

Townsend Bearings



Perma Lubrication System

Lubrication Systems



Automatic Lubrication with Lubrication Systems from perma-tec

The regulated and controlled supply of lubricant to a lubrication point is the key to trouble free mechanical performance. perma lubrication systems offer such precise and consistent lubrication to individual lubrication points. The reliable function is based on an electrochemical reaction.

By screwing an activator into a perma Classic or Futura an activating pellet is dropped into a rubber bladder which contains a liquid electrolyte. A chemical reaction occurs creating pressure of up to 4 bar. This causes the bladder to expand which in turn pushes the piston forward expelling lubricant directly into the lubrication point. When all of the lubricant is discharged, the coloured piston will be clearly visible through the clear plastic top of the units. The lubrication period is determined by the various colour coded activator screws.

perma CLASSIC

- Lubrication period up to 12 months (depending on type)
- Fully automatic, reliable and safe - no maintenance required
- Operating temperature ± 0 to $+40$ °C (32 °F to 104 °F)
- Pressure build-up of up to 4 bar
- Indication of empty level
- 120cc lubricant volume
- Simple exchange without tools
- Works independent of mounting position - even under water
- Metal housing
- Environmentally safe electrolyte liquid based on citric acid

perma FUTURA

- Lubrication period up to 6 months depending on type (activating screws same as perma CLASSIC, but with pink O-ring seal)
- Fully automatic, reliable and safe - no maintenance required
- Operating temperature ± 0 to $+40$ °C (32 °F to 104 °F)
- Pressure build-up of up to 4 bar
- Transparent housing allows constant discharge monitoring
- 100cc lubricant volume
- Simple exchange without tools
- Works independent of mounting position - even under water
- Transparent, corrosion-proof and recyclable plastic housing
- Environmentally safe electrolyte liquid based on citric acid



yellow = 1 month*



green = 3 months*



red = 6 months*



grey = 12 months

(*pink O-ring for FUTURA)

perma Lubrication
Systems for
Roller Bearings
Sliding Bearings
Chains
Open Gears
Guideways ...

Temperature Independent Precision Lubrication with perma STAR

With the development of the perma STAR lubrication systems, perma-tec was able to minimize the influence of ambient temperature on automatic lubrication.

The perma STAR consists of an LC-unit (Lubrication Cartridge) and an electro-mechanical drive unit (with an exchangeable battery set for perma STAR VARIO or external power supply for perma STAR CONTROL). The electromechanical drive unit builds up pressure (automatic pressure shut off at max. 5 bar), operates automatically and independent of temperature. Its unique advantage is the precise lubricant discharge.

We offer 3 different sizes of LC-units: 60cc (S60), 120cc (M120), and 250cc (L250). Each size can be set to discharge its content in 1, 3, 6, or 12 months by simply changing the configuration of the dialswitches on the drive. This makes the perma STAR a great solution for a wide variety of lubrication requirements. The drives are interchangeable with all three sizes of the LCs and can be changed on site.

The drive unit is re-usable and saves resources. The LC-unit is made from transparent plastic for optimal fill level control and monitoring. The plastic can be recycled and is therefore environmentally friendly.

perma STAR VARIO

- Operating temperature -10 to +50 °C (14 °F to 122 °F)
- Transparent housing for constant discharge monitoring
- 4 discharge periods: 1, 3, 6, or 12 months
- Discharge period can be individually set when changing the LC-unit
- LED lights signal the operating conditions (e.g. operating, empty, malfunction)

perma STAR CONTROL

- Operating temperature -10 to +50 °C (14 °F to 122 °F)
- Machine connection (powered and controlled by the machine)
- Signalling of operating conditions (e.g. operating, empty, malfunction) by LED lights and machine analysis
- Lubrication system operates only when power is supplied by the machine



Accessories and Lubricants

Different industries have different application areas. Each application has different lubrication requirements, e.g. hard to reach lubrication points, lubrication points with strong vibrations, or extremely high ambient temperatures.

perma-tec has developed solutions for these specific requirements and offers a wide variety of accessories for the optimal installation of its lubricators to different lubrication points.

perma-tec's standard program also includes more than 200 different lubricants. The lubricant line includes multi-purpose-, bio-, food grade-, high pressure-, high/low temperature-, and liquid grease.

Accessories

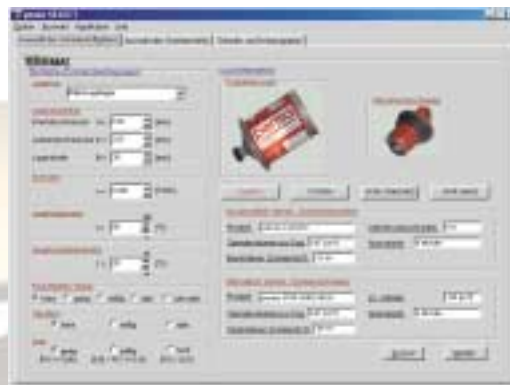


Service:
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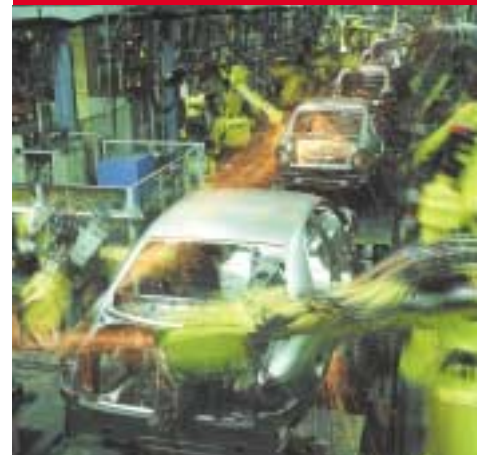
perma SELECT software
The easy to use perma SELECT program assists you in finding the best suitable lubricator, settings, and lubricant for the safe operation of your equipment.

Order form
Accessory list

Standard lubricant line



**perma Lubrication
Systems in the
Automotive Industry
Metal processing
Industry
Steel Industry
Plastic Industry
Print- and Paper
Industry
Textile Industry
Power Plants
Rock Quarries
Food Industry
Concrete Industry
Wind Energy Industry
...**

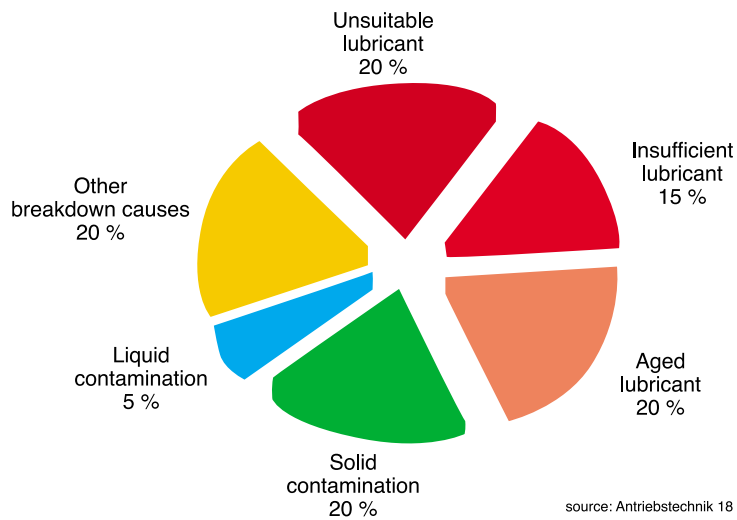


perma[®]

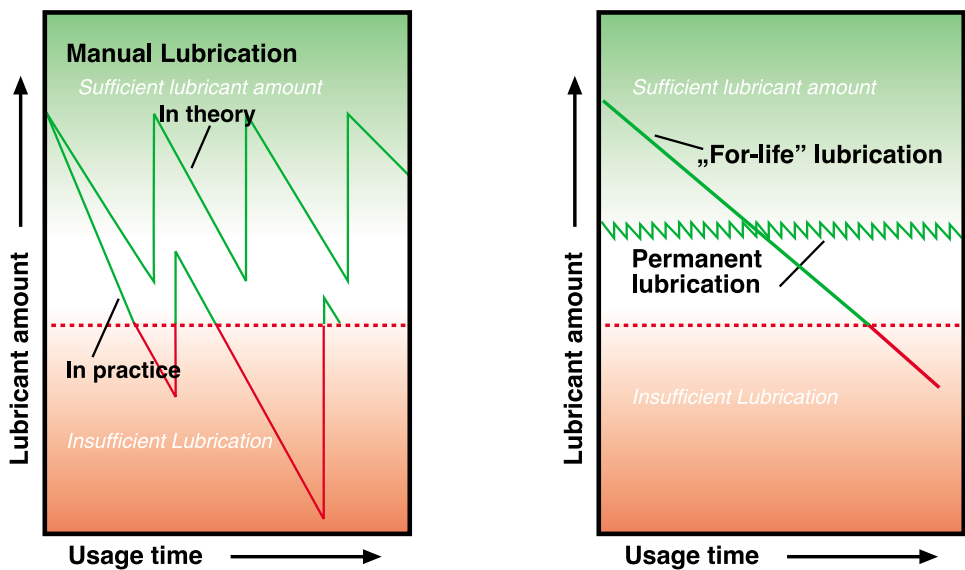
Avoiding Damages and Saving Costs with perma Lubrication Systems

More than 50% of all premature bearing failures caused by lubrication problems could be avoided. The productivity and economic efficiency of equipment and production areas could be increased.

Reasons for roller bearing breakdowns



With perma lubrication systems, production breakdowns caused by incorrect or insufficient lubrication can easily and economically be eliminated. perma-tec offers a great variety of reliable, precise and fully automatic lubrication systems which can be optimally matched to the requirements of individual lubrication points. perma lubrication systems will reduce maintenance costs, help prevent expensive breakdowns and increase the service life of your equipment.



Technical Data



Electrochemical Lubrication Systems	perma CLASSIC	perma FUTURA
Construction	Metal housing	Transparent plastic
Powered by	Electrochemical reaction	Electrochemical reaction
Discharge periods with activation screws at +20 °C (68 °F) with SF01	1, 3, 6 or 12 months	1, 3 or 6 months with pink O-ring seal
Lubricant Volume	120cc	100cc
Operating temperature	0 °C to +40 °C (32 °F to 104 °F)	0 °C to +40 °C (32 °F to 104 °F)
Pressure build-up	Max. 4 bar	Max. 4 bar



Electromechanical Lubrication Systems	perma STAR VARIO	perma STAR CONTROL
Drive	Electromechanical re-usable gear motor, battery set,	Electromechanical re-usable gear motor, 7...30 V DC
Discharge periods	1, 3, 6 or 12 months	machine controlled and impulse mode
Lubricant Cartridge Volume	Exchangeable LC-unit 60, 120 or 250cc	Exchangeable LC-unit 60, 120 or 250cc
Operating temperature	-10 °C to +50 °C (14 °F to 122 °F)	-10 °C to +50 °C (14 °F to 122 °F)
Pressure build-up	Max. 5 bar	Max. 5 bar

perma-tec GmbH & Co. KG
 Hammelburger Str. 21
 97717 Euerdorf – Germany

Tel. +49 (0) 97 04 6 09-0
 Fax +49 (0) 97 04 6 09-55

www.perma-tec.de
 e-mail: info@perma-tec.de

Electrochemical Lubrication Systems



Features	Benefits
perma CLASSIC / FUTURA Lubrication System	<ul style="list-style-type: none"> No manual re-lubrication necessary Controlled and permanent lubrication
Electrochemical drive	<ul style="list-style-type: none"> No external power supply needed Adjustable discharge period (120cc in 1, 3, 6 or 12 months) (100cc in 1, 3, or 6 months)*
Pressure build-up of up to 4 bar	<ul style="list-style-type: none"> Reliable supply of lubricant to the lubrication point
Permanent discharge of lubricant	<ul style="list-style-type: none"> Quality of lubricant at the lubrication point stays at a high level
Transparent discharge indicator cap	<ul style="list-style-type: none"> Visible control of fill level
Transparent plastic housing*	<ul style="list-style-type: none"> Visible control of discharge Corrosion-proof Recyclable

* (perma FUTURA only)

Discharge period CLASSIC

Average temperature	Type 1		Type 3		Type 6		Type 12	
	Discharge period (months)	Initial delay (days)	Discharge period (months)	Initial delay (days)	Discharge period (months)	Initial delay (days)	Discharge period (months)	Initial delay (days)
0 °C / 32 °F	4	5	8	12	15	16	>18	25
+10 °C / 50 °F	2	3	5	4	8	8	18	10
+20 °C / 68 °F	1	1	3	2	6	4	12	6
+30 °C / 86 °F	0.8	<1	2	1	3	2	6	3
+40 °C / 104 °F	0.6	<1	1	<1	2	1	3	1

This table is based on tests conducted by perma-tec under laboratory conditions and should only be used as a general guideline for selecting the discharge period. The actual discharge period is strongly influenced by various factors (e.g. the type of lubricant, ambient temperature and connecting parts).

Service: Download www.perma-tec.de

perma SELECT Software

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Order form / Accessory list

Standard lubricant line



yellow = 1 month*



green = 3 months*



red = 6 months*



grey = 12 months

(*pink O-ring seal for FUTURA)

perma-tec GmbH & Co. KG

Hammelburger Str. 21
97717 Euerdorf – Germany

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Fax +49 (0) 97 04 6 09-55

www.perma-tec.de
e-mail: info@perma-tec.de

Electronically Controlled Oil System



ECOSY
Electronically Controlled Oil System



What is **perma ECOSY**?

The remarkable features of the compact Multi-Point Oil Lubrication System **perma ECOSY** are its clear construction and multiple functionality. The base of the body is the 7 liter oil tank. All of the unit's structural components are integrated in the base body. Up to 6 lubrication points can be supplied with oil by means of simple plug-in connections. The configuration of each outlet is user friendly, menu-driven with buttons and can be done on a multilingual display. Each outlet's discharge amount can be set individually and separately from the other outlets.

Sensors collect data about operating conditions and communicate with the lubrication system **perma ECOSY**. This ensures lubrication as needed. The integrated fill level monitoring sensor with a reserve indication in the display and signalling capability makes it easy to monitor the system. By simply refilling the oil reservoir, the **perma ECOSY** is ready to function again without requiring any other maintenance. Connection to a PLC or external machine is possible.

Features

Compact Construction



Benefits

- ⇒ Sturdy PE-housing
- ⇒ Reservoir and electronic housing in one compact, sturdy unit
- ⇒ Mains supply safely integrated in the housing
- ⇒ Pump integrated in the reservoir
- ⇒ Menu-driven configuration
- ⇒ Easy access to all connection points

Innovative Distributor Function

- ⇒ Selection of 1-6 outlets possible
- ⇒ High pressure build-up of up to 10 bar at each outlet
- ⇒ Individual supply of each lubrication point (dosage as required)
- ⇒ Easy installation with tubes to the lubrication point
- ⇒ Tubes up to 10 meters (depending on ambient temperature and oil viscosity)
- ⇒ Supply of oil viscosity between 65 - 2000 mm²/s (at 40 °C / 104 °F)



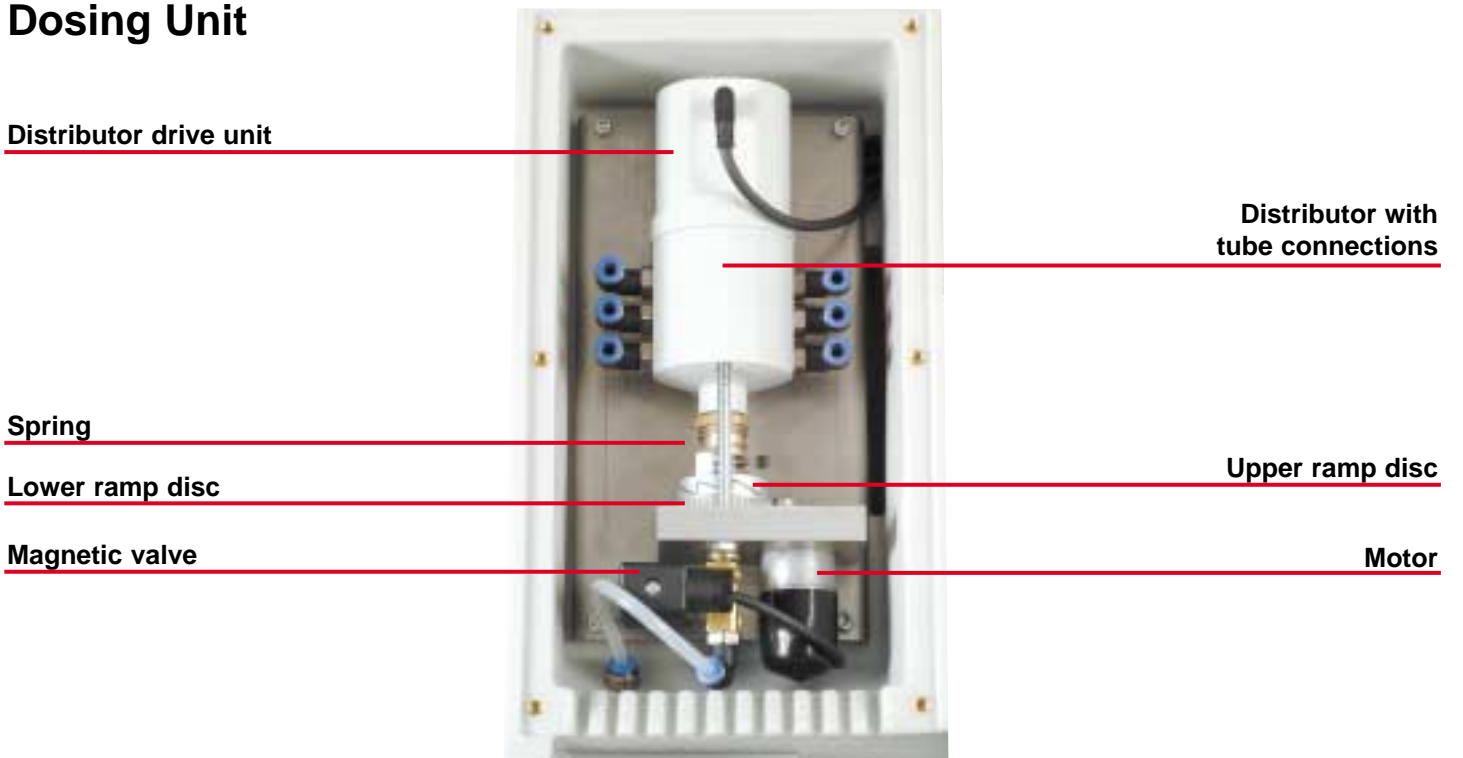
Pre-Configured Interfaces

- ⇒ Connection to external equipment (PLC, contactor) possible
- ⇒ Signals of fill level and operating condition to external control systems possible
- ⇒ Independent freely programmable control unit

ECOSY Housing



Dosing Unit





ECOSY Basic

Reservoir, pump, distributor and electronic unit

ECOSY Standard

Same as basic version plus fill level sensor and internal thermo sensor



ECOSY Exclusive

Same as standard version plus external thermo sensor and sensor for impulse control

Special Accessories

- Tubes
- Brushes
- Special brushes for step chains
- Connecting parts
- Mounting parts



Lubrication of Industrial Chains



Careful and effective lubrication of industrial chains is a prerequisite for reaching manufacturer's service life and optimal performance of the chain drives.

The linear shape of chains produces surface pressure between chain studs and bushings. Penetration of foreign substances and insufficient lubrication increase chain wear. Surrounding liquids or aggressive substances influence the operation of chains and will lead to corrosion and destruction of the slide surface when not sufficiently lubricated.

With its interval lubrication, **perma ECOSY** supplies all contact areas of chains with the correct amount of lubricant. Different speeds and lengths (constructions) of industrial chains are taken into consideration with adjustable lubricant amounts.

The advantages of **perma ECOSY** are a clearly visible wear reduction, as well as protection against corrosion and contamination.

perma ECOSY collects data about the chain's operating condition with its sensors and directs the discharge intervals according to individual requirements. The metallic friction between chain studs, bushings, rollers, and sprocket wheels will be reduced by building up a supporting lubricant film. Continuous re-lubrication ensures that the chain links are operated within a range of liquid- and mixed friction. The system minimizes friction and increases efficiency on up to 6 chain drives.

The economic operation of the Multi-Point Oil Lubrication System **perma ECOSY** increases the service life of chains and decreases maintenance costs.



The Lubrication Network



perma[®]
NET

Technical Data

Permitted operating temperature range

-20 °C to +60 °C (-4 °F to +140 °F)

Number of outlets

Standard 1 - 6

Tank volume

7 liters

Pump capacity

0 - 9999 ml / 1000 h
1 ml steps

Max. working pressure

10 bar

Filling

Manually refillable

Viscosity range

Oil 65 - 2000 mm²/s at 40 °C (104 °F)

Power supply

85 - 240 V AC 50/60 Hz

Tubes

6 / 4 mm

Input / output for PLC connection (25V)
(malfunction / reserve / machine on / off)

External dimension

310 x 370 x 170 mm

Features

- User-friendly operation via 4 display buttons
- Display with scroll-menu
- Low temperature shut-off displayed
- Reserve shown on display and reserve-signal output
- Display sensor function (alive) OK
- Sturdy metal drive unit
- Up to 6 outlets individually configurable via software
- Different display options (language, unit measurements)
- Selectable working mode (machine / time controlled)
- Malfunction indication via display and separate signal output

Note

The pump can be operated within above stated temperature range. The operating temperature depends on the lubricant. The stated pump capacity refers to oil viscosity 65 - 2000 mm²/s (+40 °C/104 °F), ambient temperature 20 °C /68 °F, without back pressure and 85 - 240 V AC 50/60 Hz rated voltage. Different pressure, temperature and voltage will change the pump capacity.



What is perma NET?

perma NET is a lubrication concept that combines the features of centralized lubrication systems with the advantages of single-point lubrication systems, while also allowing for monitoring of each individual lubrication point from a central location. Different network participants (lubricators with or without distributor, I/O components) are connected to an electrical BUS system via a supplied cable. Configuration and monitoring of each network participant is done centrally with the NCC (**Net Control Center**). perma NET is a network solution for the safe maintenance, monitoring and lubrication of machines and equipment.

Features

Central Control

Benefits

- ⇒ Clear overview of the network and its components at the **Net Control Center (NCC)**
- ⇒ User friendly menu-guided operation
- ⇒ Individual configuration of each network participant
- ⇒ Constant monitoring of each network participant
- ⇒ Changes of network function can be done centrally at any time



The Latest Generation of Single-Point Lubrication Systems

- ⇒ Individual discharge of many different kinds of lubricants
- ⇒ High pressure build-up of up to 25 bar directly at the lubrication point
- ⇒ With the direct distributor MP-6, several hundred lubrication points within the network can be serviced

Cable Connections

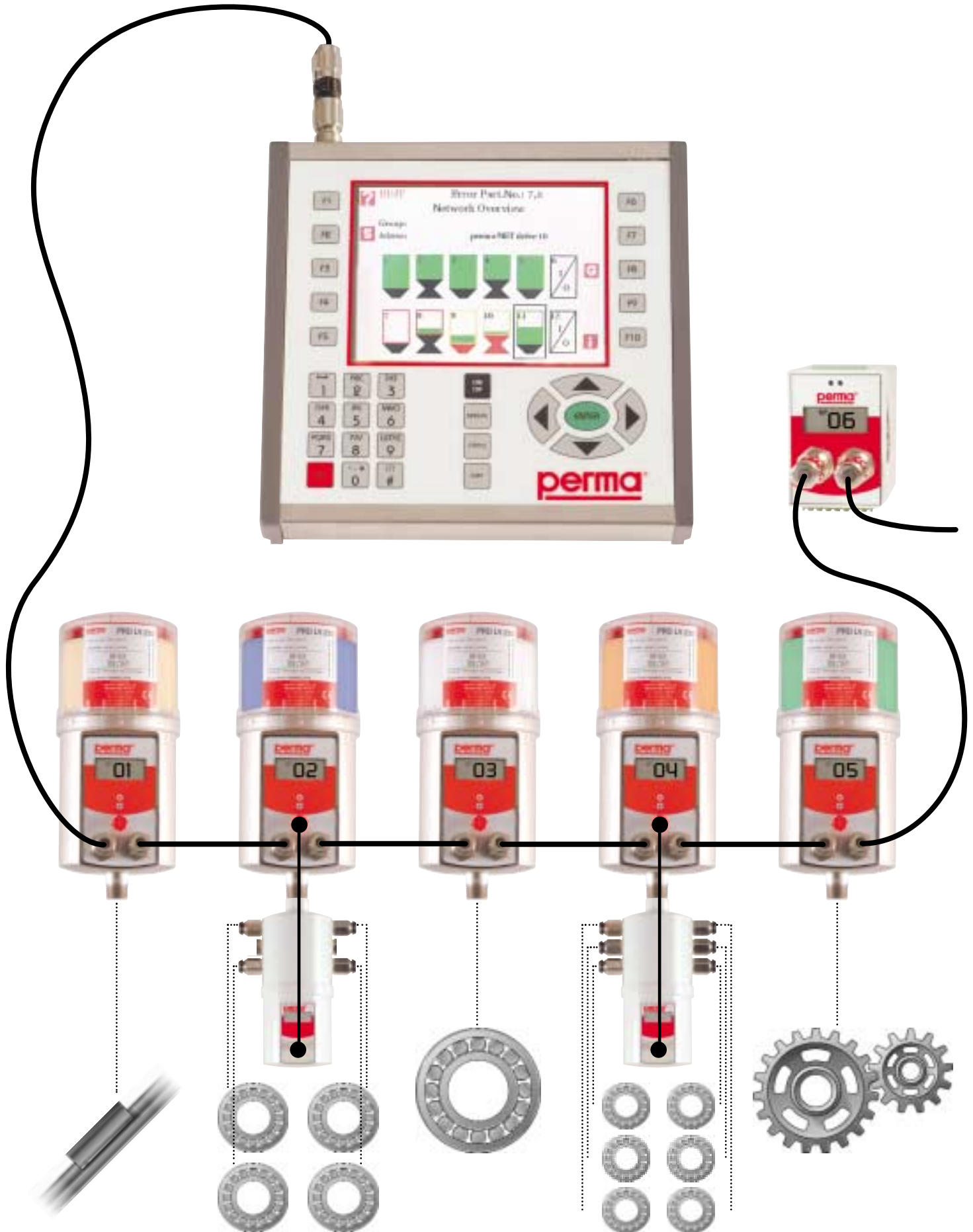
- ⇒ Little installation work and high flexibility through the use of electrical cable connections instead of tube connections and/or piping
- ⇒ Short distance for lubricants
- ⇒ Up to 100 network participants
- ⇒ Up to 1000 meters of cable length



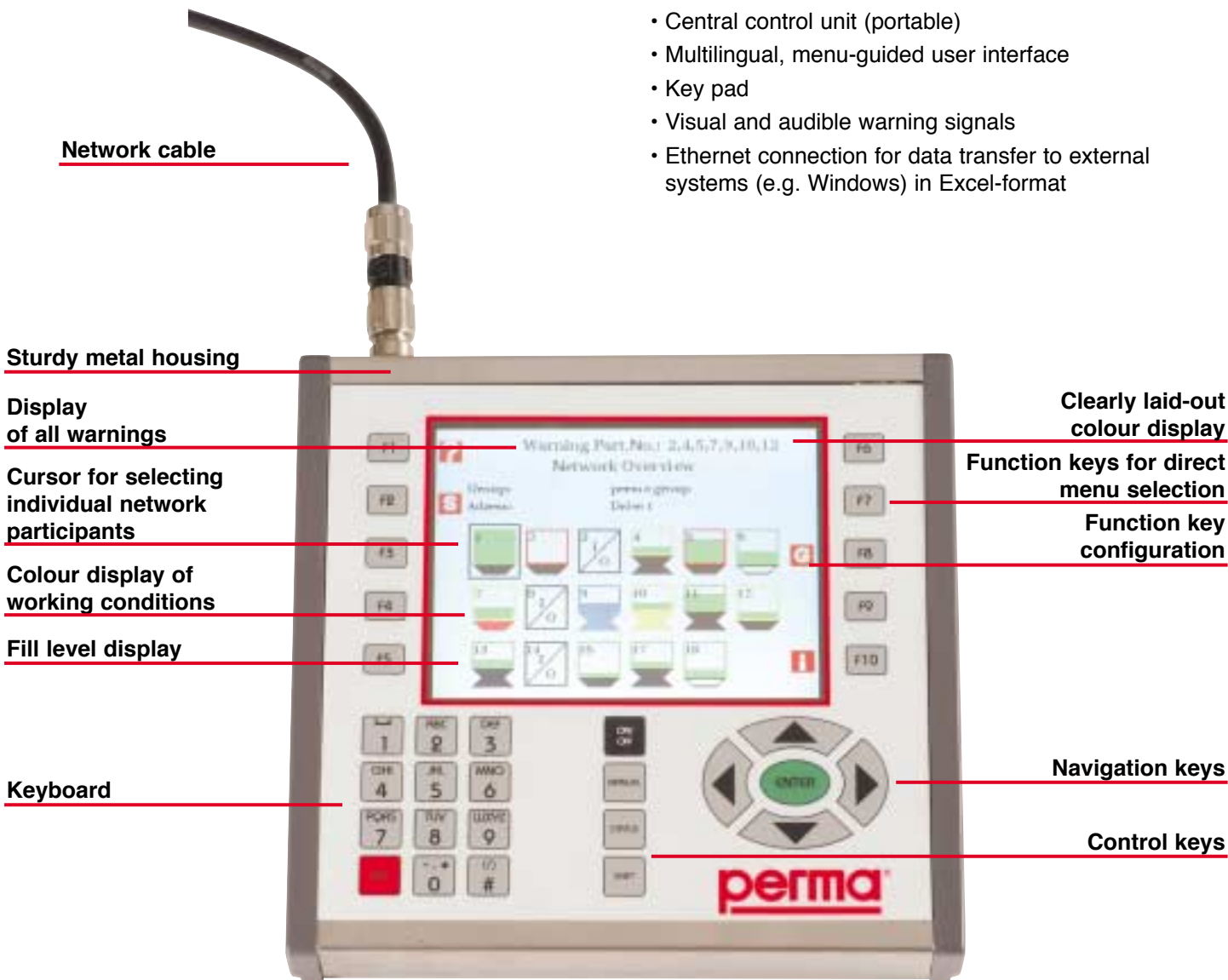
External Interfaces

- ⇒ Integration of already existing equipment into the network
- ⇒ Management and control of external equipment via the network (e.g. PLC)
- ⇒ Control of the network via external equipment
- ⇒ Access to all network data
- ⇒ Integration of perma products possible: e.g. perma PRO TEC (Condition Monitoring)
perma ECOSY (Electronically Controlled Oil System)

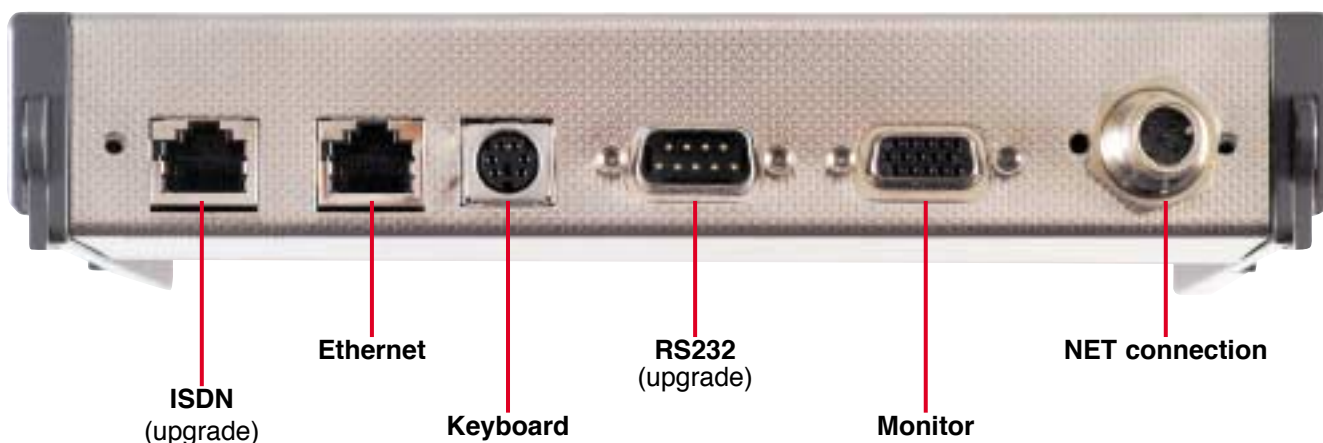
Network Example



perma NCC (Net Control Center)



Port Connection Panel





perma NET drive

- High pressure build-up of up to 25 bar
- Lubricant volume of 250 or 500cc (LV-unit)
- Wide application temperature range of -20 °C to +60 °C (-4 °F to +140 °F)
- Central setting of lubricant discharge volumes and frequency
- Internal monitoring of operating conditions
- Visual control

MP-6

- Direct distributor MP-6 + lubrication system perma Net drive = Multi-point lubrication system with up to 6 outlets
- Number of outlets can be set on the NCC
- Individual discharge amount can be set on NCC
- Direct distribution of lubricant without pressure loss
- Monitoring of individual outlets
- Malfunction of one outlet has no effect on other outlets



perma NET I/O

- 4 digital inputs for control of perma NET by external signals
- 4 digital outputs to signal operating conditions and for external equipment control

perma NET power

- Power supply of the network participants
- Power supply of the NCC
- Wide input voltage range 90 - 264V AC
- Network rated voltage 24 DC



Technical Data

Network

Communication	CAN bus
Connection	Special cable with direct plug-in connection
Voltage	24 V DC

NCC

Display	DIMM-PC with QVGA colour display
Processor	486 SX 66 MHZ
Operating System	RT-Linux
Connections	Ethernet, ISDN, RS232, Monitor, Keyboard, Network

NET I/O

Inputs	4 inputs, electrically separated, optically coupled
Outputs	4 outputs, potential free
Functions	<ul style="list-style-type: none">- Network control with signals- Switching of outputs by operating conditions- Periodic switching of outputs

NET drive

Drive	Electromechanical ramp pump with automatic force filling
Temperature range	-20 °C to +60 °C (-4 °F to +140 °F) with low temperature shut-off
Lubricants / Volumes	Grease penetration: up to NLGI2 Lubricant volume 250 and 500cc (LV-unit)

perma-tec GmbH & Co. KG
Hammelburger Str. 21
97717 Euerdorf – Germany

Tel. +49 (0) 97 04 6 09-0
Fax +49 (0) 97 04 6 09-55

www.perma-tec.de
e-mail: info@perma-tec.de

The Intelligent Lubrication System



perma[®]
PRO

Characteristics

⇒ Your Advantages



High operating pressure
up to 25 bar / 360 psi

⇒ Wide range of remote applications
Variety of lubricants available

Large temperature range
of -20 °C to +60 °C
(-4 °F to +140 °F)

⇒ For extreme applications
inside as well as outside

Sturdy metal housing

⇒ Solid lubrication system

Variable discharge settings
1 day to 24 months

⇒ Precise lubricant amount
over long periods

Two LV-units
250 ccm or 500 ccm

⇒ High variability

Battery operated,
stand-alone lubrication system

⇒ No external power supply needed

Two push buttons with display in
menu format

⇒ Easy to operate

Visible piston and LED-Display

⇒ Quick visual control and exact
information about remaining
lubricant and settings

Lubricant in the reservoir is not
under pressure

⇒ No bleeding of the grease and
therefore no loss of lubricant quality

Bayonet catch

⇒ User-friendly exchange of the
LV-units

Direct distributor MP-6

⇒ Powered and controlled by the
perma PRO
Lubricant is directly distributed
without any pressure loss
Information about each outlet via
the display

Connection for perma PRO TEC

⇒ Complete safety through lubrication
and monitoring of the lubrication
point
Temperature and vibration
increases are counter acted
with additional lubrication
Changes inside the bearing
are displayed

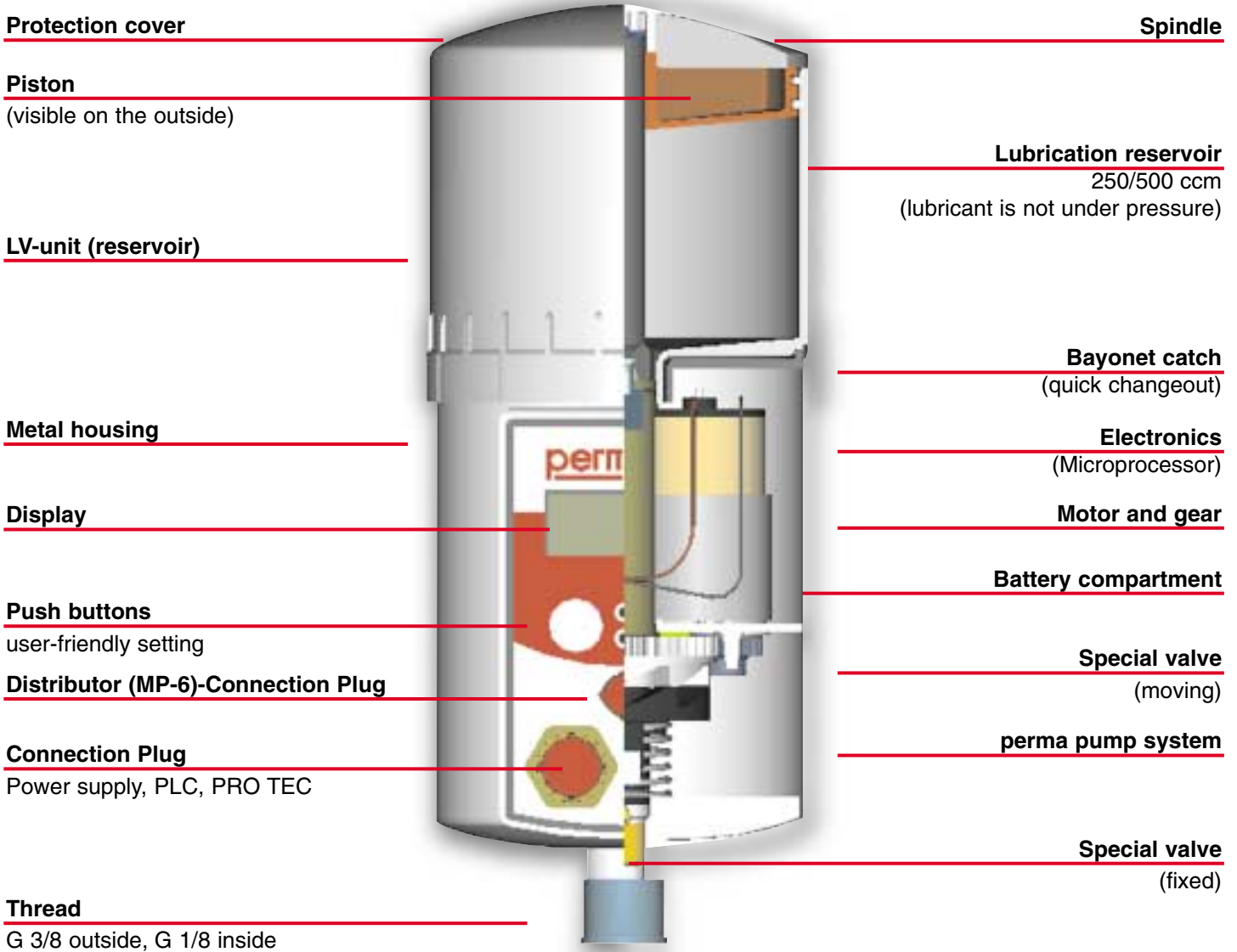
Compact and modern design

⇒ Little space required
Aesthetic



perma PRO with MP-6 (Distributor with 6 outlets)

PRO Lubrication System



MP-6 Distributor (Multi Point)





Single Point Lubrication System

perma PRO

- Battery operated lubrication system
- Lubrication volumes 250 ccm or 500 ccm
- Discharge periods adjustable from one day up to 24 months

perma PRO C

- Machine controlled lubrication system
- Lubrication volumes 250 ccm or 500 ccm
- Communication with PLC

Multi Point Lubrication System

perma PRO and perma PRO C with MP-6

- Lubrication systems PRO and PRO C with direct distributor MP-6 as multipoint lubrication system
- 2 - 6 outlets may be chosen
- Direct distribution of the lubricant without pressure loss
- Evaluation of each individual outlet



Safety Lubrication System

perma PRO and perma PRO C with PRO TEC

- The PRO and PRO C used as single- or multipoint lubrication systems, combined with the condition monitoring system PRO TEC, make up a complete safety package for critical lubrication points.



Application Areas



Automobile Industry

- Design oriented
- Modern
- Flexible

Mining Industry / Quarries

- Traditional
- Solid
- Powerful
- Rugged



Paper Industry

- Informative
- Clean
- Progressive



Operation Areas

- **Roller and Sliding Bearings**
i.e. motors, generators, pumps, fans
- **Linear units**
i.e. robots

Steel Industry

- Solid
- Extreme temperatures
- High stability



Wind Energy

- Environment conscious
- Next generation
- Continuous lubrication
- Reliable



Technical Data

Drive	Electromechanical ramp pump with automatic force-filling	
Pressure build-up	max. 25 bar / 360 psi	
Temperature range	-20 °C to +60 °C (-4 °F to +140 °F)	
Lubricants	Grease up to consistency class NLGI2	
Lubricant volumes	250 ccm or 500 ccm	
Discharge periods	1 day to 24 months	
Operation	Push buttons with LED-display	
Display	Remaining lubricant level in %, discharge period, low-temperature display, additional LED-function display (green, red)	
Power supply	Battery 3V, PLC12 ... 30 V DC	
Material	Drive LV-unit MP-6 Metal housing made of zinc die-casting Transparent plastic Metal housing made of zinc die-casting	
Measurements	250 ccm	500 ccm
	210 x ø 92 mm	260 x ø 92 mm
Weight with standard grease	250 ccm	500 ccm
	1.55 kg	1.75 kg
Connecting thread	G 3/8 outside - G 1/8 inside	
Accessories	Bracket, add-on parts, high pressure tube etc.	



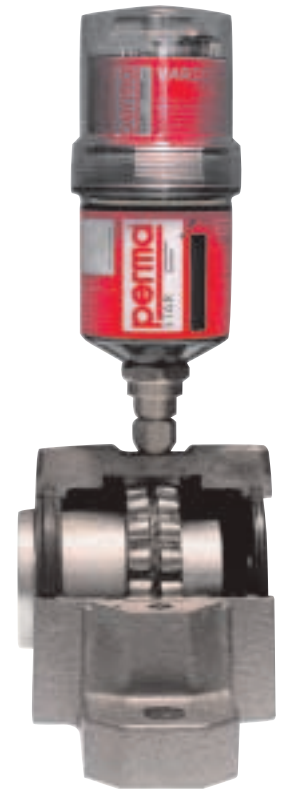
Electromechanical Lubrication Systems



Reg. No. 53532-01



Features	Benefits
Electromechanical drive unit	<ul style="list-style-type: none"> • Precise discharge • Operates temperature independent • Re-usable drive
Pressure build-up of up to 5 bar	<ul style="list-style-type: none"> • Remote installation possible
LED-Display	<ul style="list-style-type: none"> • Indicates operating conditions
Transparent plastic housing	<ul style="list-style-type: none"> • Visible control of discharge • Corrosion-proof • Recyclable
Individual selection of discharge type	<ul style="list-style-type: none"> • Adjustable discharge amount • Impulse mode setting possible (perma STAR CONTROL)
3 volumes (LC-units) S60 (60cc) M120 (120cc) L250 (250cc)	<ul style="list-style-type: none"> • Individual discharge setting possible for each lubrication point <ul style="list-style-type: none"> • small or high discharge for short (1 month) or long (12 months) discharge periods • one drive for three different lubrication volumes
Connection to machine control (perma STAR CONTROL)	<ul style="list-style-type: none"> • Power supplied by the machine • Function signal to the control unit of the machine



Discharge volume per day in cc

Discharge Volume	VARIO			CONTROL	
	60cc	120cc	250cc	Impulse Mode	120cc / per 100 operating hours
1 month	2.00	4.00	8.33	2.11	16.67
3 months	0.67	1.33	2.78	1.06	5.56
6 months	0.33	0.67	1.39	0.53	2.78
12 months	0.17	0.33	0.69	0.26	1.39

(with detailed operating instructions)

Service: Download www.perma-tec.de

perma SELECT Software

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Order form / Accessory list

Standard lubricant line



perma-tec GmbH & Co. KG

Hammelburger Str. 21
97717 Euerdorf – Germany

Tel. +49 (0) 97 04 6 09-0
Fax +49 (0) 97 04 6 09-55

www.perma-tec.de
e-mail: info@perma-tec.de

Townsend Bearings & Transmissions Limited

**Unit 1, St.Andrews Industrial Estate,
Bridport, Dorset. DT6 3EX. England.**

**Tel : 01308 456933 (UK only) +44 1308 456933 (Outside the UK)
Fax : 01308 427913 (UK only) +44 1308 427913 (Outside the UK)**

Email : sales@townsendbearings.co.uk

www.townsendbearings.co.uk