# Resistive System

Resistive type systems are recommended for small and medium size machines that need metered, frequent lubrication.

A manual or single-phase electrical driven pump intermittently sends oil under pressure through a distribution composed by proportional meters that release pre defined discharge of lubricant for each lubricating point of the machine.

Electrical driven pump may be equipped with timer to control operation. Due to its constructive conception, this system is of easy application and low maintenance cost.

**Flow Diagram**

**Legends**

Mechanical pump for oil

Resistive Distributor

# Manual Pump for Oil
# Model PM-6

**Description**

Manual pumps PM-6 are indicated for centralized lubrication systems with oil where resistance-metering units are used. You operate the pump by gently pulling the handle to the vertical position. A slow and automatic return driven by means of a spring determines the delivery to the system. Fast return of the handle means empty reservoir. In order to guarantee a perfect operation, it is recommended to clean the strainer at the outlet at regular intervals.

**Specifications**

| | |
|---|---|
| Discharge/stroke | 6 $cm^3$ maximum |
| Working pressure | 3 $kg/cm^2$ maximum |
| Suction strainer | 250 micron |
| Discharge port | 5/16” UNF (groove) |
| Working temperature | From -10 ºC to +60 ºC |
| Lubricant | Oil 50-220 cSt 40 ºC |
| Plastic reservoir | 0.5 liters |
| Mounting | Vertical |
| Reference | 00.115.1 |
| Ordering code | 9237 |

**Overall Dimensions**

# Electrical Pumps
# Model CMV-15N

## Description

Electrical pumps CMV-15N are indicated for centralized oil lubrication systems resistive type (equipped with DPT metering units).

Motor-pump assembly is controlled by a solenoid that, by its turn, controls the motor through a cyclic action. The assembly has a piston pump located inside the reservoir.

Versions with control may be supplied equipped with a programmable timer that counts pausing time and working time.

In addition to that, the unit is equipped with push button for manual actuation of additional lubricating cycles. A green light indicates live voltage in. Yellow light indicates regular operation. By means of two two switches, it is possible to schedule pausing time form 2.5 to 180.0 minutes and working time from 2.5 to 40 seconds.

Besides that, it is also possible to turn prelubrication function on to allow a complete cycle whenever the pump is energized. The electrical connection is completed by means of two couplings. (One for feeding electrical energy and another for signalization of three-pole level switch IP-65). These versions without timer send start up and shut down signals from main control panel of machine. Maximum continuous working time shall not surpass 40 seconds.

All electrical pumps CMV-15N are equipped with electrical level indicator, suction strainer, and filling strainer. Internal and external and electronic connections are made in accordance with safety standards in force.

## Specifications

| | |
|---|---|
| Voltage | 115 V AC - 230 V AC |
| Frequency | 50/60 Hz |
| Plastic reservoir | 2 liters |
| Electrical protection | IP-54 |
| Discharge/minute | 0.1 liter |
| Working pressure | 13 bar - 188 psi |
| Discharge port | 1/8” BSP (groove) |
| Lubricant | 50-220 cSt 40 $^{o}$C oil |
| Suction strainer | 250 micron |
| Minimum voltage | 1 to 240 V AC 200 V DC 40 W |
| Pausing time | From 2.5 to 180 minutes |
| Working time | From 2.5 to 40 seconds |

**Ordering codes**

| Code | Reference | Type | Voltage | Reservoir | Description |
|---|---|---|---|---|---|
| 5287 | 00.440.4 | CMV-15N | 115 V AC | 2 liters | Without timer |
| 5289 | 00.440.5 | CMV-15N | 230 V AC | 2 liters | Without timer |
| 5288 | 00.441.4 | CMV-15N | 115 V AC | 2 liters | With timer |
| 5290 | 00.441.5 | CMV-15N | 230 V AC | 2 liters | With timer |

# Electrical Pump
# Model CMV-15 N

## Dimensions

# Resistance Metering Units
# Model DPT

**Description**

Resistance metering units are indicated for application in oil centralized lubricating systems. They may be installed on one-side aluminum divider or even directly on lubricating points. For correct operation, pipe network pressure can neither be lower than 2 kg/cm$^2$ nor exceed 15 kg/cm$^2$.

**Flow Diagram**

Metering units resistive type is equiped with a non-return valve to prevent emptying main tubing during pausing time and a strainer to prevent bearing contamination plus a metering rod. When pump starts up, oil is sent under pressure around rod and metering flow is determined as a function of metering rod size. Metering unit flow and direction are indicated at its housing.

Metering flow resistive type may be either directly mounted on lubricating point or on a divider. It is recommended to use one metering unit for each lubricating point, as required. An auxiliary strainer is installed at main pressure line to help avoiding metering unit contamination.

# Metering Units for Dividers
# Model DPT - Oil 50 - 500 cSt

**Description**

These metering units may be used for intermittent lubricating systems. They are installed on single-junction 1 to 14 ways aluminum divider. For circulating oil systems it is necessary to know layout and discharge of the system to define whether this system is applicable or not.

| Code | Reference | Marking | Metered Quantity $cm^3$ / minute |
|---|---|---|---|
| 5311 | 02.004.0 | 0 | 0.085 - 0.115 |
| 5312 | 02.004.1 | 1 | 0.170 - 0.230 |
| 5313 | 02.004.2 | 2 | 0.340 - 0.460 |
| 5314 | 02.004.3 | 3 | 0.680 - 0.920 |
| 5315 | 02.004.4 | 4 | 1.360 - 1.840 |
| 5316 | 02.004.5 | 5 | 2.720 - 3.680 |
| 5317 | 02.004.6 | 6 | 5.440 - 7.360 |
| 5318 | 02.004.7 | 7 | 10.880 - 14.720 |
| 5319 | 02.004.8 | 8 | 21.760 - 29.440 |
| 5320 | 02.004.9 | 9 | 43.520 - 58.880 |

# Dividers and Fittings

| Single-Junction Dividers | | | | |
|---|---|---|---|---|
| Code | Ref | Outlets | A | B |
| 5291 | 01.030.0 | 1 | 31 | 20 |
| 5292 | 01.040.0 | 2 | 46 | 35 |
| 5393 | 01.050.0 | 3 | 61 | 50 |
| 5294 | 01.060.0 | 4 | 76 | 65 |
| 5295 | 01.070.0 | 5 | 91 | 80 |
| 5296 | 01.080.0 | 6 | 106 | 95 |
| 5297 | 01.090.0 | 7 | 121 | 110 |
| 5298 | 01.100.0 | 8 | 136 | 125 |
| 5300 | 01.123.0 | 10 | 166 | 155 |

| Double-Junction Dividers | | | | |
|---|---|---|---|---|
| Code | Ref | Outlets | A | B |
| 5301 | 01.504.0 | 2 | 31 | 20 |
| 5202 | 01.506.0 | 4 | 46 | 35 |
| 5303 | 01.508.0 | 6 | 61 | 50 |
| 5304 | 01.510.0 | 8 | 76 | 65 |
| 5305 | 01.512.0 | 10 | 91 | 80 |
| 5306 | 01.514.0 | 12 | 106 | 95 |

## Fittings

By using suitable tube fittings, it is possible to couple 4 mm and 6 mm outside diameter tubes to the same divider and 4 mm outside diameter tubes to secondary lines.

# Metering Units for Lubricating Points
# Model DPT - Oil 50-500 cSt

**Description**

These metering units may be used at intermittent lubricating systems and may be installed at lubricating points. For oil circulating systems, it is necessary to know layout and flow of the system to define whether they can be used or not.

| Code | Reference | Marking | Metered Quantity $cm^3$/minute |
|---|---|---|---|
| 5321 | 02.104.0 | 0 | 0.085 - 0.115 |
| 5322 | 02.104.1 | 1 | 0.170 - 0.230 |
| 5323 | 02.104.2 | 2 | 0.340 - 0.460 |
| 5324 | 02.104.3 | 3 | 0.680 - 0.920 |
| 5325 | 02.104.4 | 4 | 1.360 - 1.840 |
| 5326 | 02.104.5 | 5 | 2.720 - 3.680 |
| 5327 | 02.104.6 | 6 | 5.440 - 7.360 |
| 5328 | 02.104.7 | 7 | 10.880 - 14.720 |
| 5329 | 02.104.8 | 8 | 21.760 - 29.440 |
| 5330 | 02.104.9 | 9 | 43.520 - 58.880 |

Metered quantity in $cm^3$/minute is calculated at 7 kg/$cm^2$ pressure, 25 $^oC$ temperature and 65 cSt oil.

# Dividers and Fittings

## Description

### Fittings

By using suitable tube fittings, it is possible to connect to the same divider 4 mm and 6 mm outside diameter tubing from the main line and 4 mm outside diameter tubing from secondary lines.