2 Installation and Start-Up

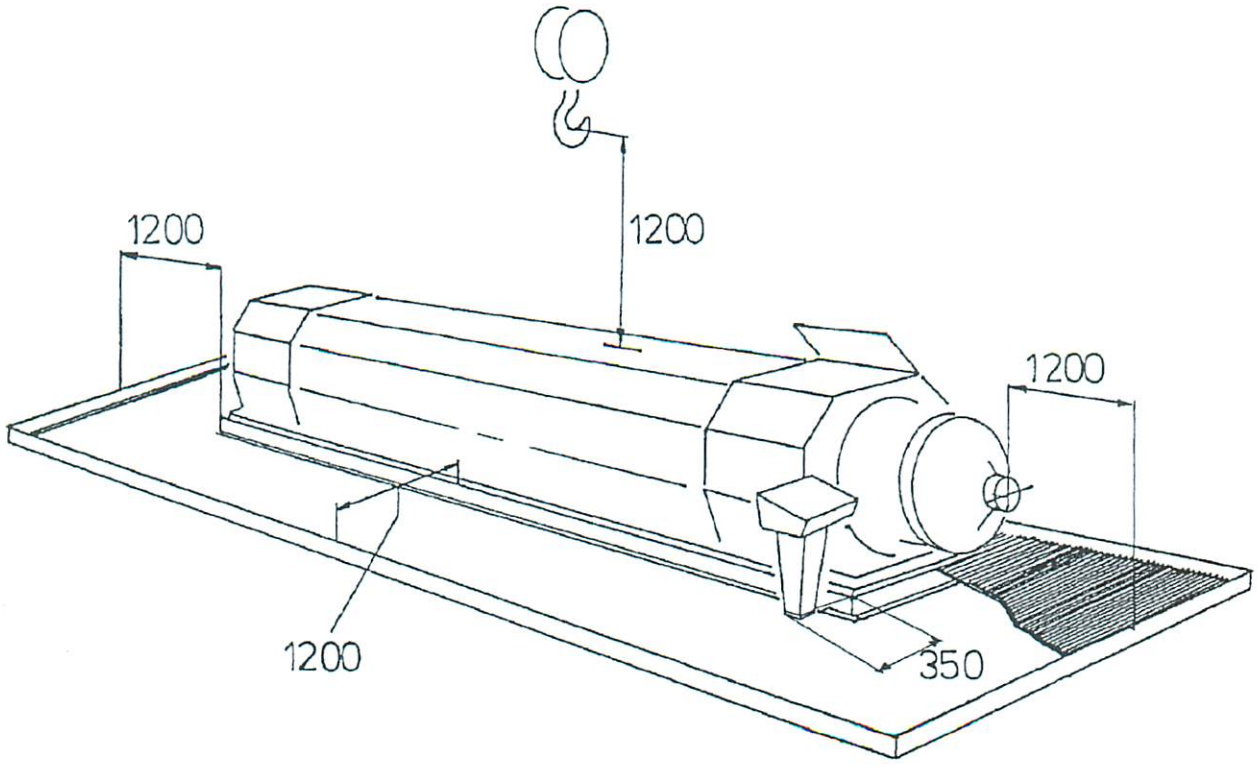

Figure 5 - General Arrangement

The Kværner Screw Press is designed for installation on steel or concrete foundations as indicated in the following procedures. Section 2.13 gives a check list for first-time start-up. Note that the information given here represents general situations and that on-site adaptation may be necessary.

2.1 Delivery Check

The screw press is normally delivered completely assembled, ready for installation. Drive units, control panel, instrumentation, piping, and other auxiliary systems are normally installed on-site.

Before installation, check that all items are available according to the packing list, including possible foundation bolts and special tools. Also, check that the condition of the delivered items is satisfactory.

2.2 General Arrangement

The general arrangement drawing shows the space requirements, heights of walkways, position of local control panel, etc.

A gangway should be provided on all four sides, at a height slightly below the top of the screw press frame.

In cases where several screw presses are to be installed in parallel, oblique angle installation may be advantageous for piping layout and disassembly.

2.3 Lifting Requirements

A crane beam (H beam) with lifting tackle should be installed above the press, if not already available.

The most important data for selection of this equipment for lifting the Kværner SP 100 series screw press are:

- Heaviest single component that requires a single point lifting tackle (outlet house, upper section):
  SP100L: 1000 kg SP100SL: 1000 kg
- Heaviest single component that requires two lifting points (press screw):
  SP100L: 4900 kg SP100SL: 6000 kg
- Heaviest assembly that requires two lifting points (press screw with inlet bearing assembly, outlet bearing assembly, two/three cylindrical screens, cone, and shredders):
  SP100L: 7000 kg SP100SL: 7800 kg
- Total weight, completely assembled screw press:
  SP100L: 14700 kg SP100SL: 16600 kg

2.4 Levelling

It is important that there is no contact between the screw and the screens. This requires careful levelling of the screw press in both directions on the foundation.

The levelling procedure is based on control points located on top of the frame, directly above each foot. The procedure is carried out as follows:

- Place the screw press on its position on the foundation.
- Determine which of the control points is the highest. This is used as the base point.
- Carry out the height adjustment so that the deviation from the base point to the other control points is max 0.2 mm, preferably between 0.1 and 0.15 mm.

After installation, the screw shaft should be rotated manually at least one full revolution to make sure that it is not touching the screen surface.

2.5 Piping

A diagram showing the installation of piping for seal water at the inlet end of the screw press is given in the following figure. A flow indicator/meter should be installed for the seal water of the inlet bearing system.

The figure also shows a flushing valve to allow for flushing the screw press at times of start-up and shut-down as well as for pressure equalization and inlet sampling. A quick-connection for water hose is normally used (fixed piping not required).

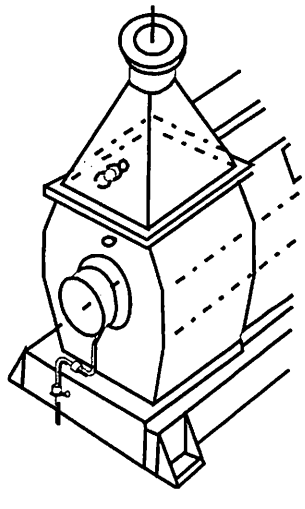

Figure 6 - Piping Arrangment

On the outlet house there are two flushing pipes for cleaning of the channels collecting white water from the screw stem screen. There is also one flushing pipe installed in the base frame under the outlet house. All these pipes can be connected to a flushing system in order to flush the channels at regular intervals.

2.6 Instrumentation

While it often is possible to operate the Kværner screw press without instrumentation, the following is generally recommended.

Inlet Pressure Gauge
In many applications, a periodic check of the inlet pressure may be sufficient. Then, a simple system may be used consisting of a standard water gage that may be connected to a shutoff/cleanout valve at the inlet house.

However, for the larger presses, a pressure transmitter with indicator display is recommended. The transmitter is mounted on the inlet house of the screw press as shown and calibrated to read zero at the axis of the screw press. Note that the operating range for the pressure transmitter is very low (0 to 1 bar) and that self-cleaning velocities are not present in the inlet house.

Speed Indicator
If a variable speed drive (hydraulic or frequency) is used, a transmitter for speed should also be installed.

Torque Indicator
For many applications, optimal performance with stable outlet consistency can best be achieved by the use of a system for automatic speed adjustment based on operation with constant torque control. With a hydraulic drive, the hydraulic working pressure is proportional to torque. Note that the hydraulic pressure transmitter should be mounted directly on the hydraulic motor.

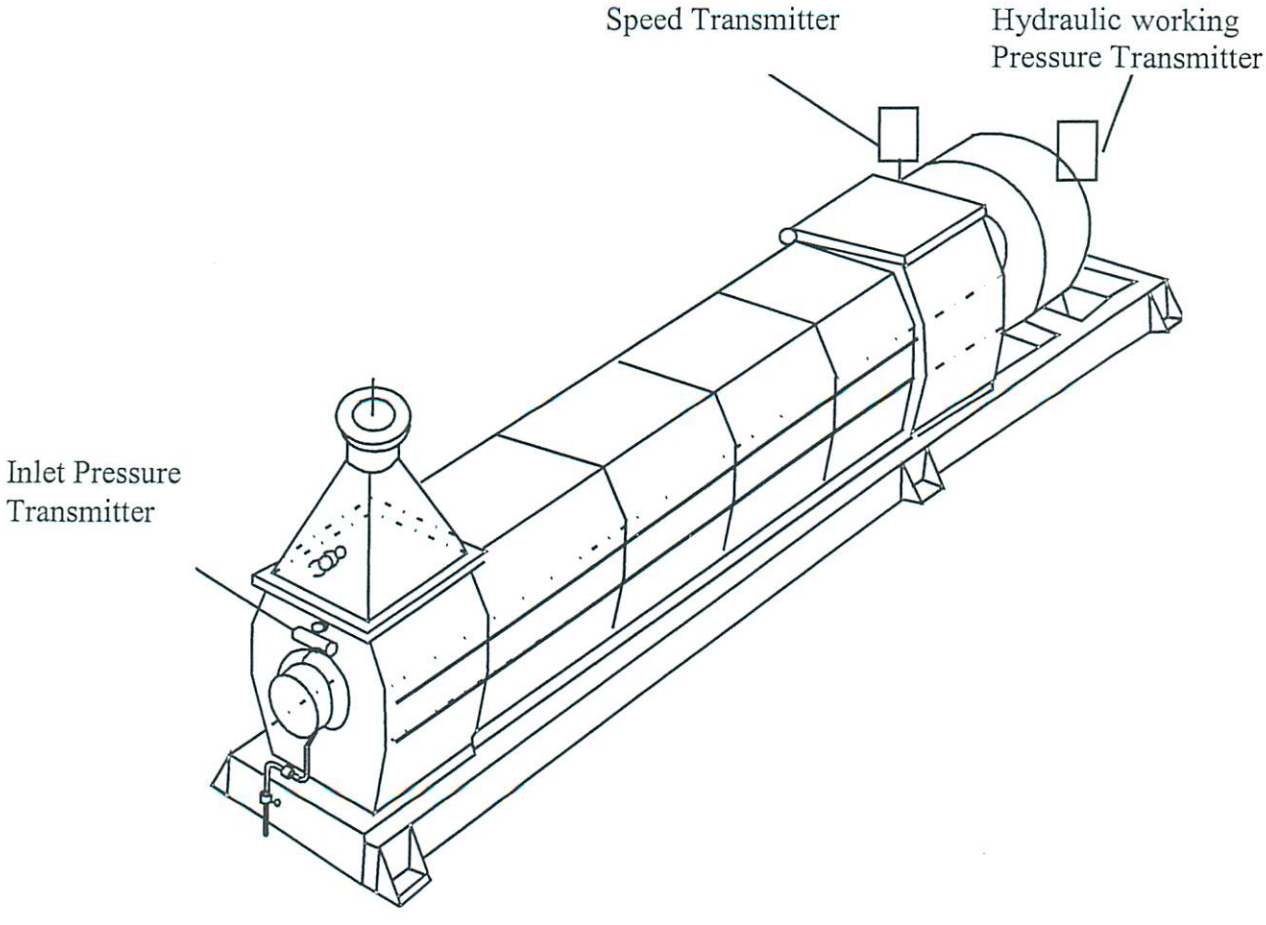

Figure 7 - Instrumentation (Hydraulic Drive)

2.7 Lubrication

The recommended oil and grease types and the amounts that should be filled before start-up are the following:

- Inlet bearing: Grease amount: 2,0 kg. Type: Lithium grease EP 3 (i.e. Mobilux EP3).
- Outlet bearing: Oil amount: 4,5 litre. Type: For operating temperatures up to 50 degrees C: ISO VG 680 EP (i.e. Mobilgear 636). For higher operating temperatures, oil with correct viscosity should be used.

Note: The screw press normally is supplied with grease and with some oil for bearing protection.

Change oil after the first 400 hours of operation. Check for seal leakage. The lubrication and inspection points are shown in the following figure.

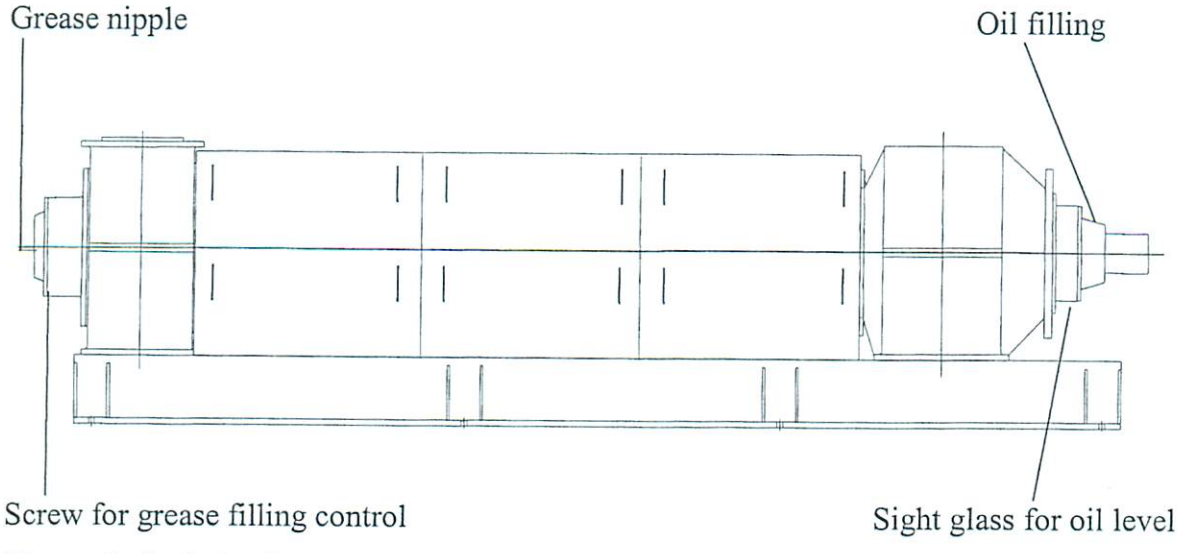

Figure 8 - Lubrication Points

2.8 Sampling Points

In most cases no routine program of sampling and analysis is required. However, it is generally recommended to arrange for sampling points as shown in the following figure. Do not use the inspection lids of the outlet house for routine sampling.

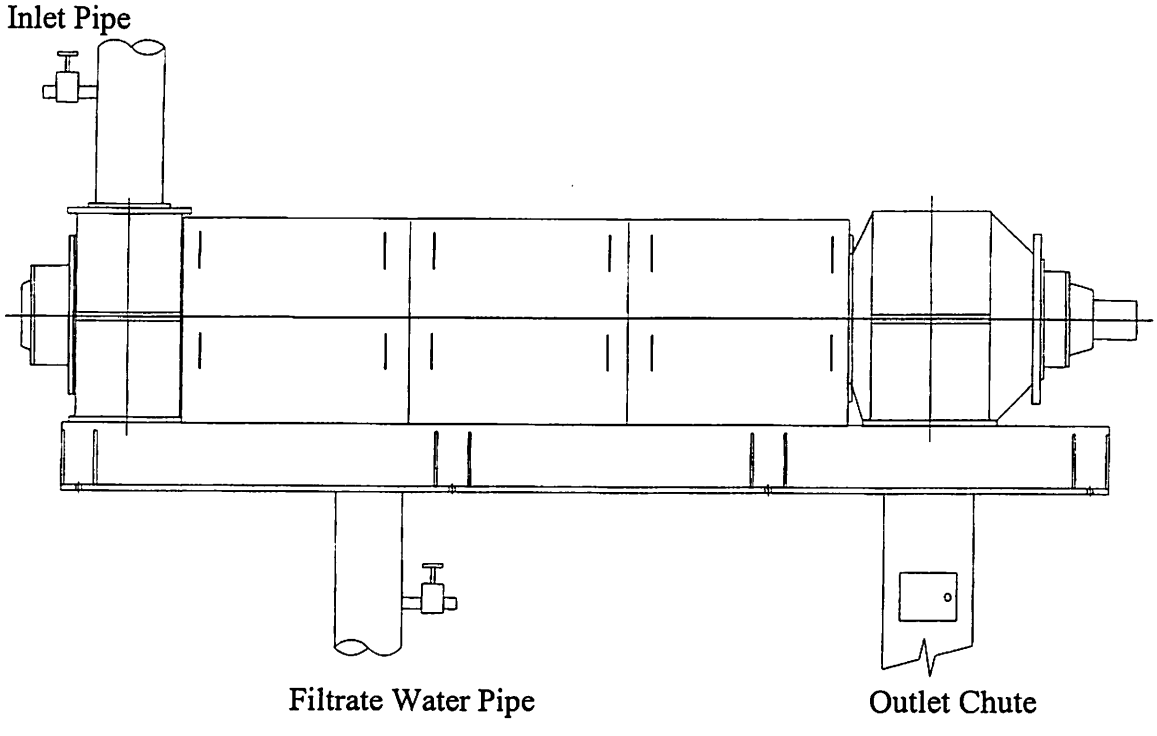

Figure 9 - Sampling Points

2.9 Start-Up Procedures

In general, it is recommended that first-time start-up should be supervised by an accredited engineer.

The following check list applies in general:

1. Flush all pipe lines in the feed system free from scrap material (disconnect the press before flushing).

2. Tighten all foundation bolts and connections properly.

3. Lubricate the bearings of the screw press with oil and grease in amounts matching those specified. Check that the oil level actually is visible through the sight glass. (Lubrication of auxiliary equipment such as gear drive, couplings, electrical motor, etc. should also be checked.)

4. Turn on the seal water. Check that it actually is flowing.

5. Connect and test the air supply for the counterpressure system and check for leaks. Reduce the pressure to zero and position the flaps in the open position. The counterpressure cone may be set in the rear position at start-up and carefully repositioned in small steps later.

6. If possible, turn the press by hand. Check for touching between screw flights and screens.