

# PR-8000

## HI-ADAPTIVE AUTOPILOT

The Modular Autopilot Series with  
a Choice of Energy-Saving Adaptive Controls.



Centralized functions save manpower and energy for  
safe, reliable marine navigation.

**TOKIMEC**

# MODULAR PANEL

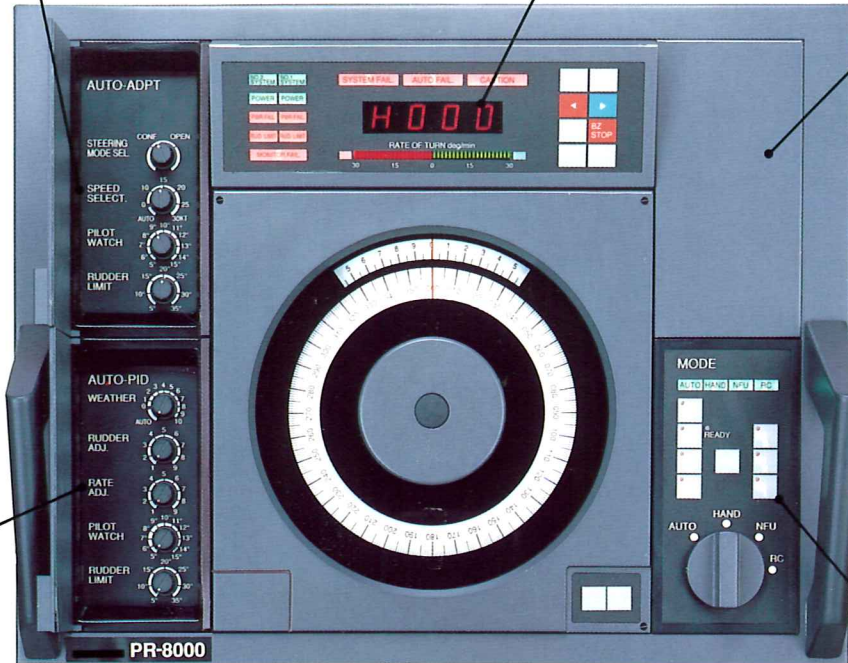
All panel components are scaled to a common DIN-sized unit (96mm × 48mm) to function as versatile installation modules.

## AUTO-ADAPT

- Adaptive Mode Panel**  
Basic system: MRACS (Model Reference Adaptive Control System) interface automatically estimates ship dynamics by accounting for course heading, ship speed, and rudder angle.
- Identification  
Estimation of ship dynamics in HAND steering mode, automatic course change mode, and RATE steering mode.
  - Course-keeping  
Changeover to and from CONFINED SEA and OPEN SEA.
  - Course change  
MRACS navigates course changes at a constant rate of turn.
  - Adjustments  
Crew adjustments required for STEERING MODE, SPEED, PILOT WATCH and RUDDER LIMIT.

## MONITOR PANEL

- Display**
- No. 1 SYSTEM/NO. 2 SYSTEM  
Illuminates when system selector switch is set to either No. 1 or No. 2.
  - POWER  
Illuminates when power is supplied normally to autopilot stand.
  - BAR GRAPH (option)  
Displays either rate of turn (full scale: 30°/min; resolution: 1.5°/min) or rudder angle.
  - Alphanumeric display  
Displays heading, course, NAV direction (option), ship speed (ADAPTIVE MODE only), and alarm code when activated—one letter character, three digits.



## OPTION PANEL

- Tracking Module for Automatic Navigation (option)**  
The tracking module is one of several options provided for this panel. It stores the planned course as entered by an officer and then continuously determines vessel location by means of dead reckoning and an automatic position sensor. It automatically makes any required corrections to hold course.

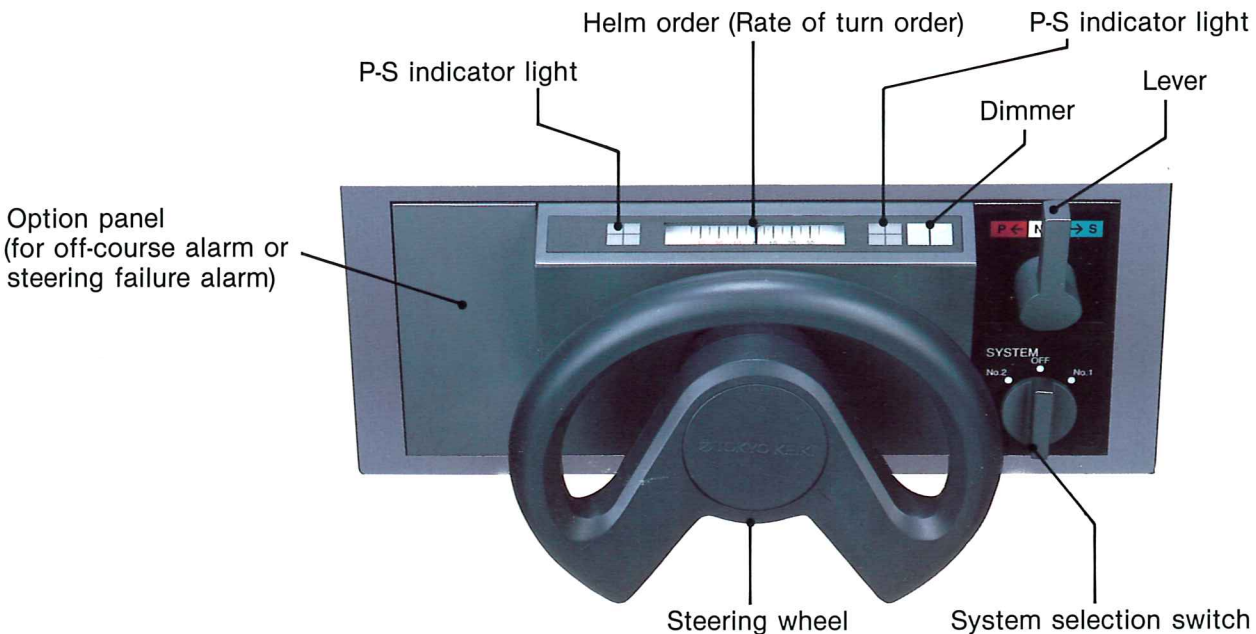
## AUTO-PID

- PID Mode Panel**  
Basic system: PID control system
- Identification  
Automatic servo control with course-deviation signal and rudder-angle signal inputs.
  - Adjustments  
Crew adjustments required for WEATHER, RUDDER, RATE, PILOT WATCH, and RUDDER LIMIT.

## MODE

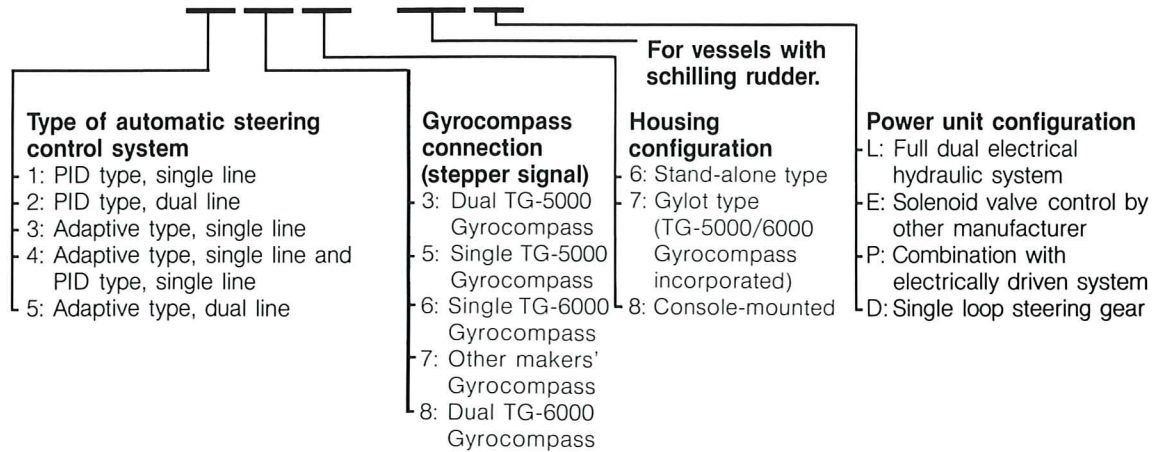
- Display**
- AUTO/HAND/NFU  
Displays steering mode in use. RC (option)
- Mode Selection**
- Selector switch  
Activates AUTO, HAND, NFU, RC (option) steering modes.

## HELM UNIT



# MODELS

PR-8 5 5 7 (H) L



## BASIC SPECIFICATIONS

### Components

	L	E	P	D
Steering Stand	1	1	1	1
Cylinder	2	—	1	—
Control Box	—	—	—	2
Power Unit	2	—	1	—
Motor Starter	2	—	2	—
Repeat Back Unit	2	2	2	2

### Steering Power Unit

Stroke (nominal)	304.8mm (12") 254.0mm (10")		140mm	
Ram Speed (hard-hard)	18 to 28 sec.		22 sec.	
Thrust (max.)	14.7 kN (1.5ft)		294 N (30kgf)	
Rudder Angle (hard-hard)	35°–35°			
Motor Rating	1.5kW 4P1750min <sup>-1</sup>		5W 3200min <sup>-1</sup>	
Oil Tank Capacity	40L x 2			
Working Oil	ISO Viscosity Grade ISO VG32			

### Electric Power Supply

	PR-8557-L	PR-8557-E	PR-8557-P	PR-8557D
Autopilot	AC 220V/440V 3 φ 50/60Hz	AC 100V/110V/115V/220V/440V 1 φ 50/60Hz		AC 440V 1 φ 50/60Hz
	Power consumption 2.5kVA	Power consumption 200VA		Power consumption 300VA
Gyrocompass	AC 110/115/220/380/440V 3 φ 50/60Hz			
	Power consumption Master compass: 200VA (start) 100VA (constant) Repeater compass: 25VA/unit Emergency: DC 24V, 2.5A Alarm: DC 24V, 0.5A			

# Dual Gyro Stand

The dual gyro stand incorporates two gyrocompasses into a single compact component. In addition to enhancing reliability and safety, the dual gyro stand installs easily and acts as mounting surface for auxiliary steering devices.



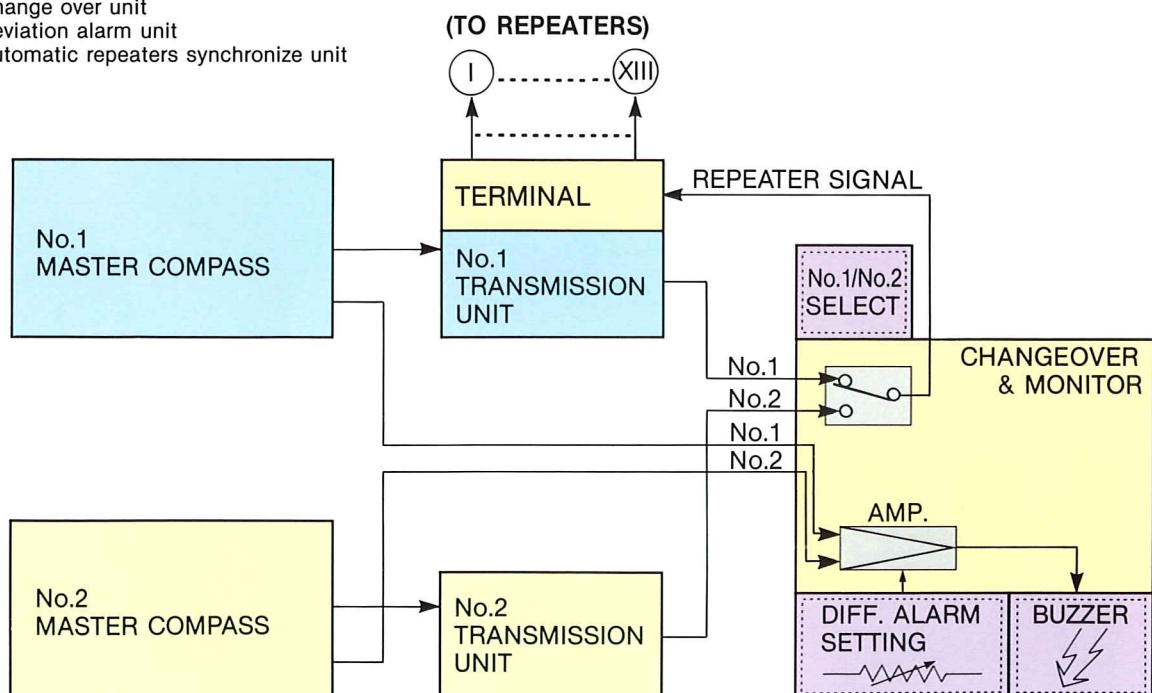
## Dual Gyro Configuration

The direction-sensing gyrocompass is one of the most important marine sensors in use today. Reliable performance of this gyro affects a wide range of applications.

Today's new gyrocompasses benefit from technological advances that have substantially reduced the mean time between failures. But just as radar, steering gear and other key navigation components now feature back-up systems for optimum reliability, dual gyro configurations are preferred. It's estimated that the dual gyro configuration provides a fifteen-fold theoretical increase in reliability over single gyro units.

## Typical Diagram

TG-5000 GYRO COMPASS  
AZIMUTH SIGNAL TRANSMISSION  
DUAL SYSTEM CONFIGURATION  
Three types of options are available  
① Change over unit  
② Deviation alarm unit  
③ Automatic repeaters synchronize unit



# MAIN FEATURES

## 1. Complete Conformity with Rules and Regulations

Functions and performance for the PR-8000 completely conform with the recommendations of SOLAS, the A342 (IX) and A574 (VIX) performance standards of IMO, and the rules and regulations of many countries and classification societies.

## 2. System Expands to Meet User Needs

Units are housed in DIN-sized modules to allow each vessel to customize control and installation configurations to shipboard needs. Functional units mount either into the standard stand-alone system, or into console and cockpit configurations.

## 3. Gylot (Gyrocompass-incorporated Autopilot)

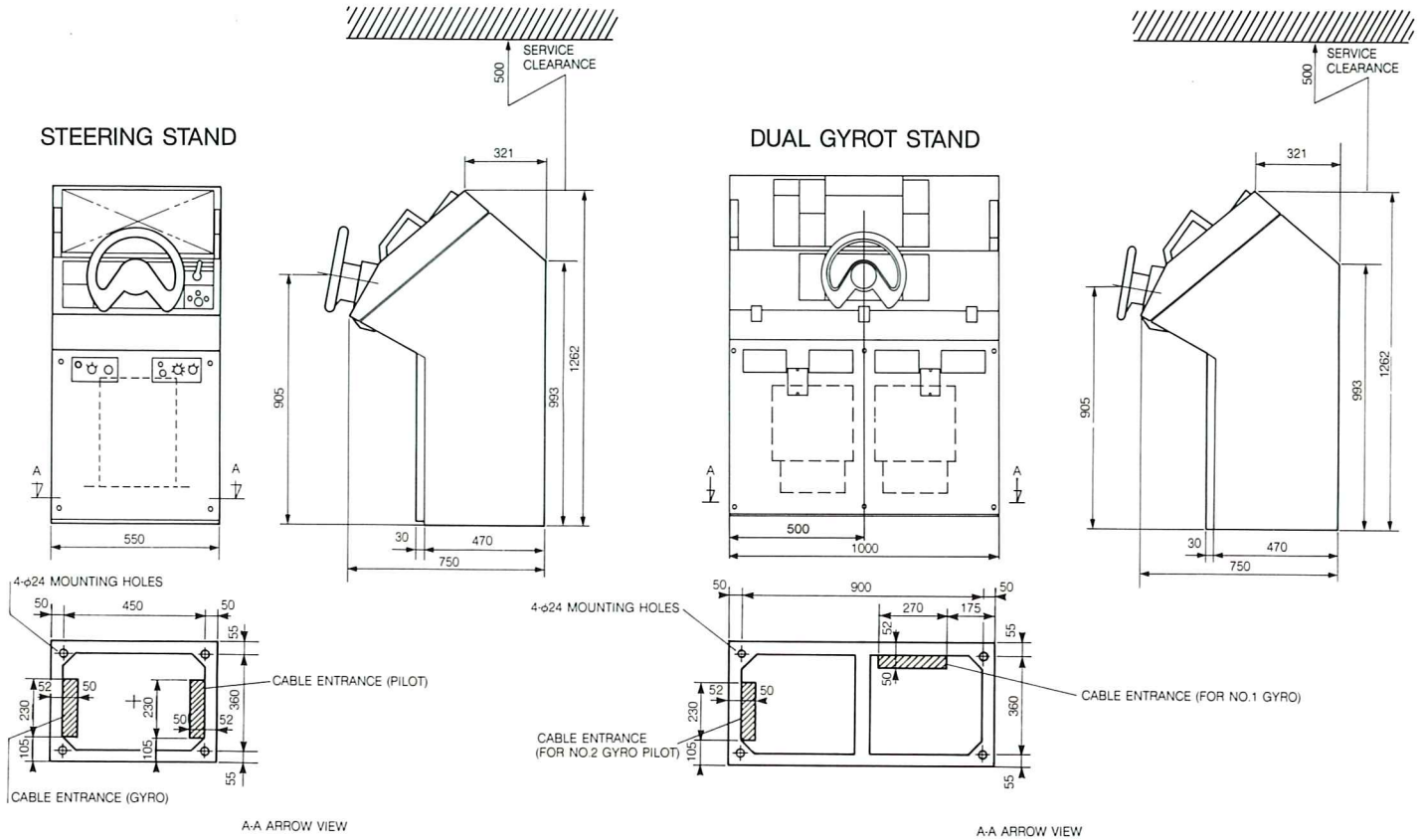
The gylot system reduces installation space and cost requirements by housing all necessary instruments except the repeater compass in the steering stand. A dual gyrocompass configuration is also available.

## 4. Energy-Saving Steering

The PR-8000 series provides a choice of two energy-saving steering modes. The Adaptive mode uses the Model Reference Adaptive Control System (MRACS) and an adaptive Kalman filter. The PID mode enhances the stability and accuracy of course-keeping functions through a new control system.



# DIMENSIONS



Specifications are subject to change without notice

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