



## PROCESS DESCRIPTION



### 6. CLEANING

#### 6.1 Application

The system is equipped with a three stage forward cleaner system for heavyweight (specific gravity of contaminants ( $SG_c$ ) > specific gravity of water ( $SG_w$ )) reject removal and a two stage reverse cleaner system for lightweight ( $SG_c < SG_w$ ) reject removal. Basic separation principle is by centrifugal forces.

#### 6.2 Operation

Stock is fed flow controlled from the preflotation system to the primary forward cleaner pump suction. This fan pump is installed at the Clear Water No. 1 Chest and dilutes the stock down to a suitable value for the cleaners (< 1%). The suspension is pumped through the first stage while the cleaning efficiency is controlled with a hand operated accept valve. Primary forward cleaner pump is interlocked with the primary reverse cleaner pump. The accepts are fed into the suction of the primary reverse cleaner pump, a fan pump to keep the forward and reverse cleaner hydraulically independent. Primary reverse cleaner pump is interlocked with Vario Split No. 1 main drive and the Vario speed must be greater than 1150 FPM.

Rejects flow to the secondary forward cleaner pump suction and are diluted further for secondary cleaning. Accepts of this stage flow back to the primary forward cleaner pump suction. The rejects flow to the tertiary forward cleaner pump suction. Tertiary accepts flow back to the secondary forward cleaner pump suction. The rejects are washed virtually fiber free in a special chamber of the cleaner. Elutrition water is controlled with an automatic on-off valve. Rejects flow from this stage to the rake classifier, a sedimentation separator for the heavies and the water. *See Chapter 13.*



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Accepts from the primary forward cleaner are diluted further in the primary reverse cleaner fan pump and fed to the primary reverse cleaner stage. The inlet of this stage is protected against over pressuring the cleaner canister with a pressure controlled pneumatic activated on-off valve. The accepts of the primary reverse cleaner stage are fed to the Vario Split No. 1 headbox. Control of the cleaners is with hand valves on accept and reject lines. Rejects of the first stage flow to the secondary reverse cleaner pump suction for further dilution with clear water and is pumped to the secondary reverse cleaner stage. Accepts flow back to the primary reverse cleaner pump and rejects are discharged to the drain system.

All cleaner stages have a pneumatically operated valve in the feed line with a slow opening to protect cleaners against damage due to water hammer, and a shut off valve in the suction pipe between Clear Water No. 1 chest and the respective fan pump to prevent contamination and backflow of the water chest at shutdown or pump failure. Timer operated automatic air bleed valves are opened for a preset time at system start to bleed the air from the cleaners. These valves are in the lines coming off the accept pipes (forward cleaners) or the inlet canister (reverse cleaners).

### 6.3 Starting Sequence of the Group

The group have to be started in sequence with the fine screening preflotation and the first washer (Vario Split No. 1). *See instructions at the end of Chapter 7.*

