

Olena Tyron

Technical English for nautical engineers

STUDENT'S BOOK

LEVEL 1



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*Рекомендовано до друку кафедрою іноземних мов за професійним спрямуванням
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Посібник «Technical English for nautical engineers. Student's book, level 1» забезпечує вивчення загального курсу технічної англійської мови професійного спрямування для судномеханіків. Мета посібника– формувати іншомовну професійну компетентність.

Посібник може використовуватися на практичних заняттях з англійської мови у навчальних закладах для спеціальності 271 «Річковий та морський транспорт» освітньої програми «Експлуатація технічних систем на водному транспорті».

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MAP OF THE BOOK

	TOPIC	TEXT	SPEAKING	GRAMMAR
Unit 1.	GAUGES AND MEASURING INSTRUMENTS	Calculations Dampers	Gauges and instruments Electrical measuring instruments	Relative clauses Reported Speech
Unit 2	FUELS AND BUNKERING	Marine Fuel Oil Standards Bunkering	Properties of the fuel Bunkering	Reported Speech
Unit 3.	ENGINEERING MATERIALS	Shipbuilding materials	Applying for a job	Sequence of Tenses
Unit 4.	DRILLS AND TRAININGS FOR SHIP'S ENGINEERS	Drills and trainings Enclosed Spaces Abandon Ship Boat Station drill	Drills and trainings Weather and culture	Present Simple Present Continuous Future Simple
Unit 5.	PERSONAL PROTECTIVE EQUIPMENT AND SAFETY	Personal protective equipment Working in the machinery spaces	Making a survey	Present Simple and Present Continuous with Future meaning
Unit 6.	ENGINE DEPARTMENT PERSONNEL	Description of the Engine Department Engine Department Personnel Performing duties: Wipers Oiler's watchkeeping duties	Performing duties	Present Perfect Present Perfect Continuous Past Simple
Unit 7.	INTERNAL COMBUSTION ENGINE	Diesel Engine. Cyclic process Construction. Four-Stroke Diesel Engine Two-Stroke Engine Starting and stopping the engine	Discussion strategies	Past Tenses

	TOPIC	TEXT	SPEAKING	GRAMMAR
Unit 8.	GENERAL DEFECTS	General Defects Inspection of steel tanks	Job interview with the Chief Engineer	Passive Voice
Unit 9.	TROUBLE SHOOTING	Operating troubles in general Hand tools Information about necessary repair	Discussion repair of the engine	Future Tenses
Unit 10	FIREFIGHTING	Sources of fire Engine room firefighting equipment Prevention of fires Muster List	Telephone conversation	Future Simple or ...going to
Unit 11.	MAIN AUXILIARY AND DECK MACHINERY	Auxiliary machinery Pumps	Explaining the cause and the result	Conditional sentences
Unit 12	IMO CONVENTIONS	Prevention of sea pollution	Pollution of sea	Conditional sentences
Unit 13	SHIPBUILDING INDUSTRY	Shipbuilding industry: Major player Types of shipbuilding enterprises	Ship construction	Mood
ENGLISH-UKRAINIAN DICTIONARY				

UNIT 1. GAUGES AND MEASURING INSTRUMENTS

Read the text and answer the questions:

1. How the nautical engineers can reduce the cost of machinery operations?
2. What are measuring instruments used for?
3. What do engineering parameters describe?

Machinery onboard ships require regular care and maintenance. Nautical engineers do their best to increase machinery's working life and efficiency. They reduce the cost of operation, which includes unnecessary breakdowns and spares. For different types of machinery and systems, different measuring tools, instruments and gauges are used on ship.

Measuring instruments and gauges are used to measure various parameters engineering parameters which describe the condition of the working machinery.

Word study

Gauge (also US English **gage**) //geɪdʒ//1. noun (often in compounds) – an instrument for measuring the amount or level of something *a fuel/petrol/temperature, etc. gauge*

2. (verb) to calculate an amount, especially by using a measuring device: Use a thermometer to gauge the temperature. I tried to gauge the weight of the box. (<http://dictionary.cambridge.org/dictionary/english/gauge>)

Word study practice

1. Rewrite these words: **Gauges, tools, instruments, devices, appliances**
-

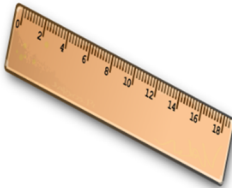



2. When, where and how you use these words?
3. Are they synonyms?
4. Mechanical gauges and tools

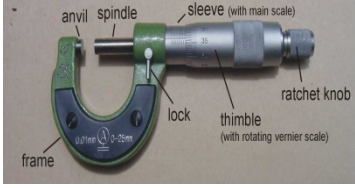




Relative Clauses

Task: choose between a) who, b) which, c) that, d) whom, e) where or f) whose.

1. What was the name of the woman designed that building?
2. The man answered the phone told you were there.

3. What happened to the lap-top I bought not long ago?
4. I don't know the name of the woman to I spoke on the phone.
5. My office I'm using at the moment is very small.
6. I met Alex..... ambition is to be Chief Engineer.
7. My uncle, lives in London, is a scientist.
8. Willy worked for a company made vacuum cleaners.
9. What's the name of the city you were born?

	Gauge and instrument	Description	Translation
1.		Ruler and scales: They are used to measure lengths and other geometrical parameters. They can be single steel plate or flexible tape type tool.	
2.	 	Callipers: They are normally of two types- inside and outside calliper. They are used to measure internal and external size (for e.g. diameter) of an object. It requires external scale to compare the measured value. Some callipers are provided with measuring scale. Other types are odd leg and divider calliper.	
3.		Vernier calliper: It is a precision tool used to measure a small distance with high accuracy. It has got two different jaws to measure outside and inside dimension of an object. It can be a scale, dial or digital type vernier calliper.	

4.		<p>Micrometer: It is a fine precision tool which is used to measure small distances and is more accurate than the vernier calliper. Another type is a large micrometer calliper which is used to measure large outside diameter or distance.</p>	
5.		<p>Feeler gauge: Feelers gauges are a bunch of fine thickened steel strips with marked thickness which are used to measure gap width or clearance between surface and bearings.</p>	
6.		<p>Telescopic feeler gauge: It is also known as tongue gauge and it consists of long feeler gauge inside a cover with tongue or curved edge. The long feeler strips protrude out of the cover so that it can be inserted in to remote places where feeler gauge access is not possible.</p>	
7.		<p>Bayonet gauge. It is an instrument to measure the level of oil.</p>	
8.		<p>Dipstick. It is an instrument to measure the level of fuel. (syn.) Sounding (ullage) stick.</p>	

Practice

Infinitive or Gerund

..... is used to V

.....is used for Ving

1. What are callipers used for?

2. What are feeler gauges used for?

Pronunciation

	<i>speaks</i> /s/	<i>comes</i> /z/	<i>finishes</i> /ɪz/
a) works	✓		
b) loses			
c) goes			
d) drives			
e) gets			
f) watches			
g) knows			
h) starts			
i) dances			

Grammar point

Indirect Speech

Statement

I am happy to return to studies.

I worked at the plant in Izmail.

I will have shipboard training.

Reported speech

He says he is happy to return to studies.

He says he worked at the plant in Izmail.

He says he will have shipboard training.

Statement

I am happy to return to studies.

I worked at the plant in Izmail.

I will have shipboard training.

Reported speech

He said he was happy to return to studies.

He said he had worked at the plant in Izmail.

He said he would have shipboard training.

Write the statements in reported speech

1. I know how to work with this tool. He says

2. I dream to become a good engineer. My friend said...

3. The students acquire practical skills during the fitter's practice. He said ... _____

4. I like to study at the University. He says ... _____
5. They will come after the break. He says... _____
6. It will be your fault. He said to me ... _____
7. I did the repair perfectly. I said... _____
8. The Engineer was absent during the accident. The cadet said ... _____

9. The fire-extinguisher is in the cabin. The Engine cadet said ... _____

10. I wrote the report. He said ... _____

Reading

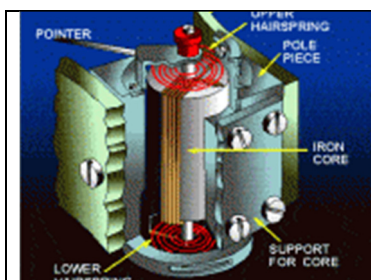
Calculations

In ship's engine room, a number of gauging instruments display various important parameters such as level, pressure, temperature etc. But there are some essential parameters which cannot be read directly through any instrument as they depend on a number of dynamic factors.

This demands the marine engineer working onboard ships to do some formula based calculations by considering all those factors and with possible available inputs.

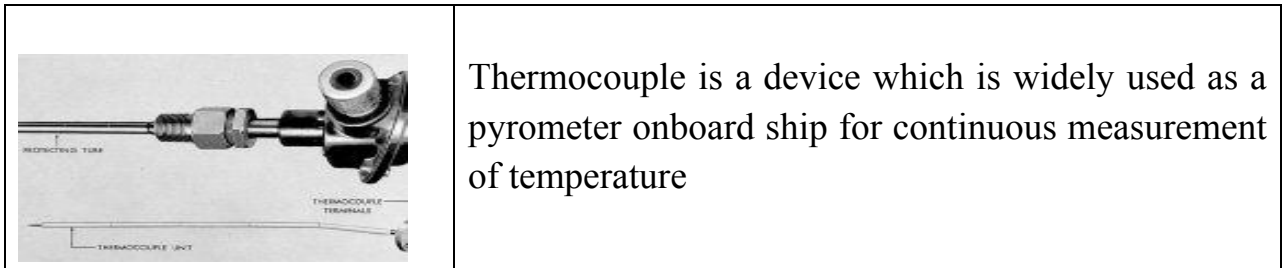
To make all necessary calculations the engineers get information by means of different electrical measuring instruments. Here you see the most popular of them.

Permanent magnet moving coil

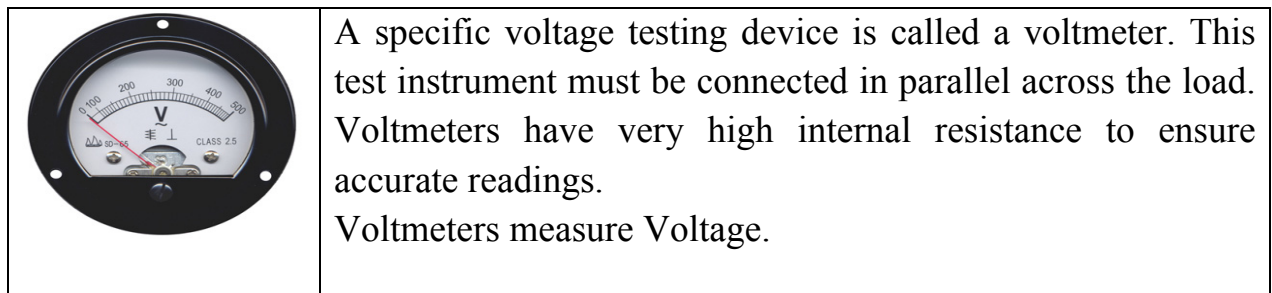


For measuring several electrical parameters to analyze and keep machineries in proper running condition, a permanent magnet moving coil (PMMC) instrument is used onboard.

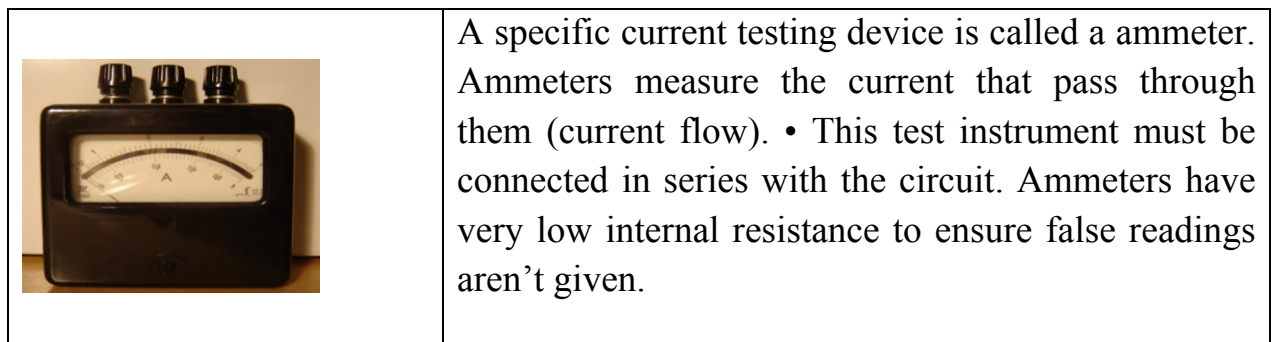
Thermocouple



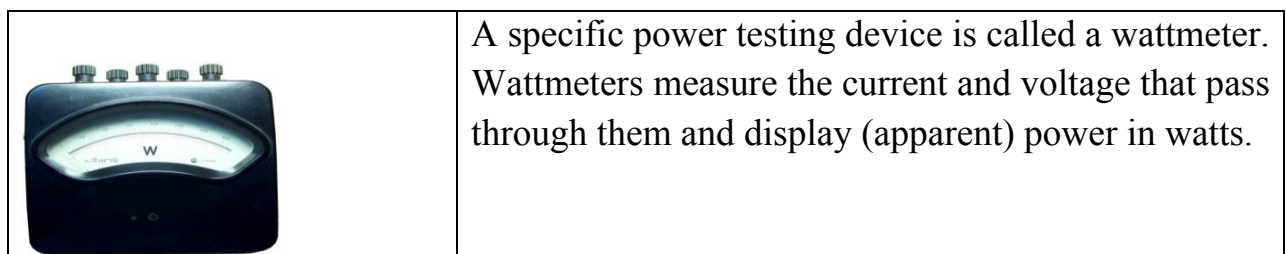
Voltmeter



Ammeter



Wattmeter



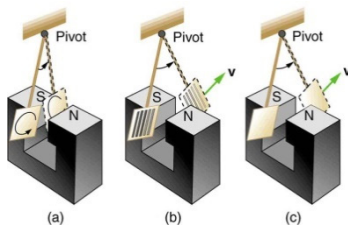
Ohmmeter



Ohmmeters measure impedance (Z) also known as resistance. A specific impedance testing device is called a ohmmeter. Impedance is defined as the total opposition to the flow of alternating current at a specific frequency.

Reading for general information

Dampers



A **damper** is a valve or plate that stops or regulates the (1) flow of air inside a (2) duct, (3) chimney, (4) VAV box(variable air box), (5) air handler, or other air-handling equipment. A damper may be used to cut off central (6) air conditioning (heating or cooling) to an unused room, or to regulate it for room-by-room (7) temperature and (8) climate control. Its operation can be manual or automatic. Manual dampers are turned by a handle on the outside of a duct. Automatic dampers are used to regulate airflow constantly and are operated by (9) electric or (10) pneumatic motors, in turn controlled by a (11) thermostat or (12) building automation system. Automatic or motorized dampers may also be controlled by a (13) solenoid, and the degree of air-flow calibrated, perhaps according to signals from the thermostat going to the actuator of the damper in order to modulate the flow of air-conditioned air in order to effect climate control.

A zone damper (also known as a **Volume Control Damper** or **VCD**) is a specific type of damper used to control the flow of air in an (14) HVAC heating or cooling system. In order to improve efficiency and occupant comfort, HVAC systems are commonly divided up into multiple zones. For example, in a house, the main floor may be served by one heating zone while the upstairs bedrooms are served by another. In this way, the heat can be directed principally to the main floor during the day and principally to the bedrooms at night, allowing the unoccupied areas to cool down.

Zone dampers as used in home HVAC systems are usually electrically powered. In large commercial installations, (15) vacuum or (16) compressed air may be used instead. In either case, the motor is usually connected to the damper via a mechanical coupling.

Tasks to the text

1. write the translation of 16 underlined words.

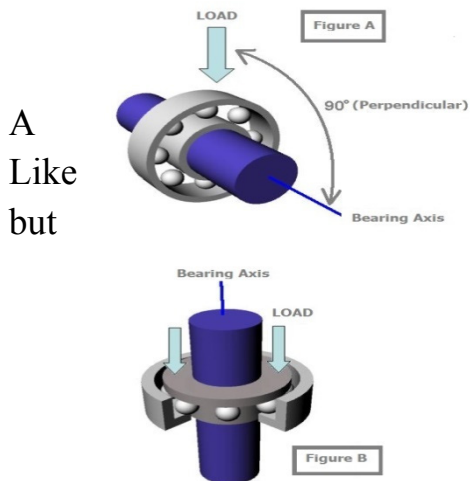
2. write if the statement true (T) or false (F)

- a. Dumper’s operation cannot be manual. T F
- b. Automatic dampers are turned by a handle on the outside of a duct. T F
- c A zone damper is a specific type of damper used to control the flow of air in heating or cooling system. T F
- d In order to improve efficiency and occupant comfort, HVAC systems are commonly divided up into multiple zones. T F
- e The motor is usually connected to the damper via an automatic coupling. T F

Practice

Thrust bearing

Make the translation in written form



A
Like
but

thrust bearing is a particular type of rotary bearing. other bearings they permit rotation between parts, they are designed to support a predominately axial load.

Thrust bearings come in several varieties.

Self-study

Find in the dictionary and write down the translation of the names of the tools

№	Name of the tool or device	translation
1.	BARS for turning shafts.	
2.	Jacking BOLTS.	
3.	Pressing BOLTS.	
4.	Tensioning BOLTS.	
5.	EQUIPMENT for fitting and removal of cylinder liners.	
6.	BRIDGE for measuring main bearing wear.	
7.	Piston insertion CONE.	
8.	Protective COVERS for threads.	
9.	Sealing COVER.	
10.	DEVICES for checking wear of various parts.	
11.	DEVICES for fitting and removal of various parts.	
12.	DEVICES for tightening piston bolts, cap nuts of the fuel injectors, etc.	
13.	DEVICES for turning out the thrust bearing.	
14.	DEVICES for withdrawing parts.	
15.	Drawing DEVICES.	
16.	Extracting DEVICES.	
17.	Holding DEVICES for spray testing of fuel injectors.	
18.	Lifting DEVICES for cylinder covers and cylinder liners.	
19.	Piston lifting DEVICES.	
20.	Spring tensioning DEVICES.	
21.	Special EYEBOLTS.	
22.	BLIND FLANGES for blanking off pipes.	
23.	GAUGES for checking fuel pump timing.	
24.	GAUGES for checking fuel valve timing.	
25.	Depth GAUGES.	
26.	Dial GAUGES for measuring crankshaft deflections.	
27.	FEELER GAUGES for checking clearances.	
28.	Tensioning JACKS.	
29.	Tool KIT	
30.	Sealing PLUGS.	
31.	Special PLIERS.	
32.	Special SPANNERS:	