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# INSTRUCTION MANUAL OF BDP / CDP UNIT

# Nabtesco Corporation

MARINE CONTROL SYSTEMS COMPANY ENGINEERING DEPARTMENT.

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REV. MARK	NOTE		DATE	DESI	GNED	CHK.	APVD.

# 1 General

This unit provides a liquid crystal display (LCD) and illuminated pushbutton switches for indicating each operation, condition, and abnormality. The unit also provides an alarm function, by which a buzzer sounds when any alarm is given.

Furthermore, a dimmer function enables the illumination to be controlled in 8 levels.

2 Individual Explanation of BDP Parts



· LCD With Touch Panel

This LCD displays the remote control system's condition and various pieces of abnormal information visually and plainly. The display consists of not only a single page but two or more pages according to the purpose. For details of each page, see the next chapter and later.

Since this display includes a touch panel, touch the screen directly for operation. If the touch panel goes out of order, connecting a USB-capable mouse to the USB port enables the operation without touching the screen directly.

· Illuminated Button Switches

Used to carry out various operations. For details of their types and operations, see the specifications and outline drawings for the vessel.

• USB Port (Compatible With Ver. 1.1)

Connectable to a USB mouse. However please note that some mouses do not operate. (wireless mouse ot mouse which needs special driver...etc.) Under connecting a mouse, there is a mouse pointer shown on the screen as below.



The mouse operation is as follows:

Mouse Operation	Action
Move	Move the mouse pointer.
Left click	Touch the switch.

Never connect any device except the above-mentioned to the USB port. If not, the display can go out of order or be damaged

Nabtesco assumes no responsibility for damage caused by misuse as mentioned above.

# 2.1 LCD Specifications

Display Device	TFT color LCD
Display Size	8.4 inches
Display colors	65,536 colors
Resolution	800X600
Vertical Viewing Angle	$\pm 80^{\circ}$
Horizontal Viewing Angle	±80°
Life of Backlight	70,000 hours (at 25°C)
Life of Touch Switch	More than a million times
Mounting Angle	0-90°
	90° 37 HIS NTISSIO DISPLAY SURFACE 0°

- 2.2 LCD Precautions
  - The liquid crystal in the LCD panel is a hazardous substance. If the LCD panel is damaged, do not ingest the leaked liquid crystal. If the liquid crystal spills on skin or clothing, use soap and wash off thoroughly.
  - Since the LCD has a glass screen, do not drop or give physical shock to the unit.
  - · Do not use a sharp-pointed tool when pressing a touch switch.
  - Before touching the LCD, discharge static electricity from your body by touching grounded metal. Excessive static electricity may cause malfunction or other trouble.
  - The backlight used in the LCD has a service life. Replace the LCD periodically according to the maintenance period recommended by us.
  - Even if the screen becomes dark due to a failure or service life of the backlight, the switches on the screen remain active. However, if the screen is too dark to view the switches, do not touch the screen.
  - Never attempt to repair, modify, or disassemble the LCD. Nabtesco assumes no responsibility for damage caused by the above.
  - Understand the following environmental limits for use and storage of the unit. Otherwise, fire or damage to the unit may result
    - Avoid locations where there is a possibility that water (surface: IP\*3 or more, backside: IP\*1 or more), corrosive gas, flammable gas, solvents, grinding fluids or cutting oil can come into contact with the unit.
    - Avoid high temperature, high humidity, and outside weather conditions, such as wind, rain or direct sunlight.
    - Avoid locations where excessive dust (surface: IP\*3 or more, backside: IP\*1 or more), salt, and metallic particles are present.
    - Avoid installing the unit in a location where vibration or physical shock may be transmitted.

The following conditions do not mean failure or malfunction:

- The response time, brightness, and color can be changed according to the usage environment and temperature.
- Depending on the display conditions, an evenness of brightness, screen flickering, vertical streaks, or faint dots can be conspicuous.
- The brightness and color vary from one LCD to another.
- The optical properties (such as brightness, color, and unevenness) vary across the ages depending on the total operating time.
- There can be afterimages occurred.
- According to the viewing angle, the display colors can be changed.

#### 2.3 Touch Panel Precautions

This display has pressure-sensitive touch panel.

When pressing the switch on the screen, please press by fingertip, not ball of a finger. If pressing the screen by ball of a finger, a strong pressing force might be necessary. Then, if pressing with gloved fingers, a strong pressing force might be also necessary. Please push after removing gloves when the reaction of the switch is bad.



When pressing the boundary area of the switch, there is a possibility of not reacting. Please push the center of the switch, not the boundary when you push the switch. Then, please see from the front of the screen and press the switch.



Do not press two or more points on the touch screen at the same time. When two points are pressed simultaneously, and if there is a switch part at the center of the two points, the switch could operate.

# 3 Illuminated Push Button Switches



The left push buttons are used in Safety System such as MANUAL SHUT DOWN and CANCEL buttons. The center push buttons are used as control-position indicator lamps and push buttons.

For the detailed layout, illuminating color, and function of the push buttons, see the outline drawing or specifications.

The right push buttons are used for the BDP Unit as follows: "BRIGHT" "DARK" - Pressed to control the illumination of the screen and push

DRIGHT, DARK	buttons in 8 levels.
"LAMP TEST" :	Pressed to carry out the lamp test of the screen and push buttons.
"BUZZER STOP" : "FLICKER STOP" :	Pressed to stop the buzzer sounding when an alarm is given Pressed to change the alarm lamp condition from flickering to lighting up continuously after BUZZER STOP button when ar alarm is given.

### 4 Alarm Patterns

The alarm patterns of BDP Unit's alarm lamps are as follows:



# 5 Explanation of Display

# 5.1 At Turn-on



At the turn-on of the display, the "DATA LOADING..." screen appears and then the above initial screen does.

Several seconds later, the MAIN screen appears automatically.

Since the screen is initialized behind the "DATA LOADING..." and initial screens, do not touch the BDP Unit. Wait until the MAIN screen is displayed, and then touch the screen.

#### 5.2 BDP Screen Configuration



BDP Unit' display provides the following pages

- MAIN (For details, see 5.4.1.)
- POWER SOURCE (For details, see 5.4.2.)
- ALARM LIST (For details, see 5.4.3.)
- UTILITY (For details, see 5.4.4.)
- 5.3 Screen Navigation

It is possible to make each detailed page appear from MAIN screen. Besides, it is possible to make only MAIN screen appear from each detailed page. Accordingly, to make another detailed page appear from one detailed page, return to MAIN page once to make the next page appear.

# 5.4 Details of Each Screen



MAIN page shows the condition of main engine (M/E) and remote control system and alarm outputs.

① M/E Speed Indicator



Shows M/E speeds with analog and digital indicators.

The digital indicator shows AHEAD engine speeds with "+" and ASTERN engine speeds with "-".

(The maximum engine speed and scale of the above indicator can change according to the project. For the vessel's specification, see the specifications.)

② M/E Order and Response Indication



1) When the control right exists, it lights up in green. Besides, the handle potentiometer fails, it lights up in red.



- 2) Indicates each control position's handle order. AHEAD engine speeds are shown with "+" and ASTERN engine speeds with "-".
- 3) When BRIDGE handle position agrees with ECR handle position, it lights up in yellow.



- Shows the final order to M/E. AHEAD engine speeds are shown with "+" and ASTERN engine speeds with "-".
- 5) The load is indicated with bar graph and digital indicator.

**③START AIR Pressure Indicator** 



Indicates the start air pressure with analog and digital indicators. (The above unit and scale can change according to the project. For the vessel's specification, see the specifications.)

# (4) Operating Condition



The upper field shows the present condition concerning START. The lower part shows the present condition concerning LIMITER. According to each condition, the indication changes as shown above.

(5) Remote Control System's Condition

 $\left[ \right]$ 

IN CONTROL	$\Box$	MINOR FAILURE	×	MAJOR FAILURE

Shows the condition of the remote control system. When there is no abnormality in the remote control system: "IN CONTROL" In the event of minor failure: "MINOR FAILURE" In the event of major failure: "MAJOR FAILURE" For each alarm given condition, see each project's specifications.

6 System and Power Source Condition

CONTROL SYSTEM SAFETY SYSTEM ECS	NORMAL NORMAL NORMAL	⇒	ABNORMAL ABNORMAL ABNORMAL
POWER SOURCE NORMAL	DETAIL 🔶		
Ţ		1	
FAILURE			

Shows each system and power source condition.

It becomes "NORMAL" under normal condition and "ABNORMAL" under abnormal condition.

For details of the power source, press "DETAIL" button to make each detailed screen appear.

O Indicating SHUT/SLOW DOWN Condition

Upper field		SLOV	
Lower field			
Shows SHUT/SL According to eacl	OW DOWN conditions. h condition, the indication char	nges as	shown below.
• SHUT DOWN's PREWAR	s Upper Field NING condition :		PREWARNING
MANUAL	SHUT DOWN condition :		MANUAL SHUT DOWN
AUTO. Sł	HUT DOWN condition :		AUTO, SHUT DOWN
MANUAL	& AUTO. SHUT DOWN condition	tion :	M & A SHUT DOWN
SHUT DO	OWN CANCEL condition :		CANCELING
SHUT DOWN's     Under tou	s Lower Field uching CANCEL button:		CANCEL
Under tou	uching individual CANCEL butt	on :	INDIVIDUAL CANCEL
SHUT DO	WN cancel available :		CANCEL AVAILABLE
• SLOW DOWN' PREWAR	s Upper Field NING condition:		PREWARNING
AUTO. SI	LOW DOWN condition :		AUTO, SLOW DOWN
SLOW DO	OWN CANCEL condition :		CANCELING
SLOW DO	OWN REQUEST condition :		SLOW DOWN REQUEST
<ul> <li>SLOW DOWN' Under tou</li> </ul>	s Lower Field uching CANCEL button:		CANCEL
Under tou	uching individual CANCEL butt	on :	INDIVIDUAL CANCEL
SLOW DC	OWN cancel available :		CANCEL AVAILABLE
(The above chara	acters can vary according to th	e proje	ct.)

8 ALARM



When there is no alarm output, "NO ALARM" is shown on the general alarm field and no indication on the list field.

When an alarm is outputted, "ALARM" is shown on the general alarm field with the alarm name flickering and buzzer sounding simultaneously. Touching BUZZER STOP makes the buzzer stop sounding and touching FLICKER STOP does the indicator lamp light up continuously. When another alarm is given continuously, the name is added to the top of the list and the remaining alarm names move downward by a line Five alarms can be indicated at the maximum, and "more..." is indicated when more than five alarms have been outputted. When there are six alarms or more, all the alarms can be checked on the LIST screen.

After any cause has been restored, it will be deleted from the LIST field.

Touching "LIST" button makes the ALARM LIST screen appear.

(The above alarm names can vary according to the project. For the vessel's specification, see the specifications.)

#### 9 Operating Buttons

	PREPARE	
CANCEL	START	

There are various operating buttons.

(Since the types and operations of the above buttons vary according to the project, see the specifications for the vessel's specifications.)

#### 1 UTILITY



Touching this button makes the UTILITY screen appear.

# 5.4.2 POWER SOURCE



This screen shows the power source condition of BRIDGE and CONTROL ROOM. The page shift BRIDGE  $\Leftrightarrow$  CONTROL ROOM can be done by touching the button on the upper left of the page.



Each power source condition is indicated as "NORMAL" and "ON" for normality and "FAILURE" and "OFF" for abnormality.



(The names and number of power sources can vary according to the project. For the vessel's specification, see the specifications.)

Touching "TO MAIN" button makes "MAIN" screen appear.



# 5.4.3 ALARM LIST

	ALAF	SW	LIST	MAIN
NO.	DESCRIPTION	NO.	DESCRIPTION	-+
01	COMMUNICATION ABNORMAL	21	AUTO.EMERG.SLOW DOWN	
02	CONTROL SYSTEM ABNORMAL	22	SLOW DOWN REQUEST	
03	SAFETY SYSTEM ABNORMAL	23	EMERG.SHUT DOWN CANCEL	
04	ECS ABNORMAL	24	EMERG.SLOW DOWN CANCEL	
05	ELECTRIC SHAFT ABNORMAL	25	CRITICAL SPEED	
06	TELEGRAPH SYSTEM ABNORMAL	26	WRONG WAY	
07	CONTROL SOURCE FAILURE	27	LOCAL TAKE COMMAND	
08	SAFETY SOURCE FAILURE	28	ECR TAKE COMMAND	
09	MAIN/EMERG.SOURCE FAILURE	29	TACHO, SYSTEM ABNORMAL	
10	BRIDGE SOURCE FAILURE	30	CRANKCASE OIL MIST H. SLD	
11	TELEGRAPH SOURCE FAILURE	31		
12	IMPERFECT BRIDGE CONTROL	32		
13	START BLOCKED	33		
14	START FAILURE	34		
15	START AIR LOW PRESSURE	35		
16	AUX.BLOWER FAILURE	36		
17	EMERG.SHUT DOWN PREWARNING	37		
18	EMERG.SLOW DOWN PREWARNING	38		
19	MANUAL EMERG, SHUT DOWN	39		
20	AUTO.EMERG.SHUT DOWN	40		ALAR



The alarms can be shown in list form.

When any alarm is given, the indicator lamp flickers with buzzer sounding simultaneously. Touching BUZZER STOP makes the buzzer stop sounding and doing FLICKER STOP makes the lamp light up continuously. After the cause is restored, the lamp will go off.

If touch "ALARM TEST" button, ALARM TEST carried out.



Touching "TO MAIN" button makes "MAIN" screen appear.



(The alarm names above can be different from the vessel. For the vessel's specification, see the specifications.)

# 5.4.4 UTILITY



This field shows the condition of the function of automatic backlight off setting.



The function of automatic backlight off switch ON ⇔ OFF can be changed by touching "ALWAYS ON / AUTO. OFF".

The function of automatic backlight off is OFF :

The function of automatic backlight off is ON :





After changed to "AUTO. OFF", the waiting time shown below appears.



And, to change the data, touch "WAITING TIME SET".



After touching the button, the waiting time input pad shown below appears. Enter the waiting time from ten-key pad and then touch OK button. Setting range is 1-99 minutes.



The function of automatic backlight off is available, when the following condition is satisfied.

- Touch panel is not touched.
- · Any illuminated push button switches are not pressed.
- Sub telegraph in FWE or AT SEA (R/U) position.
- · No system abnormal / power source failure / alarm is issued.

During automatic backlight off, backlight turnes on again immediately, if one of followings occures.

- · Touch panel is touched.
- · One or more illuminated push button switches are pressed.
- SYSTEM abnormal, power source failure, or any alarm is issued.
- Sub telegraph is in STAND BY (S/B) position.
- · Telegraph handle or speed control handle in control is operated.
- · Control position changeover is operated.

This field shows the condition of the touch sound setting.



The function of touch sound switch ON  $\Leftrightarrow$  OFF can be changed by touching "SOUND ON / SOUND OFF".



Touching the button on the center of the screen



While this page is displayed, cleaning the screen causes an inadvertent screen operation not to be carried out.

Be careful that cleaning the screen with outside this page can any button on the screen to react, resulting in an unexpected operation.

To end the mode, touching



button on the upper right of the screen.

Touching "TO MAIN" button makes "MAIN" screen appear.



5.5 Common Indication Items (Except MAIN Screen)



The time of alarm occurrence, the latest alarm name, and the total number of alarms are indicated on the bottom of the screen.

When there is no alarm occurred, no indication is shown on the ALARM field and the total number is zero.

5.6 BDP UNIT Abnormality

M/E REVOLUTION	BRIDGE HANDLE +40.0 min <sup>-1</sup> ECR HANDLE +0.0 min <sup>-1</sup>	START AIR
+0 100 +0 120 120	HANDLE MATCH COMMAND +0.0 min <sup>-1</sup>	0.0 40
ASTERN MIN <sup>-1</sup>	DISPLAY ERROR (E000)	Dar RM LIST 🔶
	ECS NORMAL POWER SOURCE NORMAL DETAIL -	
LIMITER	SHUT DOWN SLOW DOWN	
CRANKCASE OIL MIST HIGH CANCEL	PREPARE START	UTILITY

If the screen display becomes out of control due to trouble with BDP Unit inside except the LCD (trouble with BDP Unit's Control Card, a break in the signal lines between Control Card and the display, etc.), an error message is indicated as shown above. The screen information cannot be renewed while this indication is outputted. In addition, the screen navigation can be done when the above message is displayed but the data will be initialized.

# 5.7 BDP UNIT Communication Abnormality

If all the communication among BDP Unit, C-CPU Unit, and S-CPU Unit fails, there will be "COMMUNICATION ABNORMAL" alarm given and all the data initialized.

#### 5.7.1 Running mark

This running mark operates as below when the LCD works correctly. If this mark stops, the LCD is broken and please contact to Nabtesco.

NDLE FOSTION 0		The paralition		STARTAR 1		
RIDGE +0.0 E	CR +0.0 +0.0	(mm-1] +0	C4	[bar]		
colloction			STEM	STATUS		
	SAFETY SYSTEM IN POWER SOURCE IN	ORMAL ORMAL ORMAL	011	GRAPHIC		
NUX BLOWER	REMOTE CONT SHE IN	ORMAL GONMAN	vo 0.0%			
FROORAM NOT OPE	SHD	SLD				
		_		CAUNA RESET		
MONITOR				TOTAL		
ļ						
	M	-	► M	-800	→	M-800

# 5.8 CDP Screen Configuration



The CDP Unit's display consists of the above screens.

There are seven primary classifications placed as upper tabs.

Two or more sub classifications are provided under the primary classifications placed as right-side tabs.

The currently selected tab is shown as below.



The other tabs are shown as below.



The right-side tabs are also the same as the above.

#### 5.9 Screen Navigation

The page navigation can be done by directly touching a tab to be appeared. When a page appears by touching a upper tab, the top of right-side tabs is selected. (Except the screens without the right-side tabs.)

For instance, touching SHUT/SLOW DOWN tab from the upper tabs on MAIN screen causes "MANUAL SHUT DOWN" tab from the sight-side tabs to be selected. To proceed to SHUT DOWN LIST continuously, touch SHUT DOWN LIST tab from the right-side tabs.



CONDITION	AUTO. SHUT	DOWN LI	ST	IPTION	MANUAL SHUT DOWN LIST
NORMAL	oven speco	NOPME		and the second second	AUTO.
NORMAL	MAIN LO LL PRESE	NORMAL			LIST
NORMAL	NO. 17/GLOLL PRESS	HORMAL			SHUT DOWN
NORMAL	NO 2 TICLO LL PRESS	HORMAL			CANCEL
NORMAL	MONET OF WILL PRESS.	NORMAL			AUTO,
NORMAL	THRUST PAD HIGH TEMP	HERMAL			LIST
NORMAL	HON-CANCELABLE ECS-SHO	HORMAL			SLOW DOWN
NORMAL	CANGELANLE ECS-SHO	NOPMAL			CANCEL
HORMAL	-	NOPME			CANCEL
NORMAL		NOPIAL			
	CANCELAINE CAUSE			CANISE RESET	
NITOR E					TOTAL

# 5.10 Details of Each Screen



The MAIN page shows the condition of main engine (M/E) and remote control system.

① M/E Order and Response Indication

4)

	2)			
HANDLE P BRIDGE	+000.0	in-1] ECR MATCH	+000.0	COMMAND [min-1] +000.0
3)				4)

1) When the control right exists, it lights up in green. Besides, the handle potentiometer fails, it lights up in red.

BRIDGE	$\Box$	BRIDGE	$\Box$	BRIDGE
--------	--------	--------	--------	--------

- 2) Indicates each control position's handle order. AHEAD engine speeds are shown with "+" and ASTERN engine speeds with "-".
- 3) When BRIDGE handle position agrees with ECR handle position, it lights up in yellow.

HANDLE MATCH		HANDLE	МАТСН	
Shows the final order to AHEAD en	gine speed	ds are shown w	vith "+" and A	STERN
engine speeds with "-".				

# **②**M/E Speed Indicator



Shows M/E speeds with digital indicator. AHEAD engine speeds are shown with "+" and ASTERN engine speeds with "-".

# **③START AIR Pressure Indicator**



Indicates the start air pressure with digital indicator.

(The above unit can change according to the project. For the vessel's specification, see the specifications.)

# **(4)**Operating Condition

BRIDGE CONTROL CONDITION	
START	
	ENGINE NOT READY REPEATED START DELAYED START AUX. BLOWER FAILURE START BLOCKED START FAILURE START AIR LOW PRESSURE

The upper field shows the condition concerning IMPERFECT REMOTE CONDITION. The lower part shows the present condition concerning START. According to each condition, the indication changes as shown above.

# (5) SHD Condition



Shows the condition of SHUT DOWN. This display is effective while SHD BACKUP operates. For SHD BACKUP, see each project's specifications.

#### 6 Remote Control System Condition

	_		K 1		
IN CONTROL		( MINOR FAILURE )		$\rangle$	MAJOR FAILURE

Shows the remote control system condition. When there is no abnormality in the remote control system: "IN CONTROL" In the event of minor failure: "MINOR FAILURE" In the event of major failure: "MAJOR FAILURE" For each alarm given condition, see each project's specifications.

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# ⑦ LIMITER and TAKE COMMAND Condition

LIMITTER	
TAKE COMMAND	
	C/R TAKE COMMAND

Shows LIMITER and TAKE COMMAND condition. When there is no LIMITER and no TAKE COMMAND, nothing is indicated.

8 Indicating SHUT/SLOW DOWN Condition

Upper Field	SHUT DOWN	SLOW DOWN	
	NO SHUT DOWN	NO SLOW DOWN	
Lower Field	-		

Shows SHUT/SLOW DOWN conditions.

According to each condition, the indication changes as shown below.

<ul> <li>SHUT DOWN's Upper Field PREWARNING condition :</li> </ul>	PREWARNING
MANUAL SHUT DOWN condition :	MANUAL SHUT DOWN
AUTO. SHUT DOWN condition :	AUTO. SHUT DOWN
MANUAL & AUTO. SHUT DOWN condition :	M & A SHUT DOWN
SHUT DOWN CANCEL condition :	CANCELING
<ul> <li>SHUT DOWN's Lower Field Under touching CANCEL button :</li> </ul>	CANCEL
Under touching individual CANCEL button :	
SHUT DOWN cancel available :	CANCEL AVAILABLE
SLOW DOWN's Upper Field     PREWARNING condition :	PREWARNING
<ul> <li>SLOW DOWN's Upper Field PREWARNING condition :</li> <li>AUTO. SLOW DOWN condition :</li> </ul>	PREWARNING AUTO. SLOW DOWN
<ul> <li>SLOW DOWN's Upper Field PREWARNING condition : AUTO. SLOW DOWN condition : SLOW DOWN CANCEL condition :</li> </ul>	PREWARNING AUTO. SLOW DOWN CANCELING
<ul> <li>SLOW DOWN's Upper Field PREWARNING condition :</li> <li>AUTO. SLOW DOWN condition :</li> <li>SLOW DOWN CANCEL condition :</li> <li>SLOW DOWN REQUEST condition :</li> </ul>	PREWARNING AUTO. SLOW DOWN CANCELING SLOW DOWN REQUEST
<ul> <li>SLOW DOWN'S Upper Field PREWARNING condition : AUTO. SLOW DOWN condition : SLOW DOWN CANCEL condition : SLOW DOWN REQUEST condition :</li> <li>SLOW DOWN'S Lower Field Under touching CANCEL button :</li> </ul>	PREWARNING AUTO. SLOW DOWN CANCELING SLOW DOWN REQUEST CANCEL
<ul> <li>SLOW DOWN'S Upper Field PREWARNING condition : AUTO. SLOW DOWN condition : SLOW DOWN CANCEL condition : SLOW DOWN REQUEST condition :</li> <li>SLOW DOWN'S Lower Field Under touching CANCEL button : Under touching individual CANCEL button :</li> </ul>	PREWARNING AUTO. SLOW DOWN CANCELING SLOW DOWN REQUEST CANCEL INDIVIDUAL CANCEL

(The above characters can vary according to the project.)

(9) The Condition of System, Power Sources, and Communication



Shows the condition of each system, power sources, and communication. It becomes "NORMAL" under normal condition and "ABNORMAL" under abnormal condition.

1 Operating Buttons



There are various operating buttons.

(Since the types and operations of the above buttons vary according to the project, see the specifications for the vessel's specifications.)

# 1 CAUSE RESET



After the abnormal cause has been restored to normal, touching this button enables the cause indicator lamp to become normal. This operation is effective to all the screens included in the CDP, be careful to operate.

After touching the button, the above right pop-up screen will appear.

When there is no problem, touch "OK"; to cancel the cause, touch "CANCEL" button.

# 5.10.2 MANUAL SHUT DOWN

_						MANUAL
CONDITION	MA	NUAL SHUT	DOWN	LIST		SHUT DOWI
NORMAL	BRIDGE	Carlo and and the other				AUTO.
NORMAL	ECR					LIST
NORMAL	LOCAL	-				SHUT DOWI INDIVIDUAL CANCEL
NORMAL	STED					AUTO. SLOW DOW LIST
						SLOW DOW INDIVIDUAL CANCEL
						CANCEL MONITOR
					CAUSE RESET	

Shows a status indication screen concerning MANUAL SHUT DOWN.

Each button location is shown on DESCRIPTION field; the line without name means spare.

CONDITION field shows each button status as below. The SPARE lines always indicate "NORMAL".

Normal condition :	NORMAL
Cause occurrence condition :	ACTIVE
Disconnection condition :	DISCONNECTION
Possible to cause reset condition :	RESET AVAILABLE

(The above characters can vary according to the project. For the vessel's specification, see the specifications.)

# 5.10.3 SHUT/SLOW DOWN LIST

MAIN	MONITOR	ADJ	INFO.	TEST MODE	1 14	MAIN	SHUTISLOW MONITOR	LCA	INFO. TEST MOD	E ·
CONDITION	AUTO, SHUT	CONDITION	ST	TION	MANUAL SHUT DOWN LIST	CONDITION	AUTO. SLOV			MANUAL SHUT DOWN LIST
NORMAL	OVER SPEED	NORMAL			AUTD.	NORMAL	MAIN L.O. LOW PRESS.	NORMAL	MANN BEARING WEAR DOWN	AUTO.
NORMAL	MAIN L.O. L.L. PRESS.	NORMAL			LIST	NORMAL	MADY L.O. HIGH TEMP.	NORMAL	TIC L.O. HIGH TEMP	SHUT DOWN LIST
NORMAL	NO.1 TIC L.O. L.L. PRESS	NORMAL			SHUT DOWN	NORMAL	JACKET C.F.W. LOW PRESS.	NORMAL	TIC EXT. OUTLET HIGH TEM	SHUT DOWN
NORMAL	NO.2 TICLO, LL. PRESS.	HORMAL		-	CANCEL	NORMAL	JACKET C.F.W. HIGH TEMP.	NORMAL	SIT BEARING HIGH TEMP.	CANCEL
NORMAL	ACKET C F.W.L.L. PRESS	NORMAL			AUTO.	NORMAL	EXHAUST GAS DEVIATION	NORMAL	THRUST PAD HIGH TEMP.	AUTO.
NORMAL	THRUST PAD HIGH TEMP	NORMAL			LIST	NORMAL	EXHAUST GAS HIGH TEMP.	NORMAL	PISTON C.O. LOW FLOW	LIST
NORMAL	NON-CANCELABLE ECS-SHD	NORMAL			SLOW DOWN INDIVIDUAL	NORMAL	SCAVENBING AIR BOX FIRE	NORMAL	GRANKCASE OIL MIST HIGH	SLOW DOWN INDIVIDUAL
NORMAL	CANCELABLE ECS-SHD	NORMAL			CANCEL	NORMAL	PISTON C.O. HIGH TEMP	NORMAL	INT S. BRG. H. TEMP	CANCEL
NORMAL		NORMAL			CANCEL	NORMAL	ECS NE SLOW DOWN	NORMAL	TOO HIGH TIC SPEED	CANCEL
NORMAL		NORMAL		-		NORMAL	AKIAL VIBRATION HIGH	NORMAL		
	: CANCELAIRLE CAUSE			AUSE RESET	-		: CANCELABLE CAUSE		CAUSE RESET	
ONITOR					TOTAL COLOR	MONITOR				TOTAL

This screen shows the condition concerning AUTO. SHUT/SLOW DOWN. Each button location is shown on DESCRIPTION field; the line without name means spare. The cause surrounded with blue line on DESCRIPTION field is cancelable. For cancelable causes, the characters below appear at the lower right of the screen.

#### CANCEL AVAILABLE

The CONDITION field shows each cause's condition as below. The SPARE items are always indicated as "NORMAL".

Normal condition :	NORMAL
Disconnection condition :	DISCONNECTION
PREWARNING condition :	PREWARNING
Cause occurrence condition :	ACTIVE
Under CANCEL :	CANCELING
Under operating INDIVIDUAL CANCEL :	INDIVIDUAL CANCEL
Possible to cause reset condition :	RESET AVAILABLE

When an abnormal cause is restored to normal with the indicator lamp line at a break or the cause occurring, touching "CAUSE RESET" on the lower right causes the indicator lamp to return to normal. This button is effective only for the causes on this page.



(The names, number, and cancelable/non-cancelable of SHUT DOWN/ SLOW DOWN can vary according to the project. For the vessel's specification, see the specifications.)

# 5.10.4 SHUT/SLOW DOWN INDIVIDUAL CANCEL



Provided to carry out individual CANCEL.

The SHUT/SLOW DOWN INDIVIDUAL CANCEL screens consist of three pages individually with 24 causes in total.

Since each page can show 8 causes, touch page navigation button on the bottom of the page to make the other page appear.



The DESCRIPTION field on the center of the page shows each cause name; the line without name means spare.

The CONDITION field on the left of the page shows each cause's condition as below. The SPARE items are always indicated as "NORMAL".

Normal condition :	NORMAL
PREWARNING condition :	PREWARNING
Cause occurrence condition :	ACTIVE
Under CANCEL :	CANCELING
Under operating INDIVIDUAL CANCEL :	INDIVIDUAL CANCEL

For cancelable causes, "CANCEL" button will be shown at the right of the screen. For non-cancelable causes and SPARE causes, there will be no button displayed. To carry out individual CANCEL, once touch a button beside the cause. To cancel the operation, touch the button again. (For details of individual cancel and cancelable and non-cancelable causes, see the specifications for each project.)

(The names, number, and cancelable/non-cancelable of SHUT DOWN/ SLOW DOWN can vary according to the project. For the vessel's specification, see the specifications.)

# 5.10.5 CANCEL MONITOR

MAIN	SHUTTISCOW SUDWIN	MONITOR	ADJ	INFO.	TEST MODE	÷
SHUT	DOWN C	ANCEL	SLOV		ANCEL	MANUAL SHUT DOWN LIST
	JSH BUTT	ON	CONDITION	USH BUT	IPTION	AUTO.
NON ACTIVE	BRIDGE	-	NON ACTIVE	BRIDGE		LIST
NON ACTIVE	ECR		NON ACTIVE	ECR.		SHUT DOWN
NON ACTIVE	LOCAL		NON ACTIVE	LOCAL		CANCEL
NON ALLIVE	-		NOR AL TIVE	1		AUTO. SLOW DOWI
NON ACTIVE			HON ACTIVE			SLOW DOW INDIVIDUAL CANCEL
		MIST HI				CANCEL
NON ACTIVE	BRIDGE		NON ACTIVE	ECR.		-
					CAUSE RESET	

This screen shows the condition concerning SHUT/SLOW DOWN CANCEL.

Each button location is shown on DESCRIPTION field; the line without name means spare.

The CONDITION field shows each cause's condition as below. The SPARE line always shows "NON ACTIVE".

No button operation condition :	NON ACTIVE
Under operating the button :	ACTIVE
Disconnection condition :	DISCONNECTION

When an abnormal cause is restored to normal, touching "CAUSE RESET" on the lower right causes the indicator lamp to return to normal. This button is effective only for the causes on this page.



(The above characters can vary according to the project. For the vessel's specification, see the specifications.)

# 5.10.6 SYSTEM

SYSTEM
INTERLOCK
POWER
SOURCE
10.000
COMMU.
The Course of the
MONITOR LO
PENO COUN
HOUR METE

START AR (bar) 0.0	+0		DMMAND (min	DOWN N (min-1) .0 ECR +0.0 DLE MATCH	ANDLE POSIT BRIDGE +
SYSTEM	IPTION	SAFETY	CONDITION	DESCRIPTION	CONDITION
INTERLOCK	ich	COMMUNICATI	NORMAL	MINUNICATION	NORMAL
	DE	OWER SOUR	NORMAL	WER SOURCE	NORMAL
POWER	MANUAL SHD DIS.		NORMAL	NTROL POS. WTERLOCK	NORMAL
SOURCE	DIS.	HD SENSOR (	NORMAL		NORMAL
COMMU	115.	SLO SENSOR DIS.			NORMAL
	NS.	HD CANCEL D	NORMAL		NORMAL
MONITORLOG	15.	ILD CANCEL D	NORMAL		NORMAL
			NORMAL		NORMAL
REVO COUNT HOUR METER	-		NORMAL	-	NORMAL
VO PORT	2/2	•		een <	: TO DETAIL S BY PUSHING T

This screen shows the condition concerning SYSTEM MONITOR.

The SYSTEM MONITOR screen includes two pages as shown above. They are distinguished from each other; the first page (shown on the upper left) includes no detailed causes (no shift to detailed page) and the second page includes detailed causes (possible to shift to detailed pages).

Each page can appear by touching any of page shift buttons on the bottom of the page.



Each page shows MONITOR name on DESCRIPTION field; the line without name means spare. The CONDITION field shows each cause's condition as below. The SPARE line always shows "NORMAL".

Normal condition :	NORMAL
Abnormal condition :	ABNORMAL

When an abnormal cause is restored to normal, touching "CAUSE RESET" on the lower right causes the indicator lamp to return to normal. This button is effective only for the causes on this page (only for the first page).



For REVOLUTION MONITOR on the first page, touching the button below enables RPM UNIT's condition to be shown.

TO REVOLUTION MONITOR

The RPM UNIT's condition shows the engine speed and PICK UP condition of MAIN/SUB RPM UNIT.

REVOLUTION MONITOR (PICK UP CONDITION)					x		
MAIN	+0 min-1	NORMAL	SUB	+0	min-1	NORMAL	

If there is abnormal shown on this page, check that PICK UP sensor fails or its line breaks.

To close this detailed page, touch to button on the upper right.

Touching the part surrounded with blue line on the second page makes the detailed cause page appear.

NORMAL	POWER SOL	JRCE FAI	L	
	Ţ	-		
	N SHUTISLOW UNDETON AS DOWN UNDETON (MIN-1) E 00.00 ECR 10.0 HANDLE MATCH 1	0 (mm-1) ME REVOLUTION 0 (mm-1) ME REVOLUTION 1.0	T MODE	
Com	CONTROL ROOM CONTROL ROOM POWER SOURCE UNIT	ON HORMAL	SYSTEM	
NOR NOR		ON NORMAL		
		ON HENDINE SEE OUT	A REVO. COUNT HOUR METER B IID PORT	
MONITO	R		TOTAL	

This page navigation is effective regardless of the cause condition (normal or failure).

# 5.10.7 INTERLOCK

MAIN	SHUT/SLOW DOWN	MONITOR	ADJ.	INFO.	TEST MODE	-
HANDLE PO BRIDGE	SITION [min-1] +0.0 ECR HANDLE MATCH	+0.0	DMMAND [min-1 +0.0		UTION [min-1] +0	START AIR [bar] 0.0
SPARE	CONDITION		SPARE	CONDITION		SYSTEM
						INTERLOCK
						POWER SOURCE
SPARE	CONDITION		CONTROL PO		ERLOCK	сомми.
			CONTROL SY REMO-CON A	STEM NORMAL	- CE NORMAL	MONITOR LOG
						REVO.COUNT HOUR METER
NOTE: GR	REEN LETTER (SAT	ISFY) / RED L	ETTER (NOT S	ATISFY)		I/O PORT
M-800-V MO						TOTAL 0

This screen shows the condition concerning INTERLOCK. The detailed indication is provided for each of START INTERLOCK CONDITION and REMOTE CONTROL C/O INTERLOCK CONDITION.

MONITOR names are shown on DESCRIPTION field; the line without name means spare. The CONDITION field shows each cause's condition as below. Green letter means "SATISFY" and red letter means "NOT SATISFY". If all cause is green letter, Interlock condition satisfies. If one or more cause is red letter, interlock condition is not perfect.

START INTERLOCK CONDITION	REMOTE CONTROL C/O INTERLOCK CONDITION
TURNING GEAR DISENGAGE	AC & DC SOURCE NORMAL
SHD OFF	CONTROL SYSTEM NORMAL
AUX. BLOWER RUN	
START AIR PRESSURE NORMAL	
SAFETY SOURCE NORMAL	
START AIR SHUT OFF V. NOT CLOSE	
$\sim$	$\geq$
$\neg$	
START INTERLOCK CONDITION	REMOTE CONTROL C/O INTERLOCK CONDITION
START INTERLOCK CONDITION TURNING GEAR ENGAGE	REMOTE CONTROL C/O INTERLOCK CONDITION AC or DC SOURCE FAILURE
START INTERLOCK CONDITION TURNING GEAR ENGAGE SHD ON	REMOTE CONTROL C/O INTERLOCK CONDITION AC or DC SOURCE FAILURE CONTROL SYSTEM ABNORMAL
START INTERLOCK CONDITION TURNING GEAR ENGAGE SHD ON AUX. BLOWER STOP	REMOTE CONTROL C/O INTERLOCK CONDITION AC or DC SOURCE FAILURE CONTROL SYSTEM ABNORMAL
START INTERLOCK CONDITION TURNING GEAR ENGAGE SHD ON AUX. BLOWER STOP START AIR LOW PRESSURE	REMOTE CONTROL C/O INTERLOCK CONDITION AC or DC SOURCE FAILURE CONTROL SYSTEM ABNORMAL
START INTERLOCK CONDITION         TURNING GEAR ENGAGE         SHD ON         AUX. BLOWER STOP         START AIR LOW PRESSURE         SAFETY SOURCE FAILURE	REMOTE CONTROL C/O INTERLOCK CONDITION AC or DC SOURCE FAILURE CONTROL SYSTEM ABNORMAL
START INTERLOCK CONDITION         TURNING GEAR ENGAGE         SHD ON         AUX. BLOWER STOP         START AIR LOW PRESSURE         SAFETY SOURCE FAILURE         START AIR SHUT OFF V. CLOSE	REMOTE CONTROL C/O INTERLOCK CONDITION AC or DC SOURCE FAILURE CONTROL SYSTEM ABNORMAL
START INTERLOCK CONDITION TURNING GEAR ENGAGE SHD ON AUX. BLOWER STOP START AIR LOW PRESSURE SAFETY SOURCE FAILURE START AIR SHUT OFF V. CLOSE	REMOTE CONTROL C/O INTERLOCK CONDITION AC or DC SOURCE FAILURE CONTROL SYSTEM ABNORMAL
START INTERLOCK CONDITION         TURNING GEAR ENGAGE         SHD ON         AUX. BLOWER STOP         START AIR LOW PRESSURE         SAFETY SOURCE FAILURE         START AIR SHUT OFF V. CLOSE	REMOTE CONTROL C/O INTERLOCK CONDITION AC or DC SOURCE FAILURE CONTROL SYSTEM ABNORMAL
START INTERLOCK CONDITION         TURNING GEAR ENGAGE         SHD ON         AUX. BLOWER STOP         START AIR LOW PRESSURE         SAFETY SOURCE FAILURE         START AIR SHUT OFF V. CLOSE	REMOTE CONTROL C/O INTERLOCK CONDITION AC or DC SOURCE FAILURE CONTROL SYSTEM ABNORMAL
START INTERLOCK CONDITION         TURNING GEAR ENGAGE         SHD ON         AUX. BLOWER STOP         START AIR LOW PRESSURE         SAFETY SOURCE FAILURE         START AIR SHUT OFF V. CLOSE	REMOTE CONTROL C/O INTERLOCK CONDITION AC or DC SOURCE FAILURE CONTROL SYSTEM ABNORMAL

# 5.10.8 POWER SOURCE



This screen shows the power source condition of BRIDGE and CONTROL ROOM. The page shift BRIDGE  $\Leftrightarrow$  CONTROL ROOM can be done by touching the button on the upper left of the page.



Each power source condition is indicated as "NORMAL" and "ON" for normality and "FAILURE" and "OFF" for abnormality.



(The names and number of power sources can vary according to the project. For the vessel's specification, see the specifications.)

# 5.10.9 GENERAL COMMU.



Shows each communication condition of BRIDGE, ECR, and LOCAL. Each communication condition is shown below.

Normal condition :	NORMAL
Abnormal condition :	ABNORMAL

If there is an abnormality in any of MAIN and SUB of each location, "ABNORMAL" will be indicated.

Touching the button below makes the confirmation screen of communication devices and condition in each control location.



# 5.10.10 Details of COMMU.

ANDLE POSITI BRIDGE +1 HA	ON [min-1] 0.0 ECR NDLE MATCH	+0.0 COMMAND [min-1] M/E REV	+0	START AIR (bar) 0.0
BRIDGE	SUB	DESCRIPTION	RETURN	SYSTEM
NORMAL	NORMAL	BOP		INTERLOC
NORMAL	NORMAL	TELEGRAPH TRANSMITTER		-
NORMAL	NORMAL	EXT(BRIDGE)		POWER
NORMAL	NORMAL	COMM(BRIDGE)		JOONOL
NORMAL	NORMAL	PORTWIE		COMMU.
NORMAL	NORMAL	STED WTB		-
NORMAL	NORMAL	ISIG		MONITORIC
NORMAL	NORMAL	BRIDGE DISPLAY		
NORMAL	NORMAL			REVO.COUN
NORMAL	NORMAL		RESET	HOUR METE
		< >	1/2	VO PORT

Shows each device's communication condition.

Each control location has two pages and the control conditions of 20 units are shown in total.

Since each page can show 10 units, touch the page shift buttons on the bottom of the screen for checking the 11th unit or more.



UNIT names are shown on DESCRIPTION field; the line without name means spare. MAIN and SUB fields show the communication condition of each device. The SPARE line always shows "NORMAL".

Normal condition :	NORMAL
Abnormal condition :	ABNORMAL

Be careful that each device has two-system communication of MAIN and SUB so that only one-system communication failure has no influence on the device operation; however, both-system communication failure results in no signal exchange.

For instance, if two systems of RPM UNIT's MAIN and SUB become fail, the engine speed signal cannot be captured.

Be careful that the maneuverability can be susceptible greatly depending on the failed device.

For the operation of each device, see the specifications.

Touching the button below makes GENERAL COMMU. page appear.



# 5.10.11 MONITOR LOG



Provided to check the history of past abnormal causes.

No.1 item is the latest and the greater the number, the older the time of occurrence, which can record 30 historical data at the max. When the number of records exceed 31, the older record will be deleted.

Since each page can show 15 data, touch the page shift buttons on the bottom of the screen for checking the 16th data or more.



This log is reset when the power source for DISPLAY UNIT has been turned off. Since these historical data become important when trouble occurs, do not turn off this unit as long as possible.

And, if all historical data is cleared, push the below lower left of the screen.



After touching the button, the below pop-up screen will appear. When there is no problem, touch "OK". Then, all data will be cleared.

LOG C	LEAR OK?
ок	CANCEL

#### 5.10.12 REVO. COUNT. HOUR METER



Shows REVOLUTION COUNTER (NO.1 and NO.2) and RUNNING HOUR METER. REVOLUTION COUNTER can indicate 0-999999999. RUNNING HOUR METER can indicate 0.0~99999999.9. While RUNNING HOUR METER is counting, the indication below appears.

COUNTING

And, if data is reset or offset, push the below lower left of the screen.



After touching the button, the PASSWORD input pad shown below appears.



Enter the password from the ten-key pad and then touch OK button. When the password is correct, the button below is shown.



SHUT/SLOW TEST MODE MAIN ADJ INFO. HANDLE POSITION (min-1) BRIDGE +0.0 ECR +0.0 HANDLE MATCH E REVOLUTION [min START AIR +0.0 +0 0.0 SYSTEM REVOLUTION COUNTER AND RUNNING HOUR METER INTERLOCK 0 0 NO.2 POWER OFFSET RESET OFFSET RESET COMMU. NOT COUNT IONITOR LOG RESET OFFSET 0.0 HOUR EVO.CC POR MONITOR TOTAL U

And, "OFFSET" and "RESET" push button appear.

If the password is not correct,



is shown so that enter the password again. To close the password input screen, touch



button on the upper right of the input pad.

OFFSET	RESET
--------	-------

Since touching OFFSET button makes a ten-key screen shown below appears, enter the engine speed by using the ten-key and then touch "OK" button.



Once again, the confirmation below appears, touch "OK" button if acceptable. The meter restarts counting from the inputted OFFSET value.



Since touching RESET button makes the confirmation below appears, touch "OK" button if acceptable. The meter restarts counting from "0".

REVOLUTION COU	NTER No.1
RESI	ET OK?
	-

# 5.10.13 I/O PORT



Provided to check the input/output condition from/to the microcomputer. To specify the input/output port, touch the field surrounded by yellow line.



When a ten-key input screen below appears, input a desired ID or PORT number and then touch "OK" button.



According to the inputted ID or PORT number, the port condition is indicated on the DATA field.

When the port is used for digital data, ON is indicated as "-99999" and OFF as "0". When the port used for analog data shows the numeric value.

Four digital data for CONTROL and four ones for SAFETY can be checked at the same time.

Two analog data for CONTROL and two ones for SAFETY can be checked at the same time.

Switching digital and analog screens can be done by touching the button on the lower left.





Provided to check and set the ten-key data.

The ten-key data checking and setting screen consists of three pages for CONTROL, SAFETY, and CONTROL & SAFETY. The page navigation can be done by touching the right-side tabs.

For ten-key address numbers, names, and data, see the Ten-Key Data List for the vessel.

Indicating data method

To check ten-key data, use the left-side INDICATOR on the screen.



Up to four data can be checked at the same time.



Touching the above button can decrease the address number by 1. Data can be shown on DATA. If no data at appointed address number, "- - - " can be shown on DATA.



Touching the above button can increase the address number by 1. Data can be shown on DATA. If no data at appointed address number, "- - - - " can be shown on DATA.

Touch the button bellow on the screen for operation.





The address setting screen below appears.

Touch the ten-key pad or buttons below on the screen to input a desired address number.



After completing the input, touching OK button make the ten-key pad close and the ten-key data is shown on the Data field.

Changing security level method

Setting ten-key data requires the CHIEF-level security.

The security level can be checked by the indication on the lower left of the screen.



The initial level is USER.

If a ten-key data is attempted to set at USER level, the message shown below appears, resulting in no setting.



To change the security level, touch the button below on the lower right of the screen.



The PASSWORD input pad shown below appears.



Enter the password from the ten-key pad and then touch OK button. When the password is correct, the button below is shown.



And the lower-left indication becomes following.



If the password is not correct, is shown so that enter the password again.



To close the password input screen, touch



button on the upper right of the input pad.

If the password input screen is displayed at CHIEF level, the level returns to USER level. In addition, shifting to a page except ADJ. make USER level effective after tens of seconds later.

#### Setting data method

To set ten-key data, use SETTING on the right side of the screen.



Touching button on SETTING at CHIEF level makes the ten-key setting pad below appear.



At first, enter a desired address from the ten-key pad and then touch OK button. The field surrounded with yellow line moves from ADDRESS to DATA SETTING. The previous set value is stored as the initial value.



Enter a new setting value from the ten-key pad and then touch OK button. After completing the new data entry into microcomputer, the address input screen appears again.



If completing the new data entry into microcomputer after inputting, below indicator appears.



If not completing the new data entry into microcomputer for writing failure, below indicator appears. In this case, a setting address and data must be confirmed.



These display until finishing inputting next address number. To complete the setting, touch the button below on the lower right of the pad.



# 5.10.15 FLOW CHART



Provided to check and set various set values simply without setting the ten-key address. To change the setting, CHIEF level is required. Since the security level cannot be changed on a detailed page, change the level on the above-mentioned page and then shift to the detailed page for modifying the set value.

The setting includes three items as shown below. Touching a desired setting button makes the setting screen appear.



5.10.16 BRIDGE HANDLE SETTING



Provided to set BRIDGE handle.



The set value is required to convert BRIDGE HANDLE ORDER (V) into BRIDGE HANDLE ORDER (min-1).

#### Adjusting Method ①

If the potentiometer position becomes misaligned, operate the handle to each division and then enter the value shown on 1 into the corresponding division 2. <u>To start the entering</u>, touch the lower part of 2.



When the ten-key pad below appears, enter a desired value from the ten-key pad and then touch "OK".

DESCRIPTION						
TELEG. TRANS. AH N. FULL MAX. X						
			SETTIN	IG CONDITION		
DATA (b	efore settin	g)	DATA	SETTING		
		⇒				
	7	0	0	BACK		
		0	9	SPACE		
	4	5	6	CLR		
	CONSISTENCY.			ACCREDING NO.		
	1	2	3			
	<b>MARKETER</b>	100010000	and the second			
		0	+/-			
_	10000000		And the second second			
-		ок				

#### Adjusting Method 2

To change the order engine speed of the division, change the value of (3) corresponding to the desired division.

#### Checking the Changed Set Value:

After setting the handle to each division, check the value shown in ④ corresponding to the engine speeds.

#### Caution:

Before starting the change, be sure that M/E at a stop and M/E cannot start even BRIDGE HANDLE is operated. Be careful that if the setting is wrong, the vessel's movement can be changed greatly.



Provided to change the set value for UPPER SPEED LIMIT.

Touch the above-mentioned part 1.



When the ten-key pad below appears, enter a desired value from the ten-key pad and then touch "OK" button.





Provided to change the set value for LOAD PROGRAM.

Touch a desired item within (1-7) above.



When the ten-key pad below appears, enter a desired value from the ten-key pad and then touch "OK" button.



5.10.19 UTILITY



This field shows the condition of the function of automatic backlight off setting.



The function of automatic backlight off switch ON ⇔ OFF can be changed by touching "ALWAYS ON / AUTO. OFF".

The function of automatic backlight off is OFF :



The function of automatic backlight off is ON :



After changed to "AUTO. OFF", the waiting time shown below appears.



And, to change the data, touch "WAITING TIME SET".



After touching the button, the waiting time input pad shown below appears. Enter the waiting time from ten-key pad and then touch OK button. Setting range is 1-99 minutes.



The function of automatic backlight off is available, when the following condition is satisfied.

- Touch panel is not touched.
- Any illuminated push button switches are not pressed.
- Sub telegraph in FWE or AT SEA (R/U) position.
- · No system abnormal / power source failure / alarm is issued.

During automatic backlight off, backlight turnes on again immediately, if one of followings occures.

- Touch panel is touched.
- One or more illuminated push button switches are pressed.
- · SYSTEM abnormal, power source failure, or any alarm is issued.
- Sub telegraph is on STAND BY (S/B) position.
- · Telegraph handle or speed control handle in control is operated.
- Control position changeover is operated.

This field shows the condition of the touch sound setting.



The function of touch sound switch ON  $\Leftrightarrow$  OFF can be changed by touching "SOUND ON / SOUND OFF".



Touching the button below on the center of the screen makes CLEANING screen appear.



While this page is displayed, cleaning the screen causes an inadvertent screen operation not to be carried out.

Be careful that cleaning the screen with outside this page can any button on the screen to react, resulting in an unexpected operation.

X

To end the mode, touching

button on the upper right of the screen.

5.10.20 NTS UTILITY



Don't operate this button since it is for Nabtesco. It is protected by PASSWORD.

# 5.10.21 OVER SPEED TEST



This screen is provided to carry out OVER SPEED test.

Using this screen, OVER SPEED and CRITICAL SPEED tests can be done by using mimic engine speeds.

1

Provide to indicate the conditions to enter the test mode.

As shown below, "NOT SATISFY" appears when the conditions are not satisfied and "SATISFY" when those are satisfied.



2

Test Start-Stop Button



When all the conditions in ① are satisfied, touching this button enables the test mode to be effective. When the conditions are not satisfied, this button becomes inoperable. During the test, the indication below appears.



In this condition, touching the button makes the test mode be completed. In addition, any one of the conditions in 1 becomes unsatisfied, the test mode will be suspended. When a page other than this page appears during test, the test mode also becomes suspended. CRITICAL SPEED CRITICAL SPEED RANGE (LOWER) [min-1] 35 - 42 CRITICAL SPEED RANGE (UPPER) [min-1] 72 - 78 CRITICAL SPEED NO ALARM

Provided to indicate CRITICAL SPEED items.

CRITICAL SPEED range and alarm are indicated here. When the test engine speed remains within CRITICAL SPEED range for several seconds, CRITICAL SPEED alarm will be given.

4

3



Provided to indicate OVERSPEED items.

OVERSPEED range and alarm are indicated here. When the test engine speed exceeds the OVERSPEED level, SHUT DOWN will operate.

During the test mode, the following are shown.



(5)



TES	T M/E RE	VOLUTION
	0	min-1

Indicates the test engine speed.



6



Adjusting buttons to adjust the test engine speed.



Touching the above button can increase the engine speed by 1 min-1. Furthermore, touching the button continuously increases the engine speed successively.



Touching the above button can also decrease the engine speed by 1 min-1. Furthermore, touching the button continuously decreases the engine speed successively.

8



The left-side bar graph indicates the engine speed range, the bottom shows 0 min-1 and the top does the maximum engine speed. The red part in the graph shows the overspeed range and the yellow part does CRITICAL SPEED range.

The white arrow in the bar graph indicates the test engine speed, which moves vertically according to the test engine speed.

(OVERSPEED and CRITICAL SPEED levels can vary according to the project. For the vessel's specification, see the specifications.)

5.11 Common Indication Items



When MONITOR abnormal is shown on the bottom of the screen, the latest name of MONITOR abnormalities and the total number of present MONITOR abnormalities are displayed.

When there is no MONITOR abnormality, no indication is shown on MONITOR field and the total number of MONITOR abnormalities is 0.

5.12 CDP UNIT Abnormality

MAIN SHUT/SLOW DOWN	MONITOR	ADJ	INFO.	TEST MODE	-
HANDLE POSITION [min-1] BRIDGE +0.0 ECR HANDLE MATCH	+0.0	OMMAND [min-1 +0.0		JTION [min-1] F0	START AIR [bar] 0.0
BRIDGE CONTROL CONDIT		IN CONTROL	CONT	ROL SYSTEM	
	DISF	PLAY ERROR	: (E000)	ECS URCE ATION	NORMAL NORMAL
SHD SIGNAL NON AC	TIVE	DOWN	SLOW	DOWN	
CRANKCASE OIL MIST HIGH CANCEL	SHD				

If the screen display becomes out of control due to trouble with CDP UNIT inside except the LCD (trouble with CDP Unit's Control Card, a break in the signal lines between Control Card and the display, etc.), an error message is indicated as shown above. The screen information cannot be renewed while this indication is outputted. In addition, the screen navigation can be done when the above message is displayed but the data will be initialized.

5.13 CDP Unit Communication Abnormality

If all the communication among CDP Unit, C-CPU Unit, and S-CPU Unit fails, there will be "COMMUNICATION ABNORMAL" alarm given and all the data initialized.

5.14 SHUT/SLOW DOWN Condition

	MONITOR	ADJ	INFO.	TEST MODE	·
HANDLE POSITION [min-1] BRIDGE +0.0 ECR HANDLE MATCH	+0.0	OMMAND [min-1] +0.0		UTION [min-1] +0	START AIR [bar] 0.0
BRIDGE CONTROL CONDIT NORM		IN CONTROL	CONT SAF	ROL SYSTEM ETY SYSTEM ECS	NORMAL NORMAL NORMAL
		COMMAND	POWE	R SOURCE	NORMAL
SHD SIGNAL ACTIV	E SHUT	DOWN AL SHUT DOWN	SLOW	DOWN D. SLOW DOWN	
CRANKCASE OIL MIST HIGH CANCEL					CAUSE RESET
MONITOR BRIDGE MANUAL S	SHD				TOTAL 5
MAIN	MONITOR	ADJ	INFO.	TEST MODE	



When there is SHUT/SLOW DOWN, SHUT/SLOW DOWN tab flickers. On SHUT/SLOW DOWN page, "MANUAL SHUT DOWN", "SHUT DOWN LIST", and "SLOW DOWN LIST" tabs flicker in addition to SHUT/SLOW DOWN depending on the occurred cause.

# 5.15 MONITOR Abnormality

	INITOR	ADJ	INFO.	TEST MODE	•
HANDLE POSITION [min-1] BRIDGE +0.0 ECR HANDLE MATCH	+0.0	IMAND (min-1) +0.0		UTION (min-1) +0	START AIR [bar] 0.0
BRIDGE CONTROL CONDITION	LIMITER	N CONTROL	CONT	ROL SYSTEM	ABNORMAL ABNORMAL ABNORMAL
	TAKE CO	MMAND	POWE	RSOURCE	FAILURE
			COM		ABNORMAL
SHD SIGNAL NON ACTIVE	SHUT DO	DWN	SLOW	DOWN	
CRANKCASE OIL MIST HIGH CANCEL					CAUSE RESET
IONITOR MAIN REVOLUTION SIG	NAL ABNORN	AL	-		TOTAL

When there is MONITOR abnormality occurred, MONITOR tab flickers.

# 5.15.1 SYSTEM Abnormality

ANDLE POSI BRIDGE	TION [min-1] +0.0 ECR +0.0 ANDLE MATCH	COMMAND (min-1) M/E REVOLUTION (min-1)	n-1] START AIR [bar] 0.0
ADMODIAN	M/E RE	VOLUTION	10121 GK
ABITORMAL	TO REVOLI		INTERLOCK
NORMAL	DESCRIPTION	CONDITION DESCRIPTION	POWER
NORMAL	TELEGRAPH TRANSMITTE	R NORMAL SHD RESET SIG.(A) DIS.	сомми.
NORMAL		NORMAL	MONITOR LOO
NORMAL		NORMAL	REVO.COUNT
NORMAL		NORMAL.	

On MONITOR page, MONITOR and SYSTEM tab flicker. Furthermore, there is an abnormal cause on the second page, ">" tab flickers.

BRIDGE	ANDLE MATCH	+0.0	+0	[bar]
CONDITION	CONTROL	CONDITION	SAFETY DESCRIPTION	AVAILAN
ABNORMAL	COMMUNICATION	ABNORMAL	COMMUNICATION	INTERLOCK
NORMAL	POWER SOURCE	NORMAL	POWER SOURCE	
NORMAL	CONTROL POS. INTERLOCK	NORMAL	MANUAL SHD DIS.	POWER SOURCE
NORMAL		NORMAL	SLO SENSOR DIS.	
NORMAL	0	NORMAL	SHD CANCEL DIS.	COMMU.
NORMAL	-	NORMAL	SLD CANCEL DIS	MONITOR LOG
NORMAL	i	NORMAL		
NORMAL		NORMAL		REVO.COUNT HOUR METER
: TO DETAIL S BY PUSHING	SCREEN C		> 2/2	VO PORT

When there is an abnormal cause on the first page during the second page display, "<" tab flickers.

# 5.15.2 POWER SOURCE Fail





When there is an abnormal cause on the CONTROL ROOM POWER SOURCE page during the BRIDGE POWER SOURCE page display, "CONTROL ROOM" tab flickers. When there is an abnormal cause on the BRIDGE POWER SOURCE page during the CONTROL ROOM POWER SOURCE page display, "BRIDGE" tab flickers.

#### 5.15.3 COMMU. Abnormality



When there is an abnormal cause on the second page during the first page display, ">" tab flickers.

When there is an abnormal cause on the first page during the second page display, "<" tab flickers.

#### 5.15.4 Running mark

This running mark operates as below when the LCD works correctly. If this mark stops, the LCD is broken and please contact to Nabtesco.

