

## MM 242 COMPREHENSIVE GEARED SYSTEM

### GENERAL DESCRIPTION

The apparatus is used for studying the acceleration of a geared system as well as geared system efficiency under different gear ratios.

The system consists of three shafts, two stage spur gear unit with two fixed gear and two sliding gear sets. All shafts rest on ball bearings on a steel frame.

The first shafts has a cable drum for weight hanger.

The second shaft has an interchangeable inertia mass. A speed sensor monitors the mass speed.

A motor dynamometer measures the gear system input power. This motor dynamometer drives the first shaft via an electric clutch. Speed is controlled by an inverter.

A mechanical brake dynamometer is attached to the third shaft for measurement of the gear system output power.

For a study of acceleration of the geared system, a weight hanger provides torque on the cable drum and speed sensor can measure inertia mass velocity and acceleration.

The apparatus has a transparent cover with interlocks for safety protection. The unit is steel frame with adjustable footings.



### TYPICAL EXPERIMENTS

- Inertia of a mass and of a geared system.
- Input power, output power, and efficiency.
- Effect of speed and load on efficiency.

### TECHINCAL DATA

- Gear : Spur gear module 2.
- Transmission ratio alternatives : 3.
- Weight hanger and weights : 1 lot.
- Inertia masses : 2.
- Speed control : 0.75 kW inverter for controlling motor speed.
- Power measurement
  - Torques : Digital display for input and output shafts.
  - Speeds : Digital display for input and output shafts.
- Power supply : 220 V, 1 Ph, 50 Hz. Other power supply is available on request.
- Accessories : Rubber pad and stop watch

### OPTIONAL EQUIPMENT

- MM 242-050 Computer Interface  
This includes computer interface unit and software for data display and analysis by computer (separately supplied).

MM242 COMPREHENSIVE GEARED SYSTEM

Communication Port: COM7      Tested by: \_\_\_\_\_ Date: \_\_\_\_\_

Gear system: Shaft 1 to 3  
Gear Ratio: 9 : 1

**Input**  
Shaft Speed (r/min): 400  
Shaft Torque (N m): 0.63

**Output**  
Shaft Speed (r/min): 46  
Shaft Torque (N m): 4

LOG DATA

No	Input		Output		Efficiency %
	Speed (r/min)	Torque (N m)	Speed (r/min)	Torque (N m)	
1	200	0.59	24	2	61.54
2	400	0.43	46	2	53.49
3	600	0.45	69	2	51.11
4	800	0.46	91	2	49.46
5	1000	0.47	113	2	48.09
6	200	0.60	24	4	80.00
7	400	0.63	46	4	73.02

GEAR DIAGRAM: Drum, N1 B, N1 A, N2 C, N2 D, N2 B, N2 A, N3 B, N3 A

TEETH: N1 A, N2 B, N3 C, N3 B = 90 Teeth; N1 B, N2 A, N2 D, N3 A = 30 Teeth

Buttons: GENERAL, DISPLAY, DATA SHEET, GRAPH, ALL DATA, STOP, LEARN LAST DATA, CLEAR ALL DATA, SAVE TO FILE

**Net (unpacked) shipping dimensions WxLxH**  
**Net weight**

: 75 x 100 x 60 cm.  
: Approx. 127 kg

