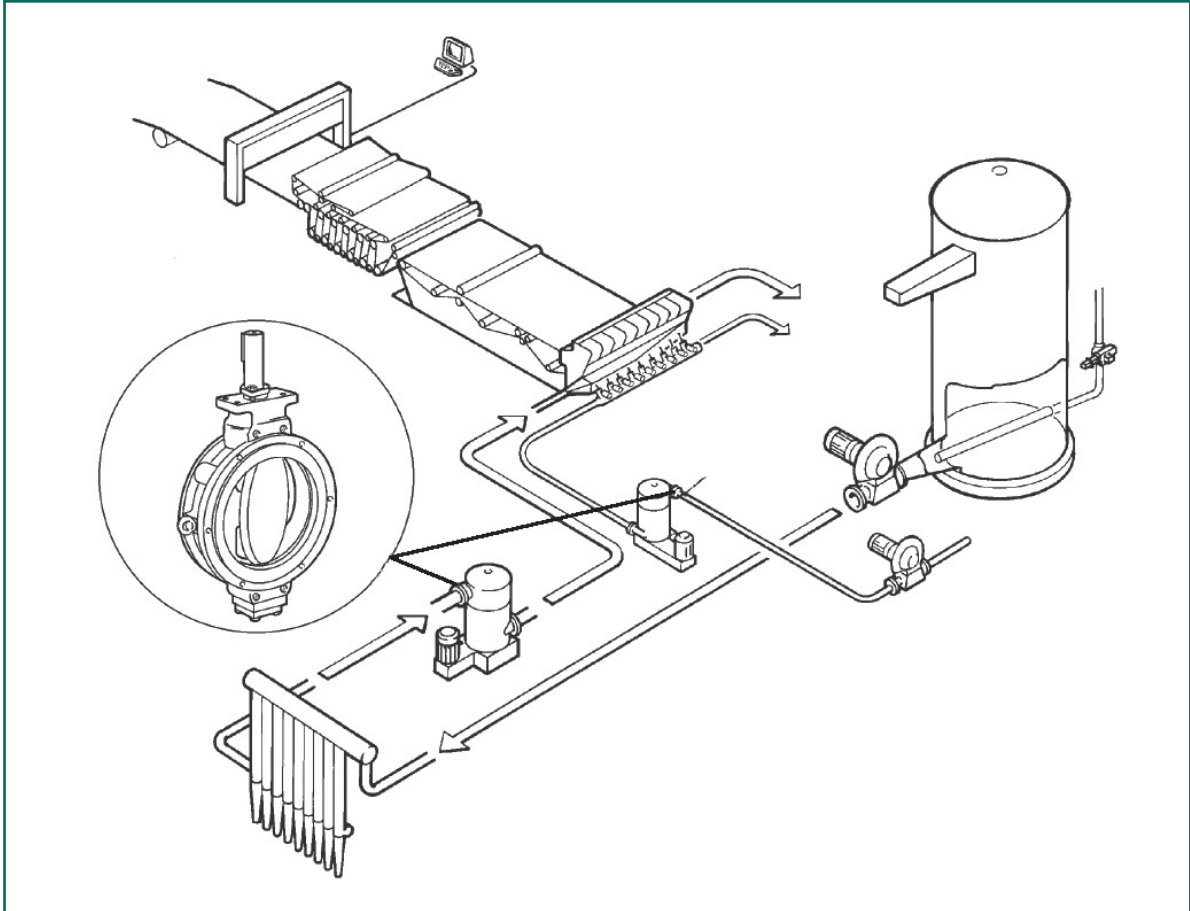


BUTTERFLY VALVE FOR MACHINE SCREENS



Overview of the process

The paper machine “approach system” or short circulation includes a final screening operation of the pulp stock.

The process

The purpose of this screening is to remove impurities and fiber bundles to ensure a uniform pulp stock flow to the headbox. The consistency of the stock is approx. 1 %.

The capacity range of the screen relates to the paper machine size. Machine screens for flows over 3000 l/s (793 g/s) can have DN 800 (32”) flange connections.

Results

There are three important design requirements for the machinery and components in the machine approach systems:

- absolutely clean surfaces
- no gaps in the piping joints
- low pulsation generation

As the function and operation of the screen requires an adjustment of the pressure drop (differential), one or two control valves are needed at the screen.

Normally the valve for the feed flow is equipped with an actuator.

NELDISC® used for this application

To meet the design requirement of the machine screen manufacturers, Metso makes a special version of the metal seated Neldisc high performance butterfly valve.

On the screen side the outer diameter ($\varnothing A$) has a dedicated dimension for the shoulder to get the valve aligned with the screen. The inside diameter dimension ($\varnothing C$) is given by the screen supplier as well.

Figure 1 (dim $\varnothing A$) shows the custom machining of the valve body to fit to the flange of the screen and connected pipe without a gap.

The dimensions on the pipe side ($\varnothing B$) follow the piping standard applied.

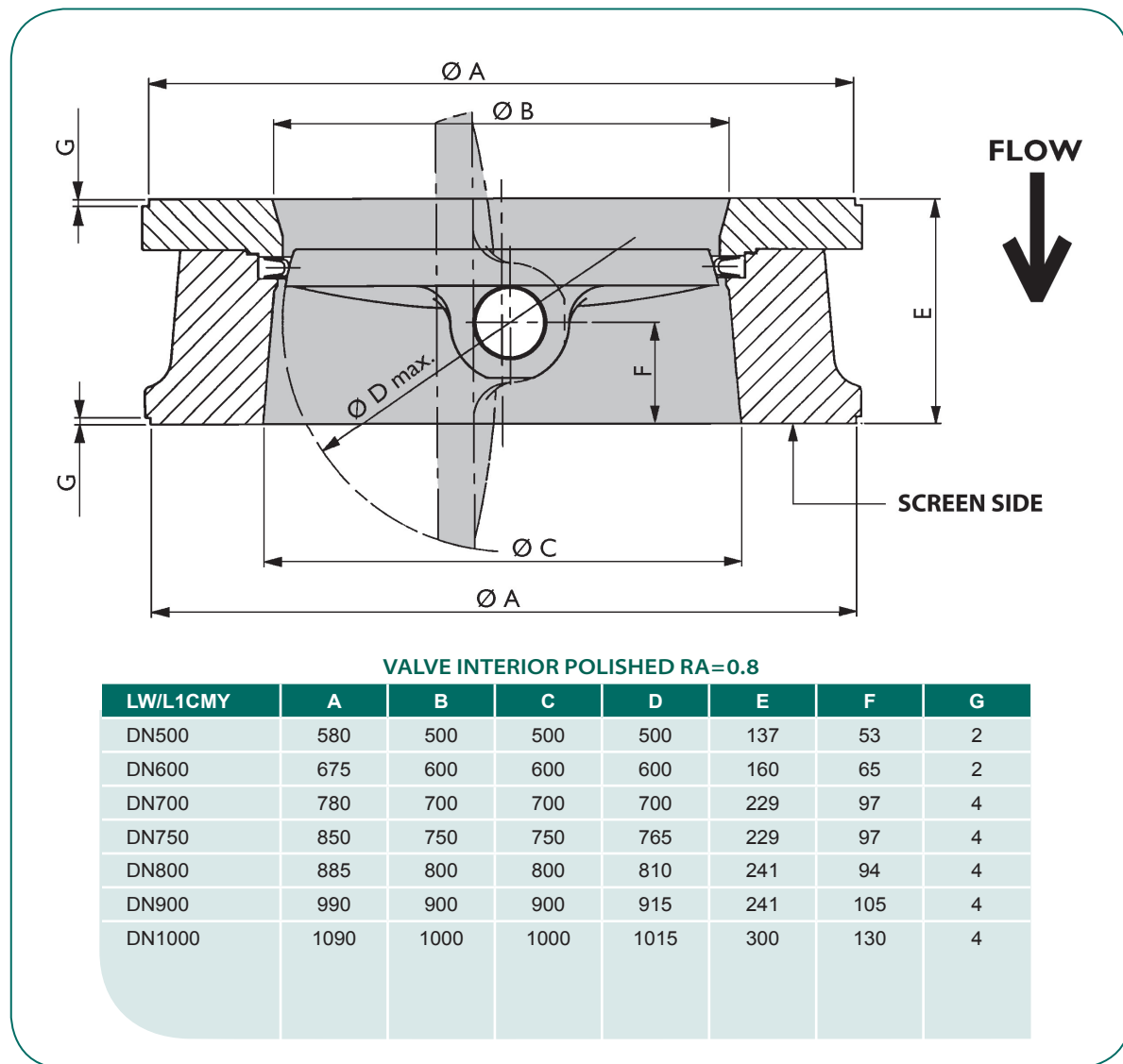
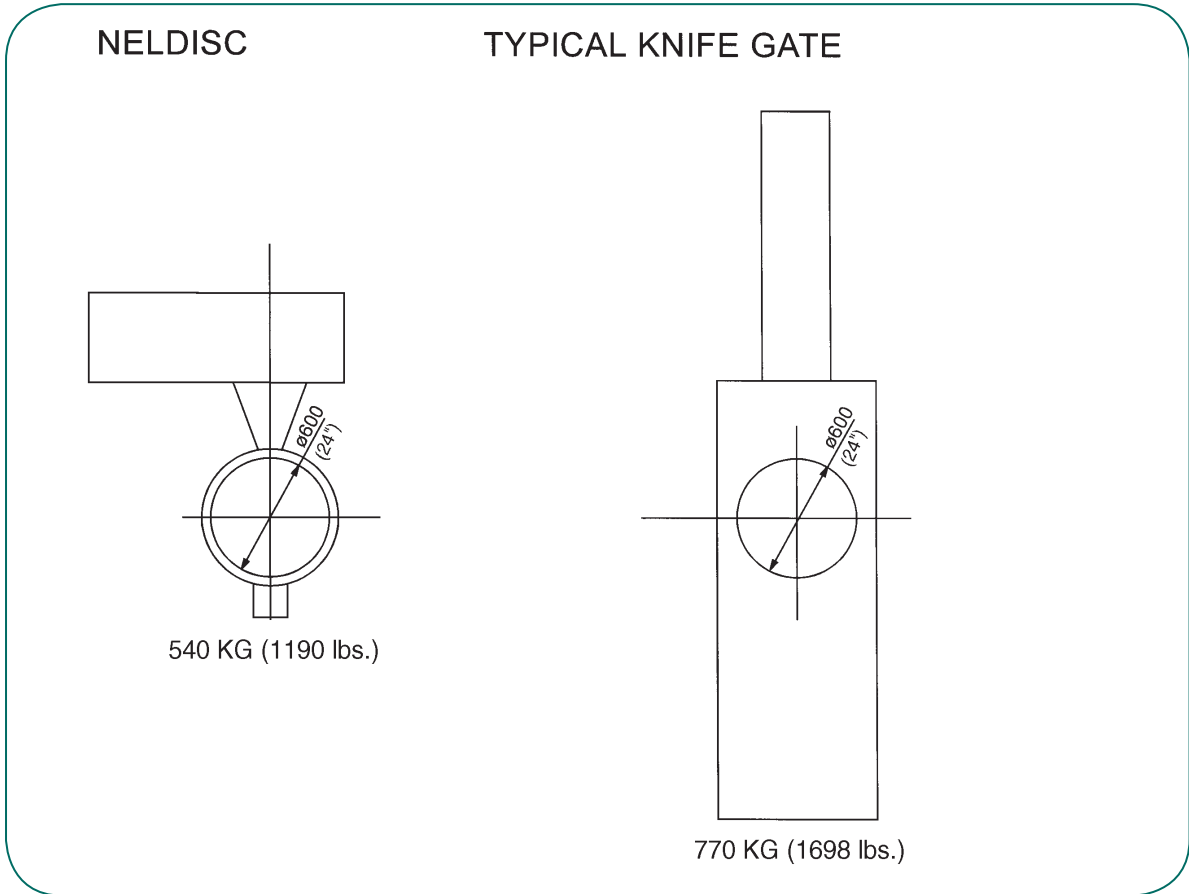


Figure 1. Custom machining of the Neldisc valve body for the paper machine screen.

The gray shaded area of figure 1 has been polished to a finish of Ra = 0.8. This finish will allow the internals of the valve to pass a cotton ball test and will also help to prevent the formation of fiber bundles on the valve internals.

Metso uses its own pneumatic actuators to operate the valve. Butterfly valves do not require very much space if that is a limiting factor in the installation of the screen.



References

These specially machined Neldisc valves are used successfully by the leading paper machine screen suppliers in modern, fast paper machines for different paper grades. A few installations are listed below:

Metso manufactures its own piston double acting and spring return actuators as well as pneumatic and electro-pneumatic positioners.

Customer	Paper grade	Valve used
Veitsiluoto Oy, PM6, Finland	LWC	L1CMY 700 (28")
United Paper Mills, Jämsänkoski, Finland	SC	L1CMY 800 (32")
Schwedt, Germany	Newsprint	L1CMY 700 (28")
Metsä-Serla, Kirkniemi, Finland	LWC	L1CMY 800 (32")
Saugbrugsforening, Norway	SC	L1CMY 700 (28")
Sachsen Papier, Germany	Newsprint	L1CMY 800 (32")

The information provided in this bulletin is advisory in nature, and is intended as a guideline only.
For specific circumstances and more detailed information, please consult with your local automation expert at Metso.

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