



Manual MOVEMENT LMV

115000-00 LMV 50F
115002-00 LMV 180
115004-00 LMV 255
115006-00 LMV X
115014-00 LMV-UV

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1. General description of movement LMV

The movement LMV is based on a 230V synchronous motor which moves the hands every minute via an exchange gear mechanism.

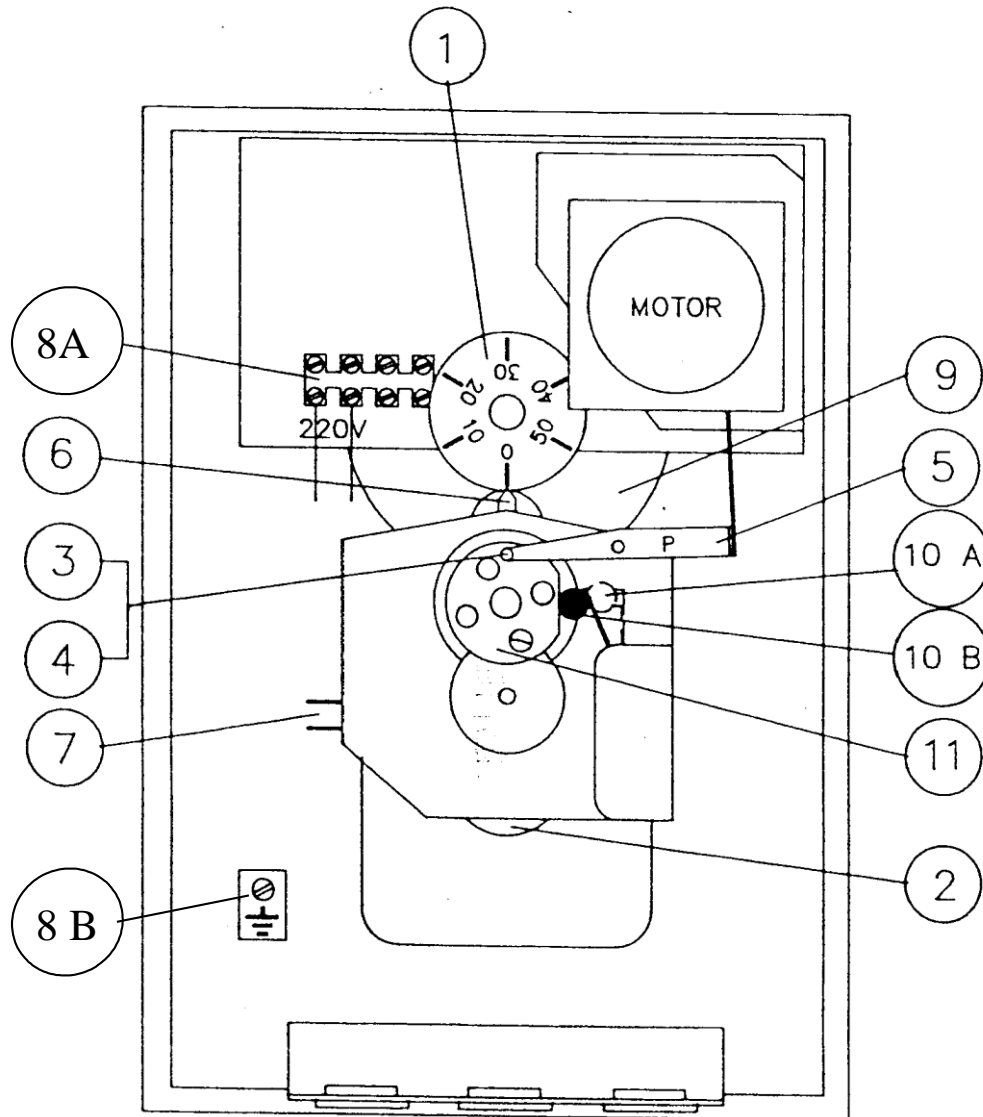
The movement is driven by 24V reversing impulses from a master clock, which are collected by a special Device, so-called impuls collector.

The impulse collector includes an impulse controller which based on a cam and a micro switcher controls the current to the synchronus motor. When the contact points of the switcher are closed the motor starts. The LMV movement has a minute graded disc which indicates the position of the minute hand. This arrangement enable setting of correct time.

The hour hand has not this feature and thus the position of the hour hand has to manually calculated and adjusted.

The version LMV-UV complies to the feature and performance of LMV version with the exception that this movement only has one shaft for minute drive. This version is used for installations with separate gear for the hand.

2. Sketch of synchronous motor for LMV



1	Setting plate	8A	Terminal for connection 230VAC
2	Drive of brass	8B	Terminal for Ground connection
3	Pin	9	Minute drive
4	Hole for pin	10A	Micro switch position "run motor"
5	Device for set of time	10B	Micro switch position "stop motor"
6	Red arrow	11	Graded disc
7	Connector to 24V impulse		



3. Check of motor before mounting of hands

At delivery the device is set to full hour (e.g 12.00). The red arrow (6) then points to 0-mark of the setting plate (1).

1. Check that the arm of the micro switch (10) is in position shown as 10 B on the sketch above.
 - If so, continue to 2.
 - If not, (which means (10) is in the same position as 10B on the sketch) carry on as follows:

Turn wheel (2) clockwise or anti -clockwise until the arm of the micro switch enters the notch position 10 B in the wheel underneath the curve (11).

2. Check that the pin (3) fit straight into the hole (4), which should be positioned straight under the pin (3), when the P-arm (5) is pressed down. In this position the red arrow (6) should point straight to the 0-mark on the graded disc. (1)
 - If so , continue mounting the hands. (see p.5.1 below)
 - If not adjust as follows:
 - A. Move the brass wheel (2) slightly anti-clockwise until pin (3) is just over hole (4)
 - B. Press the P-arm (5) so the pin (3) enters hole (4) and keep it pressed down. This step releases the synchronous motor.
 - C. Turn the minute hand drive (9) anti-clockwise until the red arrow (6) points straight to 0-mark on the setting plate.
 - D. Release the 'press down' of the P-arm.

Proceed to mounting of hands p.5.1 (see below).

4. Mounting of hands.

1. Mount the hour hand on the shaft with it's needle point aiming straight to 12.
2. Fasten the hour hand carefully.
3. Mount the minute hand on the shaft wit it's needle point aiming straight to 12.
4. **IMPORTANT!** There should be some space on the shaft between the minute- and hours hand.
5. Fasten the minute hand carefully.



Mounting of hands version 115014-00 LMV-UV

1. Mount the movement to the gear for the hands.
2. Mount the hand(s) on the shaft with needlepoint(s) aiming straight to 12.
3. Fasten the hour hand(s) carefully.
4. Mount the minute hand(s) on the shaft with needlepoint(s) aiming straight to 12.
IMPORTANT! There should be some space on the shaft between the minute- and hours hand.
5. Fasten the minute hand(s) carefully.

5. Installation and test.

1. Connect to 230 VAC via the terminal (8A) and protective earth to terminal (8B). When installed a readily accessible disconnect device shall be incorporated in the fixed wiring.
2. Connect the impulse wire from the master clock via the plug inclosed in delivery.
3. Check that the movement setting remains on full hour, e.g the red arrow (6) points straight to 0-mark.
4. Connect the plug to the movement at (7).
5. Switch on the mains.
6. Wait for a minute impulse for step forward to odd minute.
7. Now the setting plate (1) should turn one mark anti-clockwise and the hands are moving one minute forward.
 - If so, the movement are ready for operation.
 - If not, the connection to impulse (7) is wrongly polarized. Adjust as follows:
 - A. Disconnect mains
 - B. Tur the connector to impulse around or swap wires in the connector.
 - C. Check procedure from step 3 above.



6. Resetting / Setting of correct time.

In the example below we describe setting of time to 13:15. starting from the settings actual at delivery, that is 12:00.

Disconnect connection to 230V.

1. Disconnect the wire from masterclock (plug at 7). Observe how the connector is applied.
2. Check that the arm of the micro switch (10) is in the same position as 10 B on the sketch,
-If it does, continue to point 3.
-If not (which means the arm is in position 10 A) carry on as follows:

Turn wheel (2) clockwise or anti-clockwise until the arm of the micro switch enters the notch, position 10 B in the wheel underneath the curve (11). Check so that the pin (3) has position straight above the hole (4) . Proceed to p.4 below.

3. Move the brass wheel (2) slightly anti-clockwise until pin (3) is straight over hole (4).
4. Press the P-arm (5) so the pin (3) enters hole (4) and keep it pressed down. This release the synchronous motor.
5. Check that the arrow (6) points straight to 0-mark on the setting plate (1). If not turn the minute wheel (9) anti-clockwise until that position.
When the red arrow (6) points at 0 on the setting plate (1) this means that the movement is set to full hour, (the minute hand pointing at 12 and the hour's hand pointing at full hour 12).
6. Press the P-arm (5) again.
7. Turn the minute wheel (9) anti-clockwise. In this example first a full turn around, then continue until the arrow (6) points straight to minute mark 14 on the setting plate (1).
8. Check correct time for synchronisation to master clock.
9. Connect impulse wire (7) from master clock. Note! Apply the connector correct.
10. Connect 230V mains.
11. Wait for the right minute impulse. (In this example for stepping forward to odd minute)
12. When the minute impulse comes from the master clock the setting plate (1) is moving one mark clockwise and the hands are moving 1 minute forward.
The clock now shows 13:15 and it is synchronised to the master clock.
If the movement does not step forward within this odd minute the connection (7) is wrongly polarized.
Adjust by repeat the procedure from p.1 to p.5 above.
Turn the movement manually to even minute (e.g.16) by turning the minute wheel (9) anti-clockwise.
Release the P-arm (5)
Turn the connection (7) the other way around and repeat procedure from p.9 above.

WESTERSTRAND URFABRIK AB

Box 133
545 23 TÖREBODA

Tel. 0506 48 000
Fax. 0506 48 051

Internet: www.westerstrand.se
E-mail: info@westerstrand.se



7. Power failure

In case of power failure, the consequences are as follows:

- The master clock does not distribute any impulses. The impulses are stored in the memory of the master clock. **IMPORTANT!!** Impulses are collected for max. 10 hours.
- When power returns the master clock will distribute the stored impulses to the movement by rapid impulses (15 imp./min.).
- Then the movement begins to forward the hands to correct time.
- It will take some minutes (the time depends on how long the power failure has lasted) until the movement has reset the hands).
- After the movement has reached correct time it returns to normal operation.

8. Maintenance

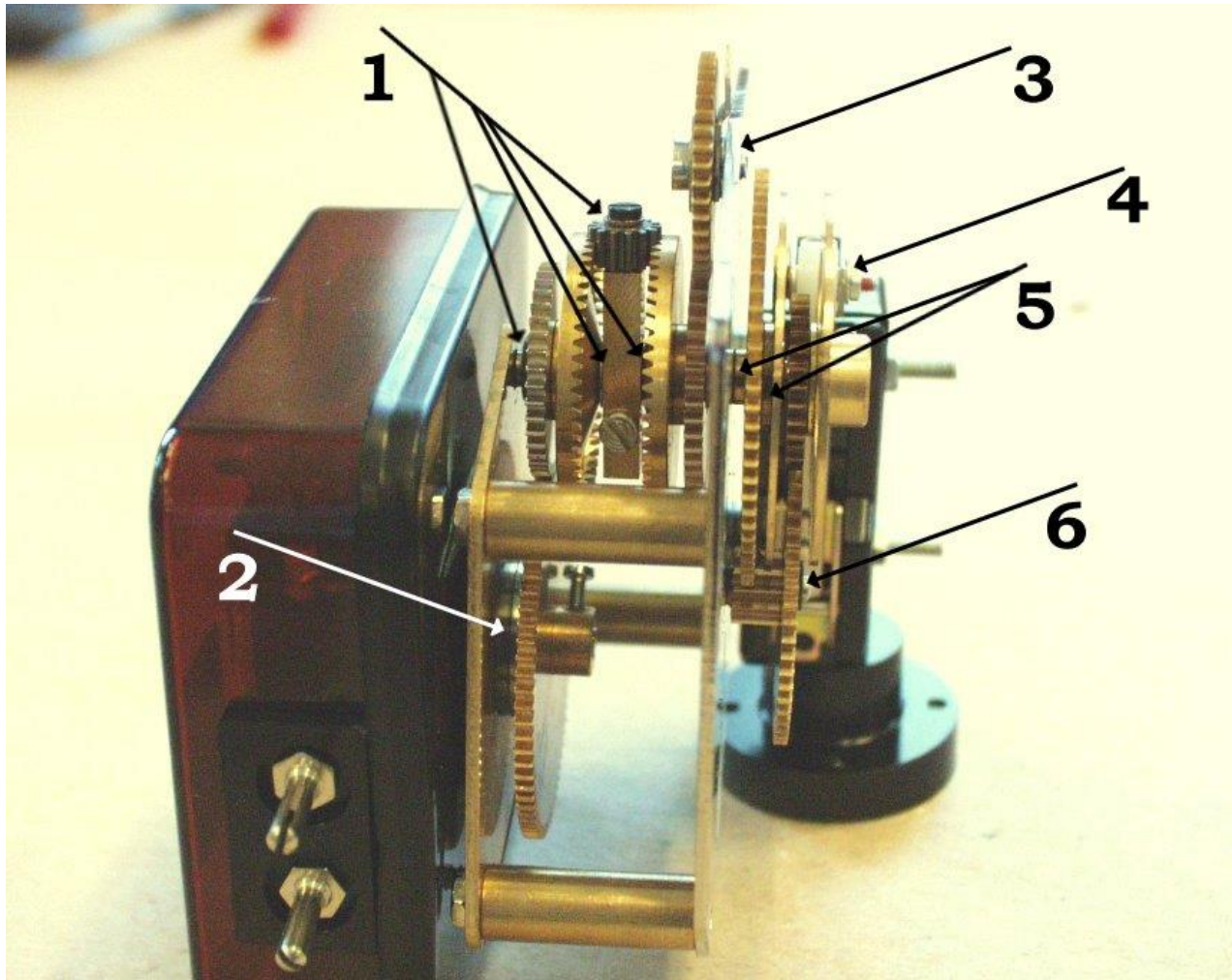
Lubrication of the movement must be done minimum once a year. All positions marked in the pictures on the following pages must be lubricated.

Movement placed in aggressive environment should be lubricated at more frequent intervals, particularly the bearings on the shafts and the gear mechanism.

Use high-grade lithium-soap paste, for specification please contact Westerstrand Urfabrik AB.

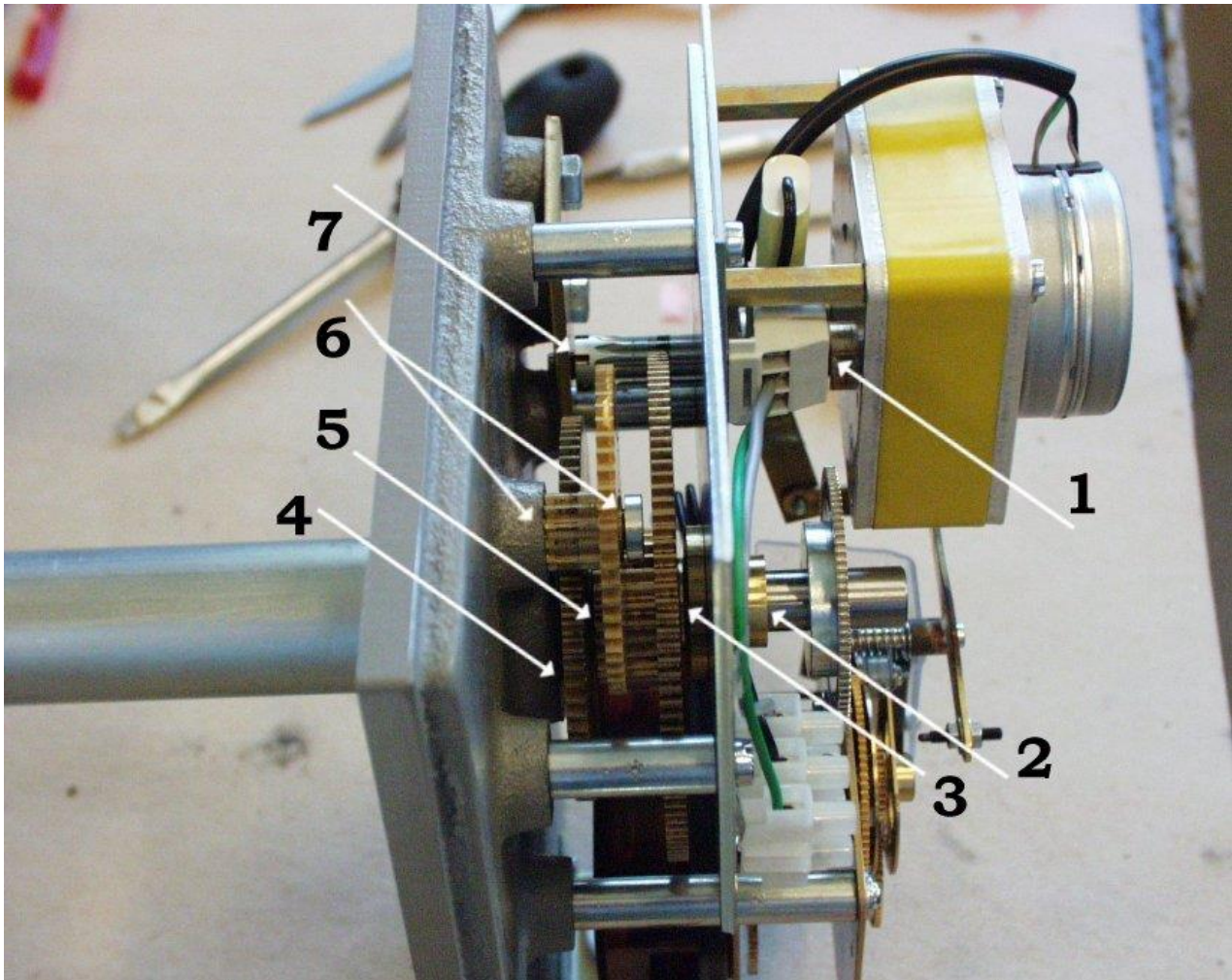
In case of negligence of maintenance the movement may be damaged or the life cycle considerable reduced.

Lubrication of driving mechanism



1. Angle gear bearing
2. Centre shaft
3. Impuls collector
4. Roller for micro breaker
5. Between minute and hour curve
6. Change gear

Lubrication of gear mechanism



1. Motor shaft
2. Bearing Minute shaft
3. Bearing Minute shaft
4. Hour shaft
5. Minute shaft
6. Change gear bearing
7. Motor shaft and driving gear

Internal connection diagram 078906-00

