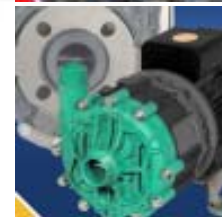
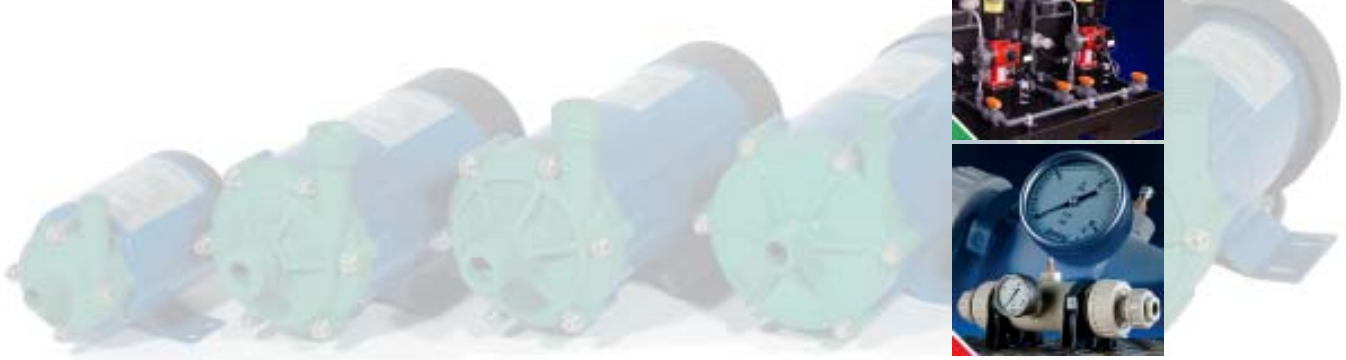


# A measured step forward™

Operations & Maintenance Manual

## CENTRAN TMB



Identification Code												
Pump Data							Motor Data					
Range	Model				Execution (Materials)	O-Ring Material	Internal Structure	Connections	rpm	Motor	Voltage	Phases
TMB	<input type="checkbox"/> 10					<input type="checkbox"/> K (FFKM)		<input type="checkbox"/> B (BSP threaded)				
	<input type="checkbox"/> 20	<input type="checkbox"/> 200	<input type="checkbox"/> 35	<input type="checkbox"/> 350	<input type="checkbox"/> WR (GFR-PP)	<input type="checkbox"/> E (EPDM)	<input type="checkbox"/> R1 (C/ AI203)	<input type="checkbox"/> N (NPT threaded)	<input type="checkbox"/> 2900	<input type="checkbox"/> 220-240 VAC		
	<input type="checkbox"/> 30	<input type="checkbox"/> 300	<input type="checkbox"/> 65	<input type="checkbox"/> 650	<input type="checkbox"/> GF (CFF-E-CTFE)	<input type="checkbox"/> V (FPM)	<input type="checkbox"/> N1 (CFF-PTFE/ AI203)	<input type="checkbox"/> P (HOSE connected)	<input type="checkbox"/> 3500	<input type="checkbox"/> 120 VAC	<input type="checkbox"/> 1 (1 phase)	

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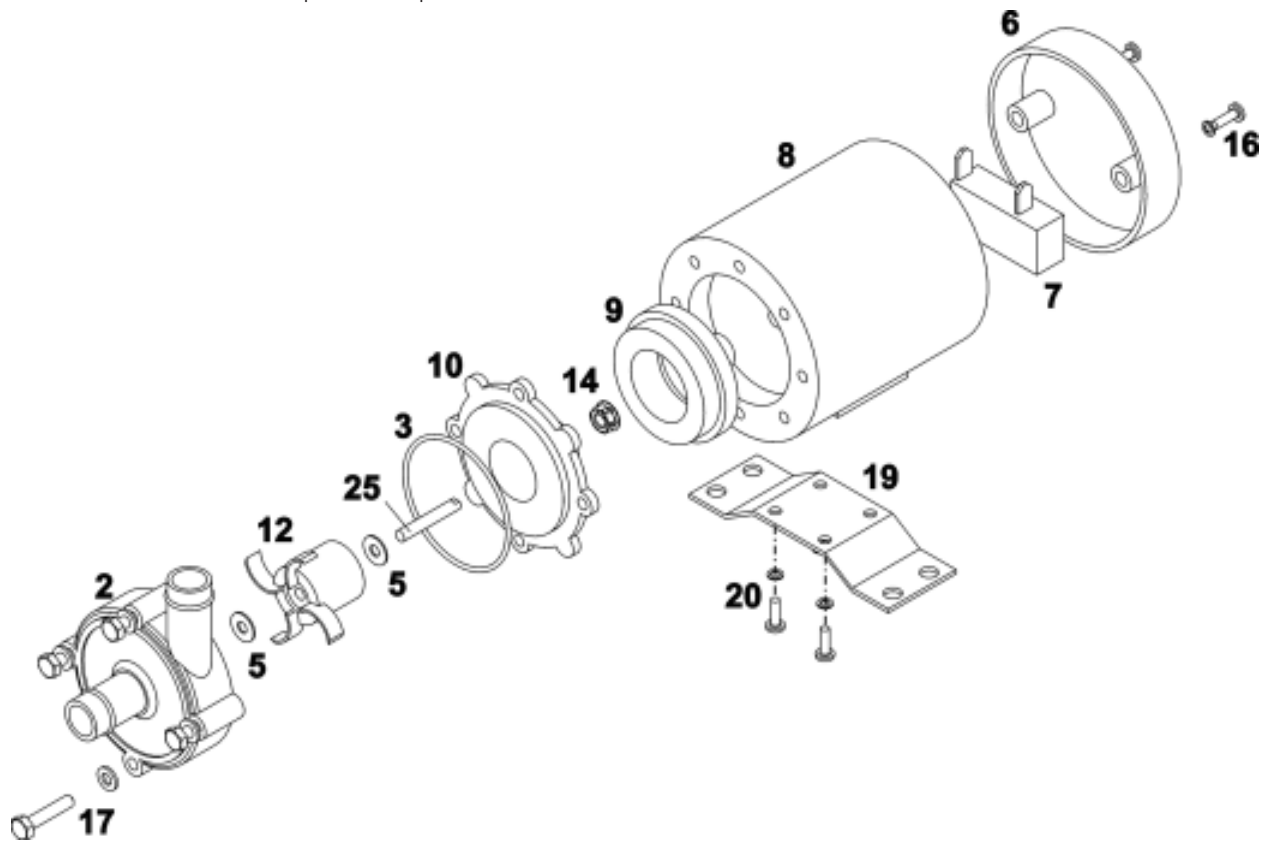
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Maintenance
Date of commissioning
Position / system reference
Service

Dealer

**Parts Description and Exploded View**

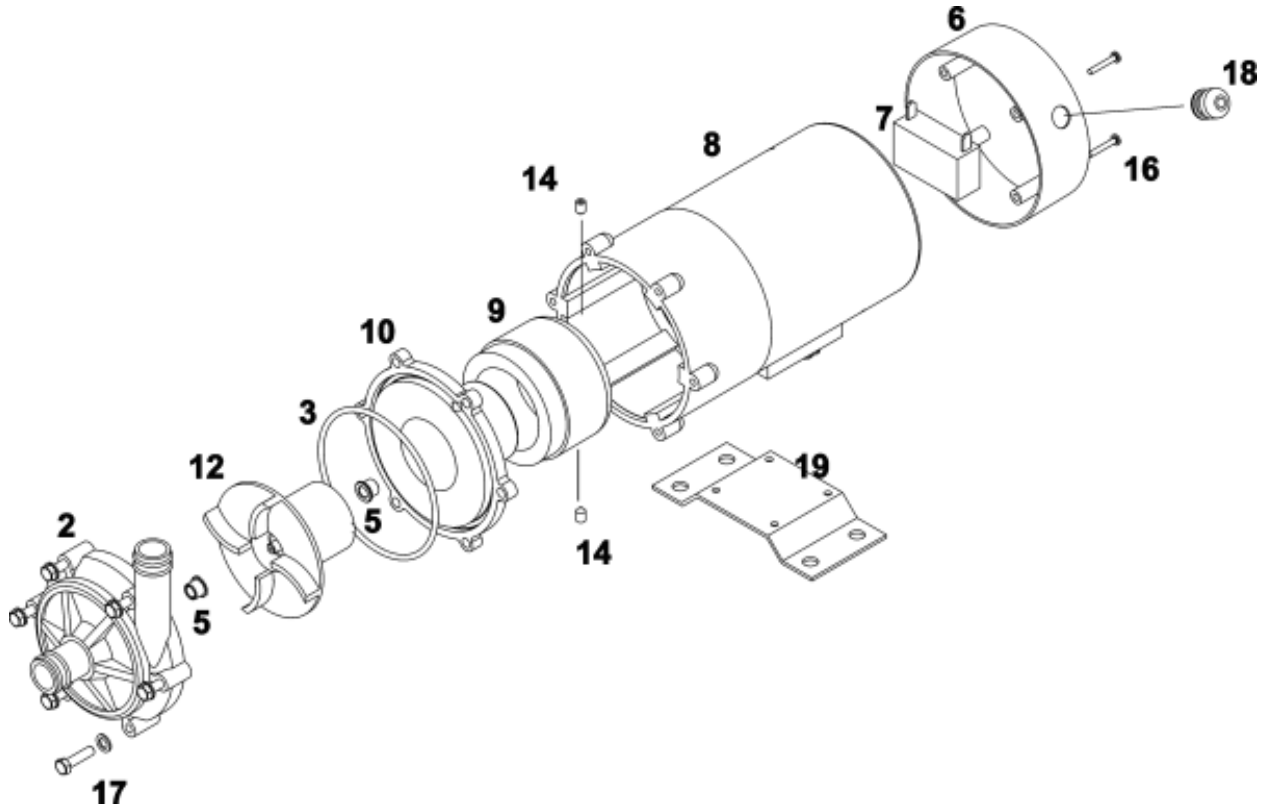
CENTRAN TMB 10 Parts Description and Exploded View



**CENTRAN TMB 10 Legend and Disassembling Steps Sequence**

Ref.	Pos.	Part Name	Qty No	Disassembling Steps Sequence										Spare stock per working years			
				1	2	3	4	5	6	7	8	9	10	2	5		
102	2	Volute casing	1		■												1
412	3	O-ring (volute casing)	1		■											1	1
386	5	Thrust bushing	2				■									2	2
832	6	Motor cover	1												■		
837	7	Capacitor	1												■		
801	8	Electric motor	1									■					
855	9	Drive magnet assembly	1												■		
162	10	Rear casing	1				■										1
235	12	Centrifugal impeller	1				■									1	1
910.1	14	Nuts (magnet-assembling locking)	1														
910.2	16	Bolt - motor cover	2														
910.3	17	Bolt - volute casing	4	■													
181	19	Baseplate	1														
910.5	20	Bolt - baseplate	4														
210	25	Shaft	1														1

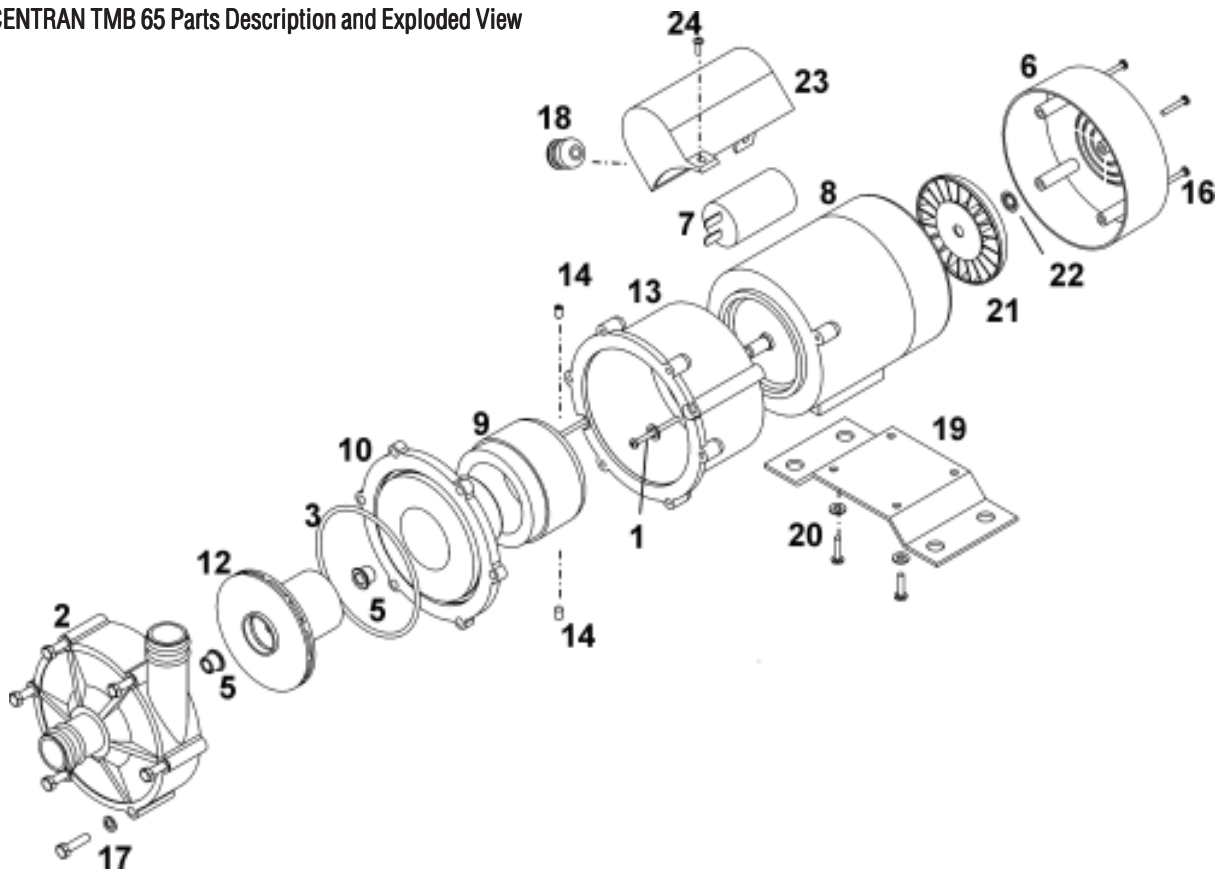
**CENTRAN TMB 20-30-35 Parts Description and Exploded View**



**CENTRAN TMB 20-30-35 Legend and Disassembling Steps Sequence**

Ref.	Pos.	Part Name	Qty No	Disassembling Steps Sequence										Spare stock per working years			
				1	2	3	4	5	6	7	8	9	10	2	5		
102	2	Volute casing	1		■												1
412	3	O-ring (volute casing)	1		■												1
545	5	Guide bushing	2				■										2
832	6	Motor cover	1												■		
837	7	Capacitor	1											■			
801	8	Electric motor	1									■					
855	9	Drive magnet assembly	1						■								
162	10	Rear casing	1			■											1
235	12	Centrifugal impeller	1			■										1	1
910.2	14	Screws (magnet-assembling locking)	2					■									
910.3	16	Bolt - motor cover	4										■				
910.4	17	Bolt - connection volute casing	6	■													
816	18	Cable glands	1												■		
181	19	Baseplate	1								■						
910.5	20	Bolt-baseplate	4					■									

**CENTRAN TMB 65 Parts Description and Exploded View**



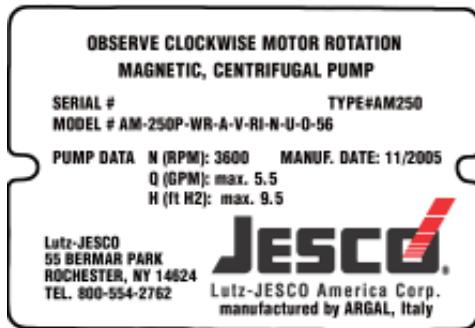
**CENTRAN TMB 65 Legend and Disassembling Steps Sequence**

Ref.	Pos.	Part Name	Qty No	Disassembling Steps Sequence										Spare stock per working years			
				1	2	3	4	5	6	7	8	9	10	2	5		
102	2	Volute casing	1			■											1
412	3	O-ring (volute casing)	1		■											1	1
545	5	Guide bushing	2				■									2	2
832.1	6	Motor cover	1											■			
837	7	Capacitor	1											■			
801	8	Electric motor	1								■						
855	9	Drive magnet assembly	1							■							
162	10	Rear casing	1			■											1
235	12	Centrifugal impeller	1			■										1	1
	13																
910.2	14	Screws (magnet-assembling locking)	3						■								
910.3	16	Bolt - motor cover	4											■			
910.4	17	Connection volute casing/rear casing/bracket	6	■													
816	18	Cable glands	1														■
181	19	Baseplate	1										■				
910.5	20	Bolt - baseplate	4										■				
815	21	Fan	1														■
920	22	Speednut	1														■
832.2	23	Capacitor cover	1														■
910.6	24	Bolt - motor cover	2														■

### Identification Codes

Each pump is supplied with the serial and model abbreviation and the serial number on the rating plate, which is riveted onto the support side. Check data upon receiving the goods. Any discrepancy between the order and the delivery must be reported communicated immediately.

**In order to be able to trace data and information, the abbreviation, model and serial number of the pump must be quoted in all correspondence.**



### General Notes

CENTRAN TMB pumps are designed and built for the transfer of liquid chemical products having a specific weight, viscosity, temperature. These criteria must be appropriate for use with centrifugal pumps in a fixed installation, from a tank at a lower level to a tank or a pipe to a higher level. The characteristics of the liquid (pressure, temperature, chemical reactivity, specific weight, viscosity, vapor tension) and the ambient atmosphere must be compatible with the characteristics of the pump and defined upon ordering.

The pump's maximum performances (capacity, head, rpm) are defined on the identification plate.

CENTRAN TMB pumps are centrifugal, horizontal, single stage, coupled to a non-synchronous electric motor via a magnetic coupling, with axial inlet and radial outlet for connection to the hydraulic system. They are foot-mounted for floor mounting.

CENTRAN TMB pumps are not self priming.

The liquid to be pumped must be clean. Suitably sized in-line strainers must be employed to ensure the absence of solids.

Pump rotation must be clockwise as observed from the motor end of the unit.

Make sure that the chemical and physical characteristics of the liquid have been carefully evaluated for pump suitability.

The inlet temperature of the liquid pumped is from 32°F to 140°F

The max viscosity is 20 cP

The specific weight cannot be above 1.1 (at the max flow)

The atmospheric temperature between 32°F and 113°F

The maximum pressure the pump may be subjected to is 1.5 times the head value developed with the outlet closed.

The vapor pressure value of the liquid to be pumped must exceed (by at least 1m w.c) the difference between the absolute total head (suction side pressure added to the positive suction head, or subtracted by the suction lift) and the pressure drops in the suction side piping (including the inlet NPSHr drops shown on the specific tables).

The pump does not include any check valve, any liquid flow control, or motor stop device.

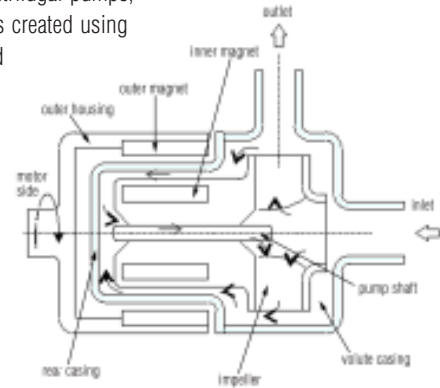
### Operating Principle

HYDRAULICALLY similar to all centrifugal pumps, this pump is equipped with a blade-type impeller rotating within a fixed housing. It has a tangential outlet (or radial with an internal deflector) and, by creating a depression in the center, it allows the liquid to flow from the central suction side. Then, flowing through the impeller's blades, the fluid acquires energy and is conveyed towards the outlet.

MECHANICALLY different from the traditional centrifugal pumps, impeller motion is created using the magnetic field between the primary outer magnet and the inner magnet (not visible because housed inside the impeller hub).

The magnetic field crosses the plastic parts and the liquid, and firmly couples the two magnet assemblies. When the motor causes the outer magnet to rotate together with its housing, the inner magnet assembly is dragged at the same speed. As a result the impeller, which is integral to it, is maintained in rotation.

The SHAFT, totally within the housing, is not involved in the transmission of rotary motion; its only function is to act as a centering guide and support for the impeller. To this end the components are designed so that a spontaneous cooling circuit (due to a simple effect of pressure) is established to cool the surfaces subject to friction. Periodic inspections and cleaning prevent the build-up of sediments between the shafts and the guide bushes significantly lengthening their working life.



## Motor

The protection level of CENTRAN TMB motors is IP 54.

The initials IP are followed by two numbers:

The first number indicates the level of protection against penetration of solid objects and in particular:

- 4 - for solids whose dimension is greater than 1 mm
- 5 - for dust (eventual internal deposits will not harm operation)
- 6 - for dust (no penetration)

The second number indicates the protection against the penetration of liquids. In particular:

- 4 - for water sprays from all directions
- 5 - for jets of water from all directions
- 6 - for tidal and sea waves

According to the IP protection indicated on the identification plate of the motor and to the environmental conditions, arrange for opportune extra protections allowing in any case correct ventilation and rapid drainage of rainwater.

## Dry Running Survey

Though the pump can occasionally run dry, it is strongly recommended to safeguard the pump and the plant by use of:

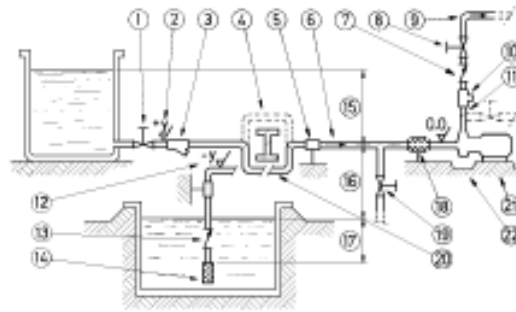
- in-line fluid pressure switch;
- fluxmeter;
- control devices for the motor power absorption.

## Instructions on Installation and Use

### Installation

- clean the plant before connecting the pump
- make sure that no foreign bodies are left in the pump.
- follow the instructions indicated in the following diagram:
  1. YES: gate valve (may also be near pump in the case of long piping)
  2. With positive head: invert piping towards pump
  3. YES: line strainer (3-5 mm mesh)
  4. NO: air pockets: the circuit must be short and straight
  5. YES: pipe supports
  6. Fluid speed suction: 2.5 m/s
  7. YES: check valve (especially for long vertical or horizontal pipes; compulsory with parallel pumps).
  8. YES: adjusting gate valve on outlet
  9. speed of delivered fluid: 3.5 m/s max.
  10. YES: in-line gauge or safety pressure switch
  11. NO: elbows (and other parts) on the pump (discharge and suction lines)
  12. With negative suction lift: invert piping towards suction tank
  13. YES: check valve (with negative suction lift)
  14. YES: strainer (3-5 mm mesh)

15. Suction head varies according to flow in order to prevent windage (min. 0.5 m, max. 15% of pump head)
16. Suction head, 3 m max.
17. Immersion depth: 0.3 m min.
18. YES: pulsation dampener (indispensable with long pipes or hot liquids) and/or anti-vibration discharge and suction; anchored near to pump
19. YES: drain pipe (completely sealed), drain valve shut during normal operations
20. YES: overcoming obstacles at lower depths.
21. Secure the pump by the mounting holes provided: the supports must be level
22. YES: drainage channel around base



- secure the pump to an adequate base plate having a mass at least 5 times that of the pump
- do not use anti-vibration mounts to secure the pump
- anti-vibration joints are recommended on the pipe connections
- make sure that the power supply is compatible with the data shown on the pump motor identification plate
- connect the motor to the power supply via a thermal control switch
- install emergency stop devices to turn off the pump in case of low liquid level (floating, magnetic, electronic, pressure-sensitive)
- ambient temperature as a function of the physical-chemical characteristics of the liquid to be pumped and in any case not greater or lower than the interval indicated in GENERAL NOTES other environmental conditions in accordance with the protection of the motor
- install a drainage pit to collect any liquid overflow from the base drainage channel due to normal operation and maintenance work
- leave enough free space around the pump for a person to move
- leave free space above the pump for lifting operations
- highlight the presence of aggressive liquids with colored tags following the local safety regulations
- do not install the pump (made in thermoplastic material) in close proximity to heating system
- do not install the pump in areas subject to solid or liquid matter falling
- do not install the pump in an explosive atmosphere
- do not install the pump in close proximity to workplaces or crowded areas
- install extra protection guards for the pump or persons as the need arises
- install a spare equivalent pump in parallel

### Start-Up

- verify that the instructions outlined in the INSTALLATION have been followed
- ensure that the NPSH available is greater than that required by the pump (in particular for hot liquids, liquids with high vapor pressure, very long suction pipes or negative suction lift)
- close the drain valve (pos. 19); totally flood the suction pipe and the pump
- start the pump with the suction valve completely open and the discharge valve partially closed
- slowly regulate the flow by opening or closing the discharge valve (never the suction valve). Make sure that the power absorbed by the motor does not exceed the rating indicated on the motor identification plate
- do not operate the pump at the limit values of its performance curve: maximum head (discharge valve excessively closed) or maximum capacity (total absence of drops and geodetic head on the discharge side)
- set the operating point to that for which the pump was requested
- ensure that there are no abnormal vibrations or noise due to inadequate mounting or cavitation
- avoid short and/or frequent starts by properly setting the control devices
- ensure that the temperature, pressure and liquid characteristics are as those specified at the time of order

### Use

- switch automatic control on
- do not activate valves during pump operation
- risks of dangerous water hammer effects in case of sudden or improper valve actuation (only trained personnel should operate valves)
- completely empty and wash the pump before using a different liquid
- isolate or empty the pump if the crystallization temperature of the liquid is the same or lower than the ambient temperature
- stop the pump if the liquid temperature exceeds the maximum allowed temperature indicated in the general notes; if the increase is of approximately 20%, check internal parts
- close the valves in case of leaks
- wash with water only if compatible with the chemical being used. Alternatively, use an appropriate solvent that will not generate dangerous exothermal reactions
- contact the liquid supplier for information on the appropriate fire precautions
- empty the pump during long periods of shutdown (in particular with liquids which easily crystallize)

### Shutdown

- disconnect the motor
- before starting maintenance, turn off the suction and discharge valves

### Disassembly

- all these maintenance operations must be performed under supervision of qualified personnel
- cut off the power supply from the motor and disconnect the electrical wiring; pull the wires from the terminal box and isolate them accordingly

- close the suction and discharge valves and open the drain valve
- use gloves, safety glasses and acid-proof overalls when disconnecting and washing the pump
- disconnect the piping and leave enough time for the residual liquid to exit the pump body and atmospheric air to fill the empty volume
- wash the pump before carrying out any maintenance work
- do not splash the liquid in the environment
- before attempting to dismantle the pump ensure that its motor is disconnected and that cannot be started accidentally
- now open the pump following the sequence indicated in the respective table of the LEGEND
- for the disassembly of the rotating parts follow the suggestions outlined in the RECOMMENDATIONS section

### Inspection

Check:

- the pump shaft for cracks and excessive wear
- guide bushing for excessive wear (@ 5%)
- counterthrust bushing for cracks or excessive wear
- pump shaft clutch
- the impeller, volute and rear chamber for abrasion, corrosion, lumps and clusters created by the pumped liquid (especially at the bottom the rear chamber) for infiltration of liquid into the chamber containing the inner magnets abrasions on the outside surface of the rear chamber due to scratching of the outer magnets
- replace broken, cracked or deformed parts.
- reopen all the blocked pipes and eliminate any chemical build-up.
- clean all the surfaces before re-assembly, especially O-ring seats to prevent the risk of drip leaks

### Assembly

- all these maintenance operations must be performed under the supervision of qualified personnel
- make periodic inspections (2 to 30 days depending on the type of liquid and the operating conditions) of the in- line and foot valves as well as of the bottom valve
- make periodic inspections (2 to 6 months depending on the type of liquid and the operating conditions) on the rotating parts of the pump; clean, replace, or lubricate as necessary (see RECOMMENDATIONS)
- make periodic inspections (3 to 5 months depending on the type of liquid and the operating conditions) on the functionality of the motor control system; efficiency must be guaranteed
- the presence of liquid below the pump could be an indication of pump problems
- excessive current consumption could be an indication of impeller problems
- unusual vibrations could be due to unbalanced impeller (due to damage or presence of foreign material obstructing its blades)
- reduced pump performance could be due to an obstruction of the impeller or damage to the motor
- motor damage could be due to abnormal friction within the pump
- damaged parts must be replaced with new original parts
- the replacement of damaged parts must be carried out in a clean, dry area



## Safety Risks



### WARNING! MAGNETIC FIELDS.

Magnetic pumps contain some of the most powerful magnets in existence. The magnets are positioned on the back of the impeller and the outer magnet housing. The magnetic fields may adversely affect persons fitted with electronic devices (e.g. pacemakers and defibrillators). Such persons must not be allowed to handle magnetic pumps and magnetic pump components. Individuals with internal surgical clips, metallic wiring, or other metallic prosthetic devices must not be allowed to handle magnetic pumps and magnetic components.



### WARNING! MAGNETIC FORCE.

Exercise extreme caution and follow instructions carefully during pump assembly/disassembly. The strong magnetic field can cause tools and parts to slam together, injuring hands and fingers.



### WARNING! CHEMICAL HAZARD.

The pumps are designed to pump different types of liquid and chemical. Follow the specific instructions to decontaminate during inspection or maintenance.



### WARNING!

Safety risks for personnel mainly arise from improper use or accidental damages.

These risks may be of an electrical nature as far as the non-synchronous motor is concerned and may cause injury to hands if working on an open pump. Risks may also arise due to the nature of the liquids pumped. It is therefore of utmost importance to closely follow all the instructions contained in this manual so as to eliminate the causes that may lead to pump failure and the consequent leakage of liquid dangerous for both personnel and the environment.

Risks may also arise from improper maintenance or dismantling practices.

In any case five general rules are important:

1. all services must be carried out by specialized personnel or supervised by qualified personnel depending on the type of maintenance required
2. install protection guards to prevent liquid sprays (when the pump is not installed in remote areas) due to an accidental pipe rupture. Arrange for safety basins to collect possible leakage
3. when working on the pump always wear adequate personal protective clothing
4. arrange for proper conditions for suction and discharge valve closing during disassembly
5. make sure that the motor is completely disconnected during disassembly.

Proper design and construction of plants, with well positioned and well marked piping and shut-off valves, adequate passages and work areas for maintenance and inspection are extremely important since the pressure developed by the pump could damage the plant as a result of faulty installation or normal operational wear and tear.

It must be stressed that the major cause of pump failures leading to a consequent need for repair is due to the pump running dry in manually operated plants. This is generally due to:

- the suction valve being closed at start-up or
- the suction tank being emptied without stopping pump operation

### Installation and Commissioning Personnel

Installation must be performed by qualified personnel who are properly trained in their fields. They may eventually delegate to others some operations depending on specific evaluations (technical capability required: specialization in industrial plumbing or electric systems as needed).

### Operators and Maintenance Personnel

Operations allowed to be performed by general operators (after training on the correct use of the plant) include:

- pump starting and stopping
- opening and closing of valves with the pump at rest
- emptying and washing of the pump body via special valves and piping
- cleaning of filtering elements

Operations allowed to be performed by qualified personnel (technical capabilities required: general knowledge of the mechanical, electrical and chemical features of the plant being fed by the pump and of the pump itself) include:

- verification of environmental conditions
- verification of the condition of the liquid being pumped
- inspection of the control/stop devices of the pump
- inspection of the rotating parts of the pump
- trouble shooting

### Repair Personnel

Operations allowed to be performed by general operators under the supervision of qualified personnel include:

- stopping of the pump
- closing of the valve
- emptying of pump body
- disconnection of piping from fittings
- removal of anchoring bolts
- washing with water or suitable solvent as needed
- transport (after removal of electrical connections by qualified personnel)

Operations allowed to be performed by qualified personnel (technical capabilities required: general knowledge of machining operations, awareness of possible damage to parts due to abrasion or shocks during handling, know-how of required bolt and screw tightening required on different materials such as plastics and metals, use of precision measuring instruments) include:

- opening and closing of the pump body
- removal and replacement of rotating parts

### Waste Disposal

Materials: separate plastic from metal parts. Dispose of by authorized companies.

### Improper Use

The pump must not be used for purposes other than the transfer of liquids.

The pump cannot be used to generate isostatic or counter pressures.

The pump cannot be used to mix liquids generating an exothermal reaction.

The pump must be installed horizontally on a firm base.

The pump must be installed on a suitable hydraulic plant with inlet and outlet connections to proper suction and discharge pipes.

The plant must be able to shut off the liquid flow independently from the pump.

Handling of aggressive liquids requires specific technical knowledge

### Recommendations

#### Disassembly

All threads are right handed

The impeller, once the pump body is open, is held in its seat only by a magnetic field. Take care it does not fall away whilst being pulled out axially (risk of damage to counterthrust ring or finger injury)

Replace the parts that are: broken, cracked, smelt.

Clean all surfaces before reassembly; in particular bushes, counterthrust rings (risk of premature wear) and O-RING seats (risk of leakage).

#### Improper use

The pump must not be used for purposes other than the transfer of liquids.

The pump cannot be used to generate isostatic or counter pressures.

The pump cannot be used to mix liquids generating an exothermal reaction

The pump must be installed horizontally on a firm base.

The pump must be installed on a suitable hydraulic plant with inlet and outlet connections to proper suction and discharge pipes.

The plant must be able to shut off the liquid flow independently from the pump.

Handling of aggressive liquids requires specific technical knowledge

### Troubleshooting

#### Condition: Pump does not deliver

1. motor rotates in wrong direction
2. suction pipe is excessively long
3. insufficient geodetic pump head or excessive suction geodetic lift
4. air infiltration into the suction pipe or branches
5. pump or suction pipe not completely covered by liquid
6. impeller channels blocked by impurities
7. check valve on discharge pipe jammed
8. geodetic system height is greater than maximum potential pump head
9. impeller jammed by crystals or by melting of materials during dry operation.
10. suction line blocked by mud or other debris
11. foot valve insufficiently immersed
12. suction valve faulty, thereby causing suction valve to empty when pump stops
13. magnets release a much greater specific weight and flow rate of liquid than planned
14. magnets release during start-up while impeller is CCW moving (feed-back of the liquid in the discharge side)

**Condition: Pump discharge rate or pressure insufficient**

see 01, 02, 03, 04, 05, 06, 10, 11, 12, 13

15. system's discharge head is greater than expected
16. suction pipe, closing valve and other items have an insufficient nominal diameter
17. small geometric pump suction head
18. damaged or worn impeller
19. liquid viscosity greater than expected
20. excessive air or gas in liquid
21. elbow joints, check valves or other items restrict the outlet port flow
22. liquid (especially if hot) with tendency to change into gaseous state

see 19

23. pump operates at greater capacity than expected
24. specific weight of liquid is greater than expected
25. impurities inside pump create abnormal wear
26. electric motor supply voltage is not rated voltage

**Condition: Pump vibrates and is noisy**

see 25

27. operates at full capacity (no head)
28. pump or pipes inadequately supported
29. eccentric impeller operation because of worn bushings

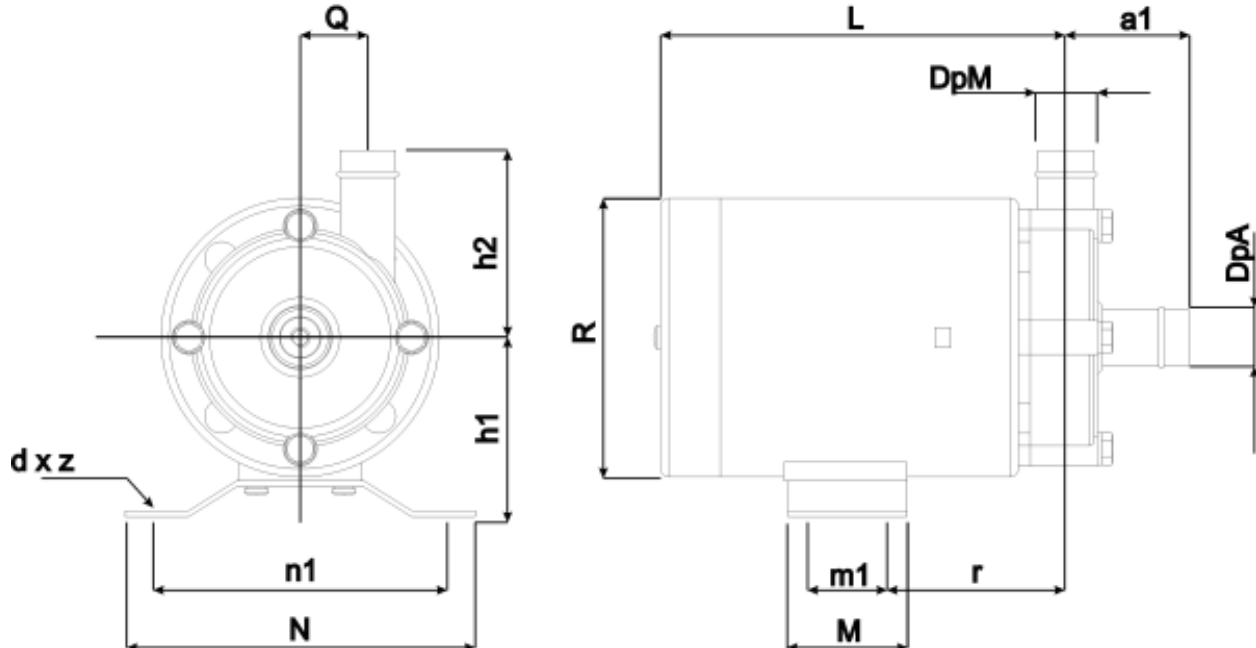
**Condition: Pump's internal parts wear out too quickly**

see 25

30. liquid excessively abrasive
31. recurring cavitation problems (see 02, 15, 19, 17)
32. high tendency of liquid to crystallize or polymerize when pump is not operating.
33. pump made of materials that are unsuitable for pumped liquid
34. operation with capacity reduced too much

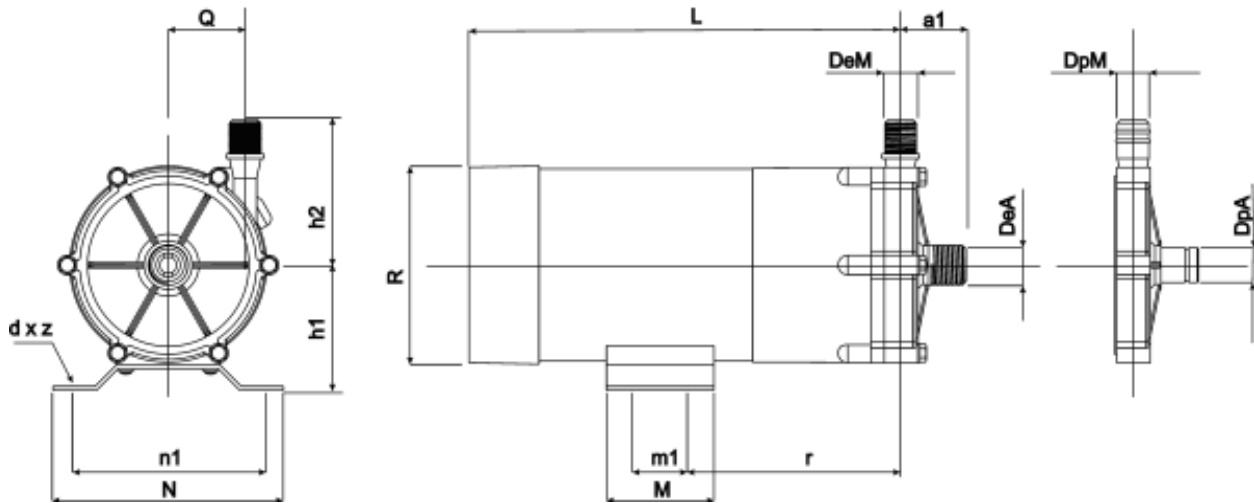
**Technical Data**

**CENTRAN TMB 10 Dimensions**



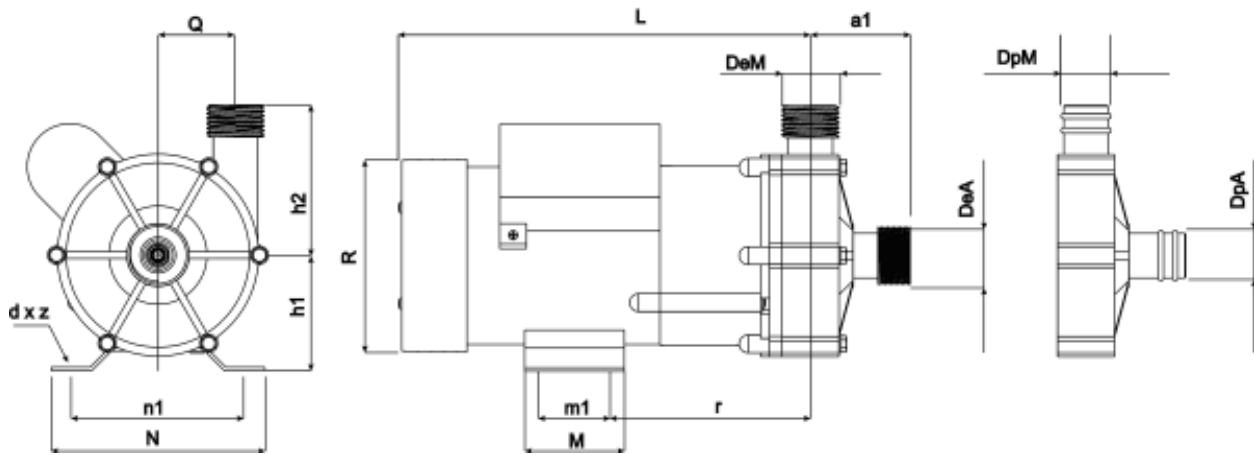
Model	a1	h1	h2	L	m1	M	n1	N	Q	r	R	dxz	DeA	DeM	DpA	DpM
<b>10</b>	31	45	47	100	16	30	78	90	17	46.5	70	∅5 x 4	/	/	14	14

**CENTRAN TMB 20-30-35 Dimensions**



Model	a1	h1	h2	L	m1	M	n1	N	Q	r	R	d x z	DeA	DeM	DpA	DpM
20	37	55	74	181	30	50	70	92	30	75	90	∅6 x 4	3/4"	3/4"	18	17
30	48	60	75	206	40	64	100	120	32	94	90	∅8 x 4	3/4"	3/4"	20	20
35	34	60	75	206	40	64	100	120	40	94	90	∅8 x 4	1/2"	3/8"	18	18

**CENTRAN TMB 65 Dimensions**



Model	a1	h1	h2	L	m1	M	n1	N	Q	r	R	d x z	DeA	DeM	DpA	DpM
65	62	67	84	222	40	68	120	144	45	115	115	∅8 x 4	1"	1"	26	26

## CENTRAN TMB Specifications

CENTRAN TMB				10	20	30	35	65
Conn.	Thread	∅ inlet	BSP/NPT	-	3/4"	3/4"	1/2"	1"
		∅ outlet	BSP/NPT	-	3/4"	3/4"	3/8"	1"
	Hose	∅ inlet	mm	14	18	20	18	26
		∅ outlet	mm	14	17	20	18	26
Motor	Power IN (50/60 Hz)		W	25/21	29/39	57/73	57/73	97/134
	Power OUT (50/60 Hz)		W	8/7	15/21	30/43	30/43	63/87
	Phases		n°	1				
	Standard voltage		V	AC 220/240 - 50/60 Hz				
Pump	Maximum Head (50/60 Hz)		m	1.8/2.2	3/4	3.4/4.5	8/11	6/8.2
	Maximum Capacity (50/60 Hz)		L/min	12/14	21/25	4/45	16/18	62/70
	Noise		dB	35	40			45
	Weight		Kg	0.9	2.2	3	3	5
CENTRAN TMB				-	20 U	30 U	35 U	65 U
Conn.	Thread	∅ inlet	BSP/NPT	-	3/4"	3/4"	1/2"	1"
		∅ outlet	BSP/NPT	-	3/4"	3/4"	3/8"	1"
	Hose	∅ inlet	mm	-	18	20	18	26
		∅ outlet	mm	-	17	20	18	26
Motor	Power IN (60 Hz)		W	-	41	72	72	145
	Power OUT (60 Hz)		W	-	26	48	48	96
	Phases		n°	1				
	Standard voltage		V	AC 120 - 60 Hz				
Pump	Maximum Head (60 Hz)		m	-	4	4.5	11	8.2
	Maximum Capacity (60 Hz)		L/min	-	25	45	18	70
	Noise		dB	-	40			45
	Weight		Kg	-	2.2	3	3	5

Dimensions in mm; weight and loads in kg

BSP or NPT parallel thread on the hydraulic connections

Contractual Data

Technical Data

Medium \_\_\_\_\_  
 conc. % \_\_\_\_\_ temp °C \_\_\_\_\_  
 capacity m<sup>3</sup>/h \_\_\_\_\_ head m c.l. \_\_\_\_\_

W.O.



This Operation and Maintenance Manual must be delivered to the pump-user, who should make diligent note of it, fill in data for the Maintenance Department (page1), and file for future reference.

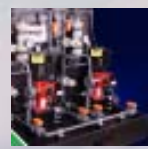
Possible modifications do not imply updating of existing manuals.



Accessories



Chemical Feed Systems



Measuring and Control Technology



Transfer Pumps

Metering Pumps