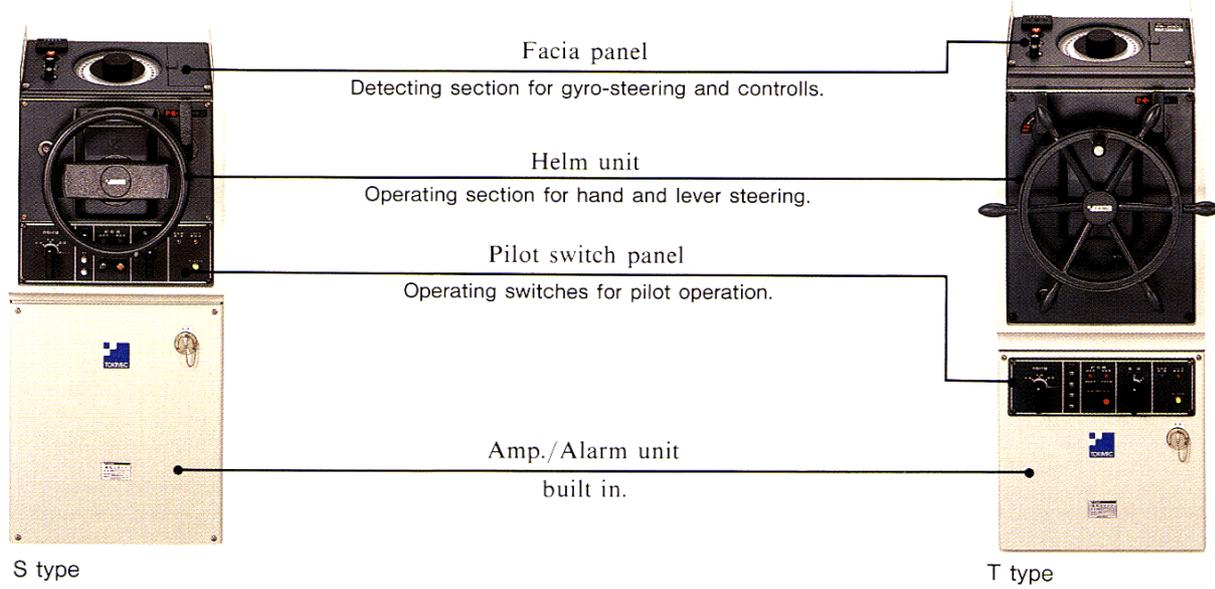
## Various systems

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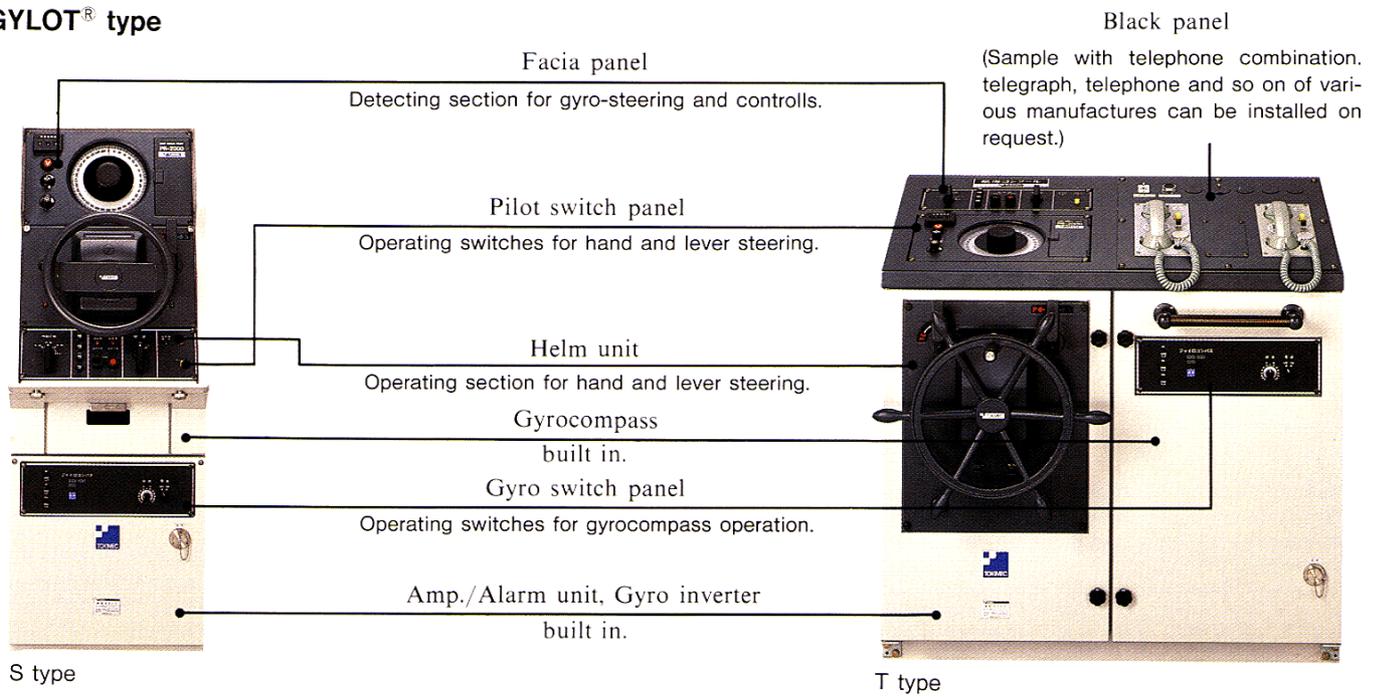
Stand type, GYLOT<sup>®</sup> type, console type and other various systems are provided to meet the purpose of the vessels.



■ Stand type



■ GYLOT® type

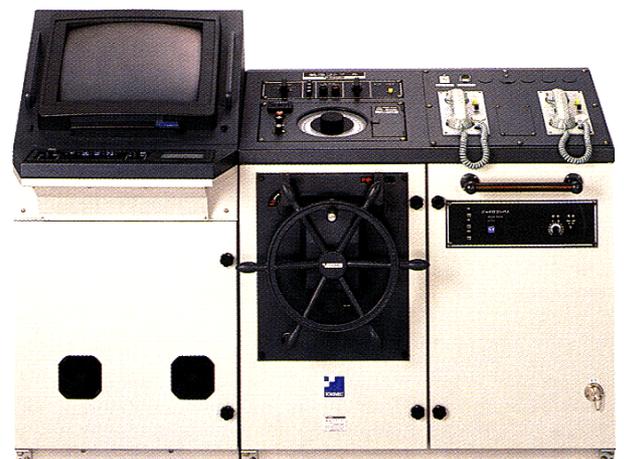


■ Console type

Console type integrated BR-2500 Radar display unit.



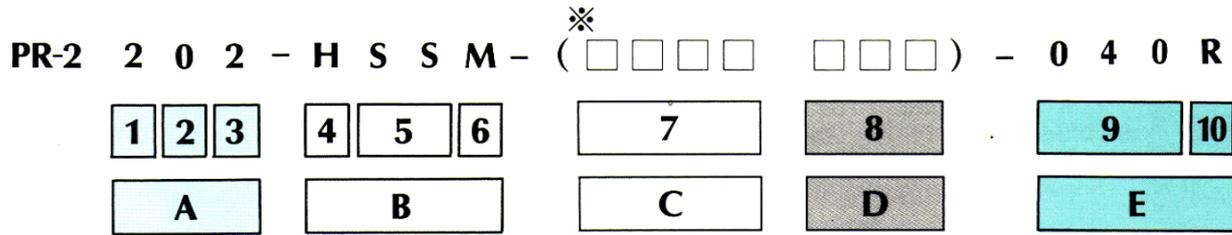
S type



T type

# MODEL CODE BREAKDOWN

## ■ Case of connection with TOKIMEC's steering gear system



※ Special specification

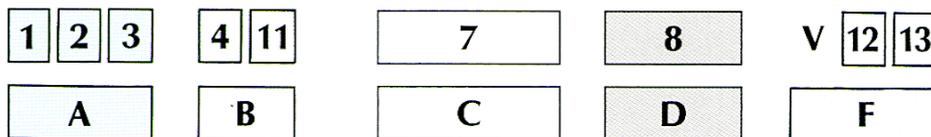
The PR-2000 series, new resco pilot, is the rational systems which can provide various types for user's wide range purpose of vessels. Please choose the most suitable combination from following list.

A	B	C
<p><b>1</b> <b>[Type of compass]</b></p> <p>1: Magnetic compass                  2: ES-110 gyrocompass                  5: TG-5000 gyrocompass                  7: Gyrocompass made by other manufacture                  9: Without AUTO mode</p>	<p><b>4</b> <b>[Rudder turning angle]</b></p> <p>H: 70°(with schilling rudder)                  W: 45°                  Y: 40°                  Nothing : 35°(standard)</p>	<p><b>7</b> <b>[Aux. steering stand and special connection to autopilot]</b></p> <p>Nothing : No indication                  (Aux. steering stand)                  U1, U2, H1, H3, B8                  (Pilot dial/remote controller)                  D1, D1S, D2S, DL1,DL2S, R2S                  (Steering gear unit alarm panel)                  SG1, SG2                  (Joy-stick/Other manufacture's tracking)                  JY, TR1                  (Note1)</p>
<p><b>2</b> <b>[Special spec.]</b></p> <p>0: Standard                  1: Es+magnetic compass                  2: ES-110 dual gyrocompass                  5: TG-5000 dual gyrocompass                  7: Connection with tracking pilot TP-20</p>	<p><b>5</b> <b>[Type of steering gear unit]</b></p> <p>TOKIMEC electro-hydraulic system                  SS: Aux. manual pump at S/G room type                  SL: Emergency hyd. line (including aux. manual pump and oil tank) independent type                  TS: Manual pump in steering stand type                  TL: Manual pump in steering stand with independent emergency hyd. line (including aux. manual pump and oil tank) type                  SP: Rudder stock dia., over 230 mm/power unit 2sets/ Aux. manual pump at S/G room (for class application vessel)                  TP: Rudder stock dia., over 230 mm/power unit 2sets/ Manual pump in steering stand (for class application vessel)</p>	
<p><b>3</b> <b>[Type of stand]</b></p> <p>1: Stand type                  2: GYLOT® type                  3: Console type                  4: Unit type</p>	<p><b>6</b> <b>[Rudder turning speed]</b></p> <p>Nothing : Standard (See Page 10)                  M: Approx. 1.5 times higher speed                  H: Approx. 2 times higher speed</p>	
	<p><b>11</b> <b>[Type of steering gear unit]</b></p> <p>Other manufacture's electro-hydraulic system.                  E: Power unit for combination with a steering gear an electro-magnetic valve controle system other than those manufactured by TOKIMEC.                  R: Electrically operated power unit for combination with a steering gear other than those manufactured by TOKIMEC.</p>	

Note1 : C-7 Please contact TOKIMEC's sales offices about aux. steering stand and special connection to auto pilot.

■ Case of connection with other manufacture's steering gear system

PR-2 2 0 2 - H E - (     -    ) - V 1 3



D	E	F (PR2000- <input type="checkbox"/> E only)
<p><b>8 [Special rudder control]</b>                      Nothing : Standard type                      D11 : Twin rudder rod connection type (pump 100 %×1)                      D12 : Twin rudder rod connection type without parallel operation (pump 100 %×2)                      D15 : Twin rudder rod connection type with parallel operation (pump 50 %×2)                      T11 : Twin rudder (pump 100 %×1)                      W12 : Single rudder and dual power unit without parallel operation (pump 100 %×2)                      W13 : Single rudder and dual power unit with parallel operation (pump 100 %×2)                      W15 : Single rudder and dual power unit with parallel operation (pump 50 %×2)</p>	<p><b>9 [Cylinder/Ram output]</b>                      To be indicated in case of TOKIMEC's steering gear system.                      015 : 14.7 kN·m (without H<input type="checkbox"/><input type="checkbox"/> type)                      020 : 19.6 kN·m (without H<input type="checkbox"/><input type="checkbox"/> type)                      025 : 24.5 kN·m                      040 : 39.2 kN·m                      060 : 58.8 kN·m                      085 : 83.3 kN·m                      100 : 98 kN·m (without <input type="checkbox"/>T<input type="checkbox"/> type)                      130 : 127.4 kN·m (without <input type="checkbox"/>T<input type="checkbox"/> type) 2-pumps type                      170 : 166.6 kN·m                      200 : 196 kN·m Ditto                      250 : 245 kN·m Ditto</p> <p><b>10 [Connection between steering unit and power unit]</b>                      R : High pressure hose (supplied by TOKIMEC)                      S : Steel pipe (supplied by customer)                      (Note2)</p>	<p><b>12 [Power supply for other manufacture's solenoid valve]</b>                      1 : AC 110 V                      2 : DC 24 V                      3 : DC 100 V</p> <p><b>13 [Control of other manufacture's solenoid valve]</b>                      1 : 1pcs. solenoid valve control                      2 : 2pcs. solenoid valves selectable control                      3 : 2pcs. solenoid valves parallel control                      (Note3)</p>
	<p>Note2 : E-10, Standard length of high pressure hose depends on each type of steering gear. For the details, please contact TOKIMEC's sales offices.</p>	<p>Note3 : F-13, Other combination except aboves can be expected. In these case, please contract TOKIMEC's sales offices.</p>

# PANEL FUNCTIONS

Functions		Performance Explanation
Steering mode	GYRO (AUTO)	<ul style="list-style-type: none"> <li>● Automatic steering using a gyrocompass, which ensures excellent course stability; fuel savings with the PID (Proportional+Integral+Differential) control and dual gain-based weather adjustment.</li> </ul>
	HAND (FOLLOW UP)	<ul style="list-style-type: none"> <li>● Manual steering with the steering wheel; accurate response to the ordered rudder angle.</li> </ul>
	REMOTE (FOLLOW UP)	<ul style="list-style-type: none"> <li>● Steering in a place away from the bridge by means of a lightweight, compact, easy-to handle knobbed remote controller (especially suited to fishing boats during fishing operations).</li> </ul>
	LEVER (NON FOLLOW UP)	<ul style="list-style-type: none"> <li>● Steering by direct control of the power unit or solenoid valve without using the control circuit.</li> </ul>
	MAGNETIC (AUTO)	<ul style="list-style-type: none"> <li>● Automatic steering using the magnetic compass.</li> <li>● The magnetic compass and controller manufactured by TOKIMEC are used in this mode.</li> <li>● Optional function when gyrocompass installed for automatic steering. Using this optional function, the ship can be steered automatically even before the gyrocompass is set to meridian.</li> </ul>
	MANUAL/HYD. (Manual pump)	<ul style="list-style-type: none"> <li>● Emergency steering at the steering stand in case of electric power failure (T□ type of power unit).</li> </ul>
Steering stand	Repeater compass Open-scale repeater compass (option)	<ul style="list-style-type: none"> <li>● Synchro or stepped motor type repeater compass; housed in the steering stand for automatic steering using the gyrocompass or by changeover to the gyrocompass and magnetic compass.</li> <li>● Can be housed in the steering stand to order.</li> </ul>
	Rudder angle indicator	<ul style="list-style-type: none"> <li>● Synchro type rudder angle indicator; housed in the steering stand for automatic steering using the magnetic compass or for manual steering only.</li> </ul>
	Auto-weather adjustment (option)	<ul style="list-style-type: none"> <li>● Auto-weather adjustment function is interlocked with a special dual gain control, and this special arrangement permits steering to be carried out with a minimum loss of propulsion power and a greater reduction in fuel costs under changing weather and sea conditions.</li> </ul>
	Off-course alarm (option)	<ul style="list-style-type: none"> <li>● Alarm is given if the ship comes off the preset course while it is being steered automatically, making it possible to prevent course deviation resulting from any failure in the steering system or gyrocompass. Course deviation is detected by a magnetic compass isolated from the gyrocompass for automatic steering. (In case of "S" type steering stand, it is to be fitted at stand side.)</li> </ul>
	Gyrocompass (GYLOT <sup>®</sup> type Console type)	<ul style="list-style-type: none"> <li>● When the small-type ES-110 gyrocompass (with a manual latitude corrector) is housed: <ul style="list-style-type: none"> <li>– Can be operated with a DC 24 V power supply; however, the repeater compass does not work in this case.</li> <li>– Repeater compass can be connected with 6 circuits except for the steering stand. If it is to be connected with 7 or more circuits, contact TOKIMEC for special arrangements.</li> </ul> </li> <li>● When the high-performance TG-5000 gyrocompass (For more than 500G/T vessel by rule requirement) is housed. <ul style="list-style-type: none"> <li>– Can be operated with a DC 24 V power unit; however the repeater compass does not work in this case.</li> <li>– Repeater output (Max. 6 circuits) by DC 24 V power supply is available with repeater back up unit (separate unit/option).</li> <li>– Repeater compass can be connected with 11 circuits except for the steering stand. If it is to be connected with 12 or more circuits, contact TOKIMEC for special arrangements.</li> <li>– High performance satisfies all major international standards including IMO standards.</li> </ul> </li> </ul>
	GPS tracking pilot (TP-20) (option)	<ul style="list-style-type: none"> <li>● According to the position signal from GPS, auto tracking operation on the planned route is available. (Max. 10 routes, Max. 25way points/route.)</li> </ul>

Functions	Performance Explanation
Aux. steering stand (option)	<ul style="list-style-type: none"> <li>● Steering in GYRO (AUTO), HAND, and REMOTE is possible, and GYRO (AUTO) mode can be excluded on request.</li> <li>● Repeater compass can be housed (repeater compass is necessary for automatic steering, and can be housed even if no AUTO mode is required).</li> <li>● Synchro type rudder angle indicator can be housed.</li> <li>● Water-proof construction.</li> </ul>
Steering gear/Power unit	<ul style="list-style-type: none"> <li>● Rudder is controlled directly by a steering gear manufactured by TOKIMEC.</li> <li>● Solenoid valve of a steering gear other than those manufactured by TOKIMEC controlled.</li> <li>● R type power unit controls floating lever of other manufacture's steering rudder.</li> <li>● Repeatback unit has water-proof construction.</li> </ul>
Rudder angle indicator (Separate unit/option)	<ul style="list-style-type: none"> <li>● Synchro type receiver is supplied if the steering gear is manufactured by TOKIMEC. (Indicator is supplied only on order of the user if the steering gear is not manufactured by TOKIMEC.)</li> <li>● Standard viewing dia. is <math>\phi</math> 100, but rotary type, wall mount type, flush indicator with a dia. of <math>\phi</math> 100 and bulkhead type with a dia. of <math>\phi</math> 200 can be installed on up to 2 units on receiver order. (In case of more than 3 sets installation or other type requirement, please contact us.)</li> </ul>

### ■ Steering stand alarm and display functions

Function	Alarm	Display
Running indicator	—	○
Port/STB'D	—	○
Auto steering	—	option
Pilot no power	○	○
Repeater no power	○	operational
(only for repeater integrated within type)		
Gyro no power	○	operational
(only for GYROT <sup>®</sup> type)		
Pilot watch	○	option
Rudder limit	—	option

○ Standard function —Not provided

### ■ Steering gear alarm and display functions (S□, T□ type)

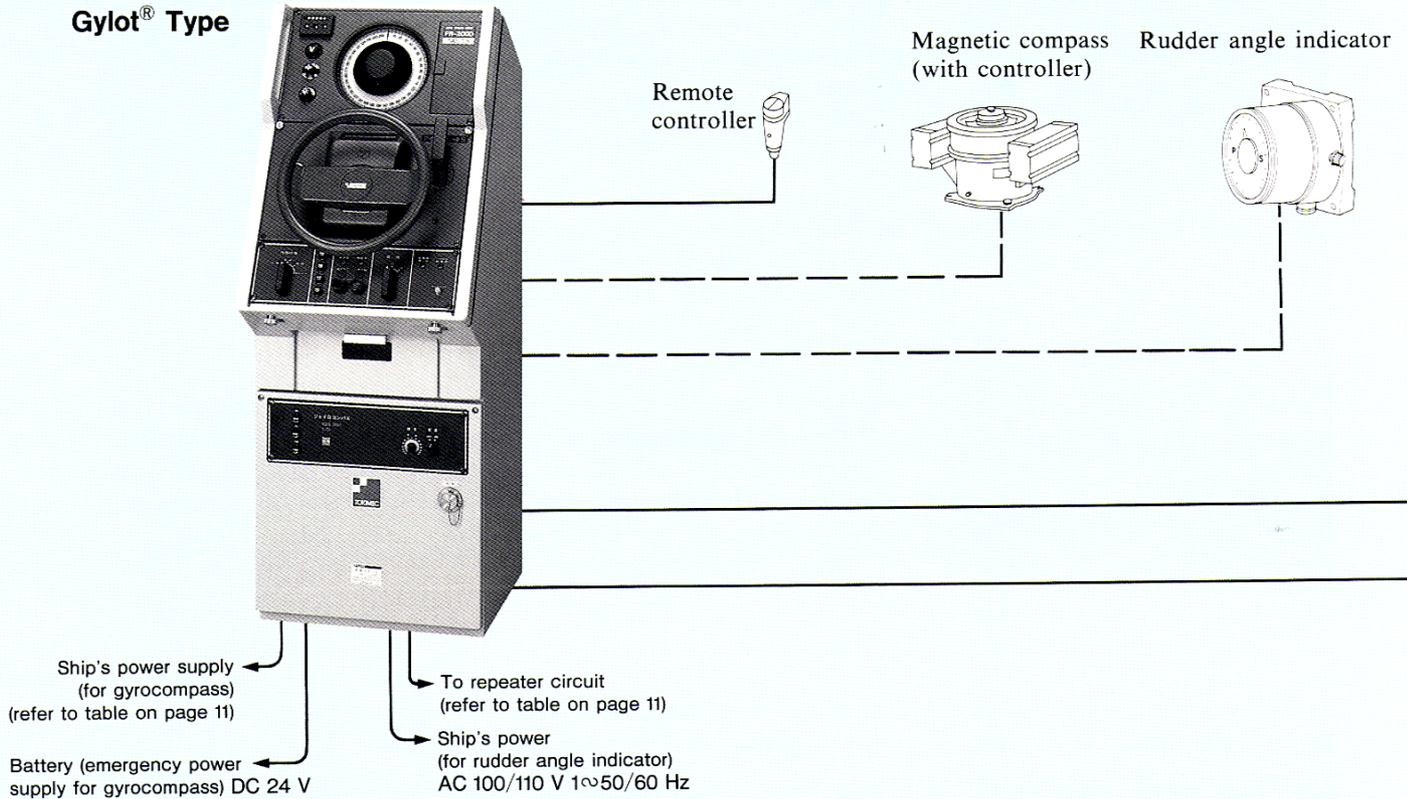
Function	Alarm	Display
Running indicator	—	○
Steering no power	○	○
Over load	○	○
Oil low level	*○	*○
Open phase	*○	*○

\* SS, TS type are optional.

# CONFIGURATION

## Sample of PR-2□□□-SL configuration

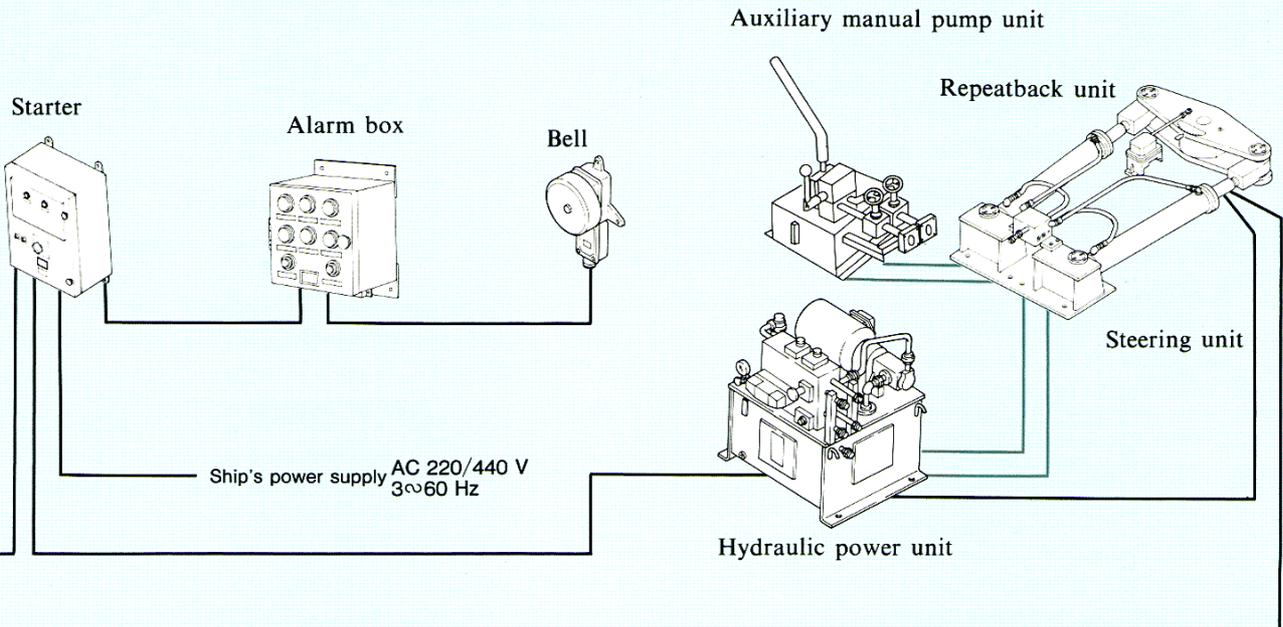
### Gylot® Type



Remark	Type	PR-2□□□-SS/SL			PR-2□□□-TS/TL		
		Stand	GYLOT®	Console	Stand	GYLOT®	Console
Steering stand (GYLOT® type)		1	—	—	1	—	—
Steering stand (Stand type)		—	1	—	—	1	—
Steering stand (Console type)		—	—	1	—	—	1
Gyrocompass		(1)	integrated	integrated	(1)	integrated	integrated
Magnetic compass (with controller)		(1)	(1)	(1)	(1)	(1)	(1)
Remote controller		1	1	1	1	1	1
Steering unit		1	1	1	1	1	1
Hyd. power unit		1	1	1	1	1	1
Manual pump		See page B-5					
Repeat back unit		1	1	1	1	1	1
Starter		1	1	1	1	1	1
Alarm box		1	1	1	1	1	1
Bell		1	1	1	1	1	1
Rudder angle indicator (synchro type)		(1)	(1)	(1)	(1)	(1)	(1)
Electric type power unit		—	—	—	—	—	—
Power supply box		—	—	—	—	—	—

( ) : option

\*Green : Hyd. Line  
Black : Elec. line



Remark	Type	PR-2□□□-E			PR-2□□□-R		
		Stand	GYLOT <sup>®</sup>	Console	Stand	GYLOT <sup>®</sup>	Console
Steering stand (GYLOT <sup>®</sup> type)		1	—	—	1	—	—
Steering stand (Stand type)		—	1	—	—	1	—
Steering stand (Console type)		—	—	1	—	—	1
Gyrocompass		(1)	integrated	integrated	(1)	integrated	integrated
Magnetic compass (with controller)		(1)	(1)	(1)	(1)	(1)	(1)
Remote controller		1	1	1	1	1	1
Steering unit		—	—	—	—	—	—
Hyd. power unit		—	—	—	—	—	—
Manual pump		—	—	—	—	—	—
Repeat back unit		1	1	1	—	—	—
Starter		—	—	—	—	—	—
Alarm box		—	—	—	—	—	—
Bell		—	—	—	—	—	—
Rudder angle indicator (synchro type)		—	—	—	—	—	—
Electric type power unit		—	—	—	1	1	1
Power supply box		1 *Note			1	1	1

( ) : option  
 Note) PR-2□□□-□E-V13/V23/V33 needs 2 sets of power supply box.

# SPECIFICATIONS

## ■ Autopilot/steering gear

Item	Type Remark	S□-015	S□-020	S□-025	S□-040	S□-060	S□-085	S□-100	
		YS□ WS□ T□ YT□ WT□	YS□ WS□ T□ YT□ WT□	YS□ WS□ T□ YT□ WT□	YS□ WS□ T□ YT□ WT□	YS□ WS□ T□ YT□ WT□	YS□ WS□ T□ YT□ WT□	YS□ WS□	
Power Consumption	AC 220/440 V 3 $\phi$ 50/60 Hz	Steering gear system	4.5 kVA	5.0 kVA	5.5 kVA	7.0 kVA	9.0 kVA	12.0 kVA	15.0 kVA
	AC 100/110 V 1 $\phi$ 50/60 Hz	For rudder angle indicator	100 VA	100 VA					
	DC 24 V	For alarm unit	0.5 A	0.5 A					
Steering Engine	Torque	NEWTON-METER	14.7 kN·m	19.6 kN·m	24.5 kN·m	39.2 kN·m	58.8 kN·m	83.4 kN·m	98.1 kN·m
	Rudder turning time (60 Hz/50 Hz) Rudder velocity	sec./70 degrees	within 14/17	within 19/23	within 20/24	within 23/28	within 22/27	within 23/28	within 21/26
	Rudder angle	Hardover~hardover	See Page 4 B-4						
	Max. rudder stock dia.	$\phi$	$\phi$ 106	$\phi$ 147	$\phi$ 147	$\phi$ 162	$\phi$ 173	$\phi$ 198	$\phi$ 212
	Motor output	kW	1.5	1.5	2.2	2.2	3.7	5.5	5.5
	Motor speed (60 Hz/50 Hz)	min <sup>-1</sup>	1 800/1 500	1 800/1 500	1 800/1 500	1 800/1 500	1 800/1 500	1 800/1 500	1 800/1 500
	Aux. Manual pump or Manual pump (Type □□S)	Delivery	Rotary type 50 cm <sup>3</sup> /rev.	Rotary type 50 cm <sup>3</sup> /rev.					
Aux. Manual pump at S/G room (Type □□L)	Delivery	Piston type 140 cm <sup>3</sup> /stroke							

## ■ Autopilot

Item	Type Remark	PR-2□□□-E	PR-2□□□-R	
		Power consumption	AC 100/110/220/400 1 $\phi$ 50/60 Hz (Steering gear power supply)	Pilot system
	DC 24 V	For alarm	0.5 A	0.5 A
Power unit	Max. Ram thrust	—	—	(Note 1) Max. 4 900 N, 3 136 N 1 176 N
	Ram speed	Hardover~hardover	—	25sec., 22sec. 12sec.
	Rudder angle	Hardover~hardover	—	(Note 2)
	stroke	—	—	150 mm

(Note 1)  
Ram thrust is 4 900 N at 25 sec., 3 136 N at 22 sec., 1 176 N at 12 sec. respectively.

(Note 2)  
Depend on specification of steering gear's maker.

## Autopilot/steering gear

Item	Type		HS <input type="checkbox"/> M-025	HS <input type="checkbox"/> M-040	HS <input type="checkbox"/> M-060	HS <input type="checkbox"/> M-085	HS <input type="checkbox"/> -100	
	Remark		HT <input type="checkbox"/> M					
Power Consumption	AC 220/440 V 3~50/60 Hz	Steering gear system	6.5 kVA	10.5 kVA	12.5 kVA	16.0 kVA	14.5 kVA	
	AC 100/110 V 1~50/60 Hz	For rudder angle indicator	100 VA	100 VA	100 VA	100 VA	100 VA	
	DC 24 V	For alarm unit	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A	
Steering Engine	Torque	NEWTON-METER	24.5 kN·m	39.2 kN·m	58.8 kN·m	83.4 kN·m	98.1 kN·m	
	Rudder turning time (60 Hz/50 Hz)	sec./70 degrees	within 15/18	within 14/17	within 15/18	within 16/20	within 21/26	
	Rudder velocity	sec./140 degrees	within 24/29	within 23/28	within 25/30	within 25/30	within 35/42	
	Rudder angle	Hardover~hardover	70 ~70°					
	Max. rudder stock dia.	φ	φ147	φ162	φ173	φ198	φ212	
	Motor output	kW	3.7	3.7	5.5	7.5	7.5	
	Motor speed (60 Hz/50 Hz)	min <sup>-1</sup>	1 800/1 500	1 800/1 500	1 800/1 500	1 800/1 500	1 800/1 500	
Aux. Manual pump or Manual pump (Type <input type="checkbox"/> <input type="checkbox"/> S)	Delivery	Rotary type 50 cm <sup>3</sup> /rev.						
Aux. Manual pump at S/G room (Type <input type="checkbox"/> <input type="checkbox"/> L)	Delivery	Piston type 140 cm <sup>3</sup> /stroke						

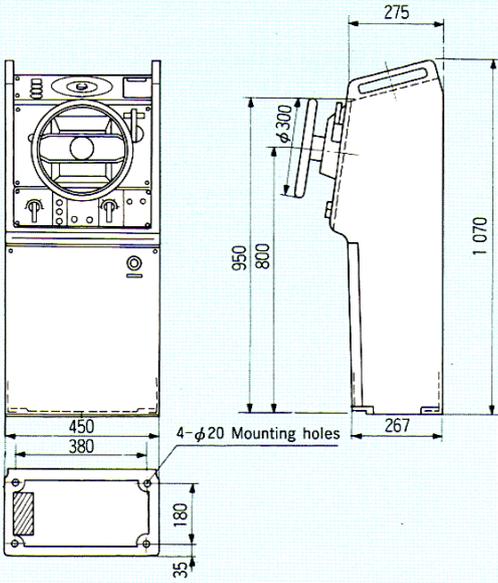
## Gyrocompass (GYLOT<sup>®</sup> type only)

Item		ES-110	TG-5000
Power consumption	AC 100/110 V 1~50/60 Hz	250 VA (regularity)	—
	AC 110/115/220/380/440 V 3~60 Hz	—	100 VA (regularity)
	Emergency battery DC 24 V	4 A	2.5 A
Setting accuracy		±0.2°	±0.1°
Repeater compass		90×synchro type	DC 70 V step motor type
Number of repeater compasses to be connected		6	11

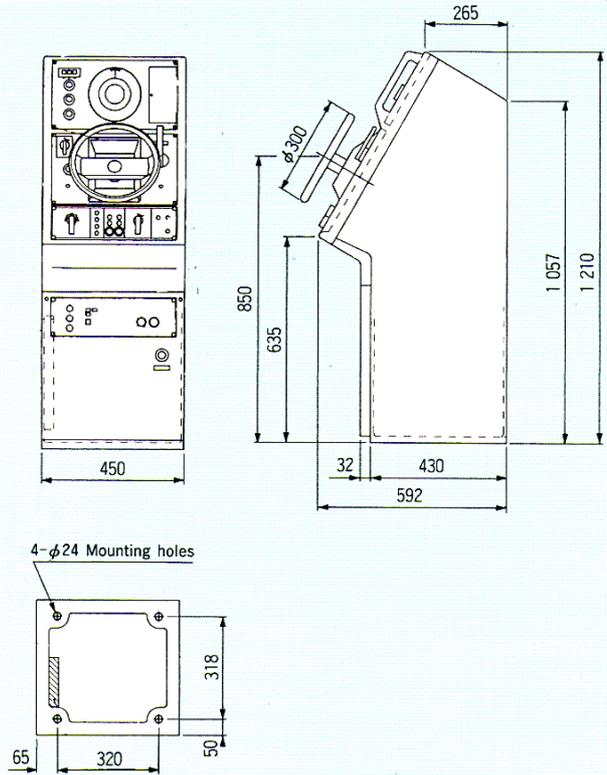
# DIMENSIONS

## Steering stand

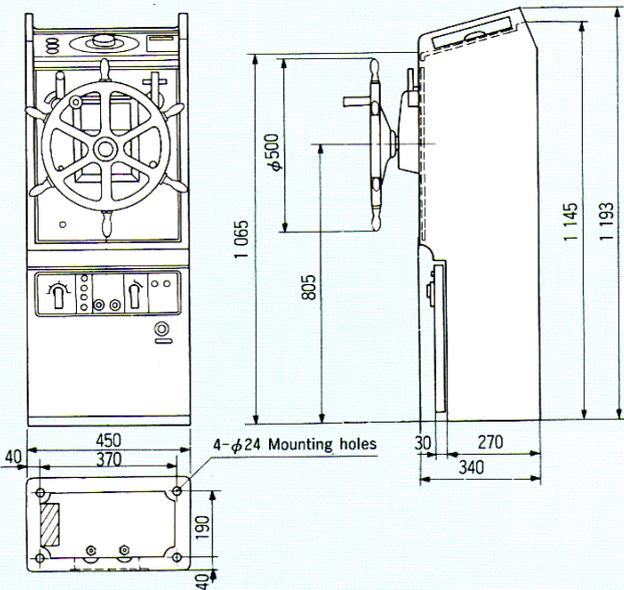
Stand type (S□, E, R) Mass=50 kg



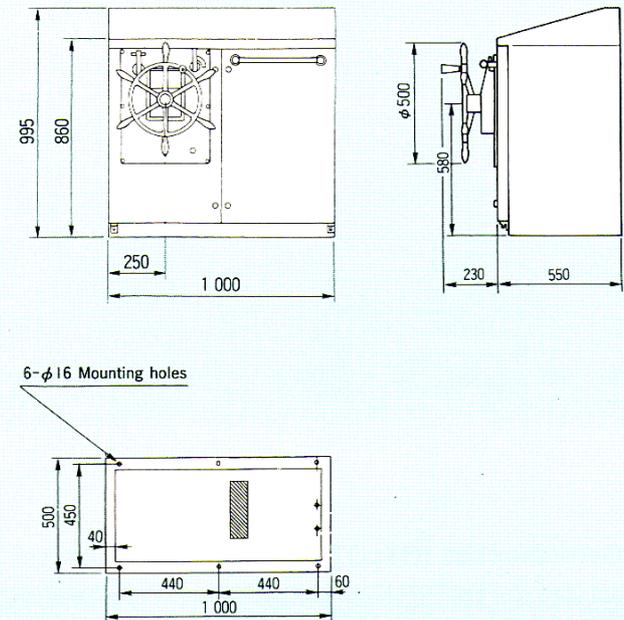
GYLOT® type (S□, E, R) Mass=150 kg



Stand type (T□) Mass=70 kg

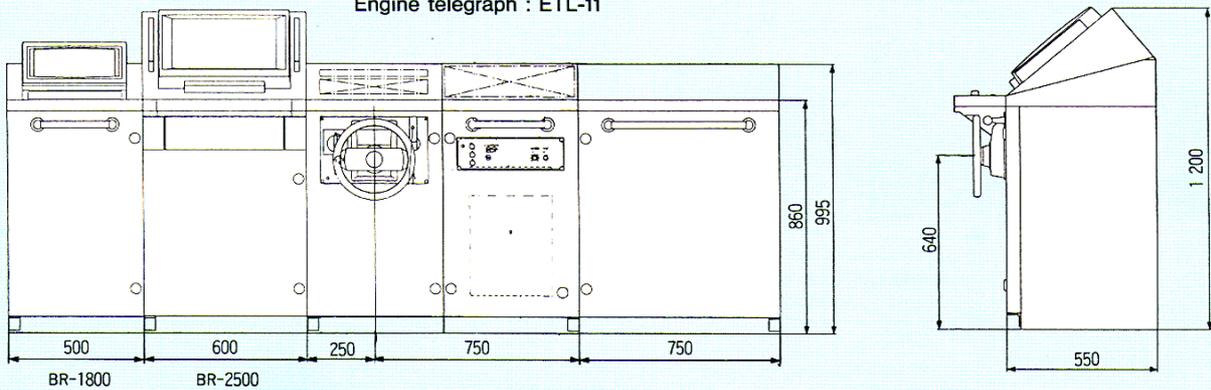


GYLOT® type (T□) Mass=210 kg



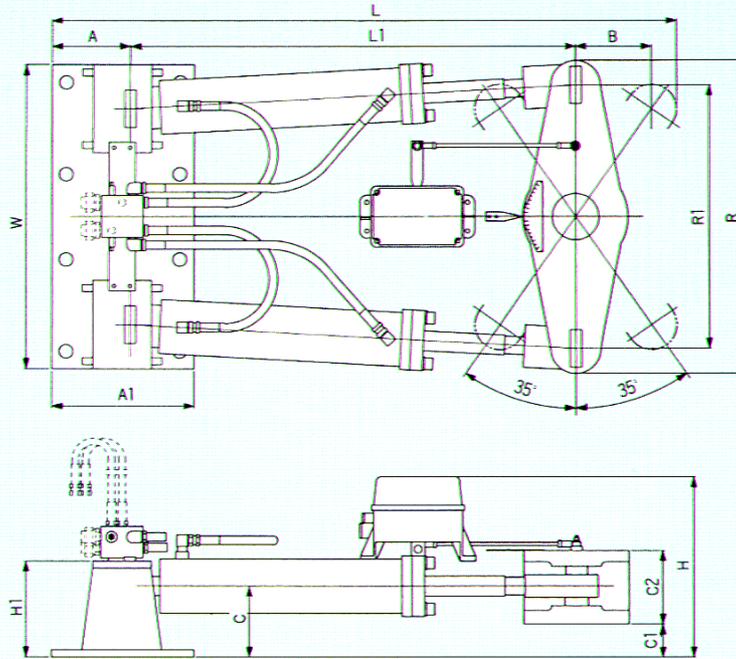
## Console type

Sample of integrated console, radars, telephone/engine telegraph.  
Radar : BR-2500/BR-1800  
Engine telegraph : ETL-11



## Steering unit

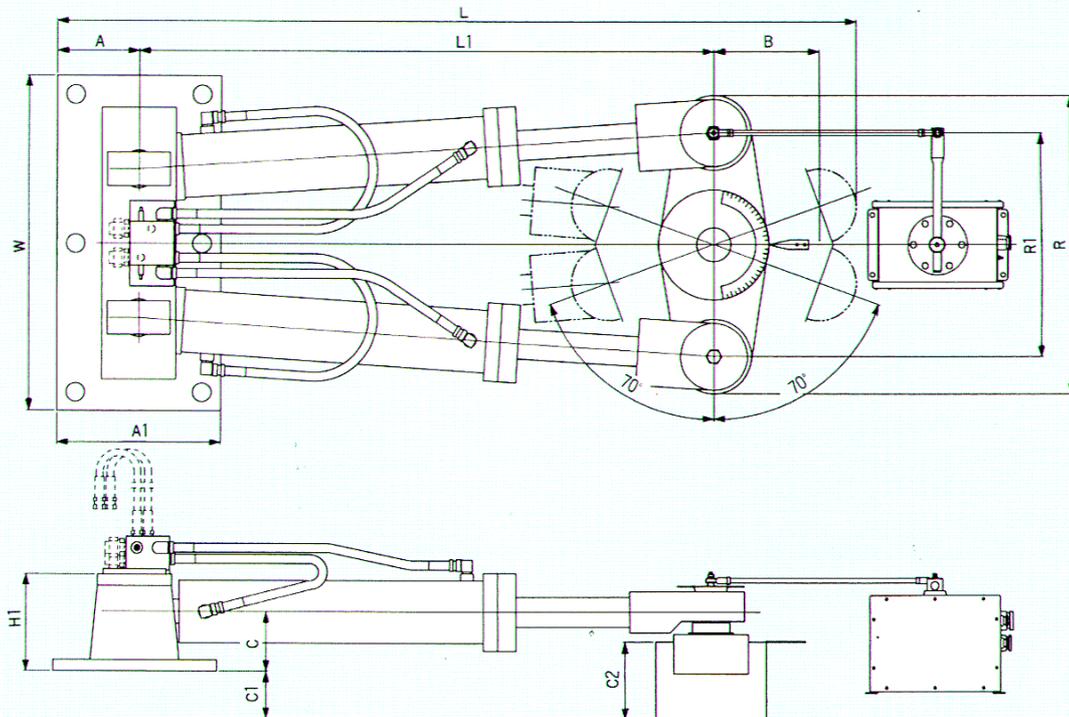
S/T type



Dimension of L and L1 provide in case of rudder angle 35 ~ 35°

TYPE	kN·m	L	L1	A	A1	B	W	R	R1	H	H1	C	C1	C2	Mass kg
SS-TS-015□	14.7	1 217	865	170	320	132	580	560	460	330	213.5	149	80	134	207
SS-TS-020□	19.6	1 406	1 004	170	320	172	690	720	600	436	213.5	149	73	150	283
SS-TS-025□	24.5														
S□-T□-040□	39.2	1 652	1 170	198.2	340	213.4	840	884	744	480	250	180	88	182	371
S□-T□-060□	58.8	1 768	1 265	220	400	213.4	860	884	744	510	270	200	93	207	539
S□-T□-085□	83.3	1 776	1 265	220	400	213.4	860	899	744	510	270	200	93	207	539
S□-100□	98.0	2 011	1 475	190	380	240.9	1 100	1 050	840	435	197	117	0	227	750

HS/HT type

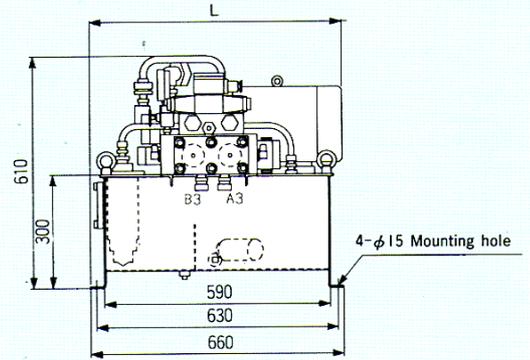
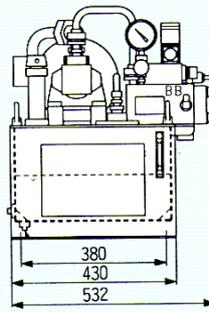


TYPE	kN·m	L	L1	A	A1	B	W	R	R1	H1	C	C1	C2	Mass kg
HS-HT-025□	24.5	1 618	1 163	170	320	226	580	600	480	170	100	115	150	350
HS-HT-040□	39.2	1 698	1 233	180	340	226	580	600	480	185	115	160	210	391
HS-HT-060□	58.8	2 160	1 558	220	440	282	900	800	600	260	160	127	207	835
HS-HT-085□	83.3	2 160	1 558	220	440	282	900	800	600	260	160	127	207	875
HS-HT-100□	98.0	2 380	1 732	220	440	329	900	900	700	260	160	147	227	980

# DIMENSIONS

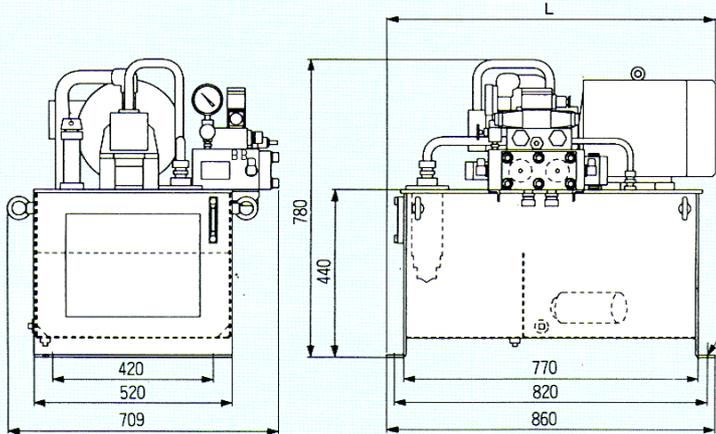
## Hydraulic power unit

S□/T□ type  
 S□ -015-040□  
 T□ -015-040□  
 Tank capacity=40L  
 Mass=145 kg



	S□-015□ T□-015□	S□-020□ T□-020□	S□-025□ T□-025□	S□-040□ T□-040□
L	626	657	657	657

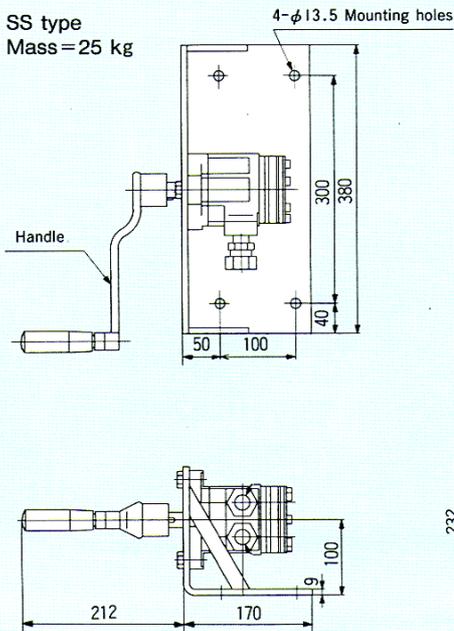
S□/T□/HS□/HT□ type  
 S□ -060-100□  
 T□ -060-100□  
 HS□ -025-100□  
 HT□ -025-100□  
 Tank capacity=120L  
 Mass=230 kg



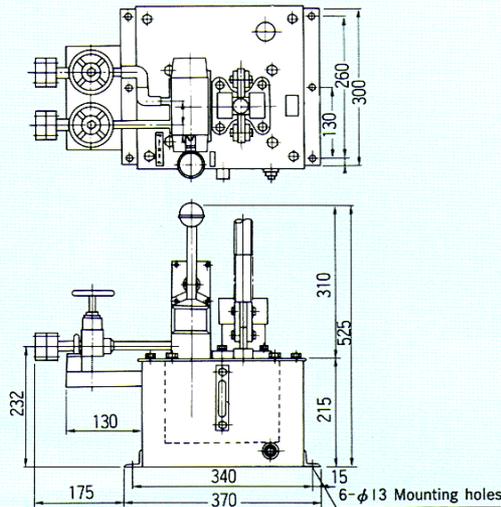
	S□-060□ T□-060□	S□-085□ T□-085□	S□-100□ T□-100□	HS□-025□ HT□-025□	HS□-040□ HT□-040□	HS□-060□ HT□-060□	HS□-085□ HT□-085□	HS□-100□ HT□-100□
L	829	859	859	829	829	859	878	878

## Auxiliary manual pump unit

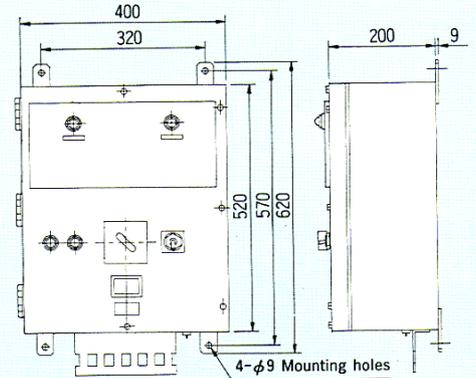
SS type  
 Mass=25 kg



SL/TL type  
 Mass=84 kg

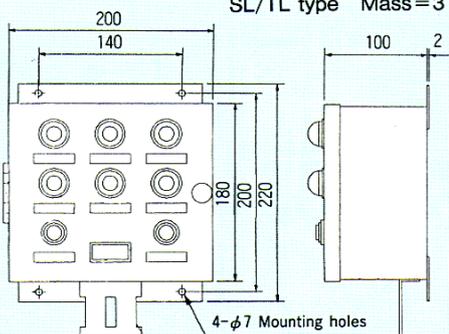


## Starter Mass=33 kg

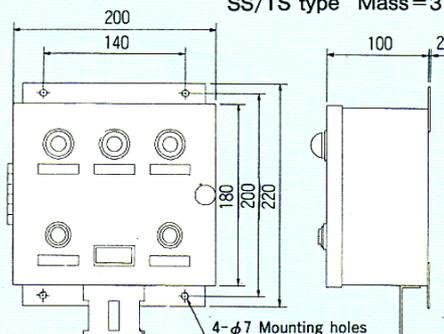


## Alarm box

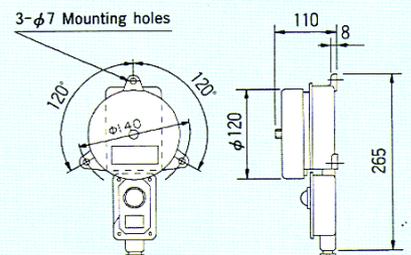
SL/TL type Mass=3 kg



SS/TS type Mass=3 kg

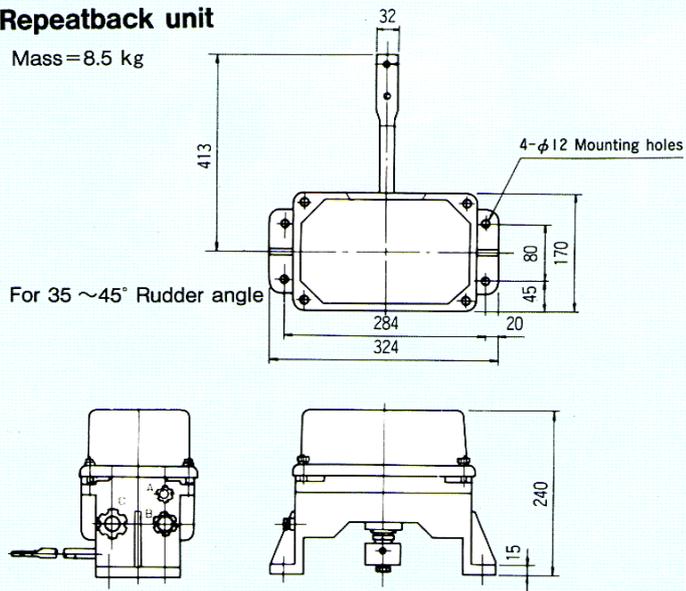


## Bell Mass=2 kg



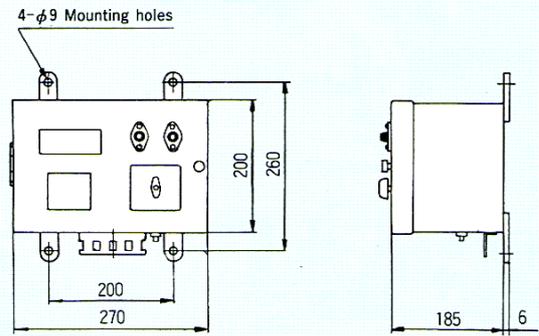
■ Repeatback unit

Mass=8.5 kg



■ Trans box

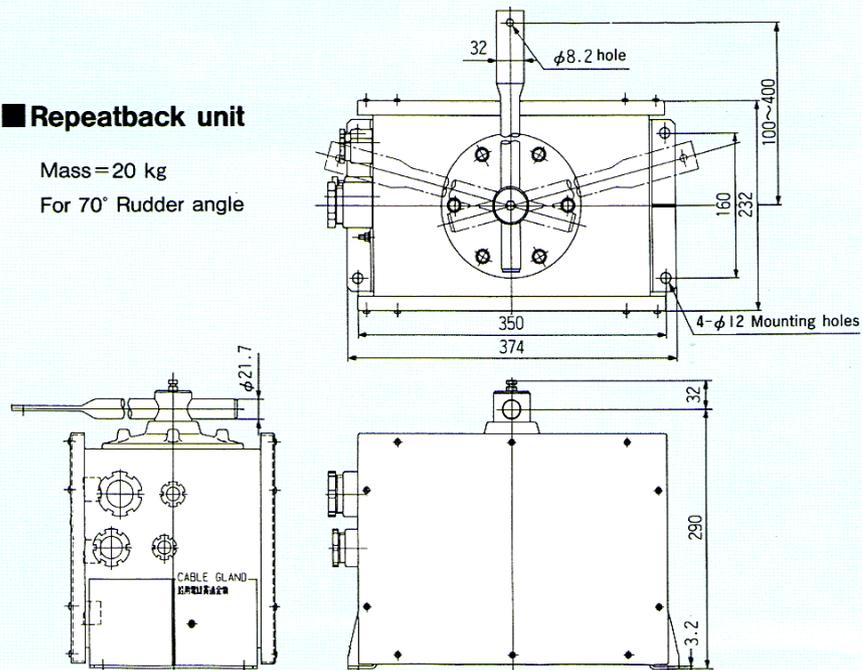
Mass=20 kg



■ Repeatback unit

Mass=20 kg

For 70° Rudder angle

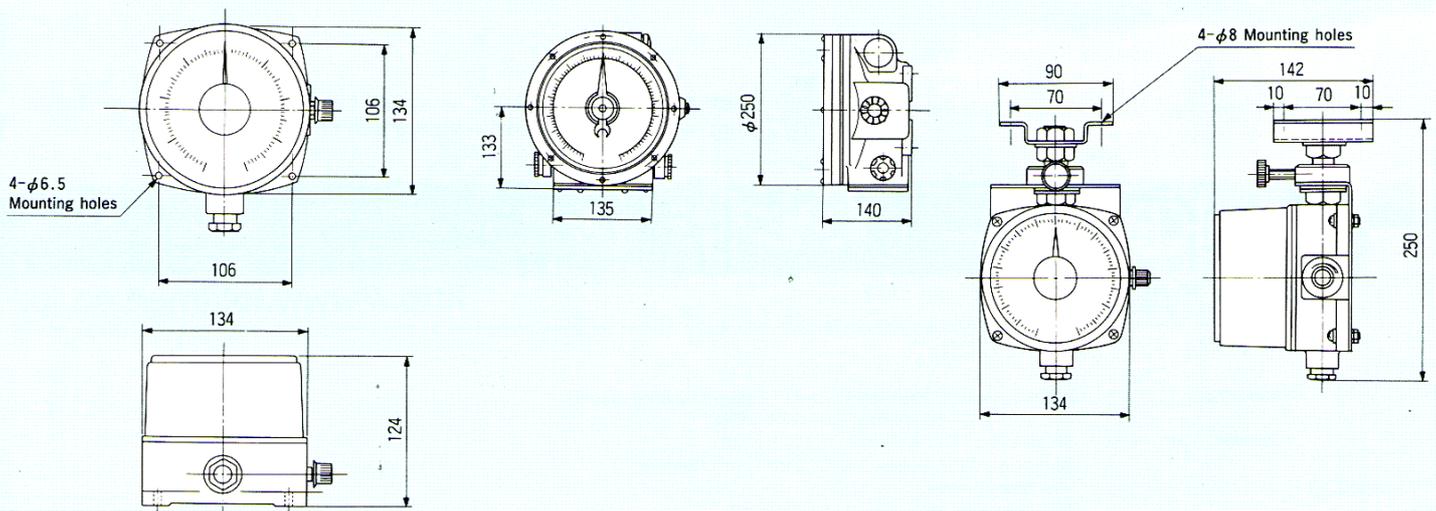


■ Rudder angle indicator

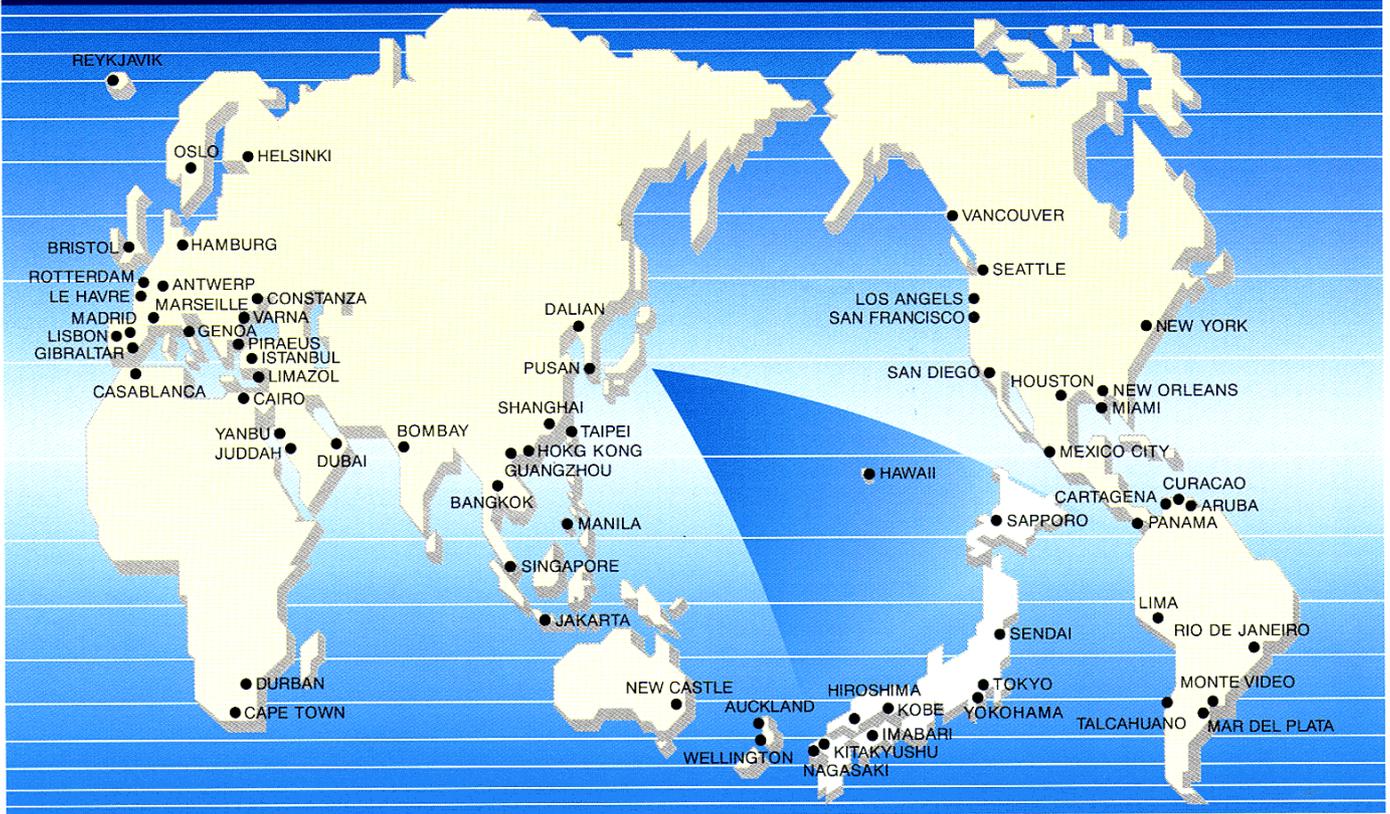
100 type Mass=1.5 kg

200 type Mass=11 kg

100 type (rotary) Mass=3 kg



# Worldwide service network



You are assured of complete and efficient servicing by the TOKIMEC service network, which covers the entire world and is staffed by well-trained service technicians.



Before operating this equipment, you should first thoroughly read the operation manual.

Design and specifications are subject to change without prior notice, and without any obligation on the part of the manufacturer.

**TOKIMEC**  
**TOKIMEC INC.**

<http://www.tokimec.co.jp/>

CONTROL DIVISION I

Head office

2-16-46, Minami-Kamata, Ohta-ku, Tokyo 144-8551, Japan  
Tel: 81-3-3737-8631 Fax: 81-3-3737-8666