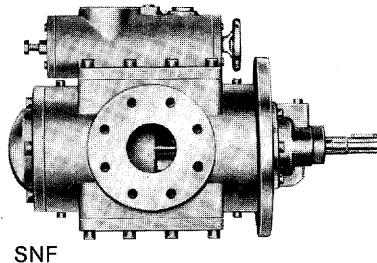
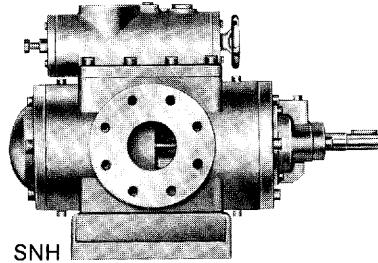


# Screw Pumps

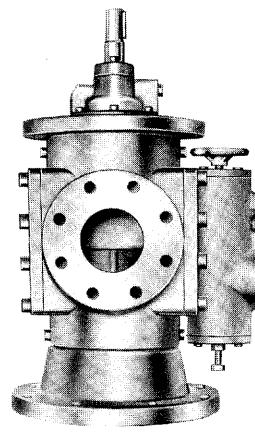
## Series SN



SNF



SNH



SNS

### **Application**

For handling lubricating fluids. The fluids to be pumped must not contain any abrasive substances nor chemically attack the pump materials.

### **Main fields of application**

Fuel oil firing/energy engineering:

For handling light and heavy fuel oils as well as residual and waste oils, e.g. as fuel oil, transfer, fuelling, ring-conduit and burner-operation pumps.

### Hydraulics:

For booster and/or pumping hydraulic oils on mineral-oil basis or hydraulic lubricating liquids; e.g. as hydraulic pumps for lifts, elevating platforms, pusher centrifuges, hydraulic presses, forging hammers, bale presses, chip-board presses, winches, hoists, variable-pitch propeller and rudder adjusting units, hatch hydraulics, rolling mill and machine tool hydraulics.

General industrial engineering/machine/heavy machine industry:

For handling lubricating, cooling, coolant, sealing, regulating and hydraulic oils, light and heavy fuel oils, Diesel oils, fuels and thermal oils (cold), e.g. for steam, gas and water turbines as lubricating, sealing, regulating oil and jacking oil pumps, for compressors as lubricating, sealing and coolant oil pumps, for gear drives as lube-oil pumps, for Diesel engines as lubricating and cooling oil as well as fuel pumps, for rolling mills as lube-oil and hydraulic pumps etc.

### Marine/Offshore engineering:

For handling lubricating, cooling and hydraulic oils, light and heavy fuel oils, crude oils as well as fuels.

### Machine-tool industry:

For handling cutting, grinding, deep-hole drilling oils and oil-in-water emulsions as well as hydraulic oils.

### Tank farms:

For handling all lubricating fluids such as greases, oils, paints, fuels, polyols, isocyanates; e.g. as loading or unloading pumps.

### Printing industry:

For handling gravure inks.

### Chemical and petro-chemical as well as processing industry:

For handling all lubricating fluids such as oils (including crude oils), greases, paint, lacquers, ointments, pastes, polyols, isocyanates, tar, bitumen, glycerin, glues, adhesive substances, resins, paraffins, waxes, water glass and also as pipeline pumps.

### Paint/lacquer industry:

For handling paints, lacquers, resins, oil varnish and linseed oils.

### Washing/cleansing agent industry:

For handling oils, greases, soaps and additives.

### Paper/pulp industry:

For handling viscose and pulp.

### Food industry:

For handling molasses, glucose, syrup and vegetable oils.

### **Design**

Self-priming three-screw pump.

The hardened and ground spindles run in a replaceable casing insert.

The axial thrust acting on the flanks of the screw threads is compensated by balance pistons which – with all three spindles – are arranged in the delivery chamber.

The idler spindles are turned hydraulically. The thread flanks merely transmit the torque resulting from the liquid friction and are consequently practically free of stress and not subject to any wear.

A groove ball bearing lubricated by the fluid to be pumped (with internal bearing design) respectively an external, grease lubricated groove ball bearing serves for fixing the driving spindle.

A stuffing box or two shaft sealing rings or a maintenance-free unbalanced mechanical seal as required is used as shaft sealing. By means of a return pipe, the sealing chamber is connected with the suction chamber. Therefore, irrespectively of the delivery pressure, only the suction/inlet pressure always becomes effective at the shaft sealing.

### **Function**

Owing to a special profiling of the flanks of the screw threads, the three spindles form sealed chambers, the contents of which are axially and completely continuously shifted from the suction to the delivery side of the pump. There is no turbulence despite the rotational movement, and squeezing stresses are avoided by the constant volume in the chambers.

### **Noise/pulsation**

The structural design and mode of operation of the screw pump ensure a very low noise level and a nearly pulsation-free delivery.

### **Performance data**

A preliminary pump selection can be effected by means of the performance tables (pages 6 to 13). For the exact performance data as a function of the viscosity of the fluid to be pumped and the pump speed, please refer to the individual characteristics.

### **Speed of rotation**

Based on the small dimensions of the rotating screw spindles and according to pump size and design rotational speeds up to 11 000 1/min are possible. With very high speeds respectively for determining the speed limit the suction/inlet pressure conditions, the design of the shaft sealing and of the bearing as well as the running speed of the thread flanks have to be considered.

**Temperature and pressure limits**

admissible temperature of fluid to be pumped  
 with stuffing box, design U2 and KA2      200°C  
 with shaft sealing rings, design U3 and U4      80°C  
 with mechanical seal, design U...      150°C ①  
     design D...      80°C  
     design E...      80-150°C ①

admissible suction lift  
 see NPSH values, page 5

admissible pump outlet pressure  
 with pump casing in c.i. (GJL-250)  
 in s.g.c.i. (GJS-400-15)      40 bar ②  
     64 bar ②

admissible supply pressure

with stuffing box, design U2 and KA2      3,0 bar ③  
 with shaft sealing rings, design U3 and U4      1,5 bar ③  
 with unbalanced mechanical seal  
 design U..., D... and E...      5,0 ... 7,0 bar ③

① with higher temperatures inquiry of our works necessary

② for the attainable delivery pressure as a function of viscosity and speed,  
 please refer to the individual characteristics.

For delivery pressures up to 120 bar, please refer to series SM  
 (pamphlet VM 618 GB/..)

③ depending on fluid to be pumped, viscosity, speed of rotation, pump size.  
 With higher supply pressures inquiry at our works necessary.

**Bearing**

In an internal groove ball bearing.

Design U ...: the groove ball bearing is lubricated by the  
 fluid to be pumped.

In an external, grease lubricated groove ball bearing.

Design D, KA: no grease nipple, groove ball bearing in closed  
 design with lifetime grease filling.

Design E:

with grease nipple. A grease volume control  
 (labyrinth ring) prevents overgreasing of the  
 bearing and thus excessive heating up to the  
 bearing.

**Branch position/flanges**

SNH, SNF, SNS: suction and delivery branch arranged symmetrically on centerline of pump and opposed in one line.

The sense of flow may be changed without  
 alteration of sense of rotation by turning the  
 pump casing by 180°.

SNGH, SNGF: suction and delivery branch arranged one after the other (U-turn) on centerline of the pump.

SNGS: suction and delivery branch arranged superimposed (U-turn) on centerline of pump.

**Flanges with all designs**

Suction side: PN16 acc. to DIN EN 1092-2 (up to DN 150)

PN10 acc. to DIN EN 1092-2 (from DN 200)

Delivery side: PN40 acc. to DIN EN 1092-2

PN64 acc. to DIN 2546 ④

④ only possible with pump casing in s.g.c.i. (GJS-400-15) against surplus price

**Heating**

For heating of pump, for instance when pumping heavy fuel oil or other pumping liquids which solidify when getting cool, the following heating devices are available:

| Series | Heating with steam or heat conveyor |                  |               |                    |
|--------|-------------------------------------|------------------|---------------|--------------------|
|        | electrical                          | heating elements | heating cover | heating cartridges |
|        |                                     |                  |               | jacketed casing ⑤  |
| SNH    | X                                   |                  | X             |                    |
| SNF    | X                                   |                  | X             |                    |
| SNS    | X                                   |                  |               | X                  |
| SNGH   | X                                   |                  | X             |                    |
| SNGF   | X                                   |                  | X             |                    |
| SNGS   | X                                   |                  |               | X                  |

④ Pumps with jacketed casing can only be supplied in fabricated steel design  
 (special technical documentation).

For further details of pump heating please refer to page 35.

**Shaft sealing**

| Pump size       | Stuffing box ④ |              | Shaft seal rings ⑤ |           | Mechanical seal ③ |               |      |
|-----------------|----------------|--------------|--------------------|-----------|-------------------|---------------|------|
|                 | internal U2    | external KA2 | 2 pcs. U3          | 3 pcs. U4 | inter. U...       | external D... | E... |
| SN...           | X              | X            | X                  | X         | X                 | X             | X    |
| 40 ... 2200     | X              | X            | -                  | -         | X                 | -             | X    |
| 2900 ... 3600 ⑦ | -              | -            | -                  | -         | X                 | -             | X    |

④ with graphite-incorporated PTFE packing

⑤ made of NBR (buna N) resp. FPM (Viton) (Viton at surplus price)

⑥ uncooled, maintenance-free mechanical seal of the unbalanced type

⑦ see separate technical literature

**Materials ...12.1 (AQ1VGG) ⑧**

Rotary seal ring: Carbon, antimony-impregnated

Stationary seal ring: Silicon carbide (SiC)

Auxiliary sealings: FPM (Viton)

Spring: CrNiMo steel

Metal parts: CrNiMo steel

An incorporated control valve serves for a slight excess pressure within the area of the shaft sealing. As a result hereof, during suction operation, air intake through the shaft sealing is avoided and dry operation of the shaft sealing prevented. The design KA2 has no control valve and therefore should not be used for suction operation.

⑧ Special mechanical seals and/or other material designs upon inquiry.

**Material****Part-No. Denomination**

| Part-No. | Denomination  | Material design  |                |                       |                       |
|----------|---|------------------|----------------|-----------------------|-----------------------|
|          |   | W1               | W2             | W3                    | W5                    |
| 1        | Pump casing   | c.i. (GJL-250)   | c.i. (GJL-250) | s.g.c.i. (GJS-400-15) | s.g.c.i. (GJS-400-15) |
| 2 ⑪      | Pump casing insert with size 40 to 120<br>with size 210 to 3600 | c.i. (GJL-200) ⑫ | silafont ⑫     | silafont ⑫            | c.i. (GJL-200) ⑫      |
| 3        | Pump cover, drive side  | c.i. (GJL-250) ⑫ | silafont ⑫     | silafont ⑫            | c.i. (GJL-250) ⑫      |
| 4        | Pump cover, non-drive side                                      | c.i. (GJL-250)   | c.i. (GJL-250) | c.i. (GJL-250)        | c.i. (GJL-250)        |
| 4        | Round pump foot (only with series SNS and SNGS)                 | c.i. (GJL-250)   | c.i. (GJL-250) | c.i. (GJL-250)        | c.i. (GJL-250)        |
| 5        | Bearing housing (only with external bearing)                    | c.i. (GJL-250)   | c.i. (GJL-250) | c.i. (GJL-250)        | c.i. (GJL-250)        |
| 5        | Shaft sealing housing (only with internal bearing)              | c.i. (GJL-250)   | c.i. (GJL-250) | c.i. (GJL-250)        | c.i. (GJL-250)        |
| 6        | Pump foot   | c.i. (GJL-250)   | c.i. (GJL-250) | c.i. (GJL-250)        | c.i. (GJL-250)        |
| 7        | Pump casing cover   | c.i. (GJL-250)   | c.i. (GJL-250) | c.i. (GJL-250)        | c.i. (GJL-250)        |
| 8        | Balance bush  | silafont         | silafont       | silafont              | silafont              |
| 9        | Seal cover  | c.i. (GJL-250)   | c.i. (GJL-250) | c.i. (GJL-250)        | c.i. (GJL-250)        |
| 9        | Gland (only with design U2 and KA2)                             | c.i. (GJL-250)   | c.i. (GJL-250) | c.i. (GJL-250)        | c.i. (GJL-250)        |
| 12       | Driving spindle   | nitride steel    | nitride steel  | nitride steel         | nitride steel         |
| 13       | Idler spindle   | nitride steel    | nitride steel  | nitride steel         | nitride steel         |

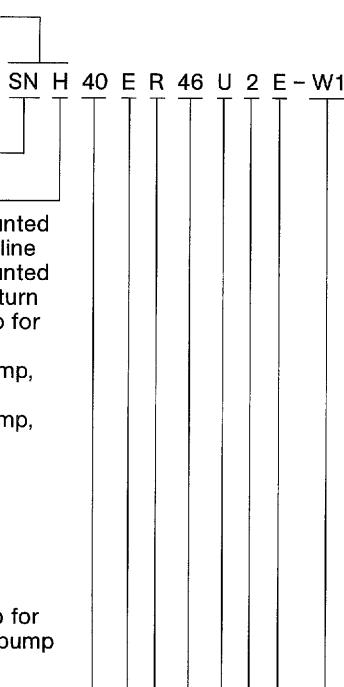
⑪ When determining the material for the pump casing insert note the pressure limiting characteristics.

For pumps in fabricated steel design (because of customers' specific demands) separate technical documentation is available upon request.

## Series SN ... ER ..

### Abbreviations

Series \_\_\_\_\_



Type \_\_\_\_\_

Design \_\_\_\_\_

- H = horizontal foot mounted pump, branches in-line
- GH = horizontal foot mounted pump, branches U-turn
- E = cartridge unit pump for H and GH-pump
- F = flange mounted pump, branches in-line
- GF = flange mounted pump, branches U-turn
- S = vertical pedestal mounted pump, branches in-line
- GS = vertical pedestal mounted pump, branches U-turn
- EF = cartridge unit pump for F-, GF-, S- and GS-pump

Size \_\_\_\_\_

- = theoretic delivery flow [l/min] with normal pitch and n = 1450 1/min

Design of driving spindle \_\_\_\_\_

Direction of screw pitch \_\_\_\_\_

- R = right-hand (standard design)
- L = left-hand (only upon request)

Screw pitch angle (degrees) \_\_\_\_\_

Structural feature \_\_\_\_\_

- U = internal ball bearing, shaft sealing uncooled/unheated
- KA = external ball bearing, stuffing box uncooled/unheated
- D = external ball bearing, mechanical seal uncooled/unheated
- E = external ball bearing with grease nipple, mechanical seal uncooled/unheated

Shaft sealing \_\_\_\_\_

- 2 = stuffing box, built-in with structural feature U and KA
- 3 = two shaft sealing rings, built-in with structural feature U
- 4 = three shaft sealing rings, built-in with structural feature U
- 6.7 = mechanical seal, built-in with structural feature E, D and U
- 12.1 = mechanical seal, built-in with structural feature U, D and E

Heating of casing \_\_\_\_\_

- E = heating elements, electric
- P = heating cartridge for steam or heat conveyors
- X = heating cover for steam or heat conveyors
- Y = jacketed casing for steam or heat conveyors (special technical documentation)

Material design \_\_\_\_\_

- W1 = pump casing c.i. (GJL), casing insert c.i. (GJL)
- W2 = pump casing c.i. (GJL), casing insert silafont
- W3 = pump casing s.g.c.i. (GJS), casing insert silafont
- W5 = pump casing s.g.c.i. (GJS), casing insert c.i. (GJL)

### Pressure relief valves

All pumps can be supplied with built-on pressure relief valve. For allocation, dimensions and connections please refer to page 36.

Valve characteristics and sectional drawings are not included within this pamphlet and must be demanded separately.

In case pumps without built-on pressure relief valve are required, an overload protection must be provided in the control system or as a pipeline pressure relief valve.

For allocation, dimensions and connections of pressure relief valves for pipeline installation please refer to page 37.

### Shaft coupling and protection against accidental contact

Shaft coupling according to DIN 740.

A protection according to DIN 24295 against accidental contact also is supplied as soon as the scope of supply includes pump, base plate and shaft coupling or when an intermediate bracket, respectively bracket with feet is included in the delivery volume.

### Drive

The pumps will be coupled either directly (Series SNH, SNGH) or by means of an intermediate bracket (Series SNS, SNGS), respectively of a bracket with feet for floor or wall mounting (Series SNF, SNGF) with electric motors of the most varied kinds or with other driving engines.

In most cases, surface cooled, three phase A.C. short circuit motors, construction B3 or V1 are provided; enclosure IP54 according to IEC Standard, class B insulation, motor windings for 400 V $\Delta$ , 50 or 60 Hz.

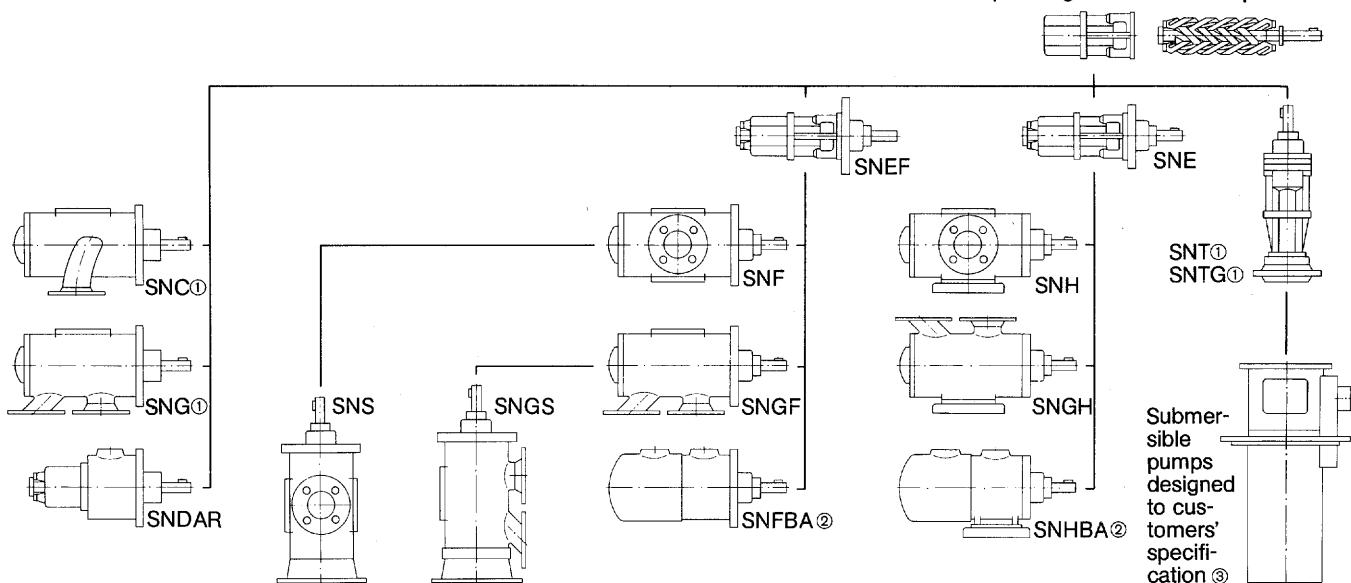


## Unit-assembly principle

Three-screw pumps, SN series.

Same delivery elements with different types of casing construction.

Pump casing insert + Screw spindle set



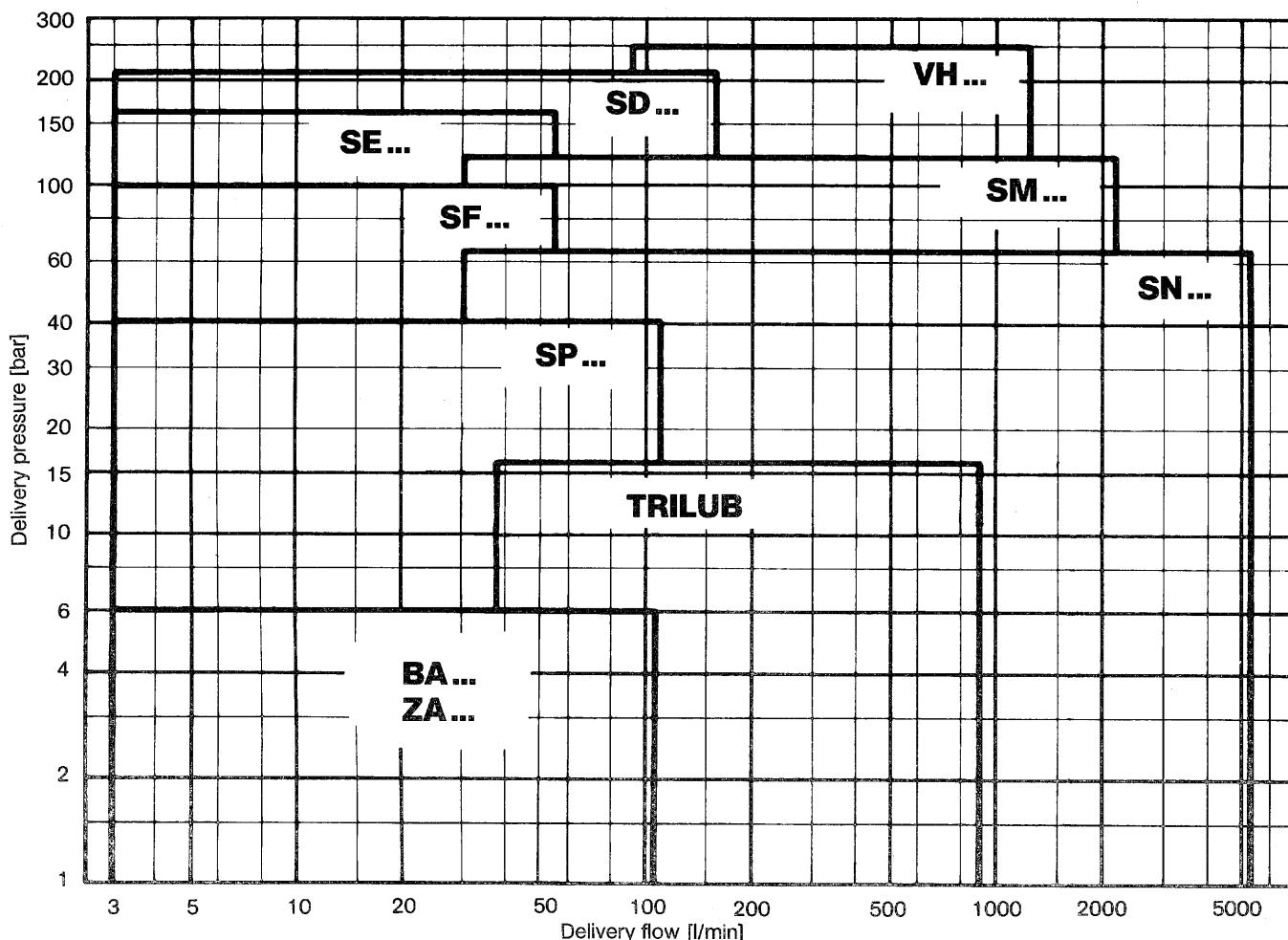
① For series SNC, SNG, SNT and SNTG pump dimensions and sectional drawings are available upon request

② For series SNHBA and SNFBA see pamphlet VM 639 GB/...

③ For submersible pumps designed to customers' specification dimensions drawings will be prepared per order

## Performance survey

For nominal pump outputs not covered by the type SN further pump series of single entry three-screw pumps are available according to the following survey (stated performances refer to 50 Hz speeds).



**NPSH req. (m)**

The values as indicated apply to airless fluids to be pumped (a safety allowances of 0.5 m is already included). In case of fluids to be pumped with air pockets (unsolved air), either the pump must be adapted or allowances on the stated NPSH values are necessary. For these purposes, by all means inquire at our works.

For exact NPSH values in dependence of the viscosity (also for other viscosities than those mentioned below) and of the pump rotational speed (also for other speeds of rotation than those mentioned below), please refer to the individual NPSH graphs.

| Pump size | Kinematic viscosity $\nu$ |      |      |      |                       |      |      |      |                        |      |      |      |
|-----------|---------------------------|------|------|------|-----------------------|------|------|------|------------------------|------|------|------|
|           | 6 mm <sup>2</sup> /s      |      |      |      | 40 mm <sup>2</sup> /s |      |      |      | 380 mm <sup>2</sup> /s |      |      |      |
|           | Speed n [1/min]           |      |      |      | Speed n [1/min]       |      |      |      | Speed n [1/min]        |      |      |      |
|           | 1450                      | 1750 | 2900 | 3500 | 1450                  | 1750 | 2900 | 3500 | 1450                   | 1750 | 2900 | 3500 |
| SN...     | m                         | m    | m    | m    | m                     | m    | m    | m    | m                      | m    | m    | m    |
| 40-38     | 3,0                       | 3,0  | 3,0  | 3,0  | 3,0                   | 3,0  | 3,0  | 3,0  | 3,0                    | 3,0  | 3,0  | 3,3  |
| 40-46     | 3,0                       | 3,0  | 3,0  | 3,0  | 3,0                   | 3,0  | 3,0  | 3,0  | 3,0                    | 3,0  | 3,0  | 4,5  |
| 40-54     | 4,9                       | 5,0  | 5,4  | 5,7  | 5,4                   | 5,5  | 5,9  | 6,4  | 6,9                    | 7,0  | 8,0  | 8,8  |
| 80-36     | 3,0                       | 3,0  | 3,0  | 3,0  | 3,0                   | 3,0  | 3,0  | 3,0  | 3,0                    | 3,0  | 3,1  | 3,7  |
| 80-42     | 3,0                       | 3,0  | 3,0  | 3,0  | 3,0                   | 3,0  | 3,0  | 3,0  | 3,0                    | 3,0  | 3,0  | 4,8  |
| 80-46     | 3,0                       | 3,0  | 3,0  | 3,3  | 3,0                   | 3,0  | 3,0  | 3,0  | 3,0                    | 3,0  | 3,0  | 6,3  |
| 80-54     | 5,0                       | 5,1  | 5,7  | 6,4  | 5,5                   | 5,6  | 6,5  | 7,2  | 7,2                    | 7,3  | ①    | ①    |
| 120-42    | 3,0                       | 3,0  | 3,0  | 3,0  | 3,0                   | 3,0  | 3,0  | 3,0  | 3,0                    | 3,0  | 4,4  | 5,8  |
| 120-46    | 3,0                       | 3,0  | 3,0  | 3,8  | 3,0                   | 3,0  | 3,4  | 4,5  | 3,0                    | 3,0  | 5,4  | 7,6  |
| 120-54    | 5,0                       | 5,2  | 6,1  | 6,4  | 5,5                   | 5,7  | 6,9  | 8,2  | 7,2                    | 7,5  | ①    | ①    |
| 210-40    | 3,0                       | 3,0  | 3,0  | 3,6  | 3,0                   | 3,0  | 3,2  | 4,2  | 3,0                    | 3,0  | 5,2  | 7,0  |
| 210-46    | 3,0                       | 3,0  | 3,8  | 5,0  | 3,0                   | 3,0  | 4,5  | 6,0  | 3,0                    | 3,5  | 7,5  | ①    |
| 210-54    | 5,2                       | 5,4  | 7,1  | —    | 5,7                   | 6,0  | 8,1  | —    | 7,5                    | 8,0  | ①    | —    |
| 280-43    | 3,0                       | 3,0  | 3,7  | 4,8  | 3,0                   | 3,0  | 4,3  | 5,8  | 3,0                    | 3,6  | 7,3  | ①    |
| 280-46    | 3,0                       | 3,0  | 4,5  | 6,1  | 3,0                   | 3,0  | 5,3  | 7,5  | 3,3                    | 4,1  | ①    | ①    |
| 280-54    | 5,3                       | 5,5  | 8,0  | —    | 5,8                   | 6,2  | —    | 7,8  | 8,4                    | 8,4  | ①    | —    |
| 440-40    | 3,0                       | 3,0  | 3,8  | 5,2  | 3,0                   | 3,0  | 4,6  | 6,4  | 3,1                    | 3,8  | 7,8  | ①    |
| 440-46    | 3,0                       | 3,0  | 5,7  | 8,1  | 3,0                   | 3,2  | 6,9  | ①    | 3,8                    | 5,0  | ①    | ①    |
| 440-52    | 4,5                       | 4,9  | ①    | —    | 5,9                   | 6,4  | ①    | —    | 7,9                    | 8,7  | ①    | —    |
| 440-54    | 5,4                       | 5,9  | —    | —    | 6,1                   | 6,6  | —    | —    | 8,2                    | ①    | —    | —    |
| 660-40    | 3,0                       | 3,0  | 5,1  | 7,2  | 3,0                   | 3,0  | 6,1  | 8,7  | 3,6                    | 4,7  | ①    | ①    |
| 660-44    | 3,0                       | 3,0  | 6,4  | 8,9  | 3,0                   | 3,6  | 7,7  | ①    | 4,3                    | 5,6  | ①    | ①    |
| 660-46    | 3,0                       | 3,4  | 7,5  | —    | 3,1                   | 3,9  | ①    | —    | 4,6                    | 6,5  | ①    | —    |
| 660-51    | 5,5                       | 6,0  | —    | —    | 6,2                   | 6,8  | —    | —    | 8,4                    | ①    | —    | —    |
| 660-54    | 5,8                       | 6,5  | —    | —    | 6,5                   | 7,3  | —    | —    | 8,9                    | ①    | —    | —    |
| 940-42    | 3,0                       | 3,1  | 6,8  | —    | 3,0                   | 3,6  | 8,0  | —    | 4,4                    | 5,8  | ①    | —    |
| 940-46    | 3,0                       | 3,4  | ①    | —    | 3,5                   | 4,6  | ①    | —    | 5,6                    | 7,9  | ①    | —    |
| 940-50    | 5,6                       | 6,3  | —    | —    | 6,4                   | 7,2  | —    | —    | 8,8                    | ①    | —    | —    |
| 940-54    | 6,1                       | 7,1  | —    | —    | 6,9                   | 8,1  | —    | —    | ①                      | ①    | —    | —    |
| 1300-38   | 3,0                       | 3,0  | 6,0  | —    | 3,0                   | 3,4  | 7,4  | —    | 4,1                    | 5,4  | ①    | —    |
| 1300-42   | 3,0                       | 3,6  | 8,3  | —    | 3,3                   | 4,2  | ①    | —    | 5,2                    | 7,2  | ①    | —    |
| 1300-44   | 3,0                       | 4,0  | —    | —    | 3,6                   | 4,8  | —    | —    | 5,8                    | 8,2  | —    | —    |
| 1300-46   | 3,4                       | 4,6  | —    | —    | 4,0                   | 5,4  | —    | —    | 7,6                    | ①    | —    | —    |
| 1300-54   | 6,6                       | 8,0  | —    | —    | 7,5                   | ①    | —    | —    | ①                      | ①    | —    | —    |
| 1700-42   | 3,2                       | 4,3  | —    | —    | 3,8                   | 5,0  | —    | —    | 6,1                    | 8,5  | —    | —    |
| 1700-46   | 3,4                       | 5,4  | —    | —    | 4,6                   | 6,6  | —    | —    | 7,9                    | ①    | —    | —    |
| 2200-42   | 3,7                       | 4,9  | —    | —    | 4,4                   | 6,0  | —    | —    | 7,3                    | ①    | —    | —    |
| 2200-46   | 4,2                       | 6,3  | —    | —    | 5,3                   | 7,6  | —    | —    | ①                      | ①    | —    | —    |
| 2900-40   | 4,0                       | 5,5  | —    | —    | 4,8                   | 6,7  | —    | —    | 7,9                    | ①    | —    | —    |
| 3600-46   | 5,7                       | 8,1  | —    | —    | 6,9                   | ①    | —    | —    | ①                      | ①    | —    | —    |

① Inlet pressure necessary













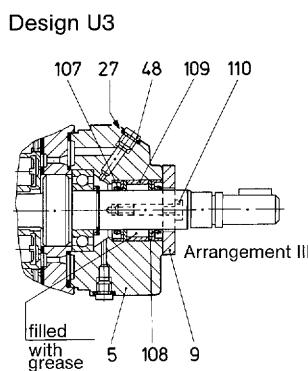
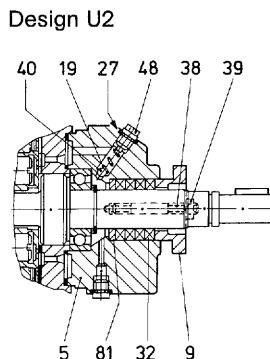
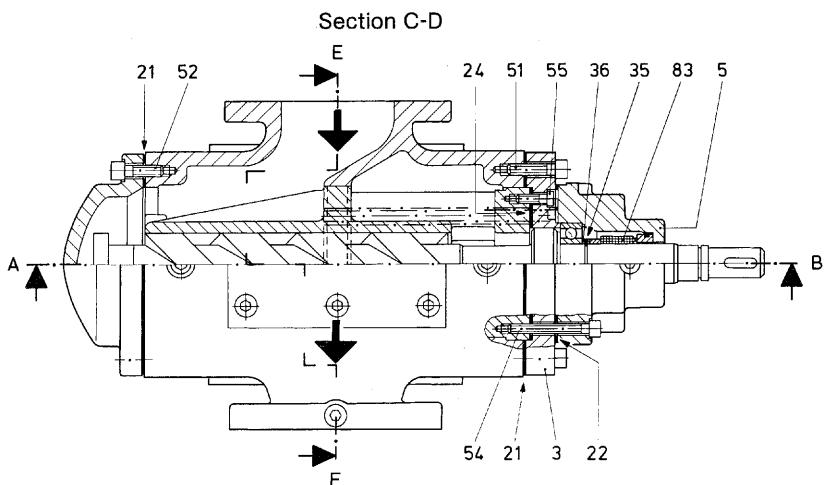
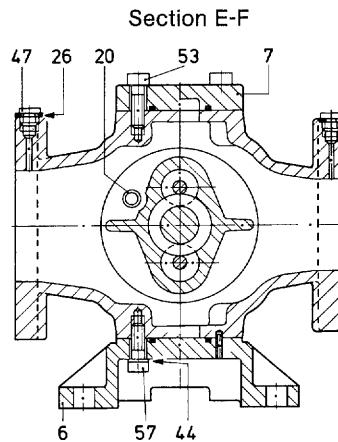
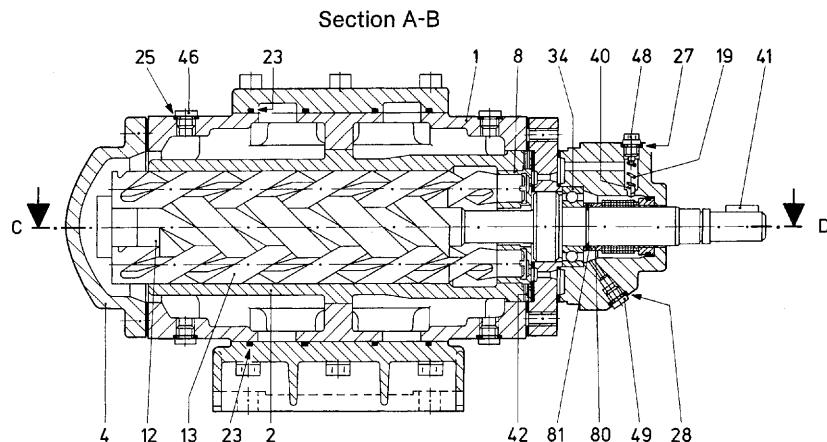




**Sectional drawing**

**SNH...** – horizontal foot mounted pump, internal ball bearing, with mechanical seal, design U...\*)  
 internal ball bearing, with stuffing box, design U2 \*\*)  
 internal ball bearing, with shaft sealing rings, design U3 \*) \*\*)

Design U... with mechanical seal



\*) shown to pump size 2200

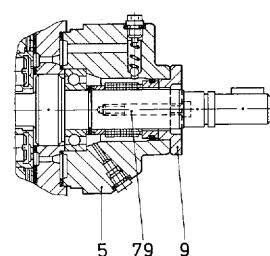
\*\*) available to pump size 2200

| Part-No. | Denomination                | Part-No. | Denomination                          |
|----------|-----------------------------|----------|---------------------------------------|
| 1        | pump casing                 | 41       | key                                   |
| 2 ①      | pump casing insert          | 42       | spring dowel                          |
| 3        | pump cover, drive side      | 44       | lock washer                           |
| 4        | pump cover, non-drive side  | 46       | screw plug                            |
| 5        | shaft sealing housing       | 47       | screw plug                            |
| 6        | pump foot                   | 48       | stop screw                            |
| 7        | pump casing cover           |          | screw plug (only with design U3)      |
| 8 ①      | balance bush                | 49       | screw plug                            |
| 9        | seal cover                  | 51       | socket head cap screw                 |
|          | gland (only with design U2) | 52       | socket head cap screw                 |
| 12 ①     | driving spindle             | 53       | socket head cap screw                 |
| 13 ①     | idler spindle               | 54       | socket head cap screw                 |
| 19       | valve spring                | 55       | socket head cap screw                 |
| 20       | balance pipe                | 57       | hexagon screw                         |
| 21 ①     | gasket                      | 79       | socket head cap screw                 |
| 22 ①     | gasket                      | 80       | spacer ring                           |
| 23 ①     | O-ring                      | 81       | supporting washer                     |
| 24 ①     | gasket                      | 83 ①     | supporting ring (only with design U2) |
| 25 ①     | joint washer                | 107 ①    | mechanical seal                       |
| 26 ①     | joint washer                | 108      | shaft seal ring                       |
| 27 ①     | joint washer                | 109      | supporting ring                       |
| 28 ①     | joint washer                | 109      | spacer bush                           |
| 32 ①     | gland packing ring          | 110      | hexagon screw                         |
| 34 ①     | groove ball bearing         |          |                                       |
| 35       | circlip                     |          |                                       |
| 36       | supporting washer           |          |                                       |
| 38       | stud bolt                   |          |                                       |
| 39       | hexagon nut                 |          |                                       |
| 40       | ball valve                  |          |                                       |

① spare parts

Arrangement of shaft seal rings  
 arrangement I    ↘ ↗    against suction head  
 arrangement II    ↘ ↗    against suction lift  
 arrangement III    ↘ ↗    against suction head and suction lift

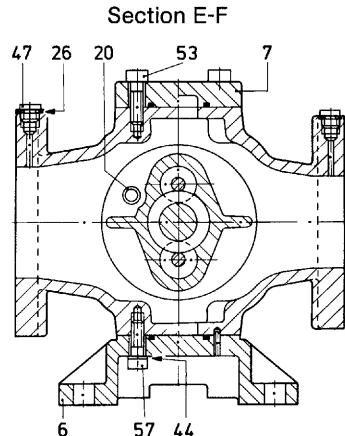
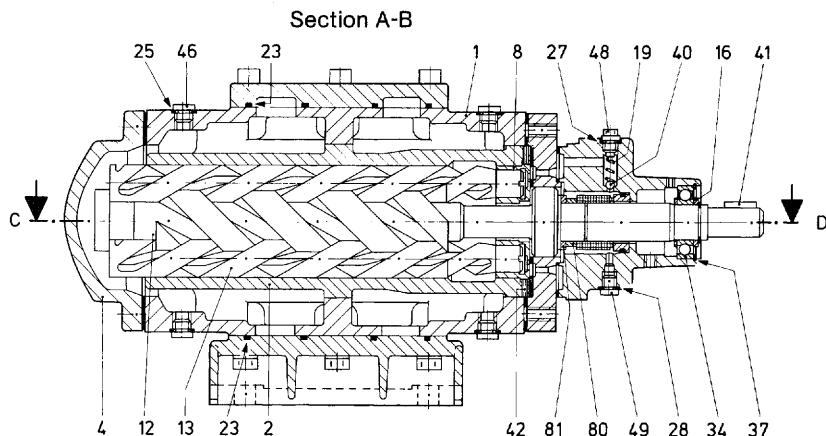
Design U... with mechanical seal  
 at pump size 940 to 2200



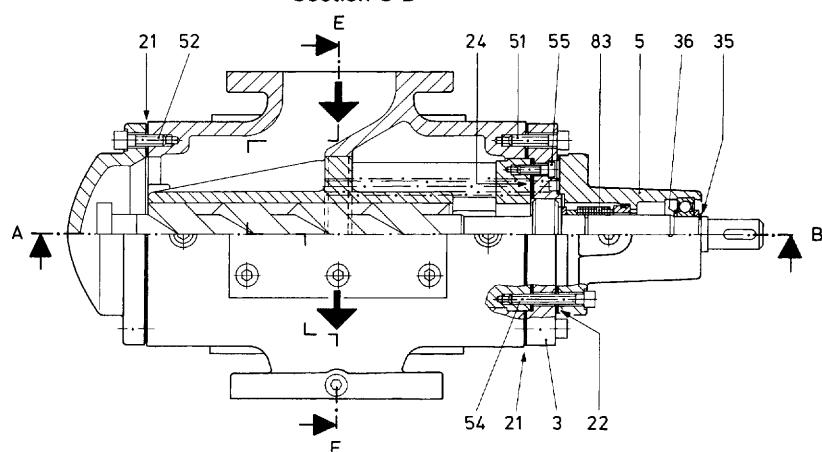
**Sectional drawing**

**SNH...** – horizontal foot mounted pump, external ball bearing, with mechanical seal, design D...\*) \*\*) and E...\*)  
external ball bearing, with stuffing box, design KA2 \*) \*\*)

Design D...



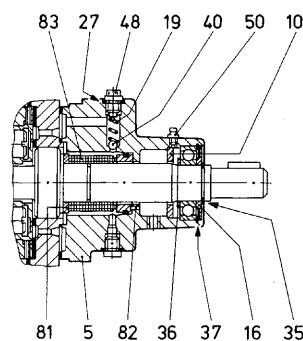
Section C-D



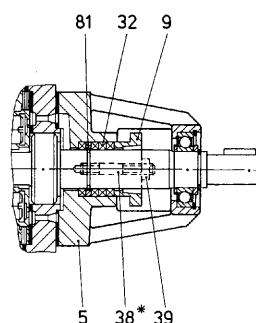
\*) shown to pump size 2200

\*\*) available to pump size 2200

**Design E...**  
bearing with grease nipple

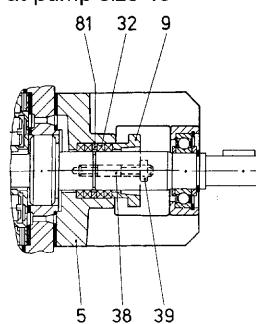


Design KA2 (pump size 80 to 2200)



\* Up to pump size 210 with stud bolt, part No. 38. Pump size 280 to 2200 with eyelet bolt, part No. 38, and spring dowel, part No. 82 (not shown in the drawing)

**Design KA2**  
at pump size 40



| Part-No. | Denomination                        |
|----------|-------------------------------------|
| 1        | pump casing                         |
| 2 ①      | pump casing insert                  |
| 3        | pump cover, drive side              |
| 4        | pump cover, non-drive side          |
| 5        | bearing housing                     |
| 6        | pump foot                           |
| 7        | pump casing cover                   |
| 8 ①      | balance bush                        |
| 9        | gland                               |
| 10       | greasing chamber disc               |
| 12 ①     | driving spindle                     |
| 13 ①     | idler spindle                       |
| 16       | spacer bush                         |
|          | labyrinth ring (only with design E) |
| 19       | valve spring                        |
| 20       | balance pipe                        |
| 21 ①     | gasket                              |
| 22 ①     | gasket                              |
| 23 ①     | O-ring                              |
| 24 ①     | gasket                              |
| 25 ①     | joint washer                        |
| 26 ①     | joint washer                        |
| 27 ①     | joint washer                        |
| 28 ①     | joint washer                        |
| 32 ①     | gland packing ring                  |
| 34 ①     | groove ball bearing                 |
| 35       | circlip                             |
| 36       | supporting washer                   |
| 37       | circlip                             |

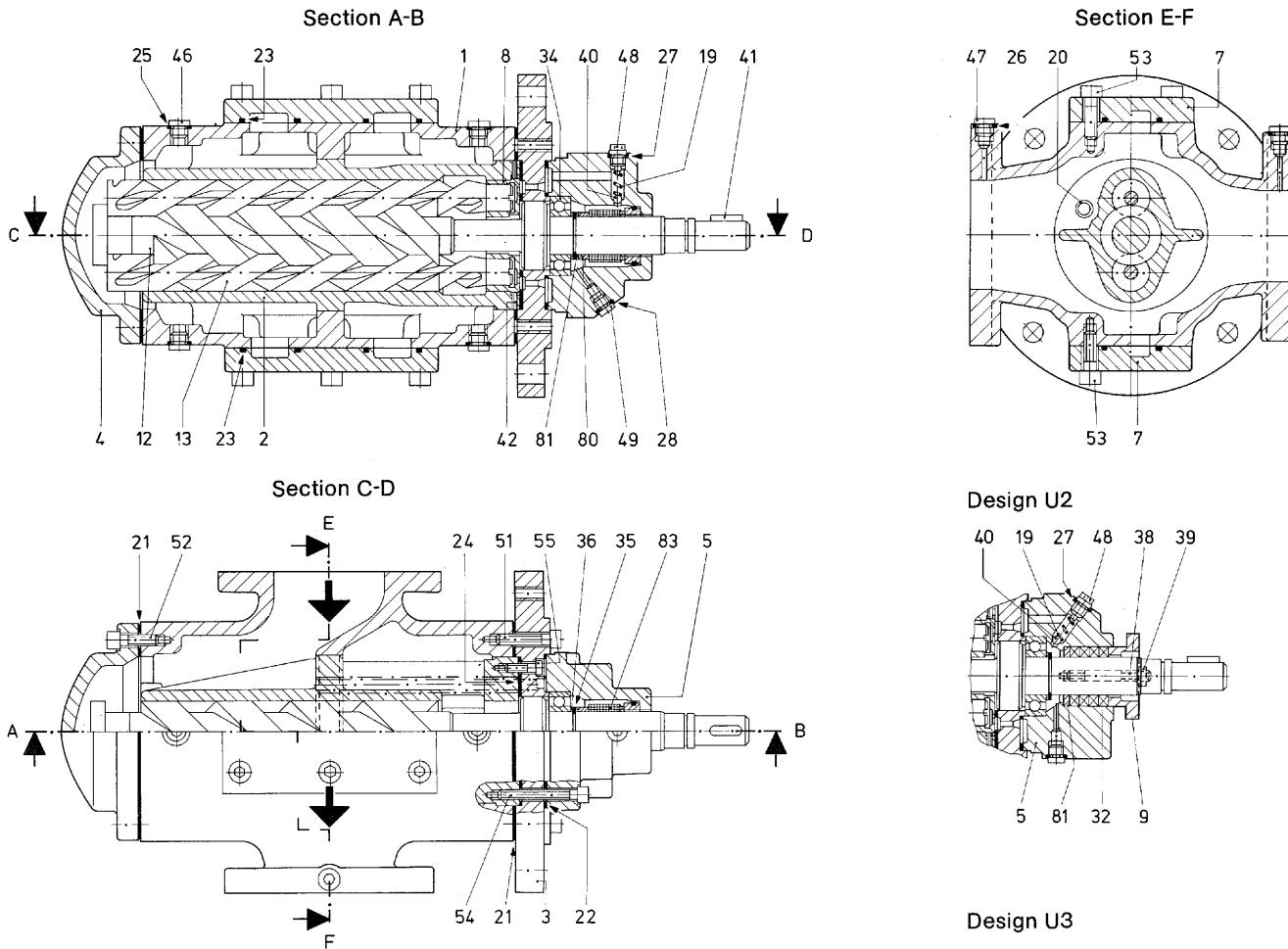
| Part-No. | Denomination   |
|----------|--|
| 38       | stud bolt (with pump size 40 to 210)<br>eyelet bolt (with pump size 280 to 2200) |
| 39       | hexagon nut  |
| 40       | ball valve   |
| 41       | key  |
| 42       | spring dowel   |
| 44       | lock washer  |
| 46       | screw plug   |
| 47       | screw plug   |
| 48       | stop screw   |
| 49       | screw plug   |
| 50       | lubricating nipple   |
| 51       | socket head cap screw  |
| 52       | socket head cap screw  |
| 53       | socket head cap screw  |
| 54       | socket head cap screw  |
| 55       | socket head cap screw  |
| 57       | hexagon screw  |
| 80       | spacer ring  |
| 81       | support ring   |
| 82       | spring dowel   |
| 83 ①     | mechanical seal  |

① spare parts

**Sectional drawing**

**SNF...** – flange mounted pump, internal ball bearing, with mechanical seal, design U... \*)  
 internal ball bearing, with stuffing box, design U2 \*) \*\*)  
 internal ball bearing, with shaft sealing rings, design U3 \*) \*\*)

Design U... with mechanical seal



\*) shown to pump size 2200

\*\*) available to pump size 2200

**Part No. Denomination**

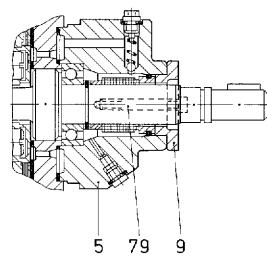
|      |                            |
|------|----------------------------|
| 1    | pump casing                |
| 2 ①  | pump casing insert         |
| 3    | pump cover, drive side     |
| 4    | pump cover, non-drive side |
| 5    | shaft sealing housing      |
| 7    | pump casing cover          |
| 8 ①  | balance bush               |
| 9    | seal cover                 |
| 12 ① | driving spindle            |
| 13 ① | idler spindle              |
| 19   | valve spring               |
| 20   | balance pipe               |
| 21 ① | gasket                     |
| 22 ① | gasket                     |
| 23 ① | O-ring                     |
| 24 ① | gasket                     |
| 25 ① | joint washer               |
| 26 ① | joint washer               |
| 27 ① | joint washer               |
| 28 ① | joint washer               |
| 32 ① | gland packing ring         |
| 34 ① | groove ball bearing        |
| 35   | circlip                    |
| 36   | supporting washer          |
| 38   | stud bolt                  |
| 39   | hexagon nut                |
| 40   | ball valve                 |
| 41   | key                        |

**Part No. Denomination**

|       |                                    |
|-------|------------------------------------|
| 42    | spring dowel                       |
| 46    | screw plug                         |
| 47    | screw plug                         |
| 48    | stop screw                         |
|       | screw plug (only with design U3)   |
| 49    | screw plug                         |
| 51    | socket head cap screw              |
| 52    | socket head cap screw              |
| 53    | socket head cap screw              |
| 54    | socket head cap screw              |
| 55    | socket head cap screw              |
| 79    | socket head cap screw              |
| 80    | spacer ring                        |
| 81    | supporting washer                  |
|       | support ring (only with design U2) |
| 83 ①  | mechanical seal                    |
| 107 ① | shaft seal ring                    |
| 108   | supporting ring                    |
| 109   | spacer bush                        |
| 110   | hexagon screw                      |

① spare parts

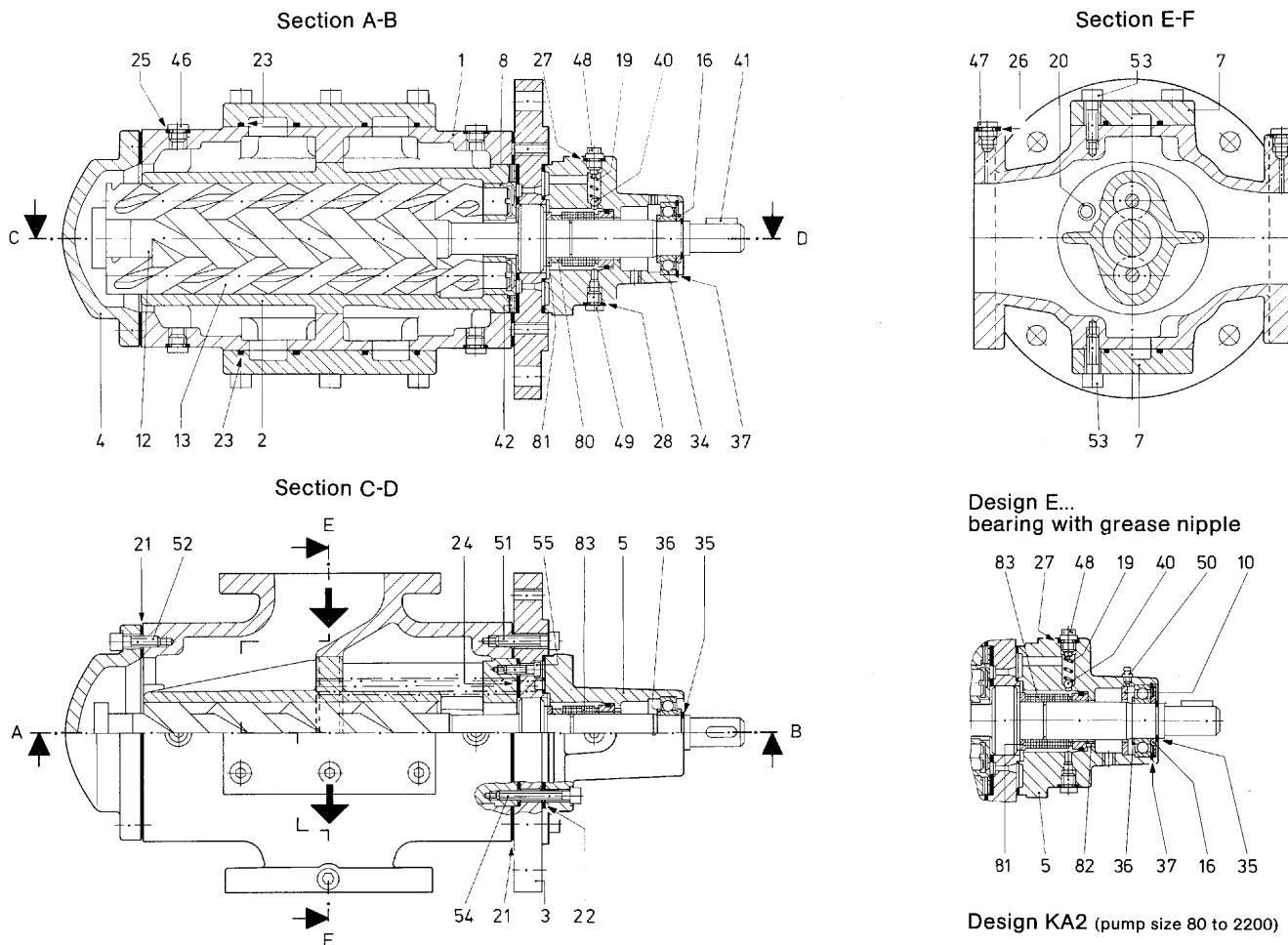
Arrangement of shaft seal rings  
 arrangement I    against suction head  
 arrangement II    against suction lift  
 arrangement III    against suction head and suction lift

**Design U... with mechanical seal at pump size 940 to 2200**

**Sectional drawing**

**SNF...** – flange mounted pump, external ball bearing, with mechanical seal, design D... \*) \*\*) and E... \*)  
external ball bearing, with stuffing box, design KA2 \*) \*\*)

Design D...



\*) shown to pump size 2200

\*\*) available to pump size 2200

**Part No. Denomination**

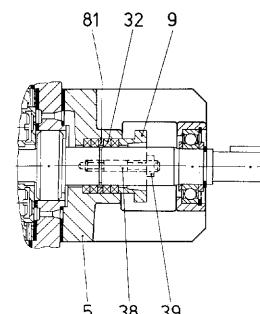
|      |                                     |
|------|-------------------------------------|
| 1    | pump casing                         |
| 2 ①  | pump casing insert                  |
| 3    | pump cover, drive side              |
| 4    | pump cover, non-drive side          |
| 5    | bearing housing                     |
| 7    | pump casing cover                   |
| 8 ①  | balance bush                        |
| 9    | gland                               |
| 10   | greasing chamber disc               |
| 12 ① | driving spindle                     |
| 13 ① | idler spindle                       |
| 16   | spacer bush                         |
|      | labyrinth ring (only with design E) |
| 19   | valve spring                        |
| 20   | balance pipe                        |
| 21 ① | gasket                              |
| 22 ① | gasket                              |
| 23 ① | O-ring                              |
| 24 ① | gasket                              |
| 25 ① | joint washer                        |
| 26 ① | joint washer                        |
| 27 ① | joint washer                        |
| 28 ① | joint washer                        |
| 32 ① | gland packing ring                  |
| 34 ① | groove ball bearing                 |
| 35   | circlip                             |
| 36   | supporting washer                   |
| 37   | circlip                             |

**Part No. Denomination**

|      |  |
|------|--|
| 38   | stud bolt (with pump size 40 to 210)<br>eyelet bolt (with pump size 280 to 2200) |
| 39   | hexagon nut  |
| 40   | ball valve   |
| 41   | key  |
| 42   | spring dowel   |
| 46   | screw plug   |
| 47   | screw plug   |
| 48   | stop screw   |
| 49   | screw plug   |
| 50   | lubricating nipple   |
| 51   | socket head cap screw  |
| 52   | socket head cap screw  |
| 53   | socket head cap screw  |
| 54   | socket head cap screw  |
| 55   | socket head cap screw  |
| 80   | spacer ring  |
| 81   | support ring   |
| 82   | spring dowel   |
| 83 ① | mechanical seal  |

① spare parts

\* Up to pump size 210 with stud bolt, part No. 38. Pump size 280 to 2200 with eyelet bolt, part No. 38, and spring dowel, part No. 82 (not shown in the drawing)

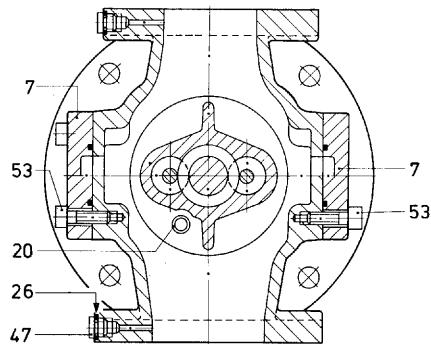
**Design KA2  
at pump size 40**

**Sectional drawing**

**SNS...** – vertical pedestal mounted pump, internal ball bearing, with mechanical seal, design U... \*)  
 internal ball bearing, with stuffing box, design U2 \*) \*\*)  
 internal ball bearing, with shaft sealing rings, design U3 \*) \*\*)

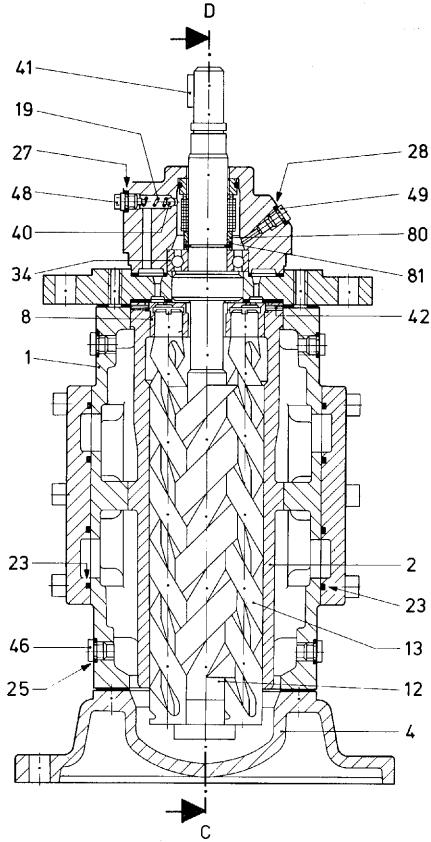
Design U... with mechanical seal

Section E-F

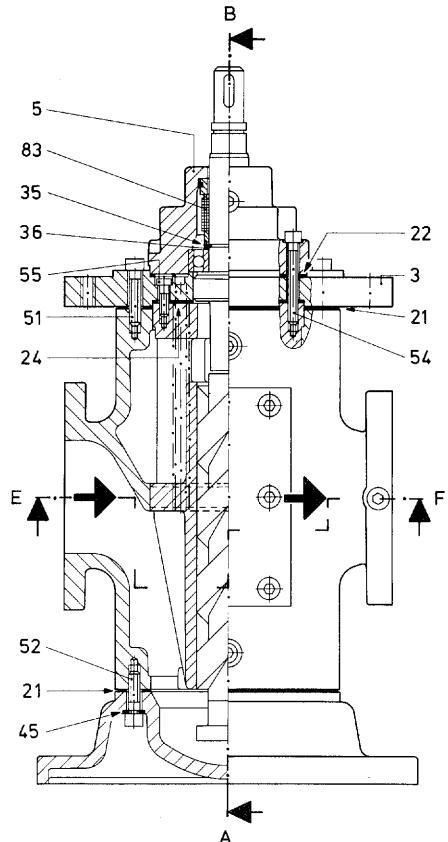


\*) shown to pump size 2200  
 \*\*) available to pump size 2200

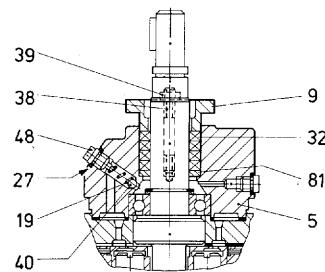
Section A-B



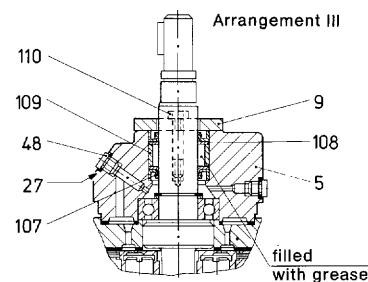
Section C-D



Design U2



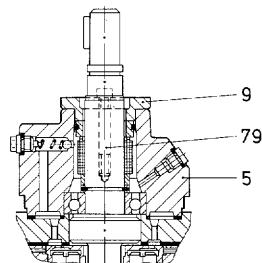
Design U3



## Arrangement of shaft seal rings

- arrangement I    □    □ against suction head
- arrangement II    □    □ against suction lift
- arrangement III    □    □ against suction head and suction lift

Design U... with mechanical seal  
at pump size 940 to 2200



## Part No. Denomination

|      |                             |
|------|-----------------------------|
| 1    | pump casing                 |
| 2 ①  | pump casing insert          |
| 3    | pump cover, drive side      |
| 4    | round pump foot             |
| 5    | shaft sealing housing       |
| 7    | pump casing cover           |
| 8 ①  | balance bush                |
| 9    | seal cover                  |
|      | gland (only with design U2) |
| 12 ① | driving spindle             |
| 13 ① | idler spindle               |
| 19   | valve spring                |
| 20   | balance pipe                |
| 21 ① | gasket                      |
| 22 ① | gasket                      |
| 23 ① | O-ring                      |
| 24 ① | gasket                      |
| 25 ① | joint washer                |

## Part No. Denomination

|      |                                  |
|------|----------------------------------|
| 26 ① | joint washer                     |
| 27 ① | joint washer                     |
| 28 ① | joint washer                     |
| 32 ① | gland packing ring               |
| 34 ① | groove ball bearing              |
| 35   | circlip                          |
| 36   | supporting washer                |
| 38   | stud bolt                        |
| 39   | hexagon nut                      |
| 40   | ball valve                       |
| 41   | key                              |
| 42   | spring dowel                     |
| 45   | lock washer                      |
| 46   | screw plug                       |
| 47   | screw plug                       |
| 48   | stop screw                       |
| 49   | screw plug (only with design U3) |
|      | screw plug                       |

## Part No. Denomination

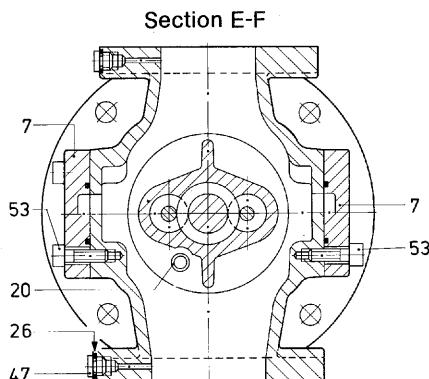
|       |                                    |
|-------|------------------------------------|
| 51    | socket head cap screw              |
| 52    | socket head cap screw              |
| 53    | socket head cap screw              |
| 54    | socket head cap screw              |
| 55    | socket head cap screw              |
| 79    | socket head cap screw              |
| 80    | spacer ring                        |
| 81    | supporting washer                  |
|       | support ring (only with design U2) |
| 83 ①  | mechanical seal                    |
| 107 ① | shaft seal ring                    |
| 108   | supporting ring                    |
| 109   | spacer bush                        |
| 110   | hexagon screw                      |

① spare parts

**Sectional drawing**

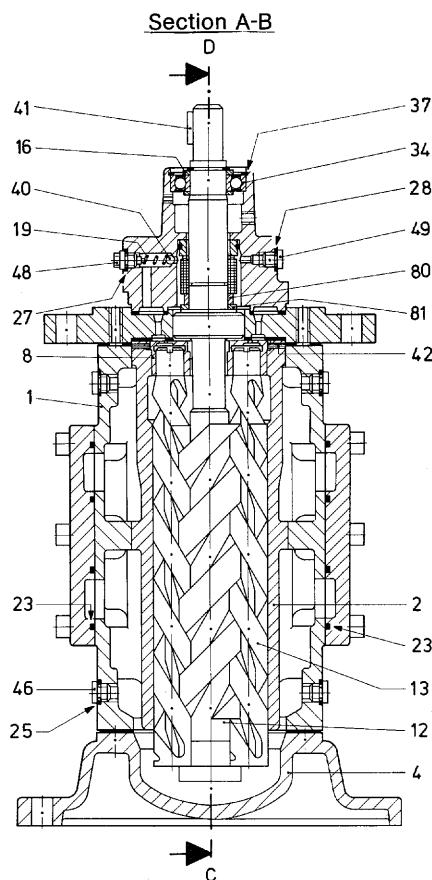
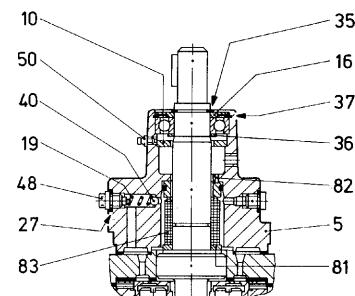
**SNS...** – vertical pedestal mounted pump, external ball bearing, with mechanical seal, design D... \*) \*\*) and E... \*)  
external ball bearing, with stuffing box, design KA2 \*) \*\*)

Design D...



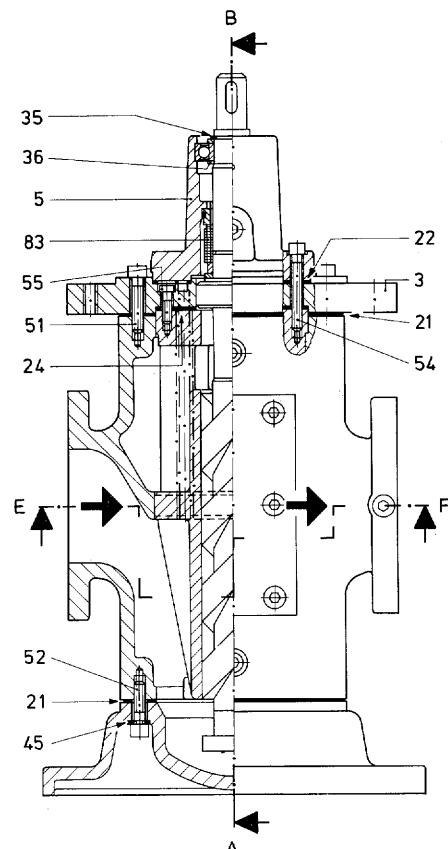
Section E-F

\*) shown to pump size 2200  
\*\*) available to pump size 2200

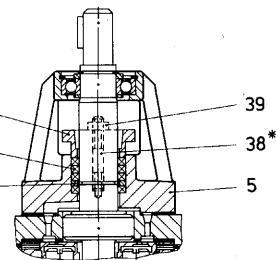
Design E..  
bearing with grease nipple

Section A-B

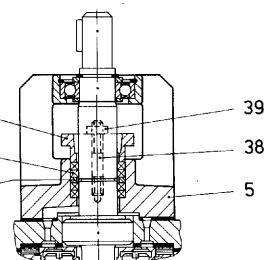
Section C-D



Design KA2 (pump size 80 to 2200)



\* Up to pump size 210 with stud bolt, part No. 38. Pump size 280 to 2200 with eyelet bolt, part No. 38, and spring dowel, part No. 82 (not shown in the drawing).

Design KA2  
at pump size 40

## Part No. Denomination

|      |                                     |
|------|-------------------------------------|
| 1    | pump casing                         |
| 2 ①  | pump casing insert                  |
| 3    | pump cover, drive side              |
| 4    | round pump foot                     |
| 5    | bearing housing                     |
| 7    | pump casing cover                   |
| 8 ①  | balance bush                        |
| 9    | gland                               |
| 10   | greasing chamber disc               |
| 12 ① | driving spindle                     |
| 13 ① | idler spindle                       |
| 16   | spacer bush                         |
|      | labyrinth ring (only with design E) |
| 19   | valve spring                        |
| 20   | balance pipe                        |
| 21 ① | gasket                              |
| 22 ① | gasket                              |
| 23 ① | O-ring                              |

## Part No. Denomination

|      |  |
|------|--|
| 24 ① | gasket   |
| 25 ① | joint washer   |
| 26 ① | joint washer   |
| 27 ① | joint washer   |
| 28 ① | joint washer   |
| 32 ① | gland packing ring   |
| 34 ① | groove ball bearing  |
| 35   | circlip  |
| 36   | supporting washer  |
| 37   | circlip  |
| 38   | stud bolt (with pump size 40 to 210)<br>eyelet bolt (with pump size 280 to 2200) |
| 39   | hexagon nut  |
| 40   | ball valve   |
| 41   | key  |
| 42   | spring dowel   |
| 45   | lock washer  |
| 46   | screw plug   |

## Part No. Denomination

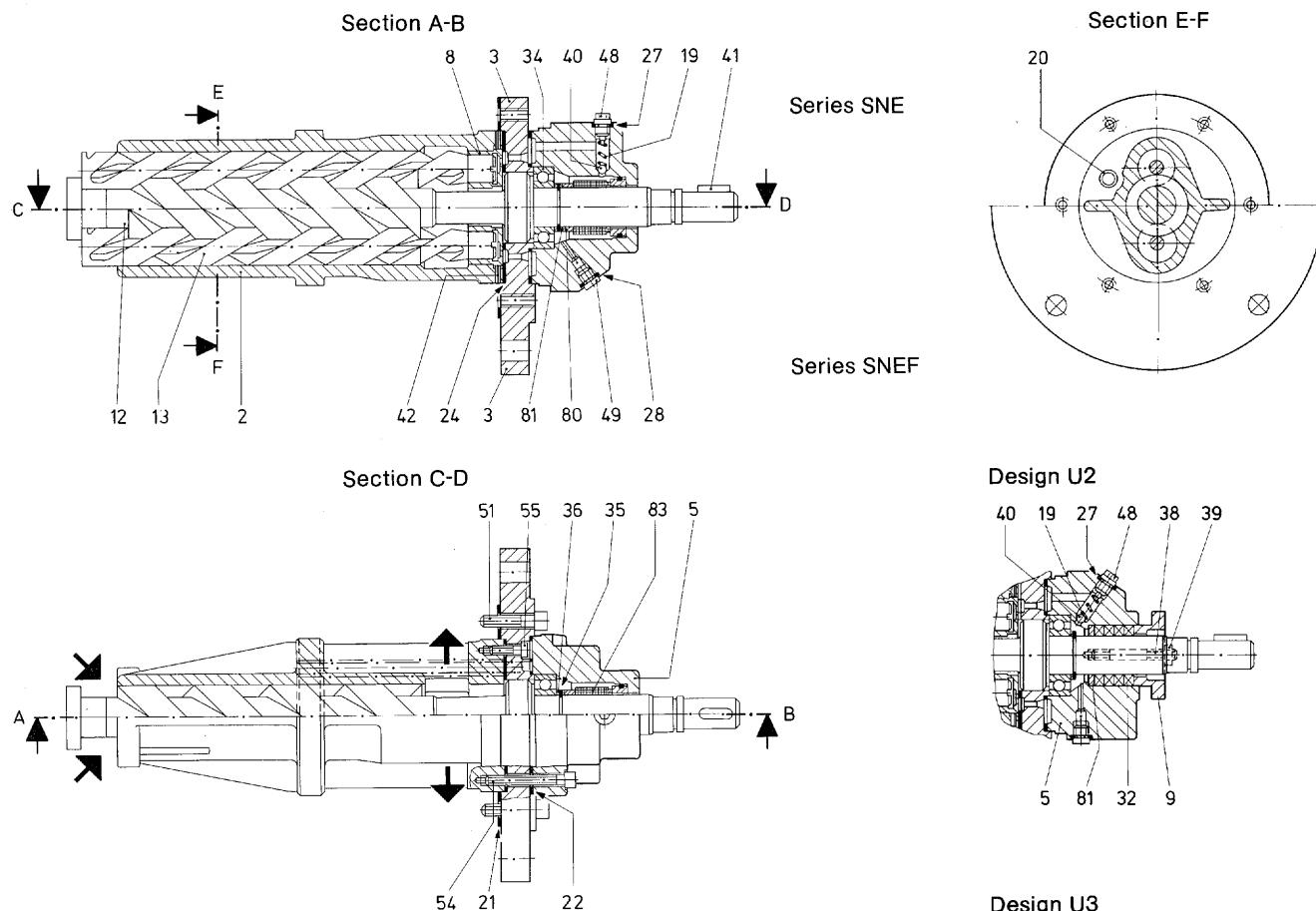
|      |                       |
|------|-----------------------|
| 47   | screw plug            |
| 48   | stop screw            |
| 49   | screw plug            |
| 50   | lubricating nipple    |
| 51   | socket head cap screw |
| 52   | socket head cap screw |
| 53   | socket head cap screw |
| 54   | socket head cap screw |
| 55   | socket head cap screw |
| 80   | spacer ring           |
| 81   | support ring          |
| 82   | spring dowel          |
| 83 ① | mechanical seal       |

① spare parts

## Sectional drawing

SNE... , SNEF... – cartridge unit pump, internal ball bearing, with mechanical seal, design U... \*)  
 internal ball bearing, with stuffing box, design U2 \*) \*\*)  
 internal ball bearing, with shaft sealing rings, design U3 \*) \*\*)

Design U... with mechanical seal



\*) shown to pump size 2200      \*\*) available to pump size 2200

## Part No. Denomination

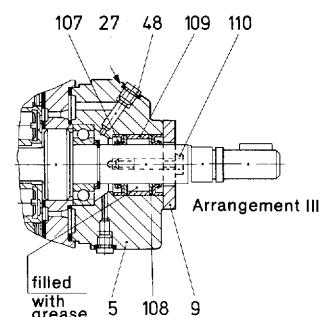
|      |                                  |
|------|----------------------------------|
| 2 ①  | pump casing insert               |
| 3    | pump cover, drive side           |
| 5    | shaft sealing housing            |
| 8 ①  | balance bush                     |
| 9    | seal cover                       |
| 12 ① | gland (only with design U2)      |
| 13 ① | driving spindle                  |
| 13 ① | idler spindle                    |
| 19   | valve spring                     |
| 20   | balance pipe                     |
| 21 ① | gasket                           |
| 22 ① | gasket                           |
| 24 ① | gasket                           |
| 27 ① | joint washer                     |
| 28 ① | joint washer                     |
| 32 ① | gland packing ring               |
| 34 ① | groove ball bearing              |
| 35   | circlip                          |
| 36   | supporting washer                |
| 38   | stud bolt                        |
| 39   | hexagon nut                      |
| 40   | ball valve                       |
| 41   | key                              |
| 42   | spring dowel                     |
| 48   | stop screw                       |
| 49   | screw plug (only with design U3) |
| 51   | screw plug                       |
| 54   | socket head cap screw            |
| 54   | socket head cap screw            |

## Part No. Denomination

|       |                                    |
|-------|------------------------------------|
| 55    | socket head cap screw              |
| 79    | socket head cap screw              |
| 80    | spacer ring                        |
| 81    | supporting washer                  |
| 83 ①  | support ring (only with design U2) |
| 83 ①  | mechanical seal                    |
| 107 ① | shaft seal ring                    |
| 108   | supporting ring                    |
| 109   | spacer bush                        |
| 110   | hexagon screw                      |

① spare parts

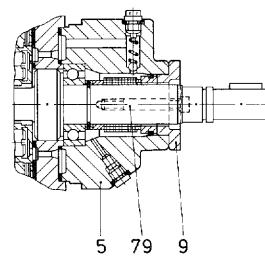
## Design U... with mechanical seal



## Arrangement of shaft seal rings

- arrangement I ↴ ↴ against suction head
- arrangement II ↴ ↴ against suction lift
- arrangement III ↴ ↴ against suction head and suction lift

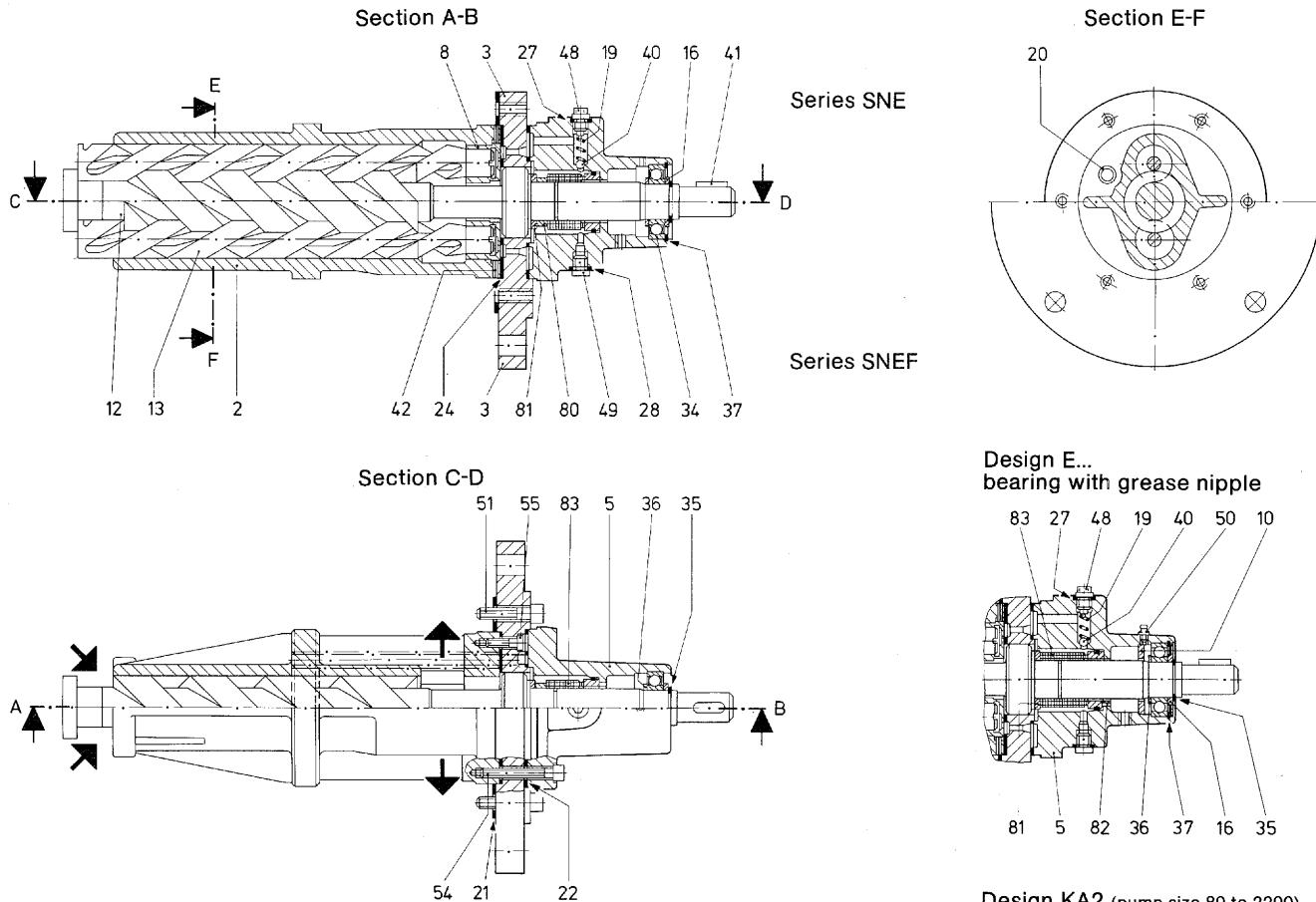
## Design U... with mechanical seal at pump size 940 to 2200



**Sectional drawing**

**SNE...**, **SNEF...** – cartridge unit pump, external ball bearing, with mechanical seal, design D... \*) \*\*) and E... \*)  
external ball bearing, with stuffing box, design KA2 \*) \*\*)

Design D...



\*) shown to pump size 2200

\*\*) available to pump size 2200

**Part No. Denomination**

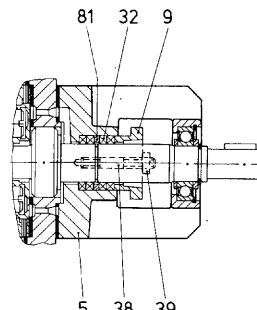
|      |  |
|------|--|
| 2 ①  | pump casing insert   |
| 3    | pump cover, drive side   |
| 5    | bearing housing  |
| 8 ①  | balance bush   |
| 9    | gland  |
| 10   | greasing chamber disc  |
| 12 ① | driving spindle  |
| 13 ① | idler spindle  |
| 16   | spacer bush  |
|      | labyrinth ring (only with design E)  |
| 19   | valve spring   |
| 20   | balance pipe   |
| 21 ① | gasket   |
| 22 ① | gasket   |
| 24 ① | gasket   |
| 27 ① | joint washer   |
| 28 ① | joint washer   |
| 32 ① | gland packing ring   |
| 34 ① | groove ball bearing  |
| 35   | circlip  |
| 36   | supporting washer  |
| 37   | circlip  |
| 38   | stud bolt (with pump size 40 to 210)<br>eyelet bolt (with pump size 280 to 2200) |
| 39   | hexagon nut  |
| 40   | ball valve   |
| 41   | key  |
| 42   | spring dowel   |
| 48   | stop screw   |

**Part No. Denomination**

|      |                       |
|------|-----------------------|
| 49   | screw plug            |
| 50   | lubricating nipple    |
| 51   | socket head cap screw |
| 54   | socket head cap screw |
| 55   | socket head cap screw |
| 80   | spacer ring           |
| 81   | support ring          |
| 82   | spring dowel          |
| 83 ① | mechanical seal       |

① spare parts

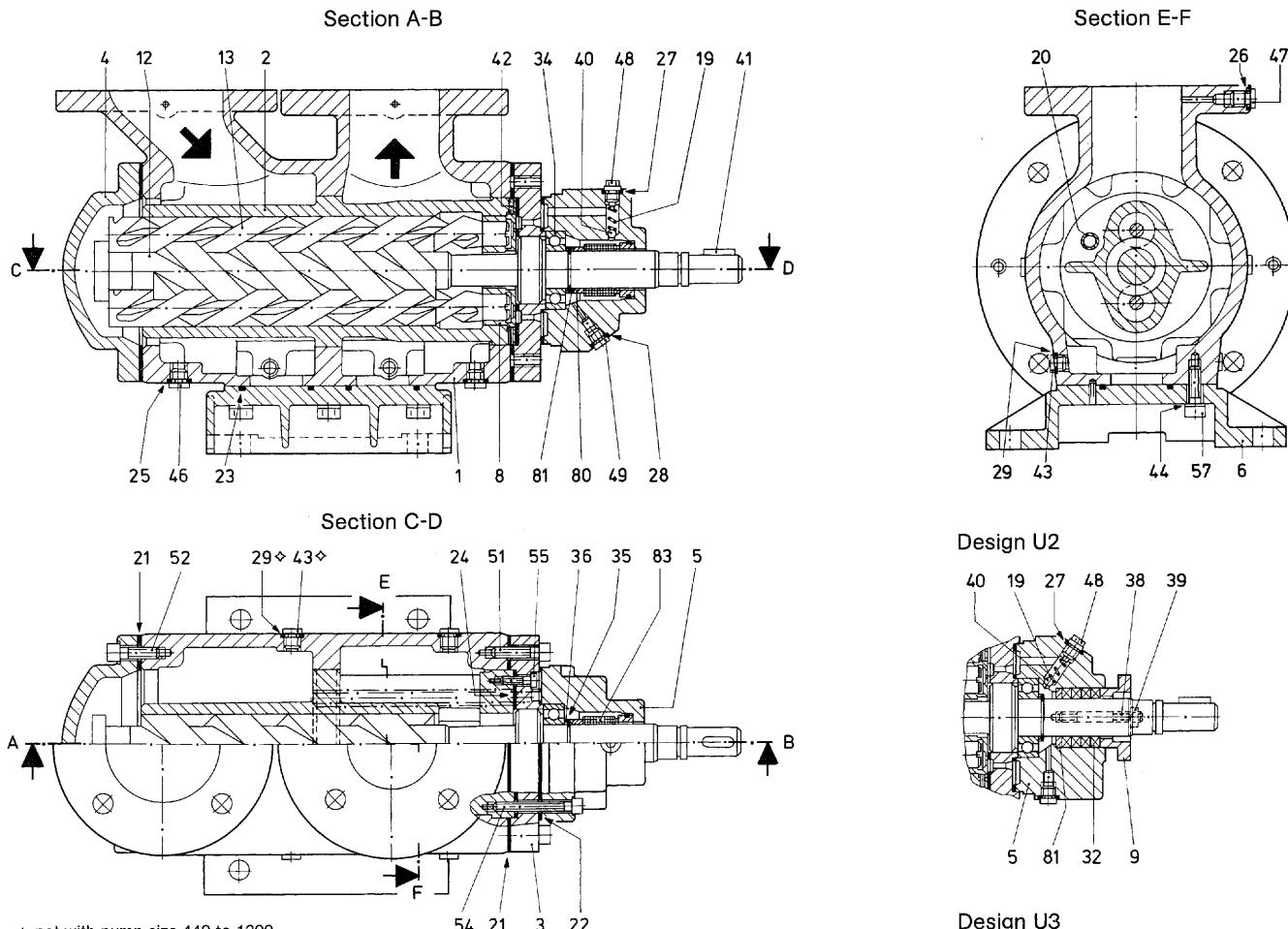
\* Up to pump size 210 with stud bolt, part No. 38. Pump size 280 to 2200 with eyelet bolt, part No. 38, and spring dowel, part No. 82 (not shown in the drawing)

**Design KA2  
at pump size 40**

**Sectional drawing**

**SNGH...** – horizontal foot mounted pump, internal ball bearing, with mechanical seal, design U...  
 internal ball bearing, with stuffing box, design U2  
 internal ball bearing, with shaft sealing rings, design U3

Design U... with mechanical seal

**Part-No. Denomination**

|      |   |
|------|---|
| 1    | pump casing                               |
| 2 ①  | pump casing insert                        |
| 3    | pump cover, drive side                    |
| 4    | pump cover, non-drive side                |
| 5    | shaft sealing housing                     |
| 6    | pump foot                                 |
| 8 ①  | balance bush                              |
| 9    | seal cover                                |
| 12 ① | gland (only with design U2)               |
| 13 ① | driving spindle                           |
| 19   | idler spindle                             |
| 20   | valve spring                              |
| 21 ① | balance pipe                              |
| 22 ① | gasket                                    |
| 23 ① | gasket                                    |
| 24 ① | O-ring                                    |
| 25 ① | gasket                                    |
| 26 ① | joint washer (with pump size 440 to 1300) |
| 27 ① | joint washer                              |
| 28 ① | joint washer                              |
| 29 ① | joint washer                              |
| 32 ① | gland packing ring                        |
| 34 ① | groove ball bearing                       |
| 35   | circclip                                  |
| 36   | supporting washer                         |
| 38   | stud bolt                                 |
| 39   | hexagon nut                               |
| 40   | ball valve                                |

**Part-No. Denomination**

|       |   |
|-------|---|
| 41    | key                                     |
| 42    | spring dowel                            |
| 43    | screw plug                              |
| 44    | lock washer                             |
| 46    | screw plug (with pump size 440 to 1300) |
| 47    | screw plug                              |
| 48    | stop screw                              |
| 49    | screw plug (only with design U3)        |
| 51    | screw plug                              |
| 52    | socket head cap screw                   |
| 54    | socket head cap screw                   |
| 55    | socket head cap screw                   |
| 57    | hexagon screw                           |
| 79    | socket head cap screw                   |
| 80    | spacer ring                             |
| 81    | supporting washer                       |
| 83 ①  | support ring (only with design U2)      |
| 107 ① | mechanical seal                         |
| 108   | shaft seal ring                         |
| 109   | supporting ring                         |
| 110   | spacer bush                             |

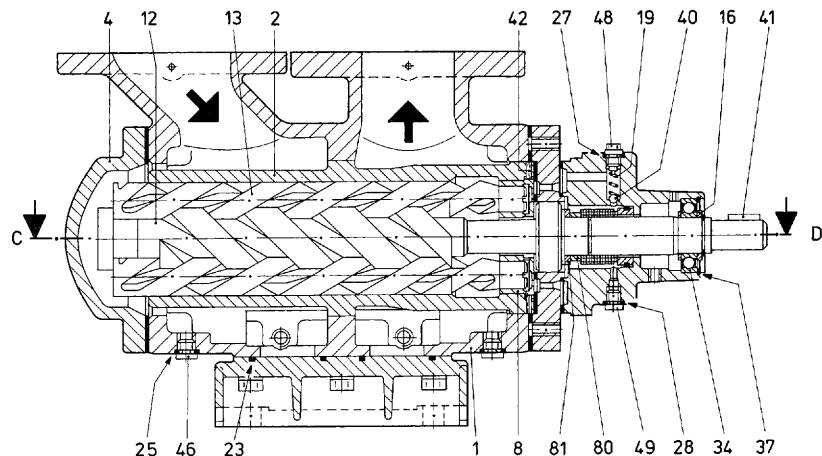
① spare parts

**Sectional drawing**

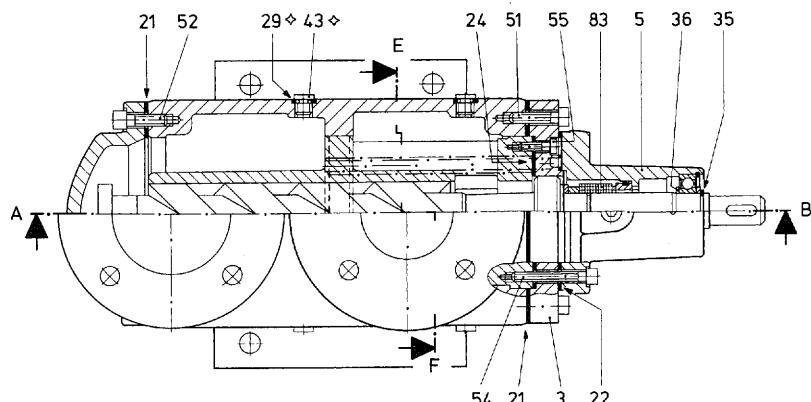
**SNGH...** – horizontal foot mounted pump, external ball bearing, with mechanical seal, design D... and E...  
external ball bearing, with stuffing box, design KA2

Design D...

Section A-B

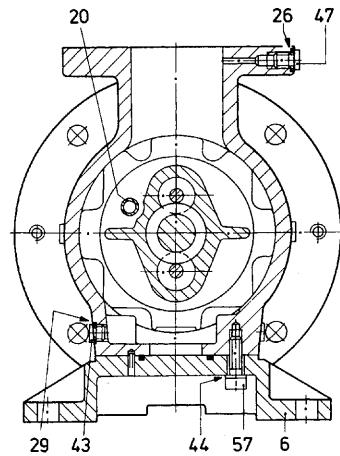


Section C-D

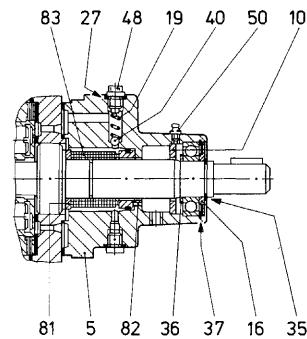


◊ not with pump size 440 to 1300

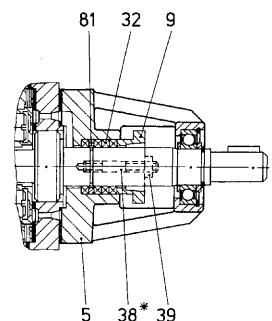
Section E-F



**Design E...**  
bearing with grease nipple

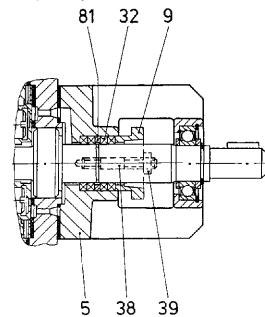


Design KA2



\* Up to pump size 210 with stud bolt, part No. 38. Pump size 280 to 1300 with eyelet bolt, part No. 38, and spring dowel, part No. 82 (not shown in the drawing)

**Design KA2**  
at pump size 40

**Part-No. Denomination**

|      |   |
|------|---|
| 1    | pump casing                               |
| 2 ①  | pump casing insert                        |
| 3    | pump cover, drive side                    |
| 4    | pump cover, non-drive side                |
| 5    | bearing housing                           |
| 6    | pump foot                                 |
| 8 ①  | balance bush                              |
| 9    | gland                                     |
| 10   | greasing chamber disc                     |
| 12 ① | driving spindle                           |
| 13 ① | idler spindle                             |
| 16   | spacer bush                               |
|      | labyrinth ring (only with design E)       |
| 19   | valve spring                              |
| 20   | balance pipe                              |
| 21 ① | gasket                                    |
| 22 ① | gasket                                    |
| 23 ① | O-ring                                    |
| 24 ① | gasket                                    |
| 25 ① | joint washer (with pump size 280 to 1300) |
| 26 ① | joint washer                              |
| 27 ① | joint washer                              |
| 28 ① | joint washer                              |
| 29 ① | joint washer                              |
| 32 ① | gland packing ring                        |
| 34 ① | groove ball bearing                       |
| 35   | circlip                                   |
| 36   | supporting washer                         |
| 37   | circlip                                   |

**Part-No. Denomination**

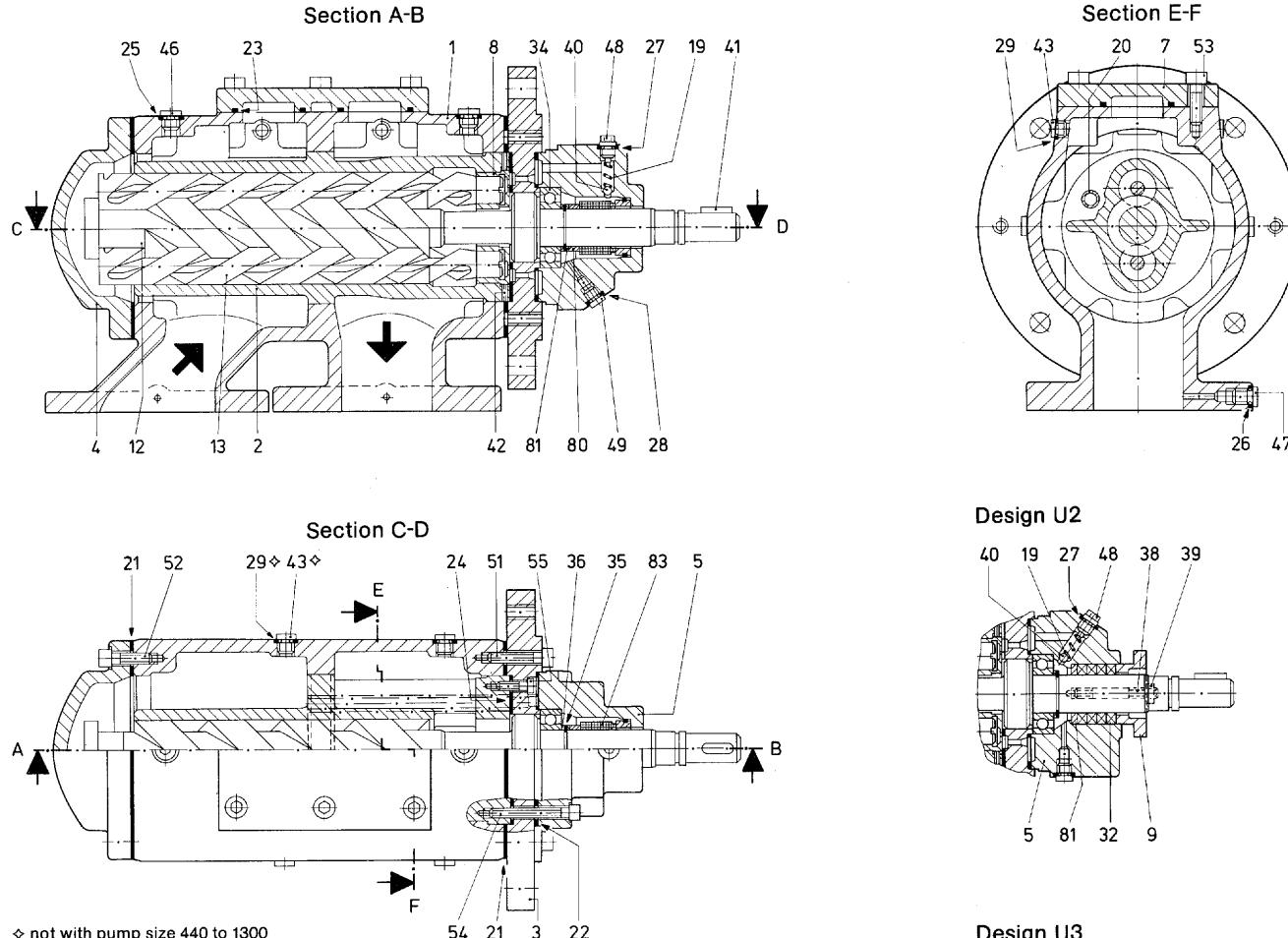
|      |  |
|------|--|
| 38   | stud bolt (with pump size 40 to 210)<br>eyelet bolt (with pump size 280 to 2200) |
| 39   | hexagon nut  |
| 40   | ball valve   |
| 41   | key  |
| 42   | spring dowel   |
| 43   | screw plug   |
| 44   | lock washer  |
| 46   | screw plug (with pump size 440 to 1300)  |
| 47   | screw plug   |
| 48   | stop screw   |
| 49   | screw plug   |
| 50   | lubricating nipple   |
| 51   | socket head cap screw  |
| 52   | socket head cap screw  |
| 54   | socket head cap screw  |
| 55   | socket head cap screw  |
| 57   | hexagon screw  |
| 80   | spacer ring  |
| 81   | support ring   |
| 82   | spring dowel   |
| 83 ① | mechanical seal  |

① spare parts

**Sectional drawing**

**SNGF...** - flange mounted pump, internal ball bearing, with mechanical seal, design U...  
 internal ball bearing, with stuffing box, design U2  
 internal ball bearing, with shaft sealing rings, design U3

Design U... with mechanical seal

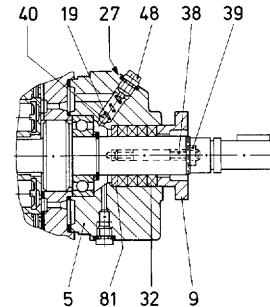
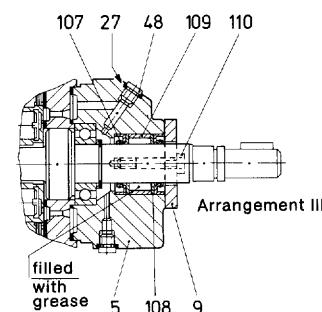
**Part No. Denomination**

|      |   |
|------|---|
| 1    | pump casing                               |
| 2 ①  | pump casing insert                        |
| 3    | pump cover, drive side                    |
| 4    | pump cover, non-drive side                |
| 5    | shaft sealing housing                     |
| 7    | pump casing cover                         |
| 8 ①  | balance bush                              |
| 9    | seal cover                                |
| 12 ① | driving spindle                           |
| 13 ① | idler spindle                             |
| 19   | valve spring                              |
| 20   | balance pipe                              |
| 21 ① | gasket                                    |
| 22 ① | gasket                                    |
| 23 ① | O-ring                                    |
| 24 ① | gasket                                    |
| 25 ① | joint washer (with pump size 440 to 1300) |
| 26 ① | joint washer                              |
| 27 ① | joint washer                              |
| 28 ① | joint washer                              |
| 29 ① | joint washer                              |
| 32 ① | gland packing ring                        |
| 34 ① | groove ball bearing                       |
| 35   | circlip                                   |
| 36   | supporting washer                         |
| 38   | stud bolt                                 |
| 39   | hexagon nut                               |
| 40   | ball valve                                |

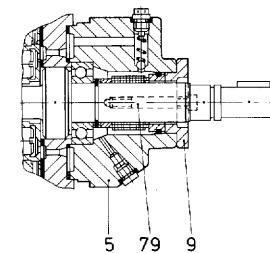
**Part No. Denomination**

|       |   |
|-------|---|
| 41    | key                                     |
| 42    | spring dowel                            |
| 43    | screw plug                              |
| 46    | screw plug (with pump size 440 to 1300) |
| 47    | screw plug                              |
| 48    | stop screw                              |
| 49    | screw plug (only with design U3)        |
| 51    | socket head cap screw                   |
| 52    | socket head cap screw                   |
| 53    | socket head cap screw                   |
| 54    | socket head cap screw                   |
| 55    | socket head cap screw                   |
| 79    | socket head cap screw                   |
| 80    | spacer ring                             |
| 81    | supporting washer                       |
| 83 ①  | support ring (only with design U2)      |
| 107 ① | mechanical seal                         |
| 108   | shaft seal ring                         |
| 109   | supporting ring                         |
| 110   | spacer bush                             |

① spare parts

**Design U2****Design U3****Arrangement of shaft seal rings**

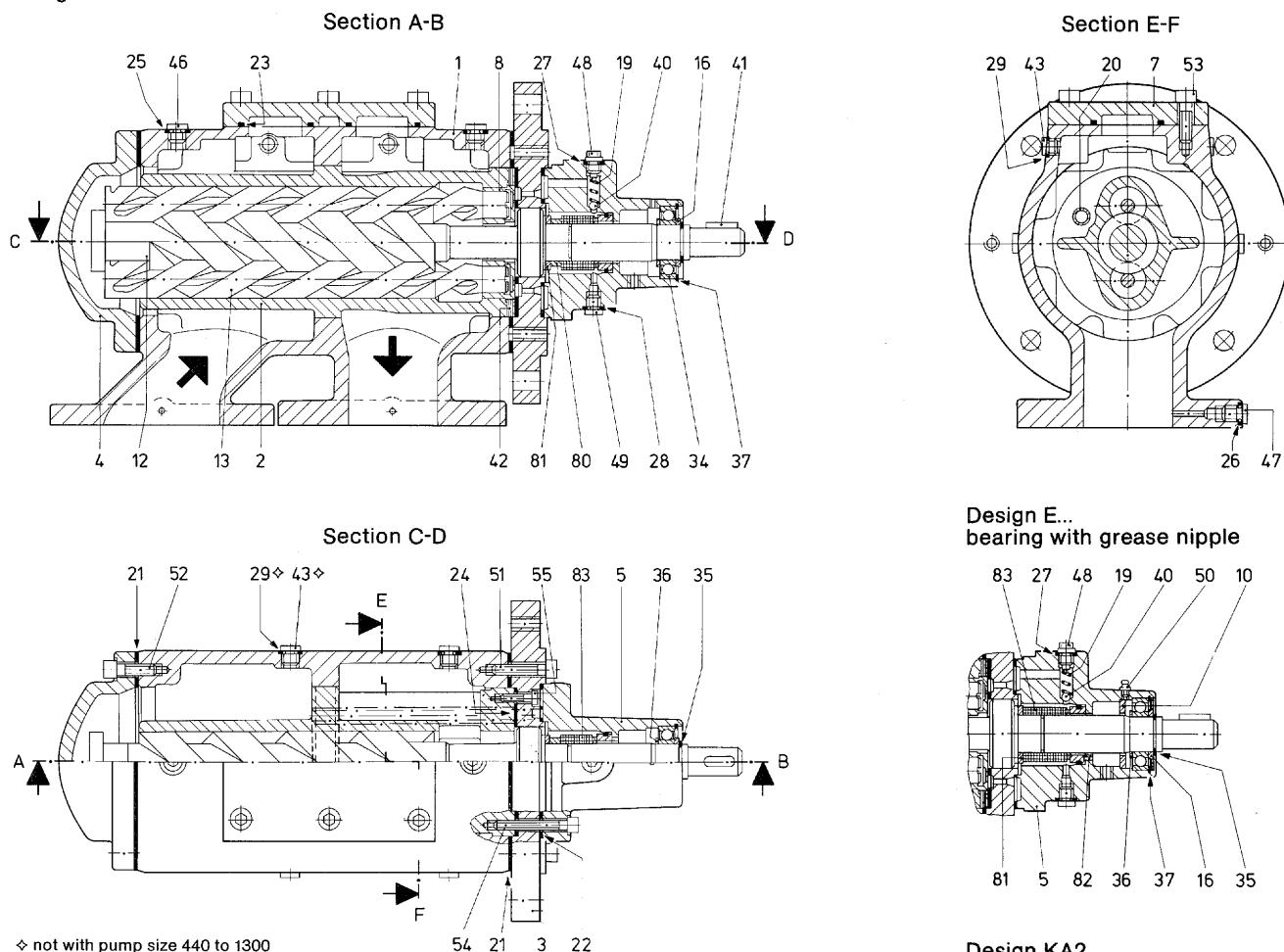
- arrangement I ↘ ↗ against suction head
- arrangement II ↗ ↗ against suction lift
- arrangement III ↗ ↗ against suction head and suction lift

**Design U... with mechanical seal at pump size 940 to 1300**

## Sectional drawing

SNGF... - flange mounted pump, external ball bearing, with mechanical seal, design D... and E...  
external ball bearing, with stuffing box, design KA2

Design D...



## Part No. Denomination

|      |   |
|------|---|
| 1    | pump casing                               |
| 2 ①  | pump casing insert                        |
| 3    | pump cover, drive side                    |
| 4    | pump cover, non-drive side                |
| 5    | bearing housing                           |
| 7    | pump casing cover                         |
| 8 ①  | balance bush                              |
| 9    | gland                                     |
| 10   | greasing chamber disc                     |
| 12 ① | driving spindle                           |
| 13 ① | idler spindle                             |
| 16   | spacer bush                               |
|      | labyrinth ring (only with design E)       |
| 19   | valve spring                              |
| 20   | balance pipe                              |
| 21 ① | gasket                                    |
| 22 ① | gasket                                    |
| 23 ① | O-ring                                    |
| 24 ① | gasket                                    |
| 25 ① | joint washer (with pump size 440 to 1300) |
| 26 ① | joint washer                              |
| 27   | joint washer                              |
| 28 ① | joint washer                              |
| 29 ① | joint washer                              |
| 32 ① | gland packing ring                        |
| 34 ① | groove ball bearing                       |
| 35   | circlip                                   |
| 36   | supporting washer                         |
| 37   | circlip                                   |

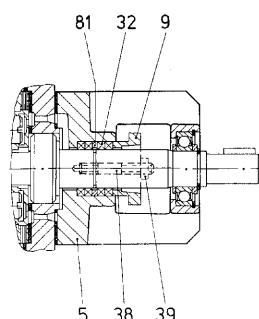
## Part No. Denomination

|      |  |
|------|--|
| 38   | stud bolt (with pump size 40 to 210)<br>eyelet bolt (with pump size 280 to 1300) |
| 39   | hexagon nut  |
| 40   | ball valve   |
| 41   | key  |
| 42   | spring dowel   |
| 43   | screw plug   |
| 46   | screw plug (with pump size 440 to 1300)  |
| 47   | screw plug   |
| 48   | stop screw   |
| 49   | screw plug   |
| 50   | lubricating nipple   |
| 51   | socket head cap screw  |
| 52   | socket head cap screw  |
| 53   | socket head cap screw  |
| 54   | socket head cap screw  |
| 55   | socket head cap screw  |
| 80   | spacer ring  |
| 81   | support ring   |
| 82   | spring dowel   |
| 83 ① | mechanical seal  |

① spare parts

\* Up to pump size 210 with stud bolt, part No. 38. Pump size 280 to 1300 with eyelet bolt, part No. 38, and spring dowel, part No. 82 (not shown in the drawing)

## Design KA2 at pump size 40





**Sectional drawing**

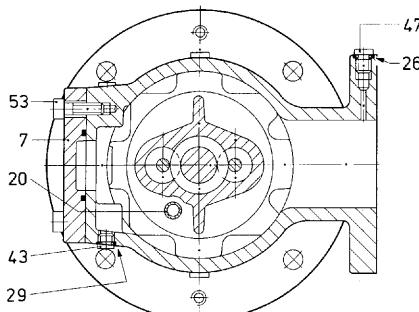
SNGS... - vertical pedestal mounted pump, internal ball bearing, with mechanical seal, design U...

internal ball bearing, with stuffing box, design U2

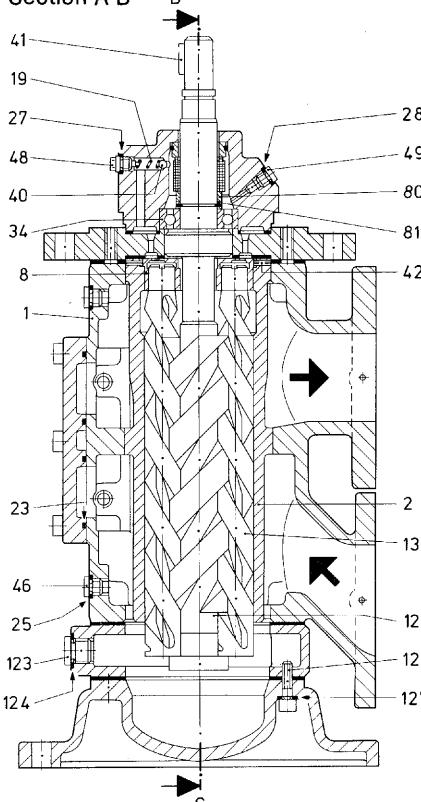
internal ball bearing, with shaft sealing rings, design U3

Design U... with mechanical seal

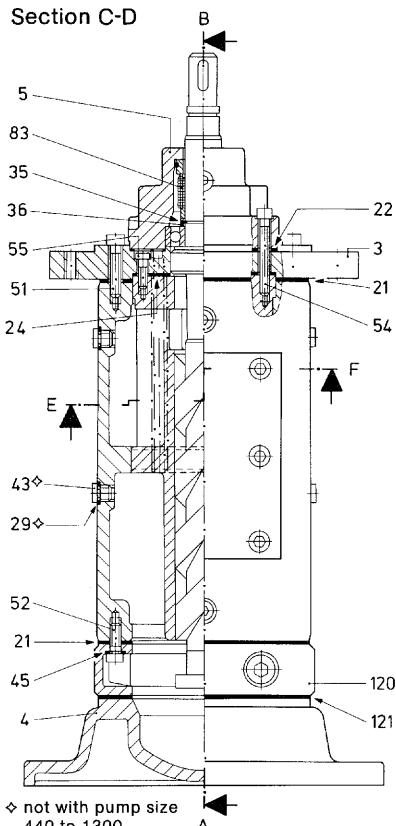
Section E-F



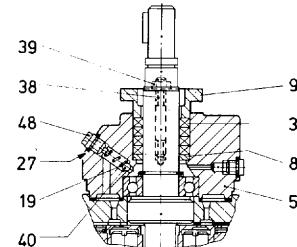
Section A-B



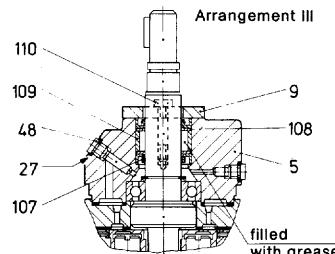
Section C-D



Design U2



Design U3



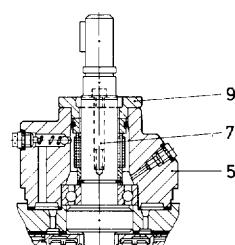
Arrangement of shaft seal rings

arrangement I    against suction head

arrangement II    against suction lift

arrangement III    against suction head and suction lift

Design U... with mechanical seal at pump size 940 to 1300



**Part No. Denomination**

|                             |   |
|-----------------------------|---|
| 1                           | pump casing                               |
| 2 ①                         | pump casing insert                        |
| 3                           | pump cover, drive side                    |
| 4                           | round pump foot                           |
| 5                           | shaft sealing housing                     |
| 7                           | pump casing cover                         |
| 8 ①                         | balance bush                              |
| 9                           | seal cover                                |
| gland (only with design U2) |   |
| 12 ①                        | driving spindle                           |
| 13 ①                        | idler spindle                             |
| 19                          | valve spring                              |
| 20                          | balance pipe                              |
| 21 ①                        | gasket                                    |
| 22 ①                        | gasket                                    |
| 23 ①                        | O-ring                                    |
| 24 ①                        | gasket                                    |
| 25 ①                        | joint washer (with pump size 440 to 1300) |
| 26 ①                        | joint washer                              |
| 27 ①                        | joint washer                              |

**Part No. Denomination**

|      |   |
|------|---|
| 28 ① | joint washer                            |
| 29 ① | joint washer                            |
| 32 ① | gland packing ring                      |
| 34 ① | groove ball bearing                     |
| 35   | circlip                                 |
| 36   | supporting washer                       |
| 38   | stud bolt                               |
| 39   | hexagon nut                             |
| 40   | ball valve                              |
| 41   | key                                     |
| 42   | spring dowel                            |
| 43   | screw plug                              |
| 45   | lock washer                             |
| 46   | screw plug (with pump size 440 to 1300) |
| 47   | screw plug                              |
| 48   | stop screw                              |
| 49   | screw plug (only with design U3)        |
| 51   | socket head cap screw                   |
| 52   | socket head cap screw                   |

**Part No. Denomination**

|       |                                    |
|-------|------------------------------------|
| 53    | socket head cap screw              |
| 54    | socket head cap screw              |
| 55    | socket head cap screw              |
| 79    | socket head cap screw              |
| 80    | spacer ring                        |
| 81    | supporting washer                  |
| 82    | support ring (only with design U2) |
| 83 ①  | mechanical seal                    |
| 107 ① | shaft seal ring                    |
| 108   | supporting ring                    |
| 109   | spacer bush                        |
| 110   | hexagon screw                      |
| 120   | heating chamber (intermediary)     |
| 121 ① | gasket                             |
| 123   | screw plug                         |
| 124 ① | joint washer                       |
| 125   | socket head cap screw              |
| 127 ① | joint washer                       |

① spare parts

































Subject to technical alterations.



A Member of the  
COLFAX PUMP GROUP

**ALLWEILER AG**  
**Business Unit Screw Spindle Pumps**  
**Postfach 1140 · 78301 Radolfzell**  
**Allweilerstraße 1 · 78315 Radolfzell**  
Germany  
Tel. +49 (0)7732 86-0  
Fax +49 (0)7732 86-436  
E-mail: service@allweiler.de  
Internet: http://www.allweiler.com

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