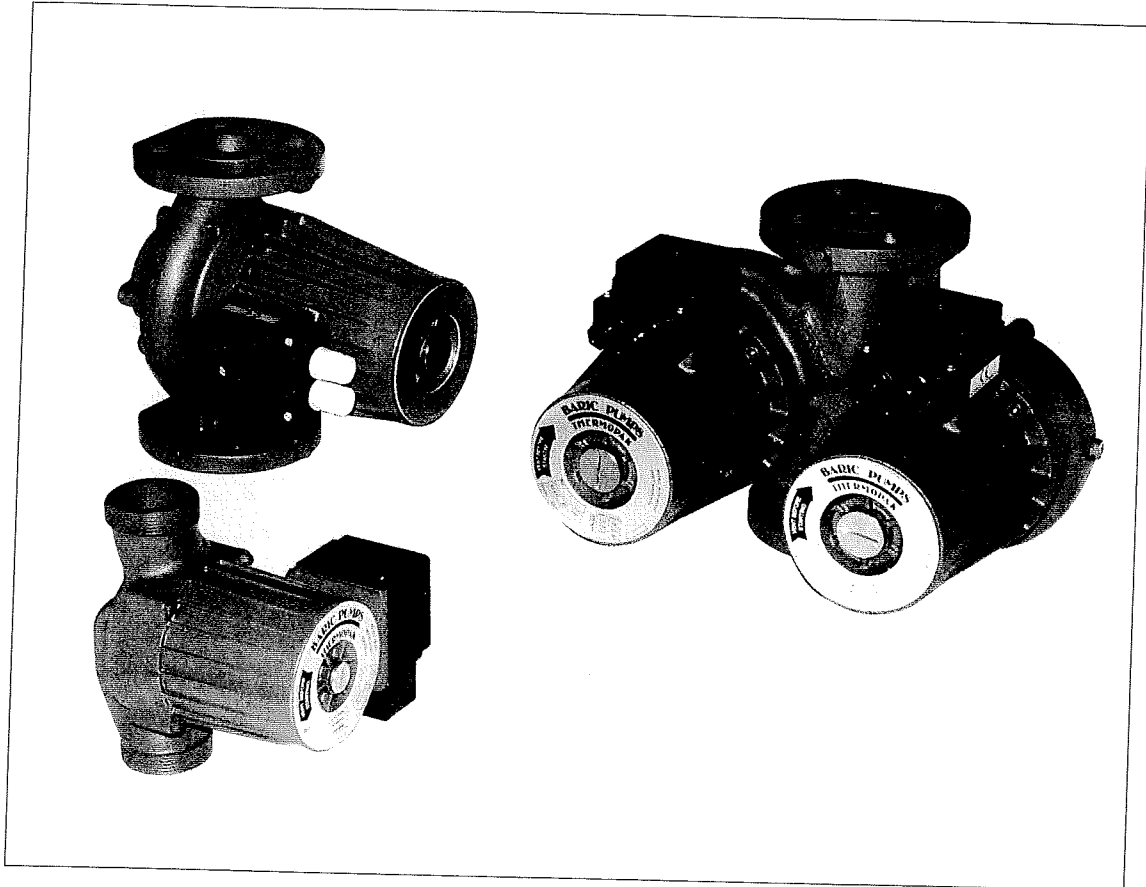


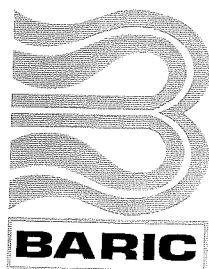
ZSN 40.07.58

# Thermopak



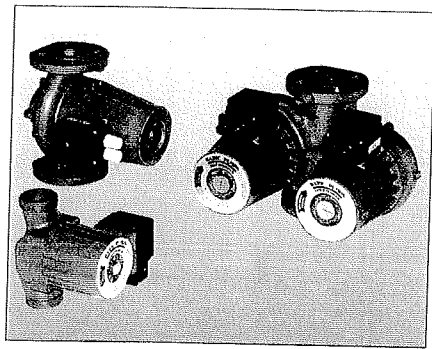
glandless

circulators



*Finest in fluid handling*

# HERMOPAK



Thermopak flooded rotor, glandless in line circulators designed for continuous service in heating and secondary hot water service systems.

### Proven Performance

Proven performance to the requirements of DOE standard specification (M&E) No.3. for low and medium temperature hot water heating systems. Performance results are from type testing in compliance with BS5316 Part 1/ISO 2548. Performance data based on clean cold water.

### Top Pull Out

The compact pipeline mounting permanently aligned, top pull out arrangement allows the motor and rotating assembly to be removed from the pump casing without disturbing pipework. Sealed glandless design precision engineered for maintenance free service, incorporates simple venting and 'freeing' facility.

### Super Quiet Operation

Water lubricated carbon bearings and dynamically balanced rotating assembly ensures smooth, super quiet running.

### Twin Thermopak

Twin-Thermopak, comprising two single Thermopak circulators within a common casing. An integral non return flap located within the common discharge allows remote duty pump selection and starting, whilst eliminating the need for separate pump non return valves.

### Three Speed performance

Three speed positions offer selection flexibility and energy efficiency in matching the circulator output to the system. (Except circulator size BN20.43).

The circulator speed, performance and thus power consumption can be altered manually by the speed selector mounted on the motor terminal box.

### Operating Limits

| Pump Size                   | Rp3/4     | Rp1-1.1/4 - 32 | 40 - 80   |           |           |           |                   |
|-----------------------------|-----------|----------------|-----------|-----------|-----------|-----------|-------------------|
| Code                        | BN        | N              | ZN        | SN        | LN        | ZSN       | ZLN               |
| Liquid Temperature Range °C | 15 to 65* | 15 to 110      | 15 to 110 | 15 to 110 | 15 to 110 | 15 to 110 | 15 to 110         |
| Maximum Operating Pressure  | 6 Bar     | 6 Bar          | 6 Bar     | 6 Bar     | 6 Bar     | 6 Bar     | 10 Bar (optional) |

| Maximum permissible water temperature against ambient air temperature |     |     |    |    |  |  |  |
|---|-----|-----|----|----|--|--|--|
| Ambient Air Temperature °C  | 20  | 30  | 45 | 60 |  |  |  |
| Maximum Water Temperature °C  | 110 | 100 | 90 | 80 |  |  |  |

\* Practical limit for secondary hot water service

### Electrical and Minimum Passivity Ratio based on Avoid Cavitation

#### Thermopak

| Pump Model  | Input Watts at Speed Position |      |      | Full Load Amps at Speed Position |      |      | Minimum Static Head Metres to Avoid Cavitation Noise |      |      |       |
|-------------|-------------------------------|------|------|----------------------------------|------|------|--|------|------|-------|
|             | 3                             | 2    | 1    | 3                                | 2    | 1    | 65°C   | 82°C | 90°C | 110°C |
| BN20.43-S1  | 68 Single Speed               |      |      | 0.32 Single Speed                |      |      | 2  |      |      |       |
| BN20.16-S1  | 136                           | 120  | 120  | 0.65                             | 0.6  | 0.42 | 2  |      |      |       |
| N25.16-S1   | 136                           | 120  | 120  | 0.65                             | 0.6  | 0.42 |  | 2    | 2.5  | 10.5  |
| N32.80-S1   | 236                           | 226  | 200  | 1.07                             | 0.98 | 0.91 |  | 2    | 4    | 12    |
| SN40.60-S3  | 380                           | 340  | 260  | 1.0                              | 0.76 | 0.47 |  | 2    | 4    | 12    |
| SN40.70-S1  | 345                           | 300  | 280  | 1.52                             | 1.45 | 1.4  |  | 2    | 4    | 12    |
| SN40.120-S3 | 585                           | 542  | 360  | 1.23                             | 1.04 | 0.64 |  | 6.5  | 8.5  | 16    |
| LN50.60-S3  | 455                           | 395  | 248  | 1.28                             | 1.0  | 0.48 |  | 2    | 4    | 12    |
| SN50.70-S1  | 630                           | 600  | 510  | 2.92                             | 2.8  | 2.65 |  | 2    | 4    | 12    |
| SN50.120-S3 | 1040                          | 980  | 670  | 1.98                             | 1.77 | 1.17 |  | 6.5  | 8.5  | 16    |
| LN65.30-S3  | 340                           | 280  | 180  | 1.23                             | 0.93 | 0.35 |  | 0.8  | 5    | 17    |
| LN65.60-S3  | 502                           | 450  | 272  | 1.35                             | 1.05 | 0.54 |  | 0.8  | 5    | 17    |
| SN65.60-S3  | 940                           | 750  | 560  | 1.55                             | 1.33 | 0.95 |  | 2    | 6    | 16    |
| SN65.70-S1  | 760                           | 675  | 560  | 3.5                              | 3.2  | 3    |  | 2    | 6    | 16    |
| SN65.120-S3 | 1300                          | 1210 | 860  | 2.78                             | 2.4  | 1.58 |  | 4    | 8    | 22    |
| LN80.30-S3  | 530                           | 460  | 275  | 1.35                             | 1.1  | 0.52 |  | 0.8  | 5    | 17    |
| LN80.60-S3  | 698                           | 680  | 500  | 2.17                             | 1.75 | 0.95 |  | 4    | 8    | 20    |
| SN80.120-S3 | 1900                          | 1780 | 1290 | 3.6                              | 3.11 | 2.15 |  | 6    | 10   | 22    |

#### Twin Thermopak

|              |      |      |      |      |      |      |  |     |     |      |
|--------------|------|------|------|------|------|------|--|-----|-----|------|
| ZN32.60-S1   | 136  | 120  | 90   | 0.65 | 0.6  | 0.45 |  | 2   | 2.5 | 10.5 |
| ZSN40.60-S3  | 380  | 340  | 260  | 1.0  | 0.76 | 0.47 |  | 2   | 4   | 12   |
| ZSN40.70-S1  | 345  | 300  | 280  | 1.52 | 1.45 | 1.4  |  | 2   | 4   | 12   |
| ZSN40.120-S3 | 585  | 542  | 360  | 1.23 | 1.04 | 0.64 |  | 6.5 | 8.5 | 16   |
| ZLN50.60-S3  | 455  | 395  | 248  | 1.28 | 1.0  | 0.48 |  | 2   | 4   | 12   |
| ZSN50.70-S1  | 630  | 600  | 510  | 2.92 | 2.8  | 2.65 |  | 2   | 4   | 12   |
| ZSN50.120-S3 | 1040 | 980  | 670  | 1.98 | 1.77 | 1.17 |  | 6.5 | 8.5 | 16   |
| ZLN65.30-S3  | 340  | 280  | 180  | 1.23 | 0.93 | 0.35 |  | 0.8 | 5   | 17   |
| ZLN65.60-S3  | 502  | 450  | 272  | 1.35 | 1.05 | 0.54 |  | 0.8 | 5   | 17   |
| ZSN65.60-S3  | 940  | 750  | 560  | 1.55 | 1.33 | 0.95 |  | 2   | 6   | 16   |
| ZSN65.70-S1  | 760  | 675  | 560  | 3.5  | 3.2  | 3    |  | 2   | 6   | 16   |
| ZSN65.120-S3 | 1300 | 1210 | 860  | 2.78 | 2.4  | 1.58 |  | 4   | 8   | 22   |
| ZLN80.30-S3  | 530  | 460  | 275  | 1.35 | 1.1  | 0.52 |  | 0.8 | 5   | 17   |
| ZLN80.60-S3  | 698  | 680  | 500  | 2.17 | 1.75 | 0.95 |  | 4   | 8   | 20   |
| ZSN80.120-S3 | 1900 | 1780 | 1290 | 3.6  | 3.11 | 2.15 |  | 6   | 10  | 22   |

### Materials of Construction

| Part Description | N | SN  | LN | BN       |
|------------------|---|---|----|----------|
| Casing           |   | Cast Iron   |    | Gunmetal |
| Impeller         |   | Engineering Thermoplastic                                 |    |          |
| Shaft            |   | Stainless Steel   |    |          |
| Bearings         |   | Carbon, Water Lubricated - Ceramic Thrust Bearing         |    | Ceramic  |
| Rotor            |   | Dynamically Balanced Assembly Protected Against Corrosion |    |          |
| Stator           |   | Class 'F' Insulation                                      |    |          |

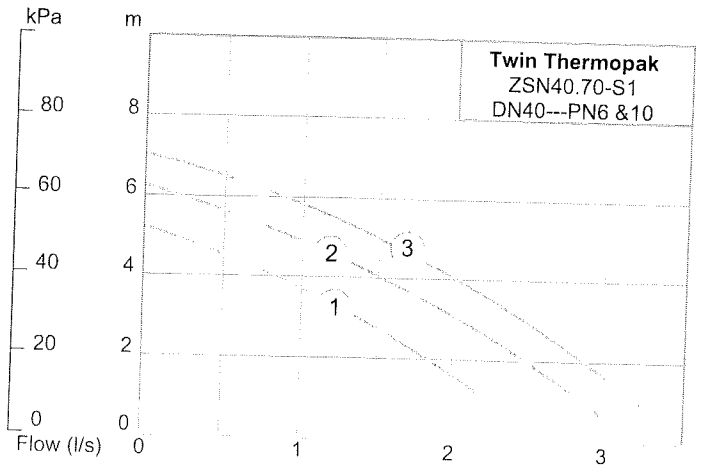
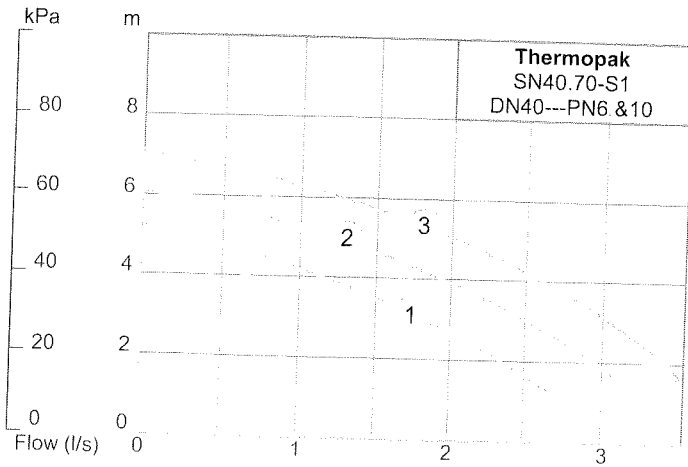
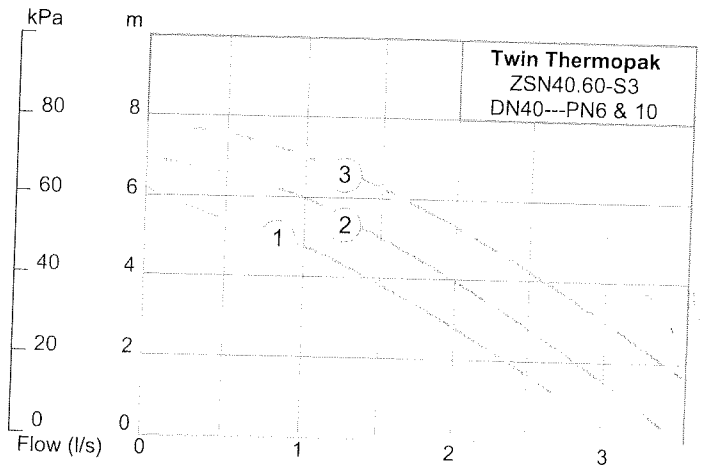
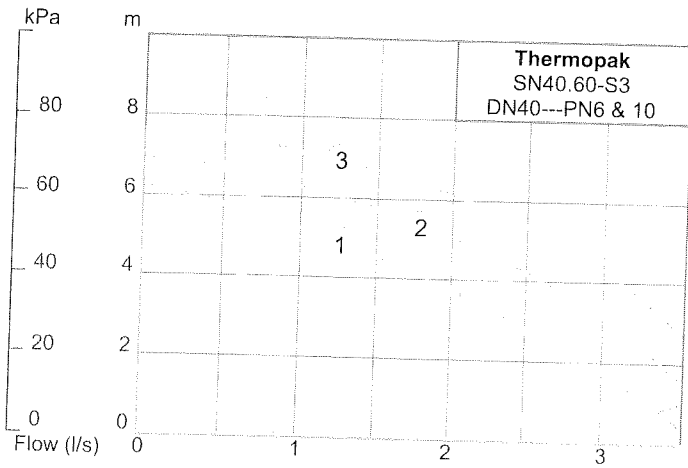
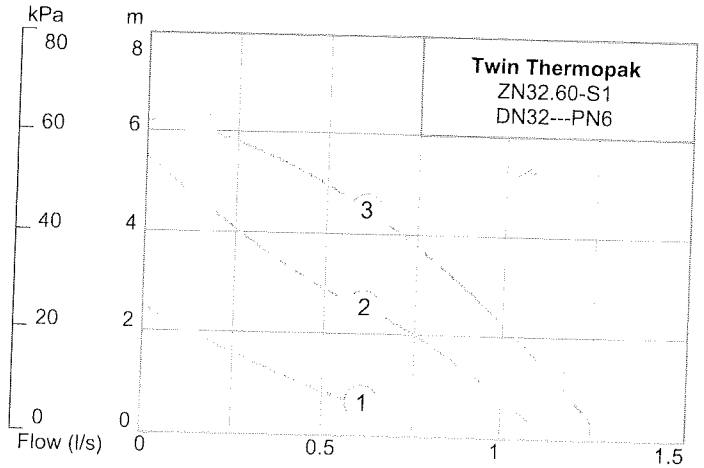
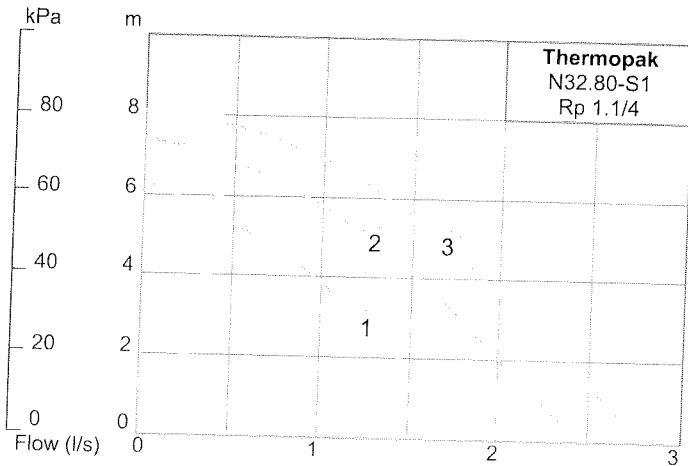
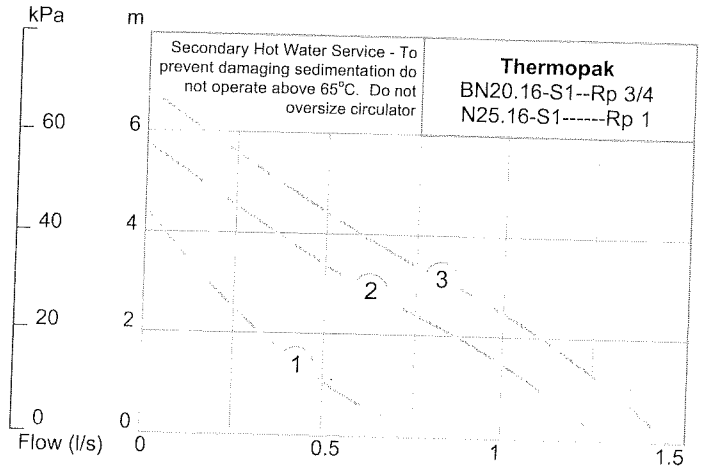
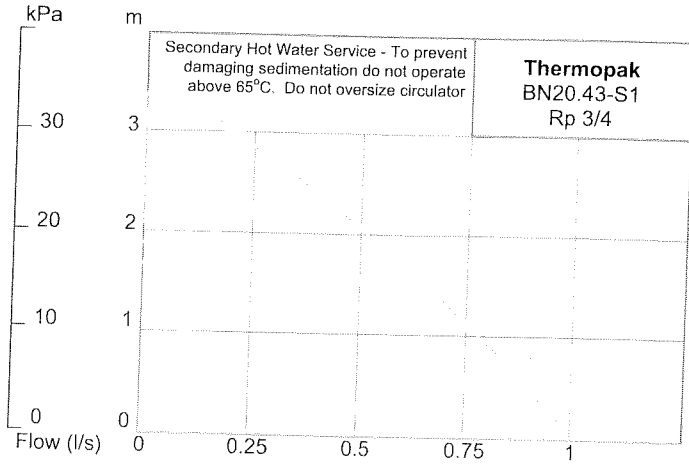
### Pump Coding

| Z              | S                             | N40       | 60       | S3                 |
|----------------|-------------------------------|-----------|----------|--------------------|
| Variant Code   | Type Code                     | Pump Size | Head     | Electricity Supply |
| Twin Thermopak | B Secondary Hot Water Service | Thermopak | Nominal  | S3 Three Phase     |
|                | L 4 Pole Speed                | Size mm   | Head kPa | S1 Single Phase    |
|                | S 2 Pole Speed                |           |          |                    |

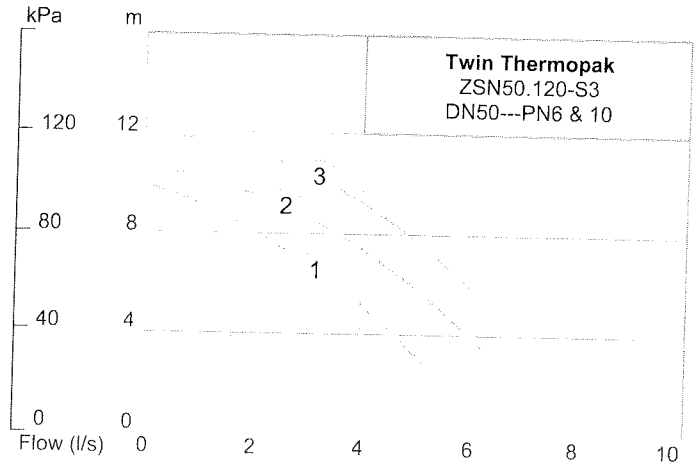
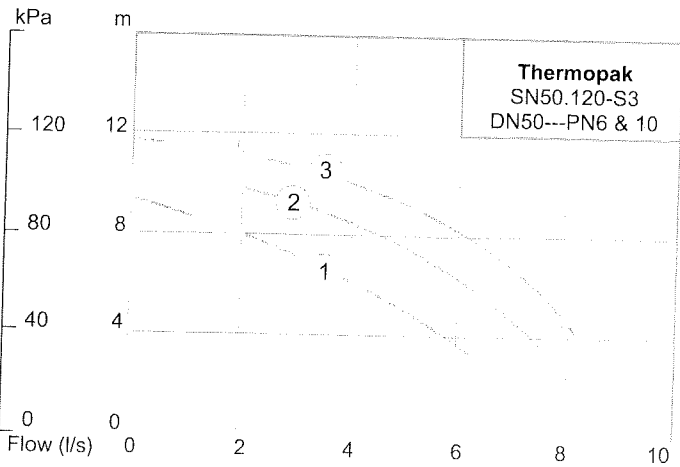
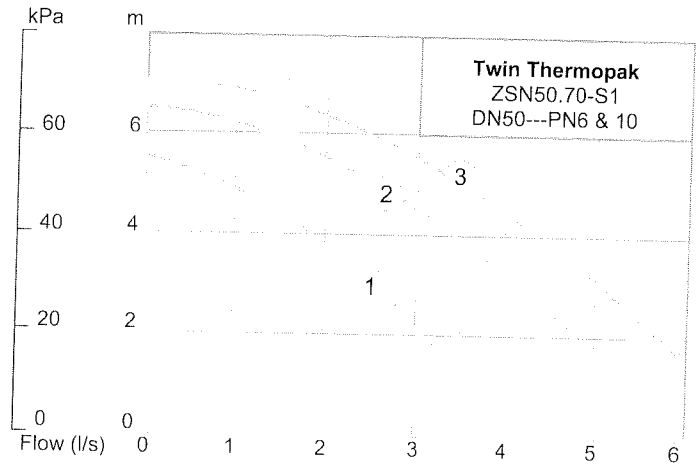
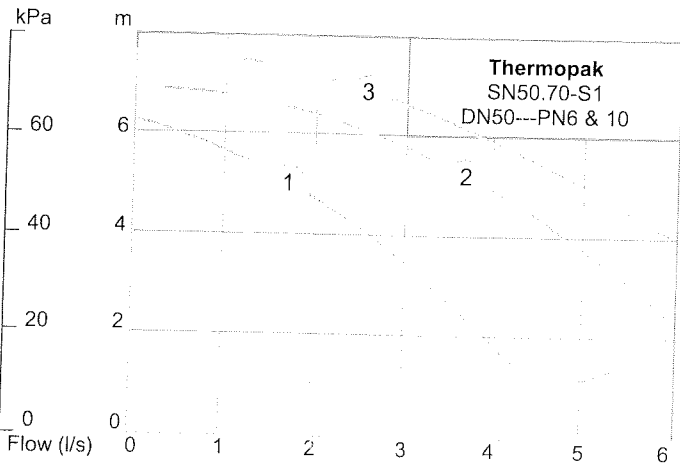
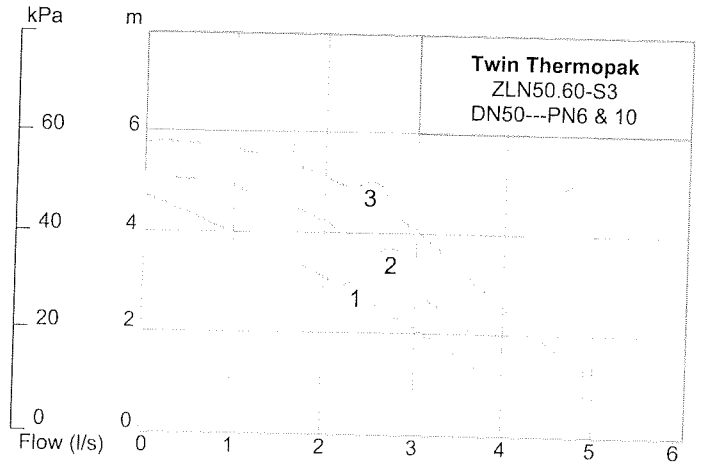
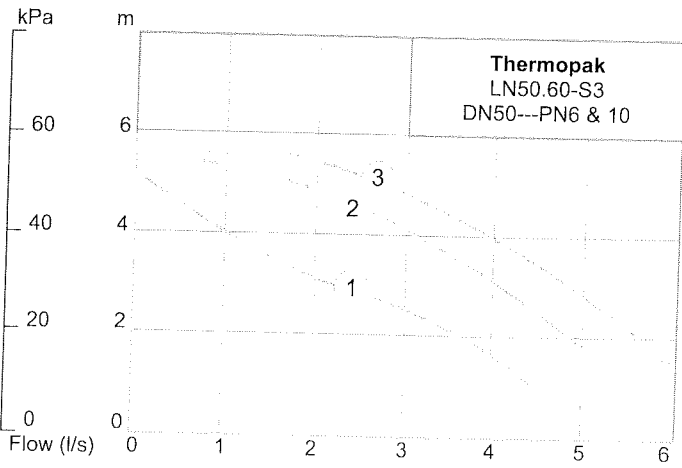
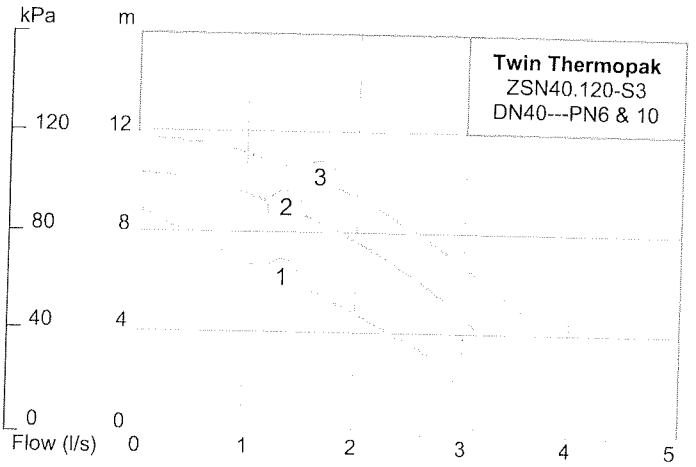
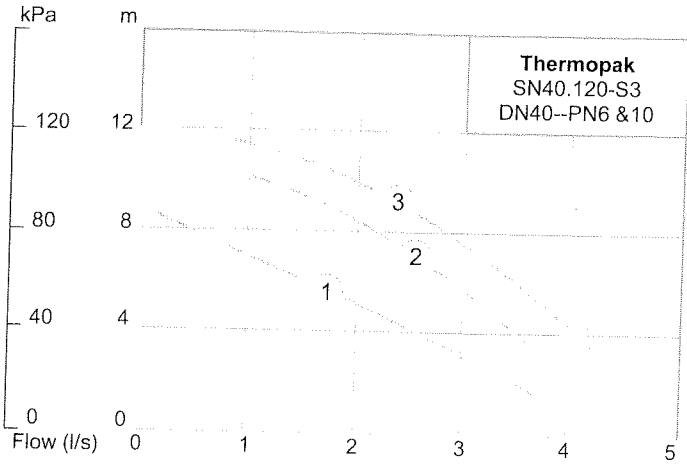
### Example

ZS N40. 60 - S3

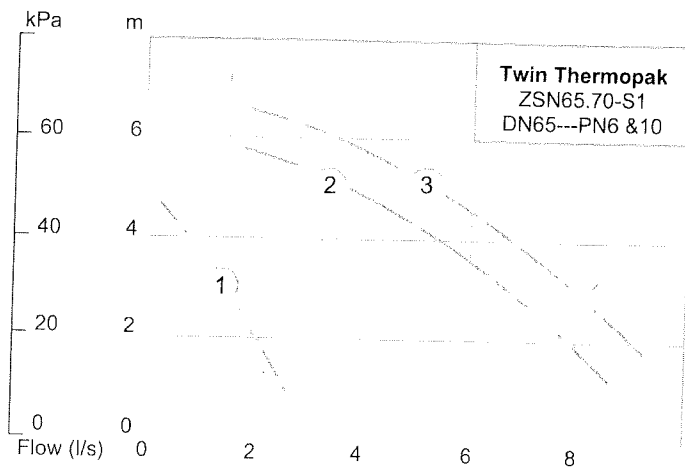
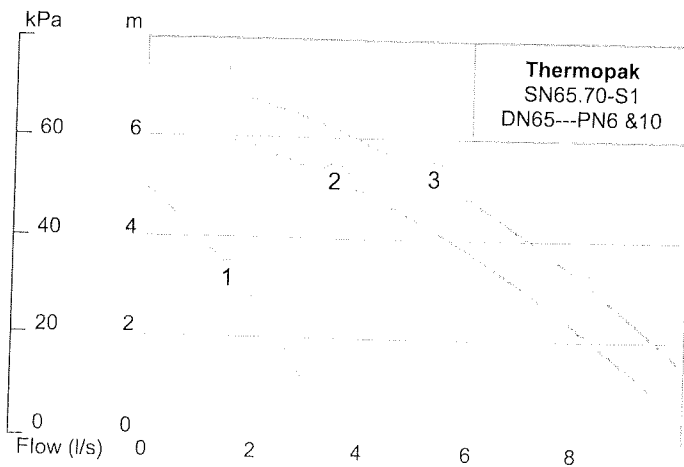
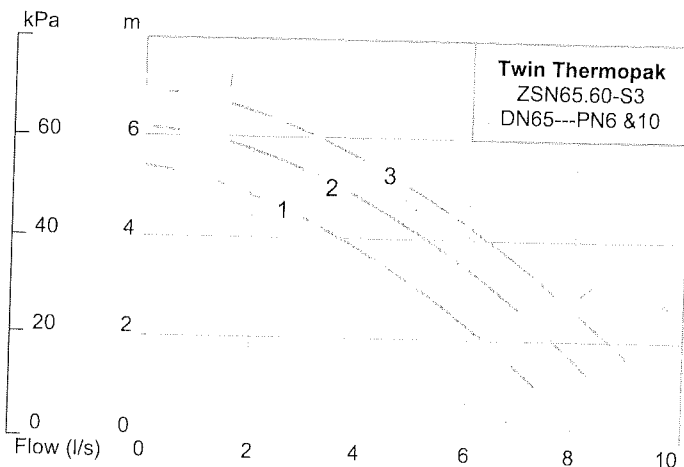
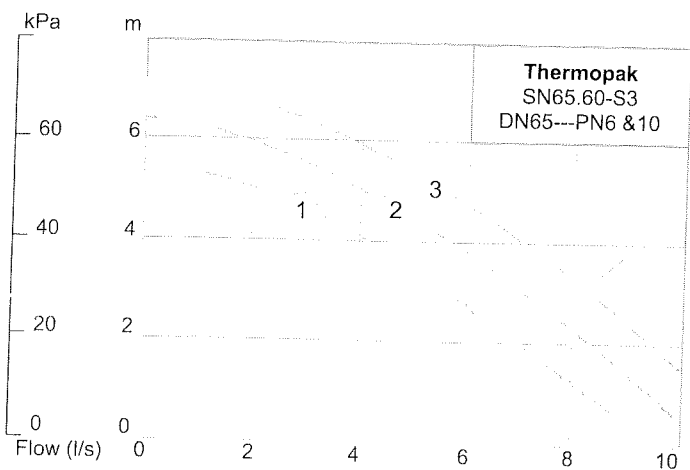
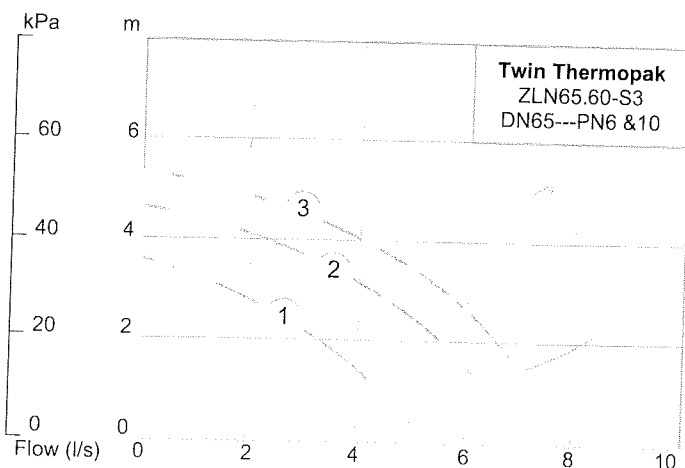
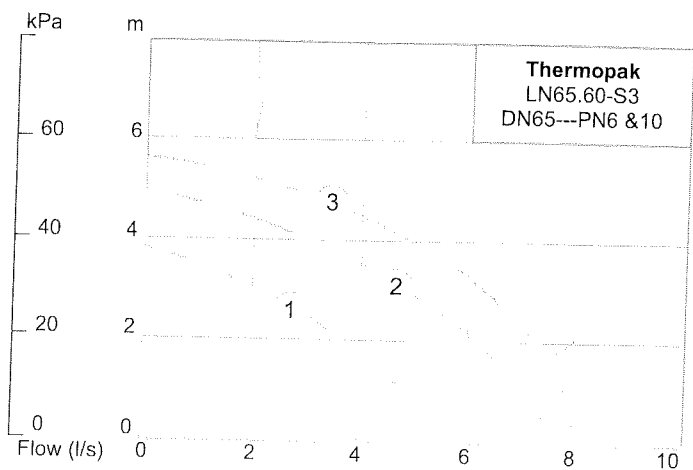
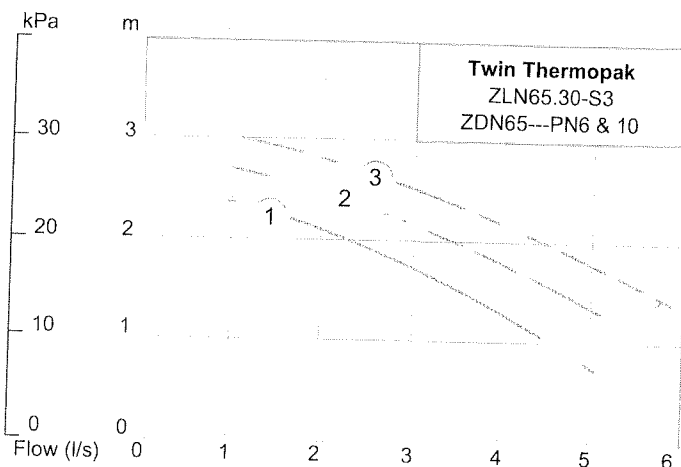
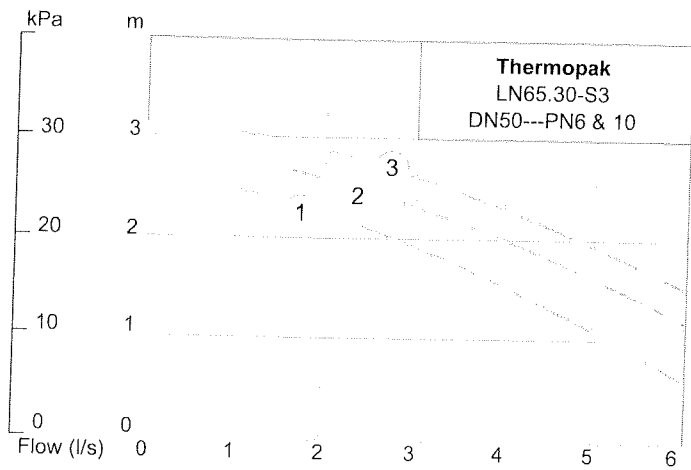
Performance Details



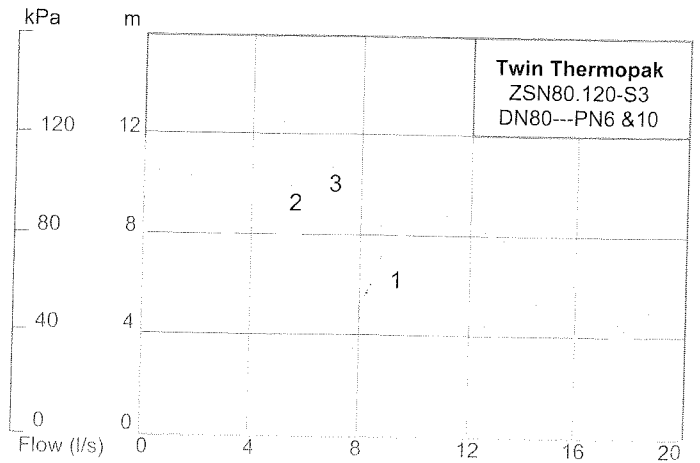
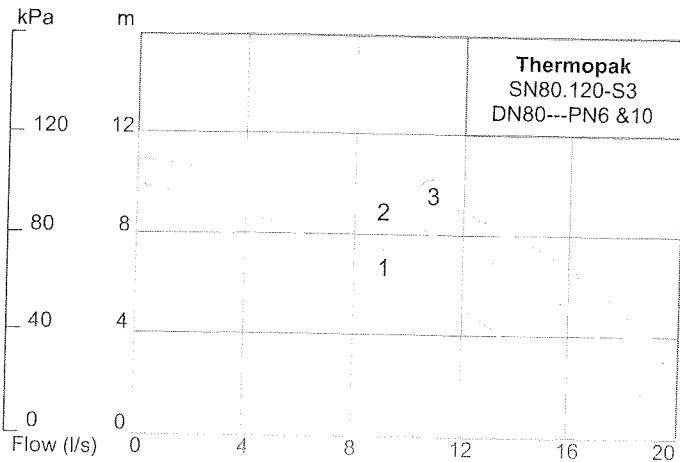
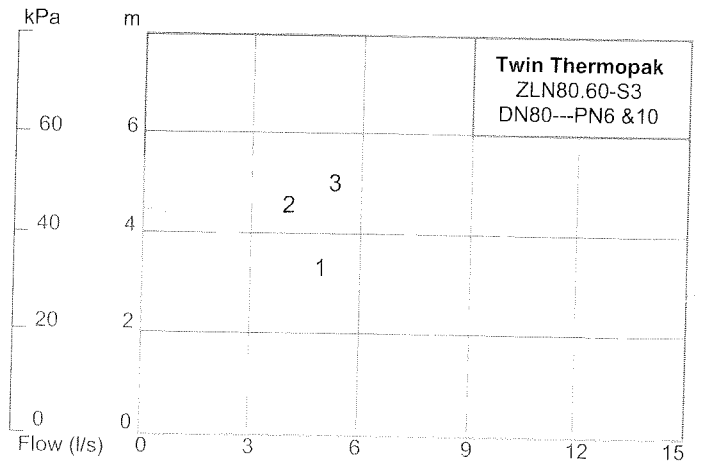
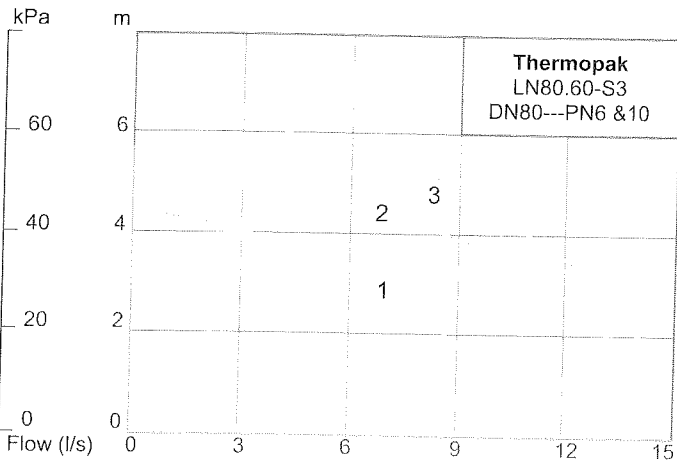
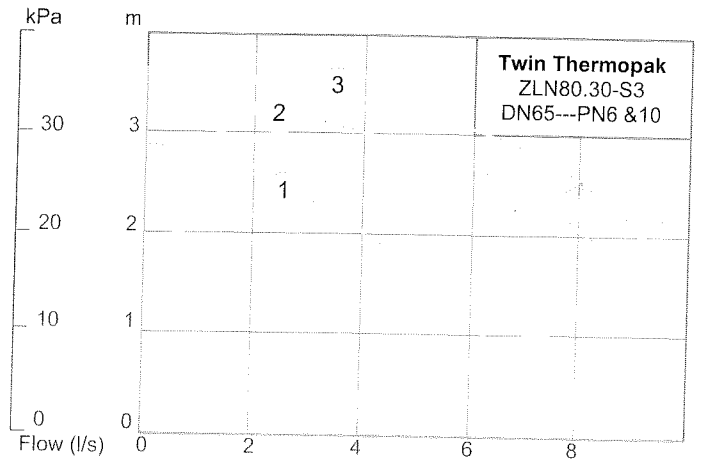
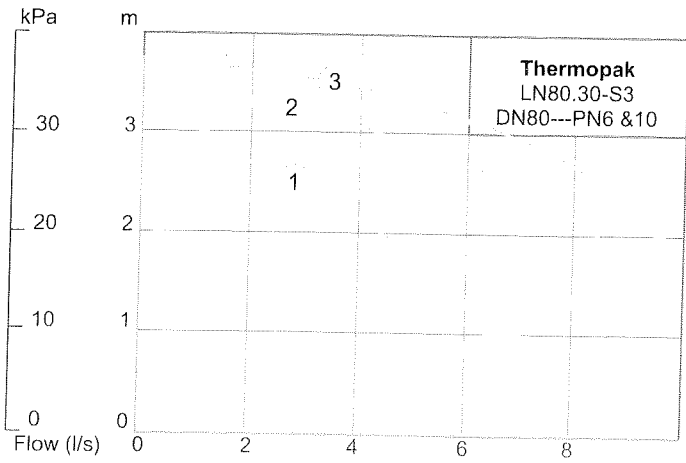
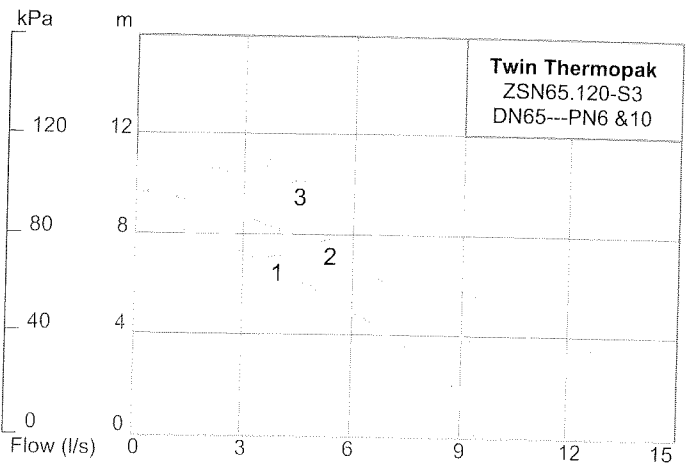
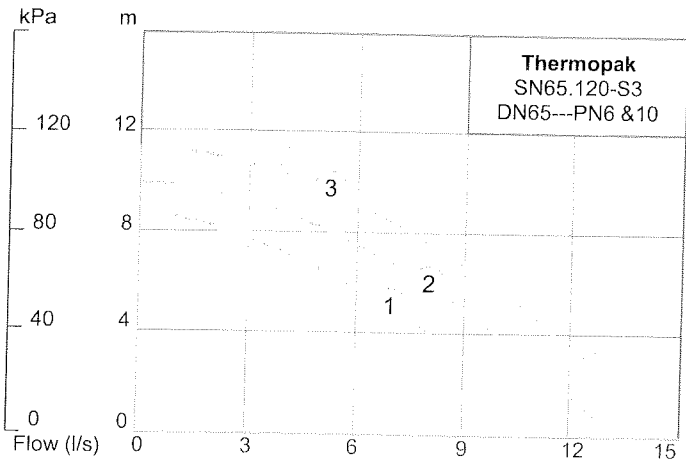
Performance Details



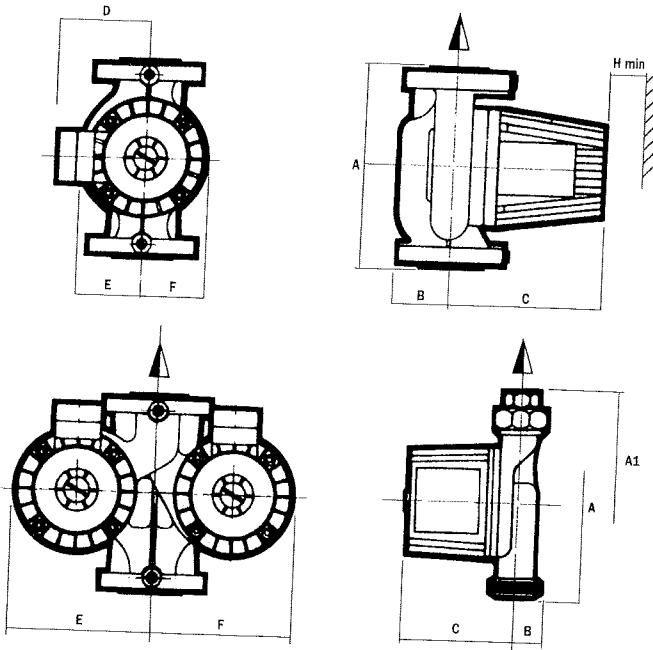
Performance Details



Performance Details



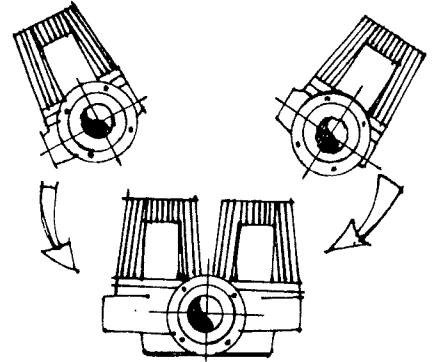
# Thermopak & Twin Thermospak Dimensions



## Twin Thermopak Benefits

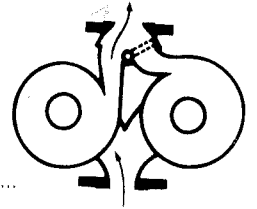
### Two pumps in one.

Space saving design measures the same distance across the flange faces as a comparable single Thermopak pump. This enables simpler compact twin pump installations-especially beneficial to the Designer and Installer.

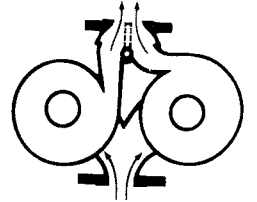


### Duty and Standby or Peak Load Operation.

Normally arranged for duty and standby operation, where either pump can be selected for individual operation...

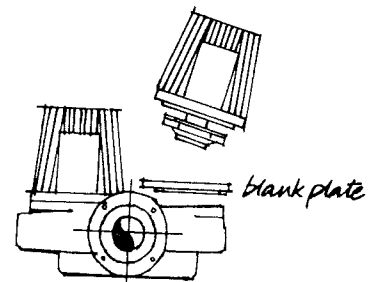


...or both pumps can be run in parallel, resulting in increased output for peak load applications.



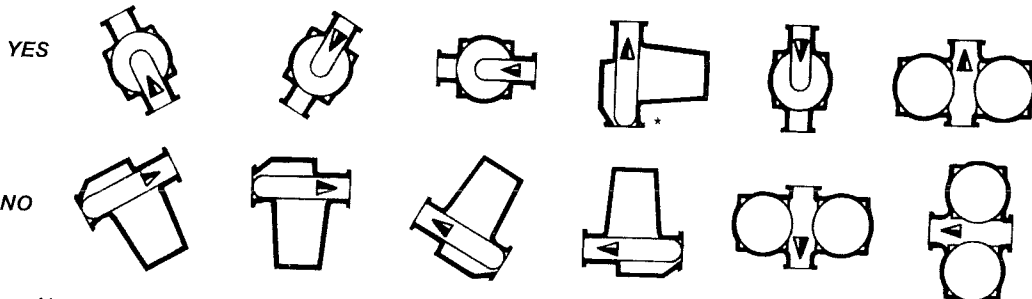
### Blank Plates

Optional 'blank plates' are available to ensure minimum system disruption during the removal of a pump assembly



| Pump Model            | Inlet & Outlet |                 |       | Dimensions |     |    |     |     |     |     | Wt Kg |    |  |
|-----------------------|----------------|-----------------|-------|------------|-----|----|-----|-----|-----|-----|-------|----|--|
|                       | Size           | BS 5404<br>PN 6 | PN 10 | A          | A1  | B  | C   | D   | E   | F   |       | H  |  |
| BN20.43-S1            | Rp3/4          |                 |       | 150        | 205 | 20 | 115 | 95  | 50  |     |       |    |  |
| BN20.16-S1            | Rp3/4          |                 |       | 150        | 205 | 20 | 115 | 95  | 50  | 50  | 70    | 4  |  |
| N25.16-S1             | Rp1            |                 |       | 180        | 235 | 20 | 115 | 95  | 50  | 50  | 70    | 4  |  |
| N32.80-S1             | Rp1.1/4        |                 |       | 180        | 235 | 35 | 145 | 115 | 60  | 55  | 70    | 5  |  |
| SN40.60-S3            | 40             | •               | •     | 250        |     | 66 | 200 | 128 | 90  | 82  | 90    | 18 |  |
| SN40.70-S1            | 40             | •               | •     | 250        |     | 66 | 200 | 128 | 90  | 82  | 90    | 20 |  |
| SN40.120-S3           | 40             | •               | •     | 250        |     | 66 | 200 | 128 | 90  | 82  | 90    | 18 |  |
| LN50.60-S3            | 50             | •               | •     | 280        |     | 75 | 235 | 145 | 110 | 90  | 90    | 26 |  |
| SN50.70-S1            | 50             | •               | •     | 280        |     | 75 | 235 | 145 | 110 | 90  | 90    | 30 |  |
| SN50.120-S3           | 50             | •               | •     | 280        |     | 75 | 235 | 145 | 110 | 90  | 90    | 28 |  |
| LN65.30-S3            | 65             | •               | •     | 340        |     | 98 | 230 | 143 | 240 | 97  | 110   | 31 |  |
| LN65.60-S3            | 65             | •               | •     | 340        |     | 98 | 230 | 143 | 240 | 97  | 110   | 31 |  |
| SN65.60-S3            | 65             | •               | •     | 340        |     | 98 | 230 | 143 | 240 | 97  | 110   | 34 |  |
| SN65.70-S1            | 65             | •               | •     | 340        |     | 98 | 230 | 170 | 265 | 97  | 110   | 34 |  |
| SN65.120-S3           | 65             | •               | •     | 340        |     | 98 | 230 | 143 | 240 | 97  | 110   | 37 |  |
| LN80.30-S3            | 80             | •               | •     | 360        |     | 97 | 251 | 143 | 243 | 100 | 110   | 35 |  |
| LN80.60-S3            | 80             | •               | •     | 360        |     | 97 | 301 | 143 | 243 | 100 | 110   | 44 |  |
| SN80.120-S3           | 80             | •               | •     | 360        |     | 97 | 301 | 143 | 243 | 100 | 110   | 44 |  |
| <b>Twin Thermopak</b> |                |                 |       |            |     |    |     |     |     |     |       |    |  |
| ZN32.60-S1            | 32             | •               | •     | 220        |     | 50 | 100 | 95  | 115 | 115 | 90    | 9  |  |
| ZSN40.60-S3           | 40             | •               | •     | 250        |     | 66 | 200 | 128 | 195 | 195 | 90    | 34 |  |
| ZSN40.70-S1           | 40             | •               | •     | 250        |     | 66 | 200 | 128 | 195 | 195 | 90    | 29 |  |
| ZSN40.120-S3          | 40             | •               | •     | 250        |     | 66 | 200 | 128 | 195 | 195 | 90    | 34 |  |
| ZLN50.60-S3           | 50             | •               | •     | 280        |     | 75 | 235 | 145 | 220 | 220 | 90    | 53 |  |
| ZSN50.70-S1           | 50             | •               | •     | 280        |     | 75 | 235 | 145 | 220 | 220 | 90    | 56 |  |
| ZSN50.120-S3          | 50             | •               | •     | 280        |     | 75 | 235 | 145 | 220 | 220 | 90    | 55 |  |
| ZLN65.30-S3           | 65             | •               | •     | 340        |     | 82 | 243 |     | 232 | 228 | 110   | 57 |  |
| ZLN65.60-S3           | 65             | •               | •     | 340        |     | 82 | 243 |     | 232 | 228 | 110   | 57 |  |
| ZSN65.60-S3           | 65             | •               | •     | 340        |     | 82 | 243 |     | 232 | 228 | 110   | 62 |  |
| ZSN65.70-S1           | 65             | •               | •     | 340        |     | 82 | 243 |     | 232 | 228 | 110   | 63 |  |
| ZSN65.120-S3          | 65             | •               | •     | 340        |     | 82 | 243 |     | 232 | 228 | 110   | 67 |  |
| ZLN80.30-S3           | 80             | •               | •     | 360        |     | 97 | 242 |     | 215 | 215 | 110   | 62 |  |
| ZLN80.60-S3           | 80             | •               | •     | 360        |     | 97 | 292 |     | 215 | 215 | 110   | 80 |  |
| ZSN80.120-S3          | 80             | •               | •     | 360        |     | 97 | 292 |     | 215 | 215 | 110   | 80 |  |

## Installation Arrangements



- Always install Thermopak circulators with motor shaft horizontal.
- \* Use this arrangement on secondary hot water service.
- Motor thermal overload protection is integral on sizes BN20 through (Z)N32.
- Motor overload protection should be provided on other sizes of circulator, set at 10% above the motor full load amps.
- The pumped liquid temperature must always be higher than the ambient air temperature to avoid condensation in the motor windings.