

**Customer**

Tel.:  
Fax:  
Job number:  
Customer number:

**Testing agency**

Tel.:  
Fax:  
  
Operator KHPRKD  
WID: 4b 48 30 30 30 97 7f fa (Hex)

**Test unit**

Order number: **0470504005**  
Serial number: 205695  
Vehicle: BMW  
Model formula: VR/4/2/70M2200R1000  
Date of prod.: 961  
Change index: 009

Verification: ---  
Pump comparison: ---  
Blocking: OK

**Warranty**

Requested: ☐ Yes ☐ No Error number: \_\_\_\_\_

Recognised: ☐ Yes ☐ No Seal: \_\_\_\_\_

\_\_\_\_\_  
Stamp, Date, Signature

**Test equipment**

|                            |                                      |                        |                |
|----------------------------|--------------------------------------|------------------------|----------------|
| Test nozzle holder:        | 1688901032                           | Overflow valve number: | 1467445003     |
| Nozzle opening pressure:   | 20.70 + 0.30 MPa (207.00 + 3.00 bar) | Inlet pressure:        | 30 kPa ± 5 kPa |
| Perforated-plate diameter: | 0.4 mm                               | Battery voltage:       | 13.5 V ± 0.1 V |
| Test pressure line:        | 1680750092                           |                        |                |

**Customer complaint****Problem****Remarks**

# Pump comparison

## General parameters

| p-Inlet<br>[kPa] | SOD meas.<br>[mm] | dT-Hybrid<br>[°C] | dPhi1<br>[°] |  |  |  |
|------------------|-------------------|-------------------|--------------|--|--|--|
| 30               | 0.800             | -3.188            | 0.68         |  |  |  |
|                  |                   |                   |              |  |  |  |
|                  | SOD angle<br>[°]  |                   |              |  |  |  |
|                  | 217.90            |                   |              |  |  |  |

## Channel assignment

| Delivery | Outlet | Meas. ch. |
|----------|--------|-----------|
| Q1       | A      | 2         |
| Q2       | B      | 5         |
| Q3       | D      | 4         |
| Q4       | E      | 3         |

## Test steps

| Designation  | n<br>[1/min] | me / me-PI<br>[mg/H]                | AD-MI / AD-PI<br>[°NW] | Q-Avg<br>[mm^3/H] | Q-Range<br>[mm^3/H] | Q-Over<br>[l/h] | Timing<br>[°NW] | t-Ein<br>[μs] | t-Ein-DT<br>[μs] | T-In<br>[°C] | T-Over<br>[°C] | T-Hybrid<br>[°C] | S |
|--------------|--------------|-------------------------------------|------------------------|-------------------|---------------------|-----------------|-----------------|---------------|------------------|--------------|----------------|------------------|---|
| WI S_001     | 398          | 20.00                               | 15.60                  |                   |                     | 59              |                 |               |                  | 39.5         |                | 28.81            | + |
| WI S_002     | 1500         | 30.00                               | 27.20                  |                   |                     | 59              |                 |               |                  | 39.6         |                | 30.56            | + |
| WI S_003     | 1500         | 30.00                               | 27.20                  |                   |                     | 107             |                 |               |                  | 39.6         |                | 32.31            | + |
| WI S_004     | 1500         | 30.00                               | 27.20                  |                   |                     | 110             |                 |               |                  | 39.5         |                | 33.81            | + |
| WI S_005     | 1500         | 30.00                               | 27.20                  |                   |                     | 109             |                 |               |                  | 39.5         |                | 34.88            | + |
| WI S_006     | 1500         | 30.00                               | 27.20                  |                   |                     | 111             |                 |               |                  | 39.5         |                | 36.19            | + |
| WI S_007     | 1500         | 30.00                               | 27.20                  | 47.92             |                     | 111             |                 |               |                  | 40.0         |                | 44.88            | + |
|              |              | Q1=48.00 Q2=48.70 Q3=47.40 Q4=47.60 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| PFP S_001    | 1500         | 30.00                               | 27.20                  |                   |                     | 111             |                 |               |                  | 40.0         |                | 44.88            | + |
| PFP S_002    | 1500         | 0.00                                | 0.00                   |                   |                     | 108             |                 |               |                  | 40.0         |                | 44.00            | + |
|              |              | p-FP [kPa] = 1860.0000              |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| SVADBA S_001 | 201          | ---                                 | 13.70                  |                   |                     | 30              |                 |               |                  | 40.0         |                | 44.76            | + |
| SVAD S_001   | 501          | ---                                 | 0.00                   |                   |                     | 72              | 0.06            |               |                  | 39.9         |                | 43.88            | + |
| SVAD S_002   | 1251         | ---                                 | 0.00                   |                   |                     | 107             | -0.19           |               |                  | 39.9         |                | 42.65            | + |
| SVAD S_003   | 2199         | ---                                 | 0.00                   |                   |                     | 122             | -0.40           |               |                  | 39.9         |                | 42.31            | + |

Measurement display: Normal = OK/not evaluated  
**Bold = not OK**

Measurement too high = ↑  
Measurement too low = ↓

(S)tatus + = test step OK, ? = cancelled  
- = test step not OK

**BOSCH****EPS944**

1.45

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# Pump comparison

## Test steps

| Designation | n<br>[1/min] | me / me-PI<br>[mg/H]                | AD-MI / AD-PI<br>[°NW] | Q-Avg<br>[mm^3/H] | Q-Range<br>[mm^3/H] | Q-Over<br>[l/h] | Timing<br>[°NW] | t-Ein<br>[μs] | t-Ein-DT<br>[μs] | T-In<br>[°C] | T-Over<br>[°C] | T-Hybrid<br>[°C] | S |
|-------------|--------------|-------------------------------------|------------------------|-------------------|---------------------|-----------------|-----------------|---------------|------------------|--------------|----------------|------------------|---|
| SVAD S_004  | 2200         | ---                                 | 37.20                  |                   |                     | 131             | 20.20           | 988.40        |                  | 39.9         |                | 43.28            | + |
| SVAD S_005  | 1248         | ---                                 | 26.30                  |                   |                     | 114             | 20.34           |               |                  | 39.9         |                | 44.44            | + |
| SVADS S_001 | 1250         | ---                                 | 26.07                  | 54.95             |                     | 111             | 11.07           |               |                  | 40.0         |                | 44.44            | + |
|             |              | Q1=54.10 Q2=56.50 Q3=54.50 Q4=55.00 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| SVADS S_002 | 501          | ---                                 | 17.48                  | 55.35             |                     | 79              | 15.48           |               |                  | 39.9         |                | 42.65            | + |
|             |              | Q1=55.40 Q2=56.80 Q3=53.90 Q4=54.80 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| AP 001      | 2200         | 45.65                               | 40.02                  | 65.95             | 1.30                | 130             |                 |               |                  | 33.0         |                | 41.71            | + |
|             |              | Q1=65.90 Q2=66.80 Q3=65.60 Q4=65.50 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| AP 002      | 2200         | 24.91                               | 31.93                  | 38.45             | 0.80                | 129             |                 |               |                  | 32.8         |                | 42.06            | + |
|             |              | Q1=38.30 Q2=38.90 Q3=38.50 Q4=38.10 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| AP 003      | 2200         | 8.31                                | 26.78                  | 17.73             | 0.30                | 125             |                 |               |                  | 32.8         |                | 40.48            | + |
|             |              | Q1=17.80 Q2=17.60 Q3=17.60 Q4=17.90 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| AP 004      | 1749         | 45.65                               | 34.13                  | 66.00             | 1.60                | 121             |                 |               |                  | 33.1         |                | 40.56            | + |
|             |              | Q1=66.20 Q2=66.90 Q3=65.30 Q4=65.60 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| AP 005      | 1750         | 8.31                                | 23.47                  | 16.65             | 0.60                | 116             |                 |               |                  | 32.9         |                | 38.81            | + |
|             |              | Q1=16.70 Q2=16.90 Q3=16.30 Q4=16.70 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| AP 006      | 1000         | 45.65                               | 25.09                  | 70.10             | 2.10                | 103             |                 |               |                  | 33.0         |                | 37.75            | + |
|             |              | Q1=69.70 Q2=71.40 Q3=69.30 Q4=70.00 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| AP 007      | 1000         | 24.91                               | 20.86                  | 40.08             | 2.00                | 102             |                 |               |                  | 33.0         |                | 37.17            | + |
|             |              | Q1=40.00 Q2=41.30 Q3=39.30 Q4=39.70 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| AP 008      | 1000         | 8.31                                | 18.06                  | 17.13             | 0.90                | 102             |                 |               |                  | 36.5         |                | 38.25            | + |
|             |              | Q1=17.50 Q2=17.40 Q3=16.60 Q4=17.00 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| AP 009      | 400          | 45.65                               | 17.68                  | 71.58             | 3.40                | 66              |                 |               |                  | 35.0         |                | 37.80            | + |
|             |              | Q1=71.60 Q2=73.40 Q3=70.00 Q4=71.30 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| AP 010      | 400          | 24.91                               | 15.67                  | 46.25             | 3.20                | 67              |                 |               |                  | 35.0         |                | 37.31            | + |
|             |              | Q1=46.60 Q2=47.90 Q3=44.70 Q4=45.80 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| AP 011      | 400          | 8.31                                | 14.02                  | 18.55             | 2.50                | 68              |                 |               |                  | 35.0         |                | 36.88            | + |
|             |              | Q1=19.60 Q2=19.80 Q3=17.30 Q4=17.50 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| AP 012      | 200          | 24.91                               | 13.89                  | 54.65             | 2.10                | 38              |                 |               |                  | 35.0         |                | 37.09            | + |
|             |              | Q1=55.10 Q2=55.70 Q3=53.60 Q4=54.20 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |
| AP 013      | 100          | 49.80                               | 13.93                  | 70.15             | 5.20                | 16              |                 |               |                  | 35.0         |                | 37.50            | + |
|             |              | Q1=71.70 Q2=72.70 Q3=68.70 Q4=67.50 |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |

Measurement display: Normal = OK/not evaluated

**Bold = not OK**

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(S)tatus + = test step OK, ? = cancelled

**- = test step not OK**

# Blocking:

## General parameters

| p-Inlet<br>[kPa] | SOD meas.<br>[mm] | dT-Hybrid<br>[°C] | dPhi1<br>[°] |  |  |  |
|------------------|-------------------|-------------------|--------------|--|--|--|
| 30               | 0.800             | -3.188            | 0.68         |  |  |  |
|                  |                   |                   |              |  |  |  |
|                  | SOD angle<br>[°]  |                   |              |  |  |  |
|                  | 217.90            |                   |              |  |  |  |

## Channel assignment

| Delivery | Outlet | Meas. ch. |
|----------|--------|-----------|
| Q1       | A      | 2         |
| Q2       | B      | 5         |
| Q3       | D      | 4         |
| Q4       | E      | 3         |

## Test steps

| Designation                         | n<br>[1/min] | me / me-PI<br>[mg/H] | AD-MI / AD-PI<br>[°NW] | Q-Avg<br>[mm^3/H] | Q-Range<br>[mm^3/H] | Q-Over<br>[l/h] | Timing<br>[°NW] | t-Ein<br>[µs] | t-Ein-DT<br>[µs] | T-In<br>[°C] | T-Over<br>[°C] | T-Hybrid<br>[°C] | S |
|-------------------------------------|--------------|----------------------|------------------------|-------------------|---------------------|-----------------|-----------------|---------------|------------------|--------------|----------------|------------------|---|
| WI S_001                            | 401          | 20.00                |                        |                   |                     | 59              |                 |               |                  | 39.9         |                | 36.44            | + |
| WI S_002                            | 1500         | 30.00                |                        |                   |                     | 111             |                 |               |                  | 39.8         |                | 36.88            | + |
| WI S_003                            | 1500         | 30.00                |                        |                   |                     | 112             |                 |               |                  | 39.7         |                | 37.75            | + |
| WI S_004                            | 1500         | 30.00                |                        |                   |                     | 114             |                 |               |                  | 39.7         |                | 38.81            | + |
| WI S_005                            | 1500         | 30.00                |                        |                   |                     | 112             |                 |               |                  | 39.7         |                | 39.44            | + |
| WI S_006                            | 1500         | 30.00                |                        |                   |                     | 113             |                 |               |                  | 39.7         |                | 40.13            | + |
| WI S_007                            | 1500         | 30.00                |                        | 46.45             |                     | 114             |                 |               |                  | 39.5         |                | 42.94            | + |
| Q1=46.30 Q2=47.40 Q3=45.90 Q4=46.20 |              |                      |                        |                   |                     |                 |                 |               |                  |              |                |                  |   |

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