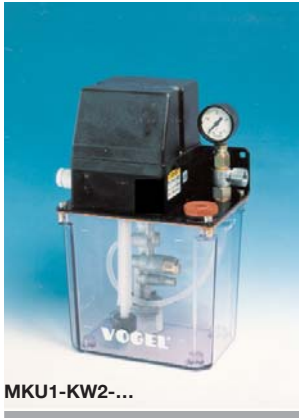


## Group MKU – 0.1, 0.2 or 0.5 l/min



These **MKU** compact units were developed to supply intermittently operated single-line central lubrication systems with lubricant. The basic model contains a gear pump with drive motor as well as the set of valves required for pressure relief and limitation (safety valve). The lubricant reservoir material is metal or plastic.

**The units are controlled depending on their design**

- by hand (unit with a pushbutton DK),
- by an external control system,
- by a built-in electronic control and monitoring unit timer or counter with adjustable interval and monitoring time,
- by a built-in electronic control unit with adjustable interval time and fixed pump running time.

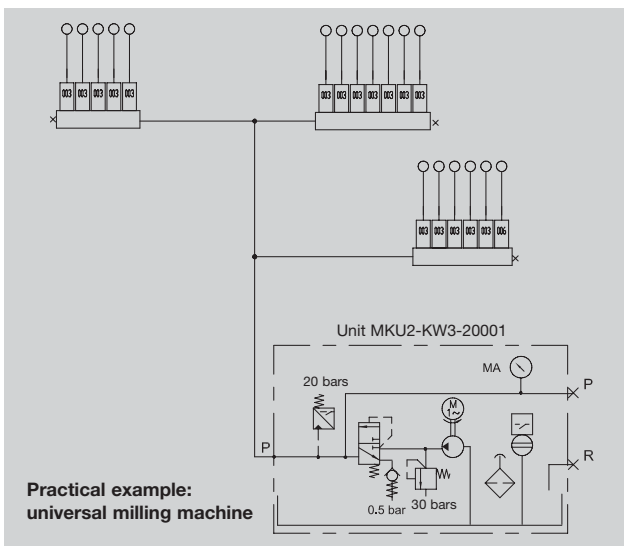
The control and monitoring unit is either a **timer for time-dependent control** or a **counter for load-dependent control**.

**Special features:**

- preliminary lubrication (lubrication after the supply voltage is turned on)
- pump delay time
- pressure dependent cut-off
- monitoring of pressure build-up
- monitoring of pump running time

**Possible monitoring elements:**

- **Pressure switch (DS)** monitors the automatic pressure build-up.
- **Level indicator (WS)**
- **Pressure gauge (MA)** displays the pressure response in the main line.
- **Monitoring contact (d2)** turns off machine if pressure fails to build up.
- **Indicator light, green (SL1)** shows that pump is running
- **Indicator light, red (SL2)** indicates a fault if pressure fails to build up or if there is a low level of lubricant in the reservoir (only with built-in level indicator).



Order No.	Delivery rate [l/min]	Reservoir capacity [l]	Reservoir material *)	manual/external	Control			Components				Hydraulic layout	Wiring diagram	Drawing
					IG12	IG38-30	IZ38-30	DK	DS	WS	MA			
MKU1-K2-10000	0.1	1.8	K	external								1	1	1
MKU1-K2-10003	0.1	1.8	K	external							●	1	1	1
MKU1-KW2-10000	0.1	1.8	K	external						●		1	1	1
MKU1-KW2-10001	0.1	1.8	K	external					●	●		1	1	1
MKU1-KW2-10003	0.1	1.8	K	external						●	●	1	1	1
MKU1-KW2-10004	0.1	1.8	K	external					●	●	●	1	1	1
MKU2-K3-20000	0.2	3	K	●				●	●			2	2	2
MKU2-K3-22005	0.2	3	K			●		●	●			2	3	3
MKU5-K3-22005	0.5	3	K			●		●	●		●	2	3	3
MKU2-KW3-20001	0.2	3	K	●				●	●	●		2	2	2
MKU2-KW3-20003	0.2	3	K	●				●	●	●	●	2	2	2
MKU2-KW3-20004	0.2	3	K	●				●		●	●	2	2	2
MKU2-KW3-20005	0.2	3	K	●				●		●		2	2	2
MKU2-KW3-21003	0.2	3	K		●			●	●	●	●	2	4	3
MKU2-KW3-21005	0.2	3	K		●			●		●		2	4	3
MKU2-KW3-22001	0.2	3	K			●		●	●	●		2	3	3
MKU2-KW3-22003	0.2	3	K			●		●	●	●	●	2	3	3
MKU2-KW3-22011	0.2	3	K				●	●	●	●		2	3	3
MKU2-KW3-22013	0.2	3	K				●	●	●	●	●	2	3	3
MKU5-KW3-20001	0.5	3	K	●				●	●	●		2	2	2
MKU5-KW3-20003	0.5	3	K	●				●	●	●	●	2	2	2
MKU5-KW3-22003	0.5	3	K			●		●	●	●	●	2	3	3
MKU2-KW6-20001	0.2	6	K	●				●	●	●		2	2	4
MKU2-KW6-20003	0.2	6	K	●				●	●	●	●	2	2	4
MKU2-KW6-22003	0.2	6	K			●		●	●	●	●	2	3	5
MKU5-K6-22005	0.5	6	K			●		●	●			2	3	5
MKU5-KW6-20001	0.5	6	K	●				●	●	●		2	2	4
MKU5-KW6-22001	0.5	6	K			●		●	●	●		2	3	5
MKU5-KW6-22003	0.5	6	K			●		●	●	●	●	2	3	5
MKU2-BW3-20001	0.2	3	B	●				●	●	●		2	2	6
MKU2-BW3-20003	0.2	3	B	●				●	●	●	●	2	2	6
MKU2-BW3-20005	0.2	3	B	●				●		●		2	2	6
MKU2-BW3-21003	0.2	3	B		●			●	●	●	●	2	4	7
MKU2-BW3-22001	0.2	3	B			●		●	●	●		2	3	7
MKU2-BW3-22003	0.2	3	B			●		●	●	●	●	2	3	7
MKU2-BW3-22011	0.2	3	B				●	●	●	●		2	3	7
MKU2-BW3-22013	0.2	3	B				●	●	●	●	●	2	3	7
MKU5-BW3-21003	0.5	3	B		●			●	●	●	●	2	4	7

\*) Reservoir material: **K = plastic, B = metal**

● = components contained in the unit. **DK** = pushbutton / **DS** = pressure switch / **WS** = level indicator / **MA** = pressure gauge

#### Notice!

All products from Willy Vogel AG may be used only for their intended purpose and in accordance with the information contained in the operating instructions belonging to the respective equipment.

In particular, we call your attention to the fact that hazardous materials of any kind, especially the materials classified as hazardous by

EC Directive 67/548/EEC, Article 2, Par. 2, may only be filled into VOGEL central lubrication systems and components and delivered and/or distributed with the same after consultation with and written approval from Willy Vogel AG.

See operating instruction 951-130-172.

**Technical data**

**Gear pump unit**

Flow rate at 50 Hz . . . . . 0.1; 0.2 or 0.5 l/min  
 at 60 Hz . . . . . 0.12; 0.24 or 0.6 l/min  
 in relation to a service viscosity of 140 mm<sup>2</sup>/s,  
 at a back pressure of p = 5 bars  
 Operating pressure . . . . . 30 ±½ bars  
 corresponds to actual value of built-in safety valve  
 Operating temperature. . . . . +10 to +40 °C  
 Medium . . . . . oil on a petroleum or  
 synthetic basis  
 compatible with . . . . . plastics, NBR elastomers,  
 copper, copper alloys  
 Service viscosity  
 MKU1 units: . . . . . 20 - 750 mm<sup>2</sup>/s  
 MKU2, MKU5 units: . . . . . 20 - 1500 mm<sup>2</sup>/s  
 Reservoir capacity . . . . . nominal 1.8, 3 or 6 l  
 Reservoir material . . . . . plastic or metal  
 Type of enclosure. . . . . IP 54  
 Frequency/voltage . . . . . 50/60 Hz, 115 V AC or  
 50/60 Hz, 230 V AC  
 please indicate when ordering

**Motor with built-in thermostatic switch**

Mode of operation . . . . . S3, 20% (1.25 to 25 min)  
 duty cycle 1)  
 Power consumption approx. . . . . 50 Hz: 115 W; 60 Hz: 140 W  
 Speed . . . . . 50 Hz: 2700 rpm;  
 60 Hz: 3300 rpm

**Level indicator**

Function. . . . . opens in event of  
 low lubricant  
 Max. switching voltage . . . . . 42 V AC  
 Max. switching current . . . . . 0.7 A  
 (ohmic load)  
 Max. contact rating . . . . . 50 VA 2)

**Pressure switch**

Type of contacts . . . . . closes when pressure builds up  
 Max. switching voltage . . . . . 42 V AC  
 Max. switching current . . . . . 2.5 A  
 (ohmic load)  
 Max. contact rating . . . . . 30 VA 2)  
 Switching pressure . . . . . 20 bars

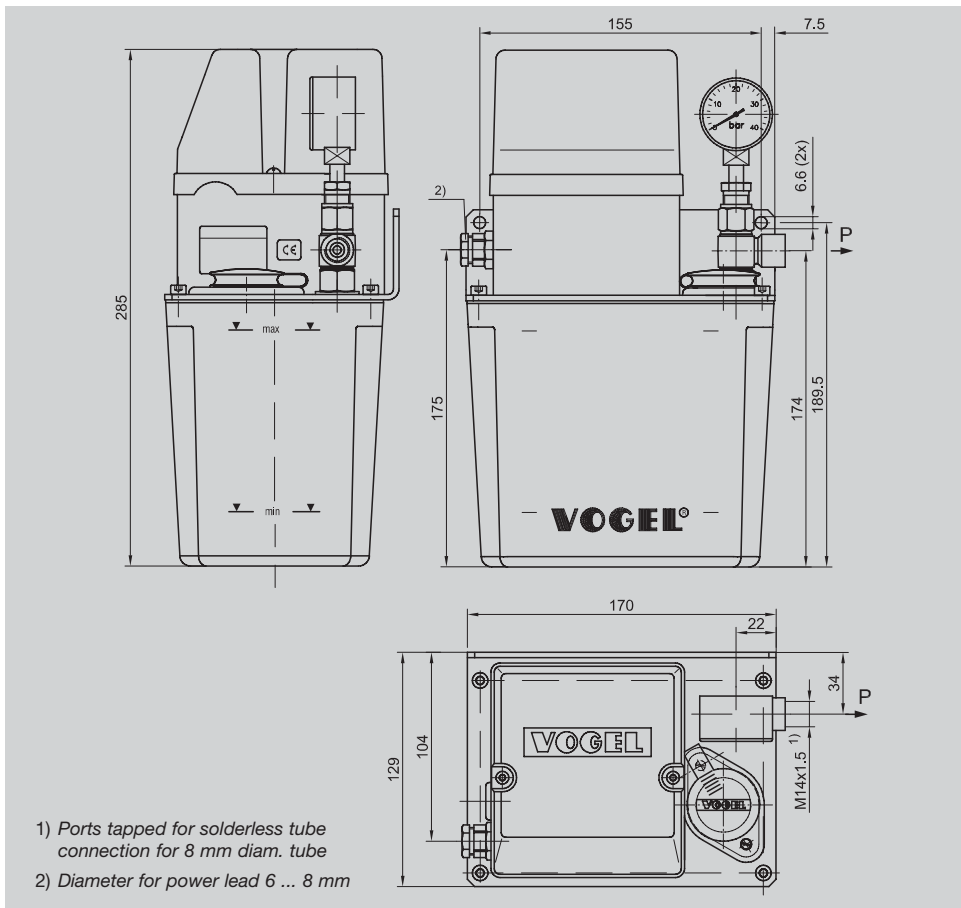
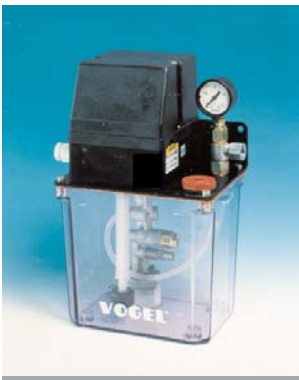
1) The 20% duty cycle is the ratio of the pump running time to the subsequent idle time

**Example:**

1 minute of pump running time requires at least 5 minutes of idle time.  
 The maximum permissible pump running time amounts to 3 minutes.  
 That results in a necessary idle time of 15 minutes.

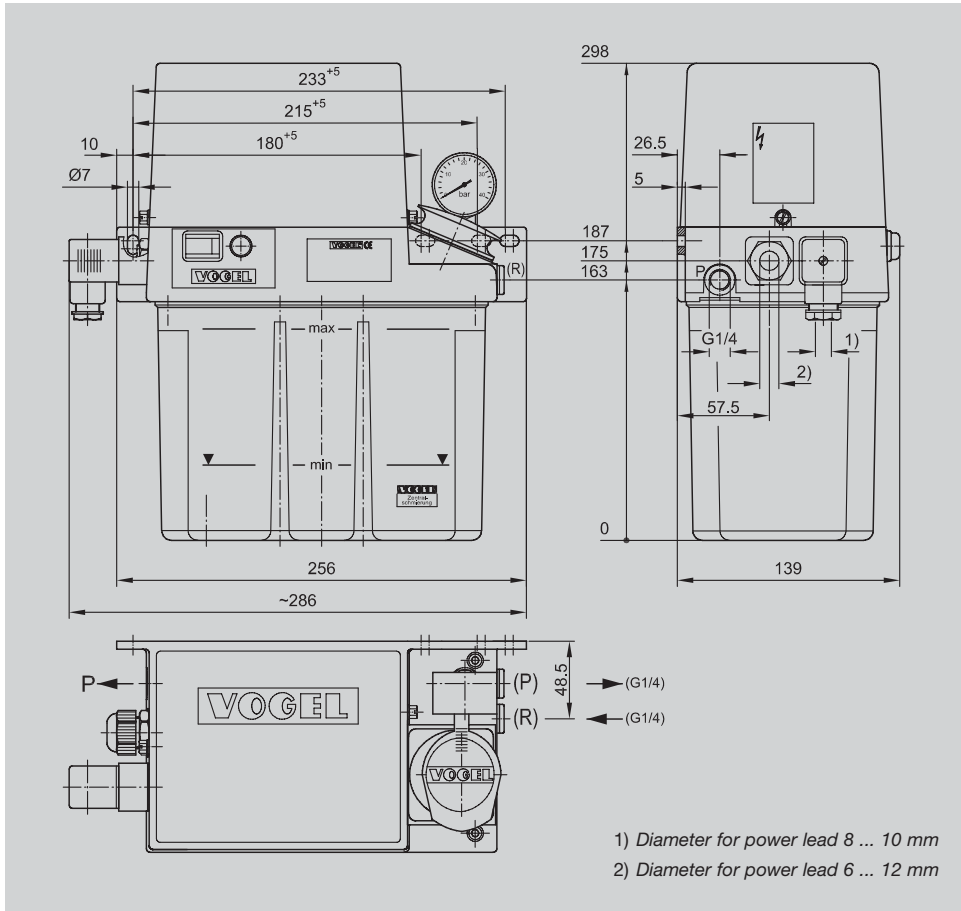
2) Take appropriate measures to protect contacts when switching inductive loads.

**MKU1-K(W)2-10...**



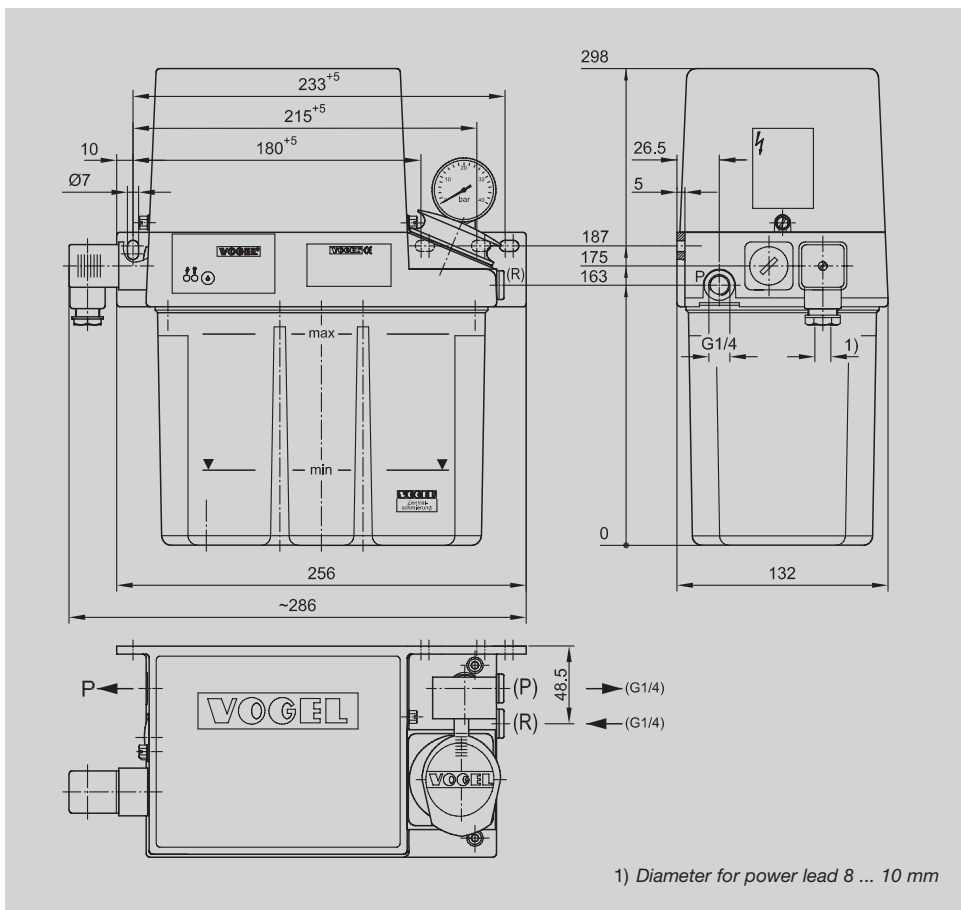
**Drawing 1**

**MKU2-K(W)3-20...**



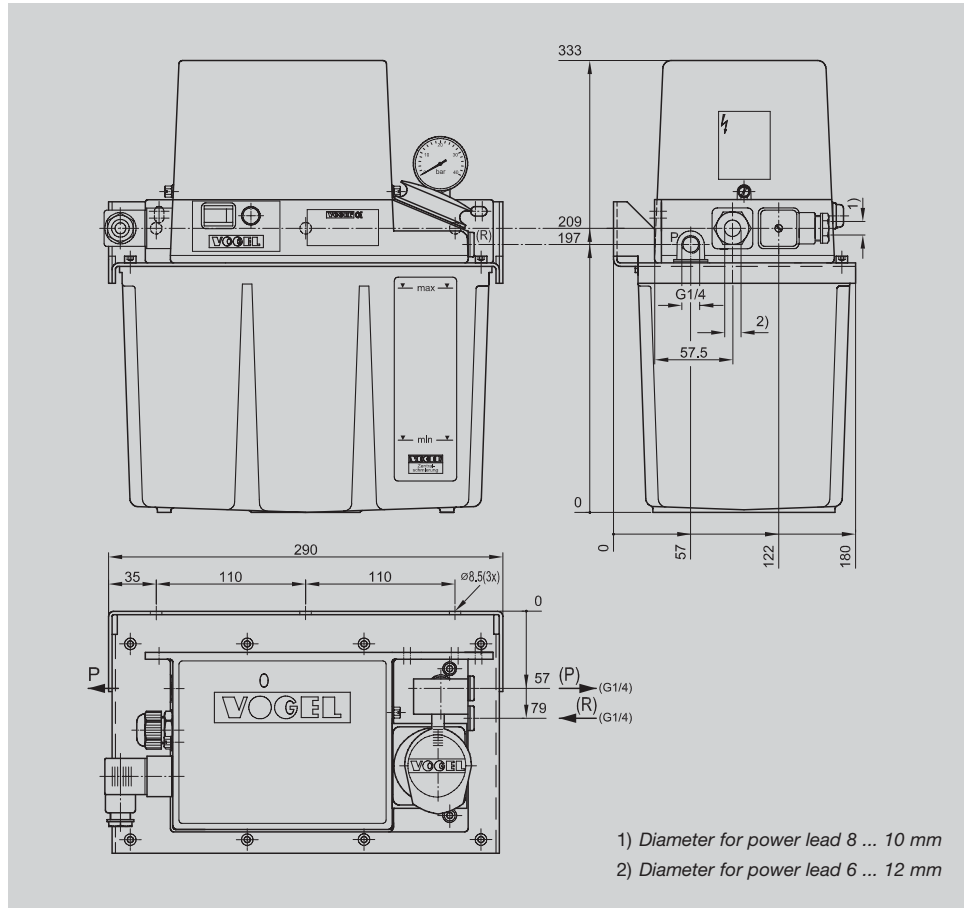
Drawing 2

**MKU2-K(W)3-22...**



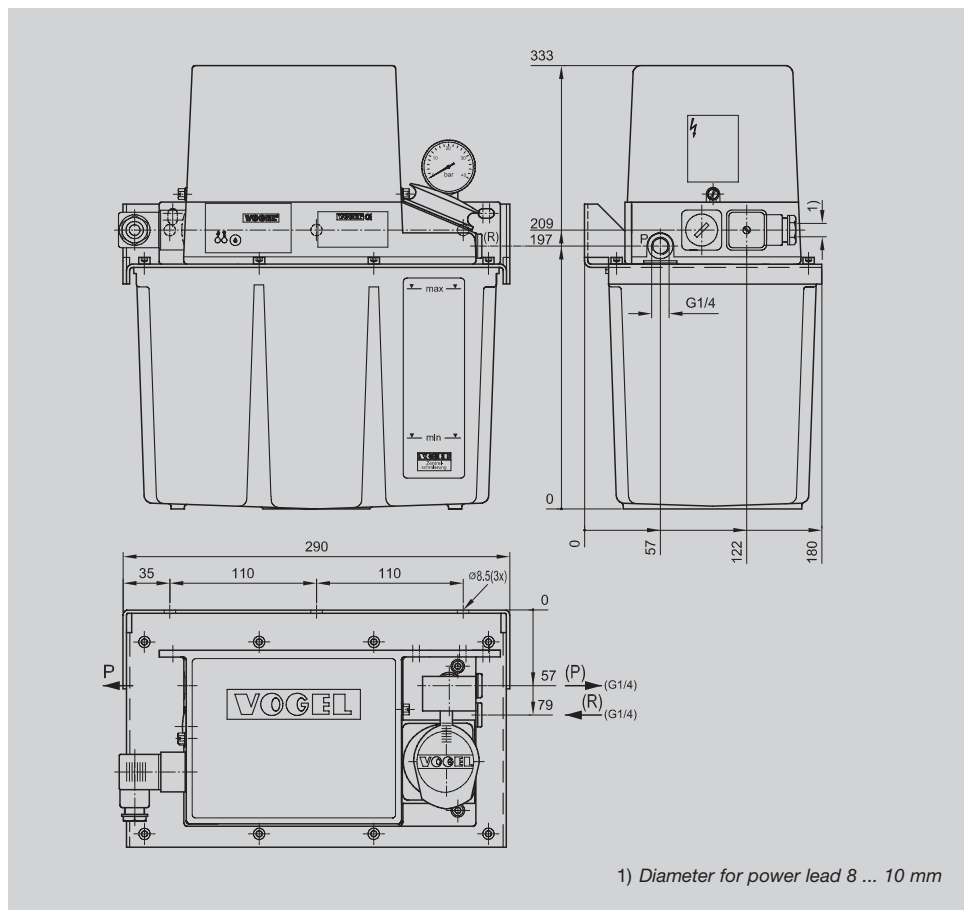
Drawing 3

**MKU2-KW6-20...**



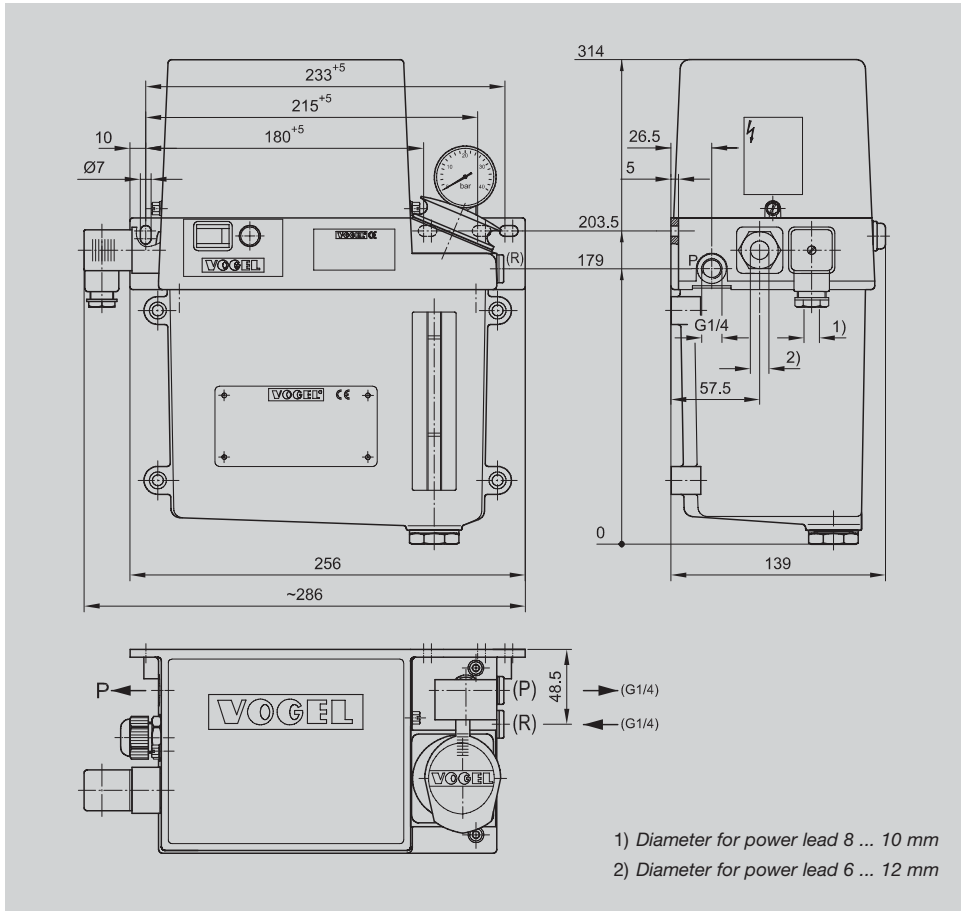
Drawing 4

**MKU2-KW6-22...**



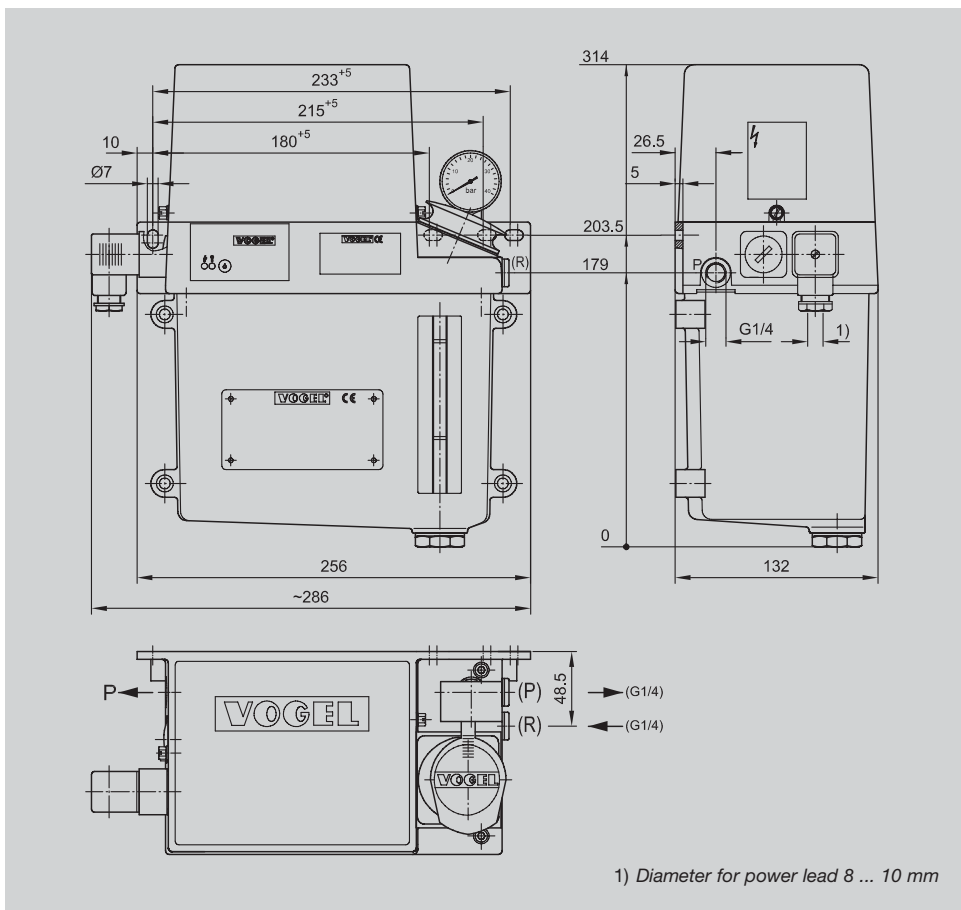
Drawing 5

**MKU2-BW3-20...**



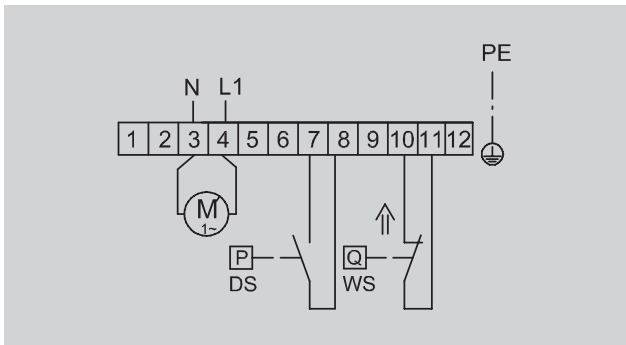
Drawing 6

**MKU2-BW3-22...**



Drawing 7

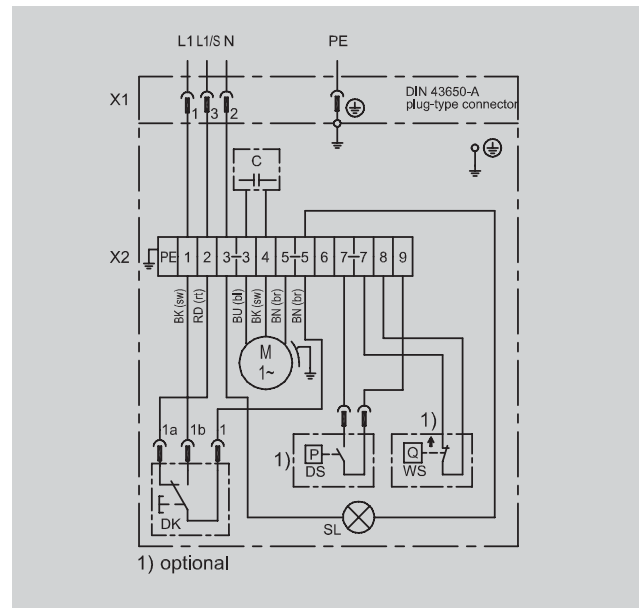
**Wiring diagram 1**



**Legend** (wiring diagrams 1-4)

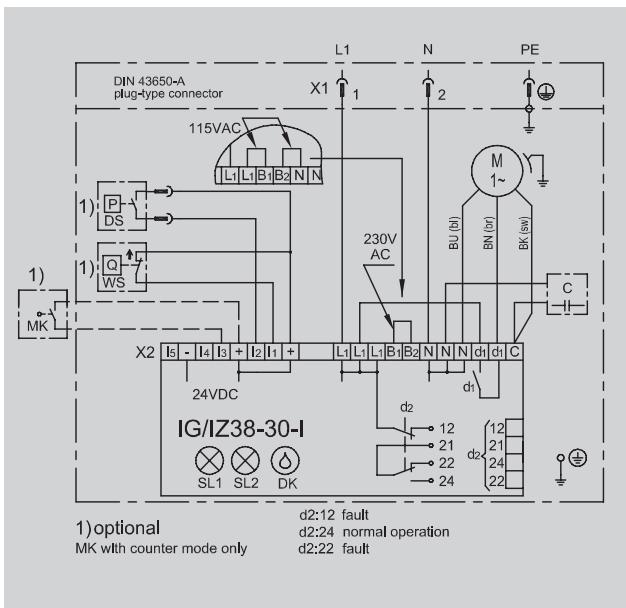
- L1/N** terminal for operating voltage
- DK** pushbutton for intermediate lubrication
- DS** pressure switch
- WS** level indicator, contact illustration: full reservoir
- M** pump motor
- C** capacitor
- SL1** indicator light (green) for "PUMP ON"
- SL2** indicator light (red) for "FAULT"

**Wiring diagram 2**



1) optional

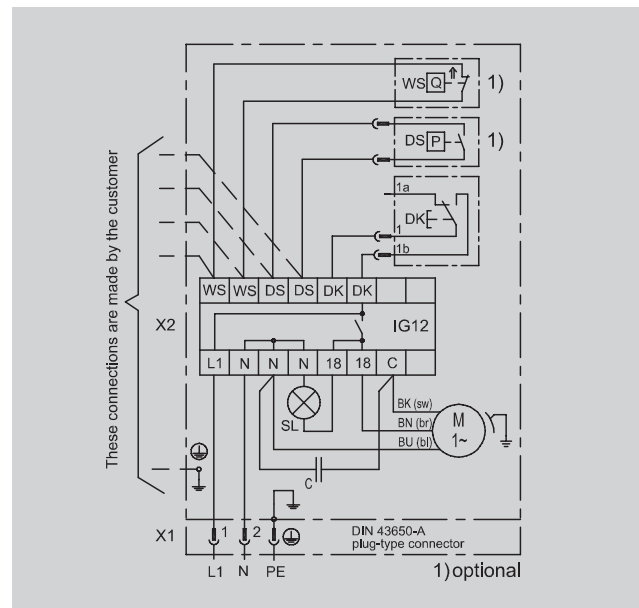
**Wiring diagram 3**



1) optional  
MK with counter mode only

d2:12 fault  
d2:24 normal operation  
d2:22 fault

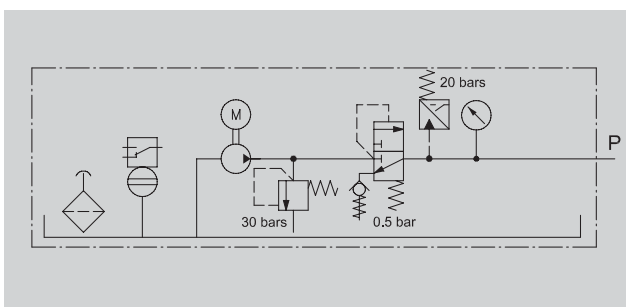
**Wiring diagram 4**



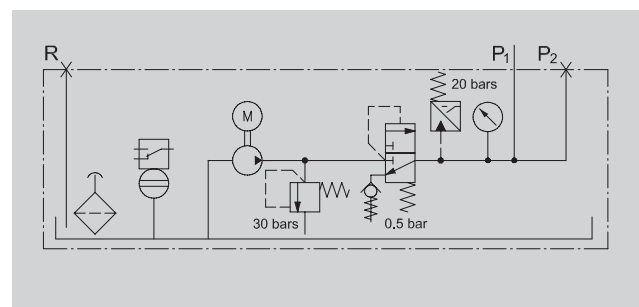
These connections are made by the customer

1) optional

**Hydraulic layout 1**



**Hydraulic layout 2**



Dimensions in mm

The compact units with 3- or 6-liter reservoirs may be equipped with an electronic control unit for intermittently operated single-line central lubrication systems. Optionally with

- **IG38-30-I for time-dependent control**
- **IZ38-30-I for load-dependent control**
- **IG12 for time-dependent control** (without monitoring functions)

**The units conform to the following directives:** Electromagnetic compatibility 89/336/EWG; 91/31/EWG  
 Low voltage directive 73/23/EWG; 93/68/EWG

## IG38-30-I control and monitoring unit with pre-lubrication, time-dependent or IZ38-30-I, load-dependent

### Functions

- **IG38-30-I: timer** mode (time-dependent)
- **IZ38-30-I: counter** mode (load-dependent)
- Preliminary lubrication (lubrication after the supply voltage is switched on)
- Pump delay time
- Monitoring of pressure build-up
- Monitoring of pump runtime limitation
- Monitoring of lubricant level with wire-break detection (level indicator opens if lubricant level is critical)

### Technical data

Interval duration preselectable in 12 stages:  
 IG38-30-I (min) ..... 1; 2; 4; 8; 16; 32; 64; 128;  
 IZ38-30-I (pulses) ..... 256; 512; 1024; 2048  
 Pump delay time, nonadjustable ..... 15 s  
 Pump runtime limitation, nonadjustable ..... 60 s  
 Rated voltage ..... 115 or 230 V AC  
 Rated frequency ..... 50/60 Hz  
 Design ..... board-mounted

## IG12 control unit without pre-lubrication, time-dependent, without monitoring functions

### Functions

- Timer with adjustable interval time and constant lubrication time
- Operation always begins with an interval when the supply voltage is switched on
- Intermediate lubrication via pushbutton DK is possible at any time during an interval

### Technical data

Rated voltage ..... 115 or 230 V AC  
 Rated frequency ..... 50/60 Hz  
 Interval time (min)  
 preselectable in 10 stages: 1.5; 3; 6; 12; 24; 48; 96; 192; 384; 768  
 As-delivered setting ..... interval time set for 1.5 min  
 Contact time, fixed ..... 20 s  
 Design ..... plastic housing  
 Terminal bloc for level indicator (WS) and pressure switch (DS)

### Leaflet information

1-0016-US Compact units for grease  
 1-1700-1-US Control units



A brand of the SKF Group

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