

## Exhaust air flow control valves

**FESTO**



# Exhaust air flow control valves

Product range overview

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## Function

Exhaust air flow control valves are screwed into the exhaust controls of control valves or drives. They enable the piston speed of cylinders or rotary drives to be controlled by restricting

the air exhaust. This is done using the adjusting element. The air is exhausted via an integrated silencer which reduces the noise level.

| Design                               | Valve function                     | Design                                                                              | Type | Pneumatic connection 1                                                   | qn <sup>1)</sup><br>[l/min] | Adjusting element  | → Page/<br>Internet |
|--------------------------------------|------------------------------------|-------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------|-----------------------------|--------------------|---------------------|
| Exhaust air<br>flow control<br>valve | Sintered metal                     |                                                                                     |      |                                                                          |                             |                    |                     |
|                                      | Flow control/<br>silencer function |    | GRE  | G1/8, G1/4, G3/8, G1/2,<br>NPT1/8-27, NPT1/4-18,<br>NPT3/8-18, NPT1/2-14 | 0 ... 3,600                 | Slotted head screw | 3                   |
| Flow control/<br>silencer            | Plastic                            |                                                                                     |      |                                                                          |                             |                    |                     |
|                                      | Flow control/<br>silencer function |   | VFFK | M5, M7, R1/8, R1/4                                                       | 0 ... 420                   | Knurled screw      | 5                   |
|                                      |                                    |  | GRU  | G1/8, G1/4, G3/8, G1/2, G3/4                                             | 0 ... 8,000                 | Slotted head screw | 8                   |

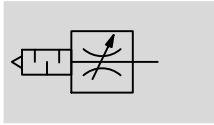
1) Standard flow rate

# Exhaust air flow control valves GRE

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Technical data

Function



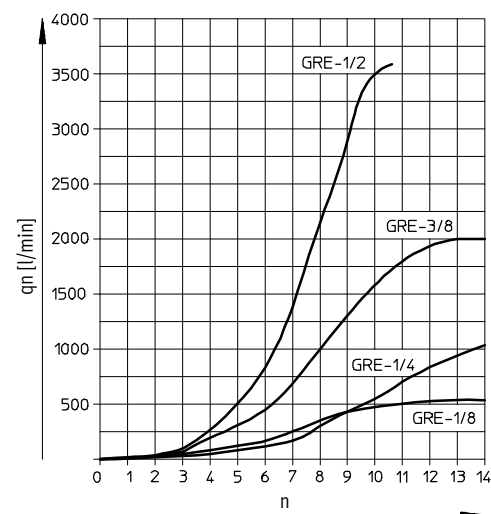
-  Flow rate  
0 ... 3,600 l/min
-  Temperature range  
-10 ... +70 °C
-  Operating pressure  
0 ... 10 bar



| General technical data    |               |                                |                   |                   |
|---------------------------|---------------|--------------------------------|-------------------|-------------------|
| Valve function            |               | Flow control/silencer function |                   |                   |
| Pneumatic connection 1    |               | G1/8 or NPT1/8-27              | G1/4 or NPT1/4-18 | G3/8 or NPT3/8-18 |
| Adjustment component      |               | Slotted head screw             |                   |                   |
| Type of mounting          |               | Screw-in                       |                   |                   |
| Mounting position         |               | Any                            |                   |                   |
| Nominal tightening torque | [Nm / ft-lbf] | 12 ±20 / 8.85 ±20              | –                 | –                 |
| Max. tightening torque    | [Nm / ft-lbf] | –                              | –                 | 15 / 11.1         |

| Operating and environmental conditions |  |                                                                                                        |                                                           |                                                           |
|----------------------------------------|--|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|
| Pneumatic connection 1                 |  | G1/8 or NPT1/8-27                                                                                      | G1/4 or NPT1/4-18                                         | G3/8 or NPT3/8-18                                         |
| Operating pressure                     |  | 0 ... 10 / 0 ... 145                                                                                   |                                                           |                                                           |
| Operating medium                       |  | Compressed air in accordance with ISO 8573-1:2010 [7:-:-]                                              | Compressed air in accordance with ISO 8573-1:2010 [7:-:-] | Compressed air in accordance with ISO 8573-1:2010 [7:4:4] |
| Note on operating/pilot medium         |  | Operation with lubricated medium possible (in which case lubricated operation will always be required) |                                                           |                                                           |
| Ambient temperature                    |  | -10 ... +70 / 14 ... 158                                                                               |                                                           |                                                           |
| Temperature of medium                  |  | -10 ... +70 / 14 ... 158                                                                               |                                                           |                                                           |

Standard flow rate  $q_n$  at 6 bar → 0 bar as a function of spindle rotations  $n$



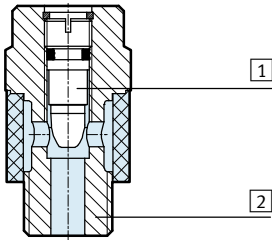
# Exhaust air flow control valves GRE

Technical data

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## Materials

Sectional view

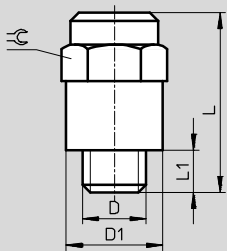


Exhaust air flow control valve

|                   |                 |                         |
|-------------------|-----------------|-------------------------|
| 1                 | Adjusting screw | Brass                   |
| 2                 | Threaded plug   | Wrought aluminium alloy |
| –                 | Seals           | NBR                     |
| Note on materials |                 | RoHS-compliant          |

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)



| Type        | Connection<br>D | D1<br>Ø<br>[mm / in] | L<br>[mm / in] | L1<br>[mm / in] | ↺      |
|-------------|-----------------|----------------------|----------------|-----------------|--------|
| G thread    |                 |                      |                |                 |        |
| GRE-1/8     | G1/8            | 15 / 0.59            | 27.1 / 1.07    | 5.1 / 0.2       | 14     |
| GRE-1/4     | G1/4            | 18.2 / 0.72          | 32.1 / 1.26    | 6.1 / 0.24      | 17     |
| GRE-3/8     | G3/8            | 25 / 0.98            | 41.1 / 1.62    | 7.1 / 0.28      | 22     |
| GRE-1/2     | G1/2            | 27 / 1.06            | 44.6 / 1.76    | 8.6 / 0.34      | 24     |
| NPT thread  |                 |                      |                |                 |        |
| GRE-1/8-NPT | NPT1/8-27       | 15.3 / 0.6           | 34 / 1.34      | 10.7 / 0.42     | 9/16   |
| GRE-1/4-NPT | NPT1/4-18       | 18.8 / 0.74          | 42 / 1.65      | 14.7 / 0.58     | 11/16  |
| GRE-3/8-NPT | NPT3/8-18       | 25 / 0.98            | 50 / 1.97      | 14.6 / 0.57     | 7/8    |
| GRE-1/2-NPT | NPT1/2-14       | 27 / 1.06            | 57 / 2.24      | 19.4 / 0.76     | 1 1/16 |

## Ordering data

|  | Pneumatic<br>connection 1 | Standard nominal flow rate q <sub>nN</sub><br>at 6 bar → 5 bar<br>in direction of flow control<br>[l/min / cfm] | Standard flow rate q <sub>n</sub><br>at 6 bar → 0 bar<br>in direction of flow control<br>[l/min / cfm] | Weight<br>[g / lb] | Part No. | Type        |
|--|---------------------------|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------|----------|-------------|
|  | G thread                  |                                                                                                                 |                                                                                                        |                    |          |             |
|  | G1/8                      | 520 / 18.4                                                                                                      | 0 ... 520 / 0 ... 18.4                                                                                 | 15 / 0.03          | 10351    | GRE-1/8     |
|  | G1/4                      | 996 / 35.2                                                                                                      | 0 ... 996 / 0 ... 35.2                                                                                 | 25 / 0.06          | 10352    | GRE-1/4     |
|  | G3/8                      | 2,000 / 70.6                                                                                                    | 3 ... 2,000 / 0.1 ... 70.6                                                                             | 50 / 0.11          | 35310    | GRE-3/8     |
|  | G1/2                      | 3,600 / 127.1                                                                                                   | 0 ... 3,600 / 0 ... 127.1                                                                              | 75 / 0.17          | 10353    | GRE-1/2     |
|  | NPT thread                |                                                                                                                 |                                                                                                        |                    |          |             |
|  | NPT1/8-27                 | 520 / 18.4                                                                                                      | 0 ... 520 / 0 ... 18.4                                                                                 | 15 / 0.03          | 10057    | GRE-1/8-NPT |
|  | NPT1/4-18                 | 996 / 35.2                                                                                                      | 0 ... 996 / 0 ... 35.2                                                                                 | 25 / 0.06          | 10058    | GRE-1/4-NPT |
|  | NPT3/8-18                 | 2,000 / 70.6                                                                                                    | 3 ... 2,000 / 0.1 ... 70.6                                                                             | 50 / 0.11          | 35311    | GRE-3/8-NPT |
|  | NPT1/2-14                 | 3,600 / 127.1                                                                                                   | 0 ... 3,600 / 0 ... 127.1                                                                              | 75 / 0.17          | 10059    | GRE-1/2-NPT |

# Flow control/silencers VFFK

Type codes



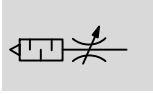
|                        |                       |      |   |   |   |   |   |    |   |   |
|------------------------|-----------------------|------|---|---|---|---|---|----|---|---|
|                        |                       | VFFK | - | C | - | K | - | M7 | - | P |
| Type                   |                       |      |   |   |   |   |   |    |   |   |
| VFFK                   | Flow control/silencer |      |   |   |   |   |   |    |   |   |
| Design                 |                       |      |   |   |   |   |   |    |   |   |
| C                      | Inline                |      |   |   |   |   |   |    |   |   |
| Adjusting element      |                       |      |   |   |   |   |   |    |   |   |
| K                      | Knurled screw         |      |   |   |   |   |   |    |   |   |
| Pneumatic connection 1 |                       |      |   |   |   |   |   |    |   |   |
| M5                     | Thread M5             |      |   |   |   |   |   |    |   |   |
| M7                     | Thread M7             |      |   |   |   |   |   |    |   |   |
| R18                    | Thread R1/8           |      |   |   |   |   |   |    |   |   |
| R14                    | Thread R1/4           |      |   |   |   |   |   |    |   |   |
| Additional feature     |                       |      |   |   |   |   |   |    |   |   |
| P                      | Polymer silencer      |      |   |   |   |   |   |    |   |   |

# Flow control/silencers VFFK

Technical data

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Function



- - Flow rate  
0 ... 420 l/min
- - Temperature range  
0 ... +60 °C
- - Operating pressure  
0 ... 10 bar



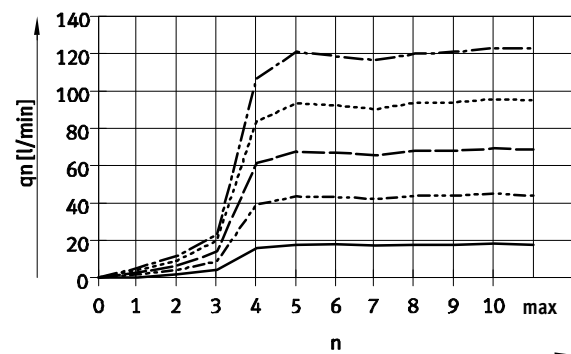
| General technical data         |                                |          |      |         |
|--------------------------------|--------------------------------|----------|------|---------|
| Valve function                 | Flow control/silencer function |          |      |         |
| Pneumatic connection 1         | M5                             | M7       | R1/8 | R1/4    |
| Adjusting element              | Knurled screw                  |          |      |         |
| Type of mounting               | Screw-in                       |          |      |         |
| Mounting position              | Any                            |          |      |         |
| Type of seal on threaded plug  | Sealing ring                   |          |      | Coating |
| Nominal tightening torque [Nm] | 1.4 ±20%                       | 3.8 ±20% | -    |         |

| Operating and environmental conditions |                                                     |
|----------------------------------------|-----------------------------------------------------|
| Operating pressure complete [bar]      | 0 ... 10                                            |
| temperature range                      |                                                     |
| Operating medium                       | Compressed air according to ISO 8573-1:2010 [7:4:4] |
| Note about the operating/pilot medium  | Lubricated operation possible                       |
| Ambient temperature [°C]               | 0 ... +60                                           |
| Temperature of medium [°C]             | 0 ... +60                                           |
| Storage temperature [°C]               | 0 ... +60                                           |

| Materials         |                     |                 |
|-------------------|---------------------|-----------------|
| Type              | VFFK-C-K-M...-P     | VFFK-C-K-R...-P |
| Silencer insert   | PE                  |                 |
| Threaded plug     | Nickel-plated brass |                 |
| Regulating screw  | Nickel-plated brass |                 |
| Knurled nut       | Aluminium           |                 |
| Seals             | NBR                 | -               |
| Note on materials | RoHS-compliant      |                 |

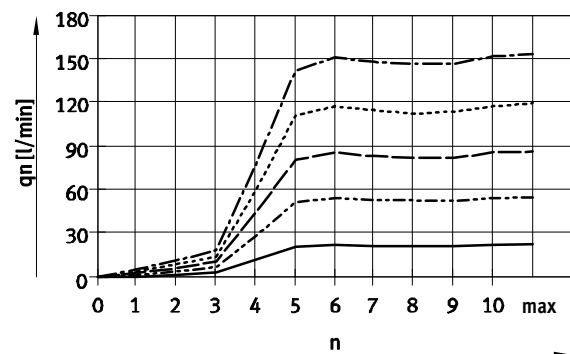
Standard flow rate  $q_n$  [l/min] as a function of turns of the adjusting screw  $n$

VFFK-C-K-M5-P



- P1 = 1 bar
- - - P1 = 3 bar
- · - P1 = 5 bar
- P1 = 7 bar
- — — P1 = 9 bar

VFFK-C-K-M7-P



Flow rate tolerance: ±20%

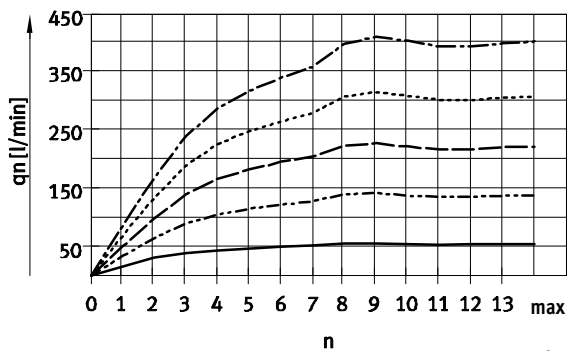
# Flow control/silencers VFFK

Technical data

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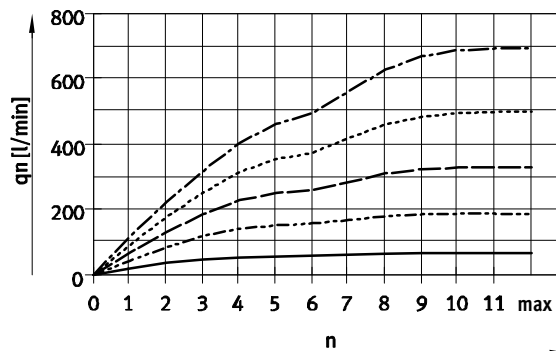
## Standard flow rate $q_n$ [l/min] as a function of turns of the adjusting screw $n$

VFFK-C-K-R18-P



—  $P_1 = 1$  bar  
 - - -  $P_1 = 3$  bar  
 - · -  $P_1 = 5$  bar  
 · · ·  $P_1 = 7$  bar  
 - · -  $P_1 = 9$  bar

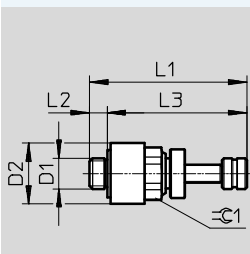
VFFK-C-K-R14-P



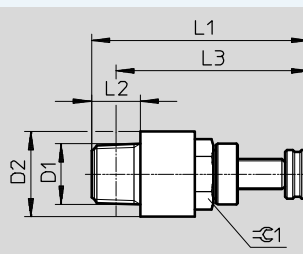
Flow rate tolerance:  $\pm 20\%$

## Dimensions

VFFK-C-K-M...-P



VFFK-C-K-R...-P



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| Type           | Connection<br>D1 | D2<br>Ø | L1   |      | L2   | L3   |      | ±0.1 |
|----------------|------------------|---------|------|------|------|------|------|------|
|                |                  |         | min. | max. |      | min. | max. |      |
| VFFK-C-K-M5-P  | M5x0.8           | 10      | 20.6 | 23.4 | 3    | 17.6 | 20.4 | 8    |
| VFFK-C-K-M7-P  | M7x1             | 10      | 24.1 | 26.9 | 5.5  | 18.6 | 21.4 | 8    |
| VFFK-C-K-R18-P | R $\frac{1}{8}$  | 14      | 29.1 | 35.8 | 8    | 25.1 | 31.8 | 10   |
| VFFK-C-K-R14-P | R $\frac{1}{4}$  | 18      | 31.1 | 37   | 10.8 | 25.1 | 31   | 14   |

## Ordering data

|  | Pneumatic<br>connection 1 | Standard flow rate $q_n$ at 6 bar → 0 bar<br>[l/min] | Weight<br>[g] | Part No. | Type           |
|--|---------------------------|------------------------------------------------------|---------------|----------|----------------|
|  | M5                        | 0 ... 80                                             | 4.5           | 133140   | VFFK-C-K-M5-P  |
|  | M7                        | 0 ... 100                                            | 6.1           | 133141   | VFFK-C-K-M7-P  |
|  | R $\frac{1}{8}$           | 0 ... 270                                            | 13.5          | 133142   | VFFK-C-K-R18-P |
|  | R $\frac{1}{4}$           | 0 ... 420                                            | 25            | 133143   | VFFK-C-K-R14-P |

# Flow control/silencers GRU

Type codes

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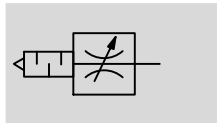
|                               |                       |     |   |     |   |   |
|-------------------------------|-----------------------|-----|---|-----|---|---|
|                               |                       | GRU | - | 1/4 | - | B |
| <b>Type</b>                   |                       |     |   |     |   |   |
| GRU                           | Flow control/silencer |     |   |     |   |   |
| <b>Pneumatic connection 1</b> |                       |     |   |     |   |   |
| 1/8                           | Thread G1/8           |     |   |     |   |   |
| 1/4                           | Thread G1/4           |     |   |     |   |   |
| 3/8                           | Thread G3/8           |     |   |     |   |   |
| 1/2                           | Thread G1/2           |     |   |     |   |   |
| 3/4                           | Thread G3/4           |     |   |     |   |   |
| <b>Generation</b>             |                       |     |   |     |   |   |
| B                             | B series              |     |   |     |   |   |

# Flow control/silencers GRU

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Technical data

Function



- - Flow rate  
0 ... 8,000 l/min
- - Temperature range  
-10 ... +70 °C
- - Operating pressure  
0 ... 10 bar



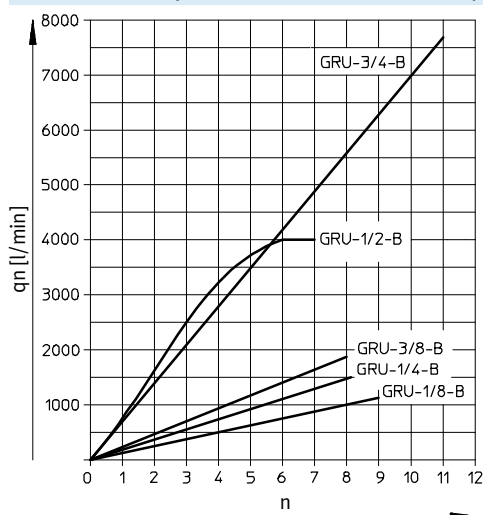
## General technical data

| Valve function         | Flow control/silencer function |      |      |      |      |
|------------------------|--------------------------------|------|------|------|------|
| Pneumatic connection 1 | G1/8                           | G1/4 | G3/8 | G1/2 | G3/4 |
| Adjustment component   | Slotted head screw             |      |      |      |      |
| Type of mounting       | Screw-in                       |      |      |      |      |
| Mounting position      | Any                            |      |      |      |      |

## Operating and environmental conditions

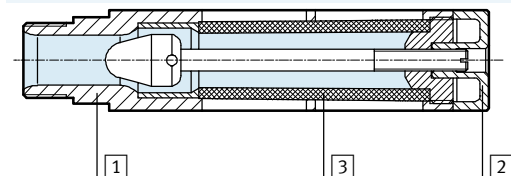
|                                |                                                           |
|--------------------------------|-----------------------------------------------------------|
| Operating pressure [bar]       | 0 ... 10                                                  |
| complete temperature range     |                                                           |
| Operating medium               | Compressed air in accordance with ISO 8573-1:2010 [7:-:-] |
| Note on operating/pilot medium | Operation with lubricated medium possible                 |
| Ambient temperature [°C]       | -10 ... +70                                               |
| Temperature of medium [°C]     | -10 ... +70                                               |

## Standard flow rate $q_n$ at 6 bar $\rightarrow$ 0 bar as a function of spindle rotations $n$



## Materials

Sectional view



## Flow control/silencer

|                   |                        |                |
|-------------------|------------------------|----------------|
| 1                 | Housing, threaded plug | Aluminium      |
| 2                 | Adjusting screw        | PA             |
| 3                 | Silencer insert        | PE             |
| Note on materials |                        | RoHS-compliant |

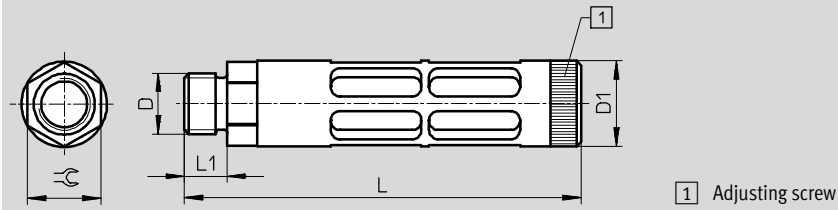
# Flow control/silencers GRU

Technical data

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## Dimensions

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| Type    | Connection<br>D | D1<br>Ø | L    | L1  | ↗  |
|---------|-----------------|---------|------|-----|----|
| GRU-1/8 | G1/8            | 16      | 46   | 5.4 | 14 |
| GRU-1/4 | G1/4            | 19.5    | 63.3 | 6.4 | 17 |
| GRU-3/8 | G3/8            | 25      | 95.3 | 7.5 | 19 |
| GRU-1/2 | G1/2            | 28      | 130  | 14  | 24 |
| GRU-3/4 | G3/4            | 38      | 157  | 16  | 32 |

## Ordering data

|  | Pneumatic con-<br>nection 1 | Standard flow rate qn at 6 bar → 0 bar in direction of flow control<br>[l/min] | Weight<br>[g] | Part No.    | Type             |
|--|-----------------------------|--------------------------------------------------------------------------------|---------------|-------------|------------------|
|  | G1/8                        | 0 ... 1,000                                                                    | 10            | <b>9516</b> | <b>GRU-1/8-B</b> |
|  | G1/4                        | 0 ... 1,500                                                                    | 25            | <b>9517</b> | <b>GRU-1/4-B</b> |
|  | G3/8                        | 0 ... 1,700                                                                    | 55            | <b>9518</b> | <b>GRU-3/8-B</b> |
|  | G1/2                        | 0 ... 4,000                                                                    | 100           | <b>9519</b> | <b>GRU-1/2-B</b> |
|  | G3/4                        | 0 ... 8,000                                                                    | 170           | <b>9520</b> | <b>GRU-3/4-B</b> |

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