

Product description

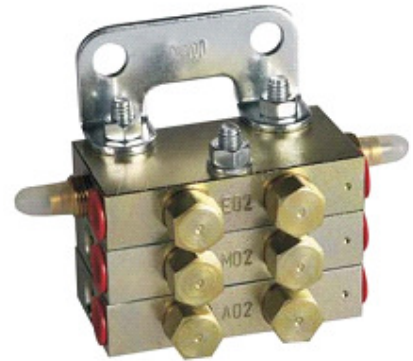
**ZPAG  
Distributor**

**DESCRIPTION**

---

Progressive group-lubrication distributors ZPAG are used in group lubrication systems where a lot of machines or plants, which are either of the same kind or similar to each other and erected in a hall, have to be supplied with lubricant individually and program-controlled.

The progressive group-lubrication distributor ZPAG has the task to control, filter, restrict and monitor the lubricant flow as main distributor in plants with a feed line being permanently under pressure. The lubricant is supplied to the lubrication points either directly or via further downstream connected progressive distributors (ZPA or ZPC).



**OPERATION**

---

The progressive group-lubrication distributor ZPAG is connected to a feed line being permanently under pressure. Triggered by a signal of the electric control system, the 2/2-way solenoid valve opens, and lubricant is supplied under pressure via the filter and the throttle to the progressive distributor. Then the lubricant is divided into partial quantities, which are carried one after the other to the up to 24 possible outlets. This proportioning is effected by pistons, which are moved by the lubricant being under pressure and which forcibly control each other. The pistons move into their final positions and, as a result, the portions of lubricant before the pistons are supplied one after the other to lubrication points. The distributor works as long as it is fed with lubricant via the open 2/2-way solenoid valve.

The metered volume per piston stroke depends on the segment size and can optionally be 0.07; 0.1; 0.2; or 0.3 cm<sup>3</sup>.

There are different possibilities of merging several metered volumes and to lead them to one outlet.

Each single outlet is furnished with an integrated nonreturn valve. This has the advantage that the distributors work reliably even at higher counterpressures and with flexible line material.

2 motion indicators are screwed into the piston of segment E. They jut out of the distributor body and thus indicate the piston stroke. When one motion indicator has moved into both stroke directions once, this is a sign for the fact that all outlets of the distributors have supplied lubricant.

The motion indicators make a visual and - with mounted monitoring switch - an electrical operational monitoring of the progressive group-lubrication distributor ZPAG possible.

**GENERAL PRODUCT CHARACTERISTICS**

---

- Progressive group-lubrication distributor
- Control via solenoid valve
- up to 24 outlets
- electronic monitoring possible
- Metered volume variable from 0.1 cm<sup>3</sup>
- Lubricants: Grease, liquid grease and oil



## CHARACTERISTICS

### Group-lubrication distributor

Type : ..... segment distributor controlled by 2/2-way solenoid valve  
 Installation position : ..... optional  
 Temperature range : ..... - 20° to + 80°C  
 Number of segments : ..... 3 to 12  
 Number of outlets : ..... 1 to 24  
 Operating pressure : ..... max. 160 bar  
 Usable lubricants based on mineral oils:  
 lubricating grease : ..... up to NLGI class 2 DIN 51818  
 oil : ..... service viscosity > 220 mm<sup>2</sup>/s; ISO VG 68, DIN 51519 at 20°C ambient temperature  
 Synthetic lubricants : ..... on request  
 For the volume flow, please see diagrams on pages 10 and 11.

### Progressive distributors ZPA

Admissible differential pressure between 2 outlets ..... max. 80 bar  
 Output volume each piston stroke ..... optional 0.1; 0.2 or 0.3 cm<sup>3</sup>  
 Opening pressure of the non-return valves ..... 2 bar  
 Response pressure ..... ≤ 10 bar  
 Pipe line connection: outlet ..... Ø 6

### ATTENTION :

It must be remembered that the lubricant metered by a given piston does not exit out of same element but in the adjacent element next to the inlet port. The quantity metered by the piston provided in the initial element is discharged out of the end element outlet port.

A. DISTRIBUTOR TYPE	CODE
	ZPAG

B. NUMBER OF SEGMENT	CODE
3 segments	03
4 segments	04
5 segments	05
6 segments	06
7 segments	07
8 segments	08
9 segments	09
10 segments	10
11 segments	11
12 segments	12

C. REVISION	CODE
Stage A	A

D. MONITORING	CODE
With nonreturn valve, with motion indicator	01
With nonreturn valve, with monitoring switch	02

E. THROTTLE INSERT
Low effect
High effect



## F. SOLENOID VALVE

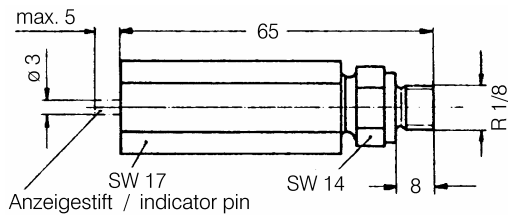
Version 24V DC

## G. CODING OF THE OUTLET

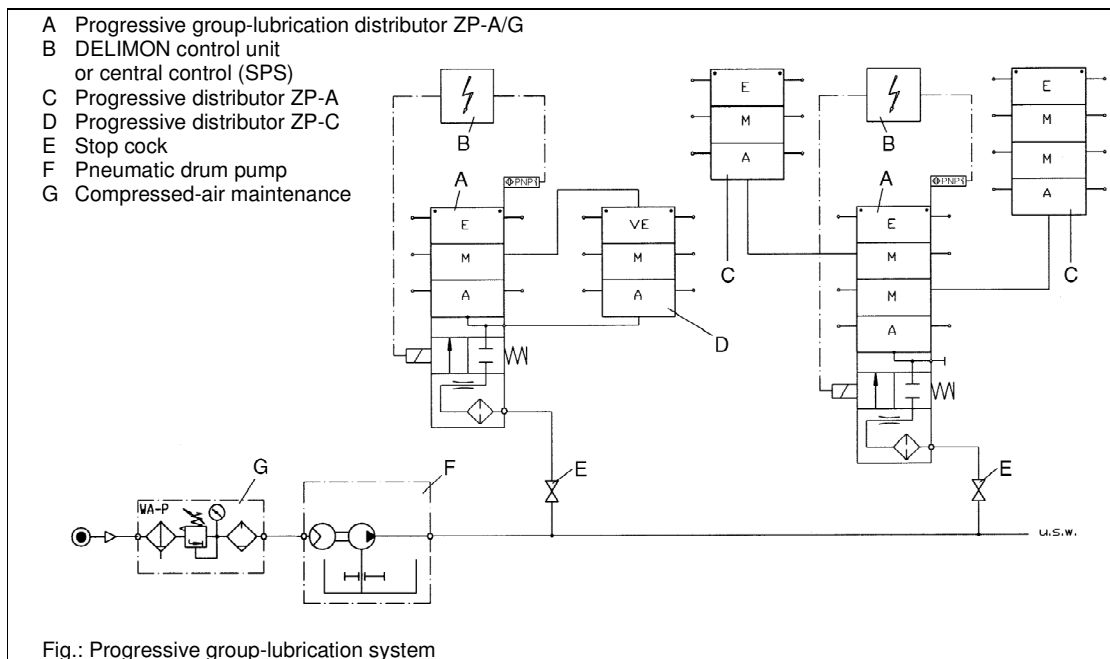
A segment  
M segment  
M or E segment

## H. ACCESSORIES

without  
Overpressure indicator 70 or 100 bar



## SYSTEM SCHEME



## DESIGN

The progressive group-lubrication distributor ZPAG is a compact unit consisting of:

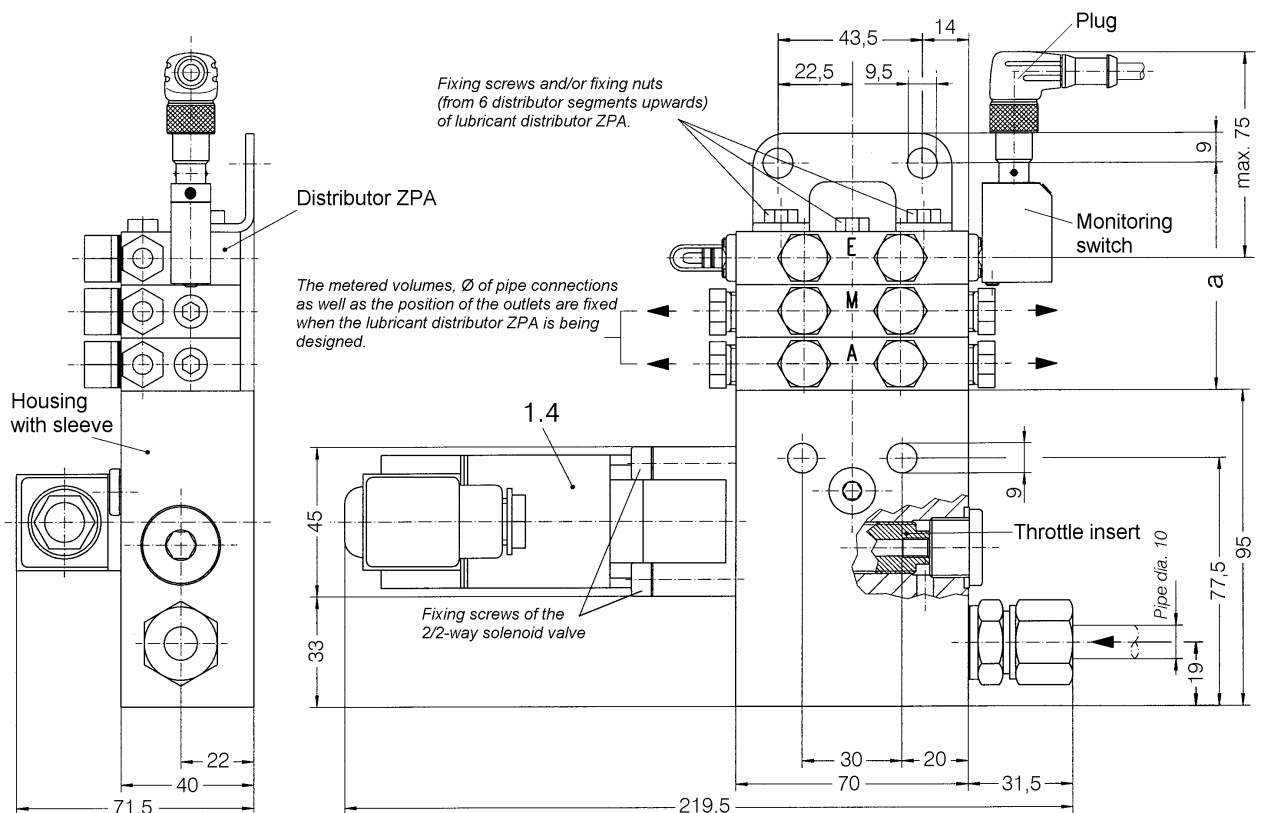
- Housing with mounted 2/2-way solenoid valve (NC), integrated filter and throttle insert.

Progressive distributors consist of several (in standard version of at least 3) individual segments, which are screwed with each other and sealed against each other, with integrated nonreturn valves and two motion indicators as well as a mounted monitoring switch.

Dependent on the arrangement in the distributor, the individual segments are manufactured in the following design:

- Initial- or A-segment
- Medium or M-segment
- Final- or E-segment

## DRAWING MEASUREMENT



### Attention:

Special care has to be taken that the quantity of lubricant metered by a piston does not escape in the same segment but in the adjacent segment next to the inlet port. The metered volume of the piston in the initial segment is discharged at the final segment.



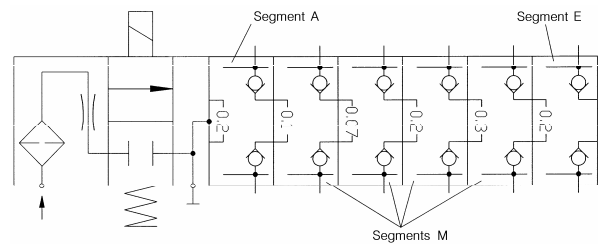
## SPECIFICATION

### Attention:

It must be remembered that the lubricant metered by a given piston does not exit out of same element but in the adjacent element next to the inlet port. The quantity metered by the piston provided in the initial element is discharged out of the end element outlet port.

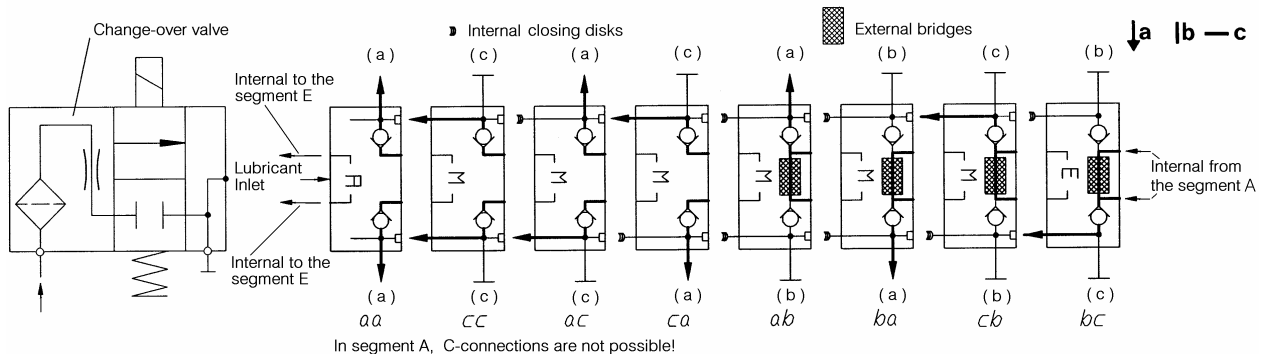
### Explanation (distributor ZP-A)

1. The basic design of the Progressive group-lubrication distributor ZP-A/G is illustrated by a symbol. The channel holes drawn into the symbol show that the metered volume of a segment from the progressive distributor ZP-A is fundamentally led into the segment being placed in front of it in direction of the "inlet". There is one exception for the initial segment the metered volume of which is led back into the final segment. Each segment of the distributor is provided with a marking regarding the metered volume.



01 is equal to  $0.1 \text{ cm}^3$  per piston stroke  
 02 is equal to  $0.2 \text{ cm}^3$  per piston stroke  
 03 is equal to  $0.3 \text{ cm}^3$  per piston stroke

2. There are 8 possibilities of merging several metered volumes of the distributor and to lead them to one outlet. Three symbols with letters are available to mark these possibilities and the arrangement of the outlets.



Symbol "a" shows the position of the outlet.

Symbol "b" shows the merging of the two metered volumes of a segment. For this purpose, a bridge is mounted to the segment concerned.

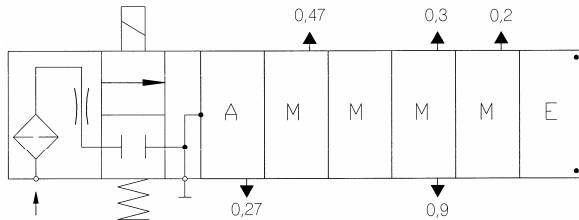
Symbol "c" designates the merging of the metered volumes of adjacent segments. For this purpose, the disks between the segments in direction of "inlet" are removed. This connection is not possible in the initial segment.

3. Metered volume at the outlet ( $\text{cm}^3$ )



**ATTENTION:**

Please take special care that the quantity of lubricant metered by a piston does not escape in the same but in the adjacent element in direction of the inlet. The metered volume of the piston in the initial segment escapes at the final segment.



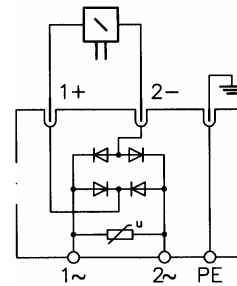
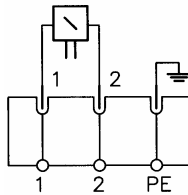
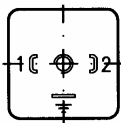
**SPECIFICATION (continuation)**

**2/2-way solenoid valve (electrical data)**

Rated voltage	$U_N$	:	24 V DC	110 V AC 50/60 Hz	230 V AC 50/60 Hz
Nominal power	$P_N$	:	20 W	20 W	20 W
Current	$I_N$	:	0.83 A	0.2 A	0.1 A

Plug and switch symbols  
(DIN 43650 PG 9)

Magnetansicht  
Magnetic view



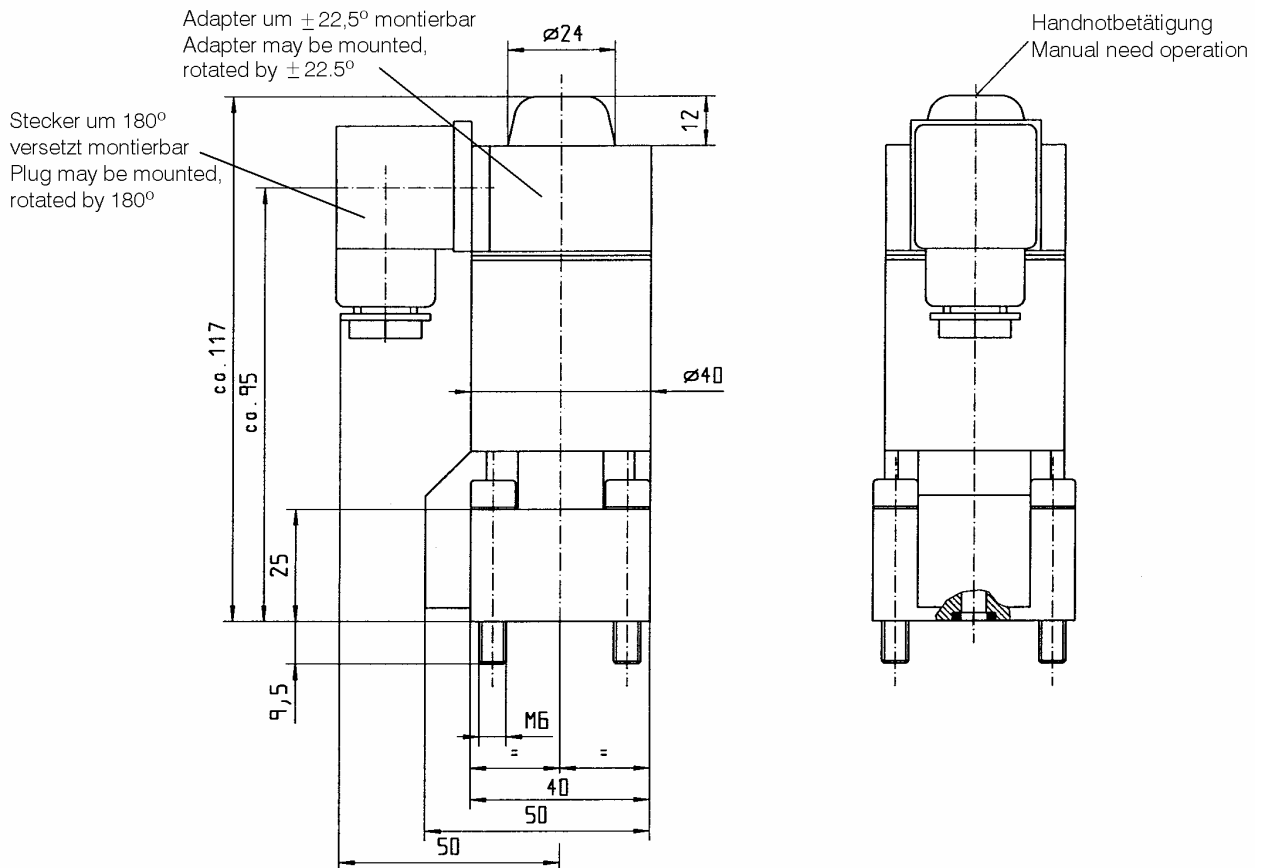
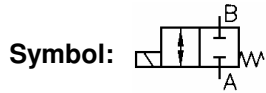
Function : ..... NC normally closed  
 Protection system of housing : ..... IP 54 according to DIN VDE 0470/EN 60529/IEC 529  
 (in case of a professional installation of the plug)  
 Insulating class : ..... F  
 Duty cycle : ..... 100 % ED max. at 35°C ambient temperature  
 Plug : ..... according to DIN 43650 with screw joint PG 9

**2/2-way solenoid valve (mechanical data)**

Type : ..... level seat valve  
 Emergency hand operation : ..... push button under rubber cap with return spring  
 Overlapping : ..... negative, i.e. when switching from the O position into the A position and vice versa,  
 the transition from the one into the other circuit symbol takes place gradually.



**SPECIFICATION (continuation)**

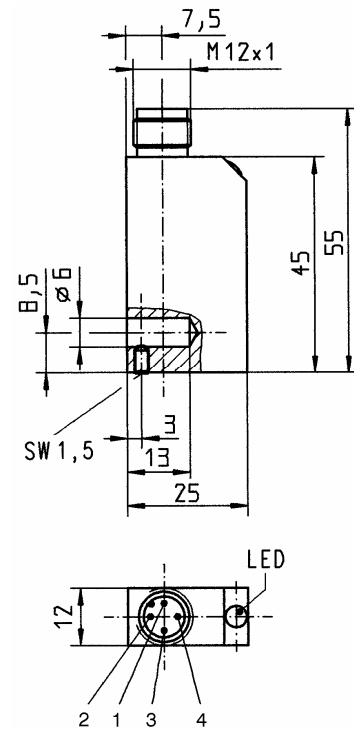
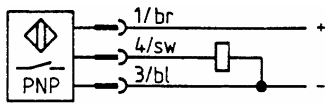


**SPECIFICATION (continuation)**

**Monitoring switch**

Protection system : ..... IP 65 in plugged condition  
 Operating voltage : ..... 10 V to 30 V DC  
 Output current : ..... max. 200 mA  
 Switching function : ..... NO (— / —)  
 Switching frequency . ..... max. 1000 Hz  
 Feed line : Proof against wrong poling ..... yes  
                   Shortcircuit proof ..... no

**Connection diagram**



**Spring strainer**

Filter : ..... wire fabric 0.4 x 0.18 DIN ISO 4783 T.2  
 Filtering area : ..... 19 cm<sup>2</sup>

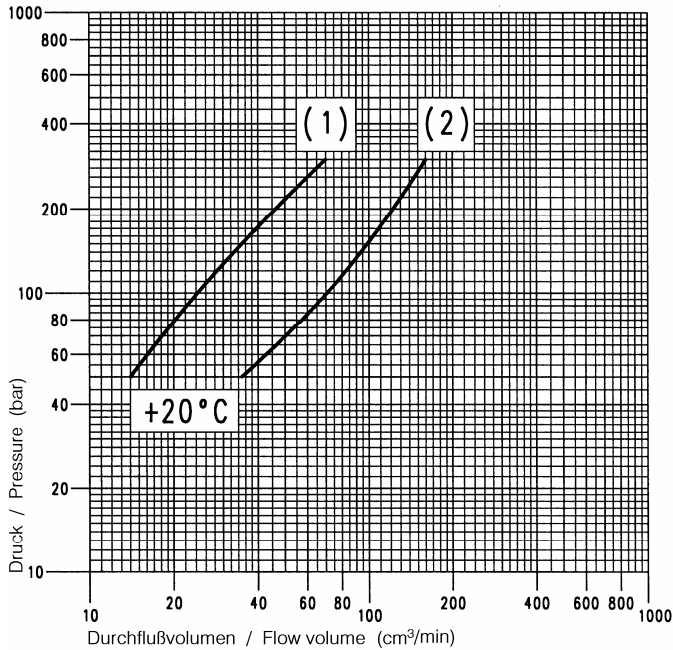




**FLOW DIAGRAMS**

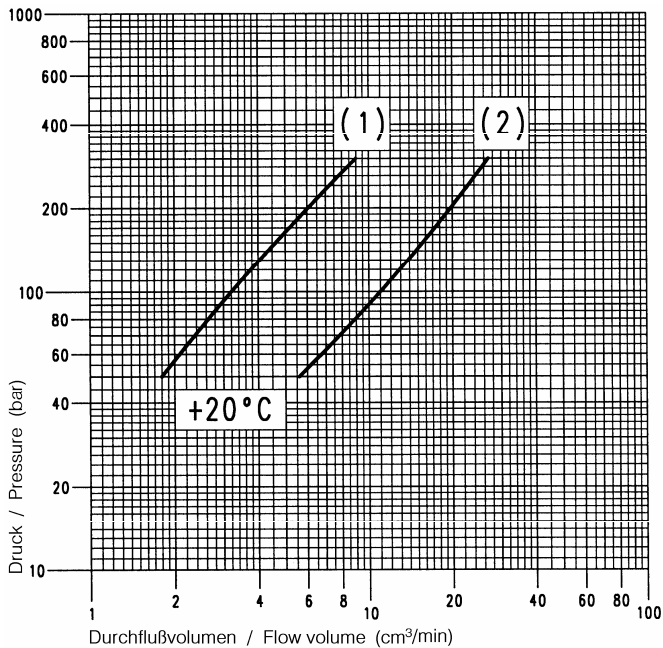
**Throttle insert**

**Flow volume of the throttle inserts at 0 bar counterpressure:**



Flow medium: Oil Talona 40 Company: Shell, ISO VG 150 DIN 51519  
 (≈ 174 mm<sup>2</sup>/s at 40°C)  
 (≈ 650 mm<sup>2</sup>/s at 20°C)

Throttle (1) low effect / Throttle (2) high effect



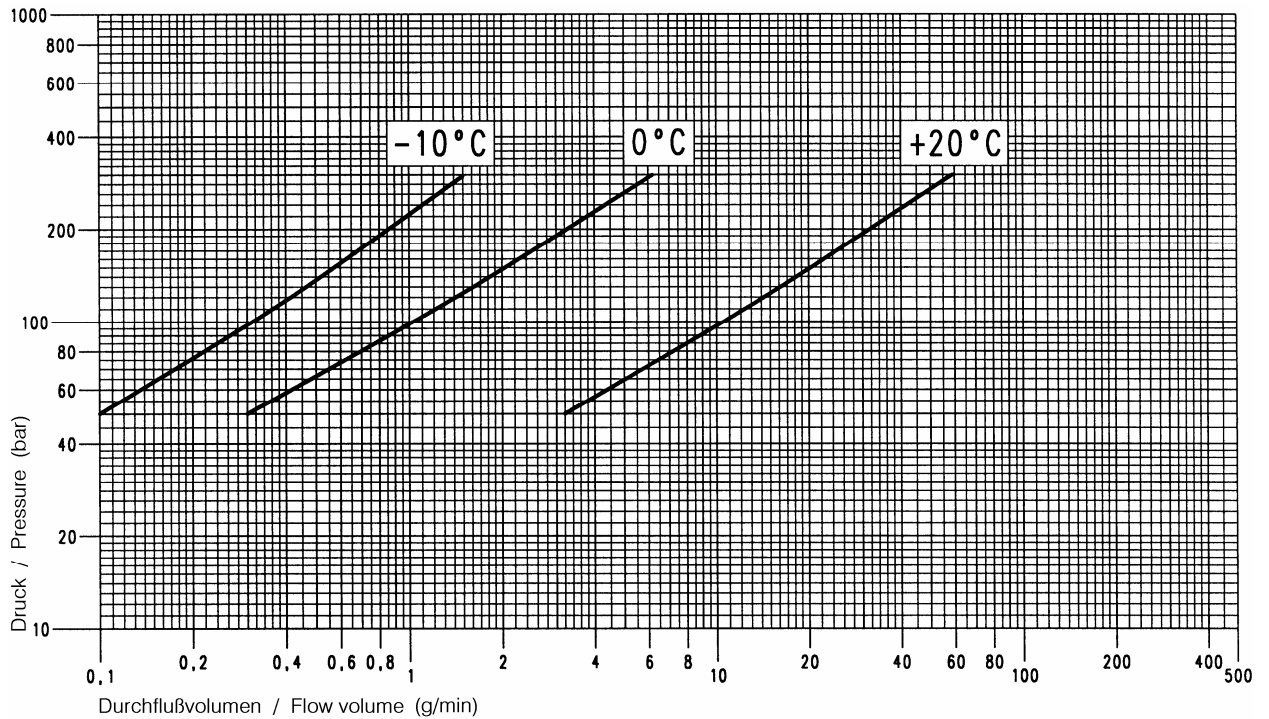
Flow medium: Oil Tellus C460 Company: Shell  
 (≈ 490 mm<sup>2</sup>/s at 40°C)  
 (≈ 2100 mm<sup>2</sup>/s at 20°C)

Throttle (1) low effect / Throttle (2) high effect

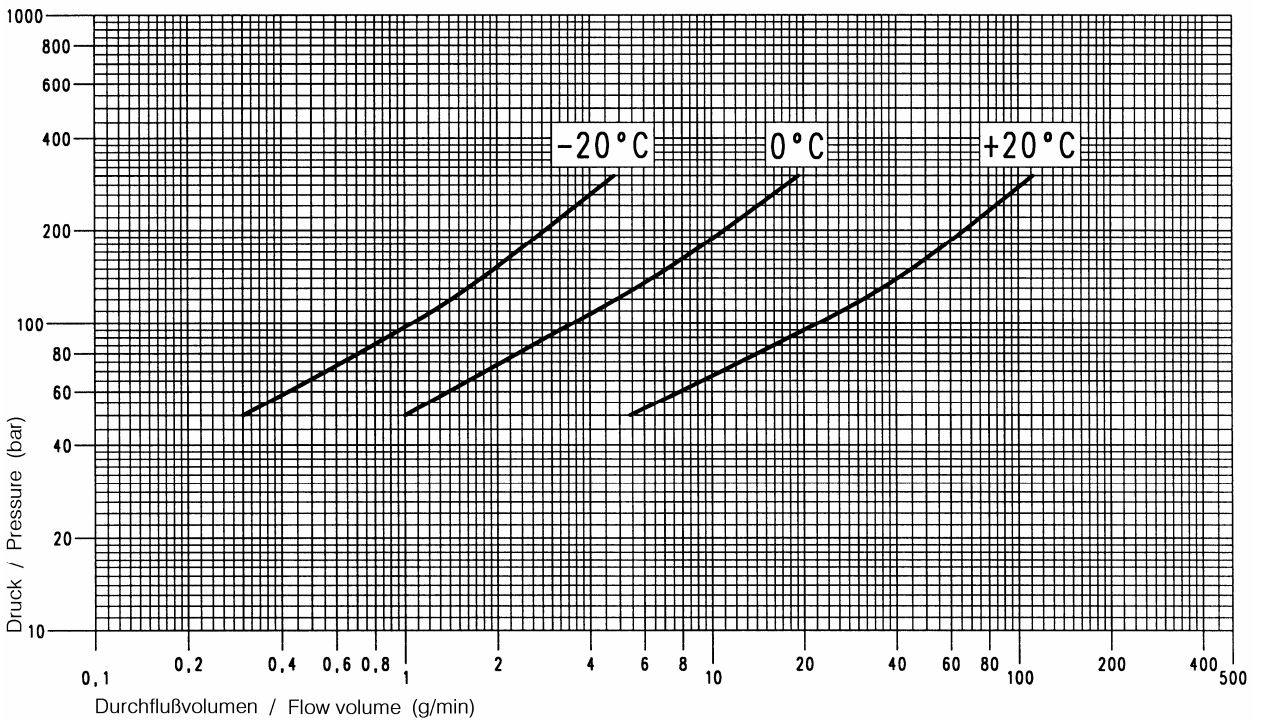


**FLOW DIAGRAMS (continuation)**

**Throttle insert**



Flow medium: Grease Renolit MP Company: Fuchs  
Worked penetration NLGI-class 2  
Throttle with low effect



Flow medium: Grease Renolit MP Company: Fuchs  
Worked penetration NLGI-class 2  
Throttle with high effect

