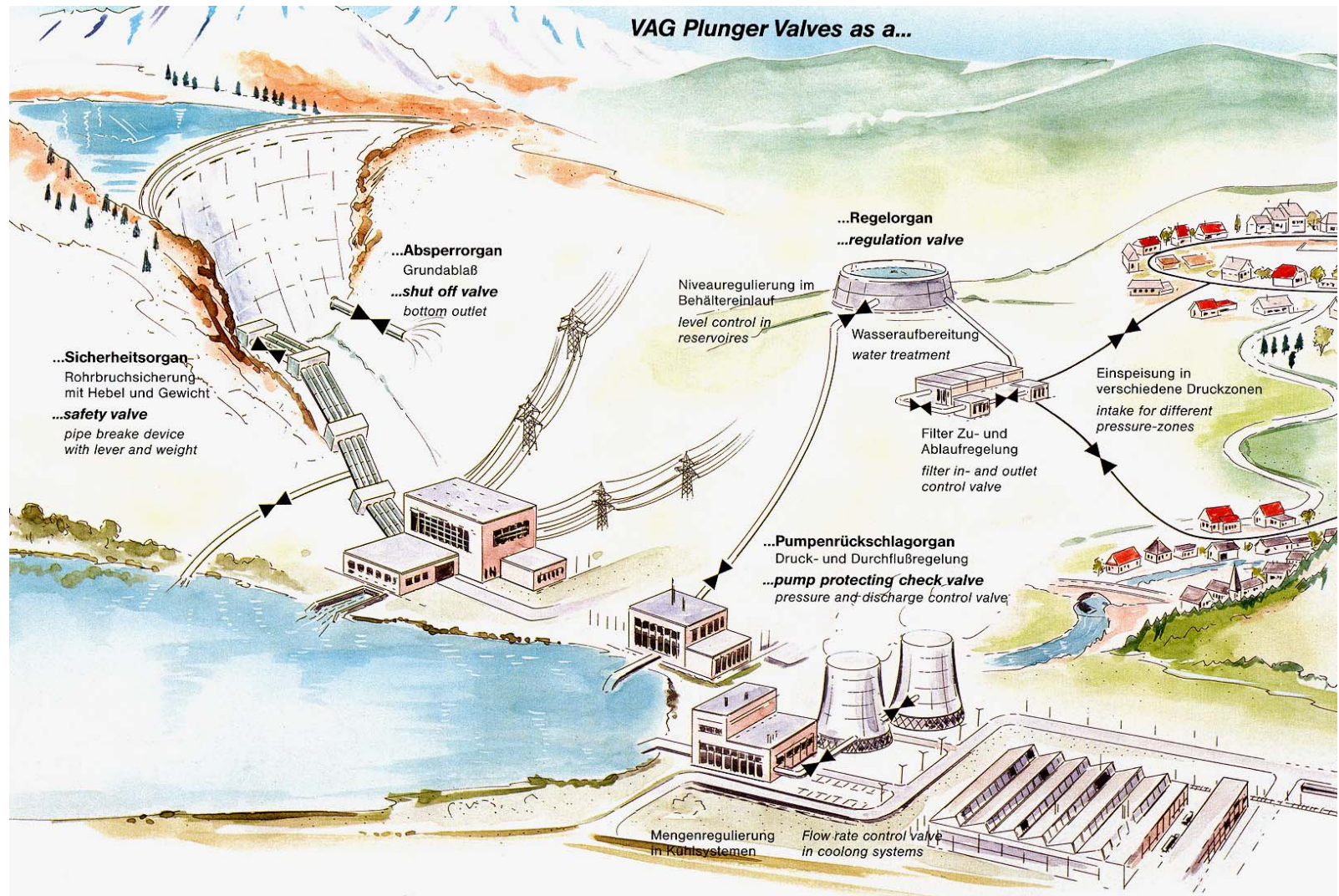


The background of the slide is a dark, high-contrast image of industrial machinery, likely a large valve or part of a ship's engine. It features several large, circular components with bolted flanges and various pipes and fittings. The lighting is dramatic, highlighting the metallic textures and the complex geometry of the machinery.

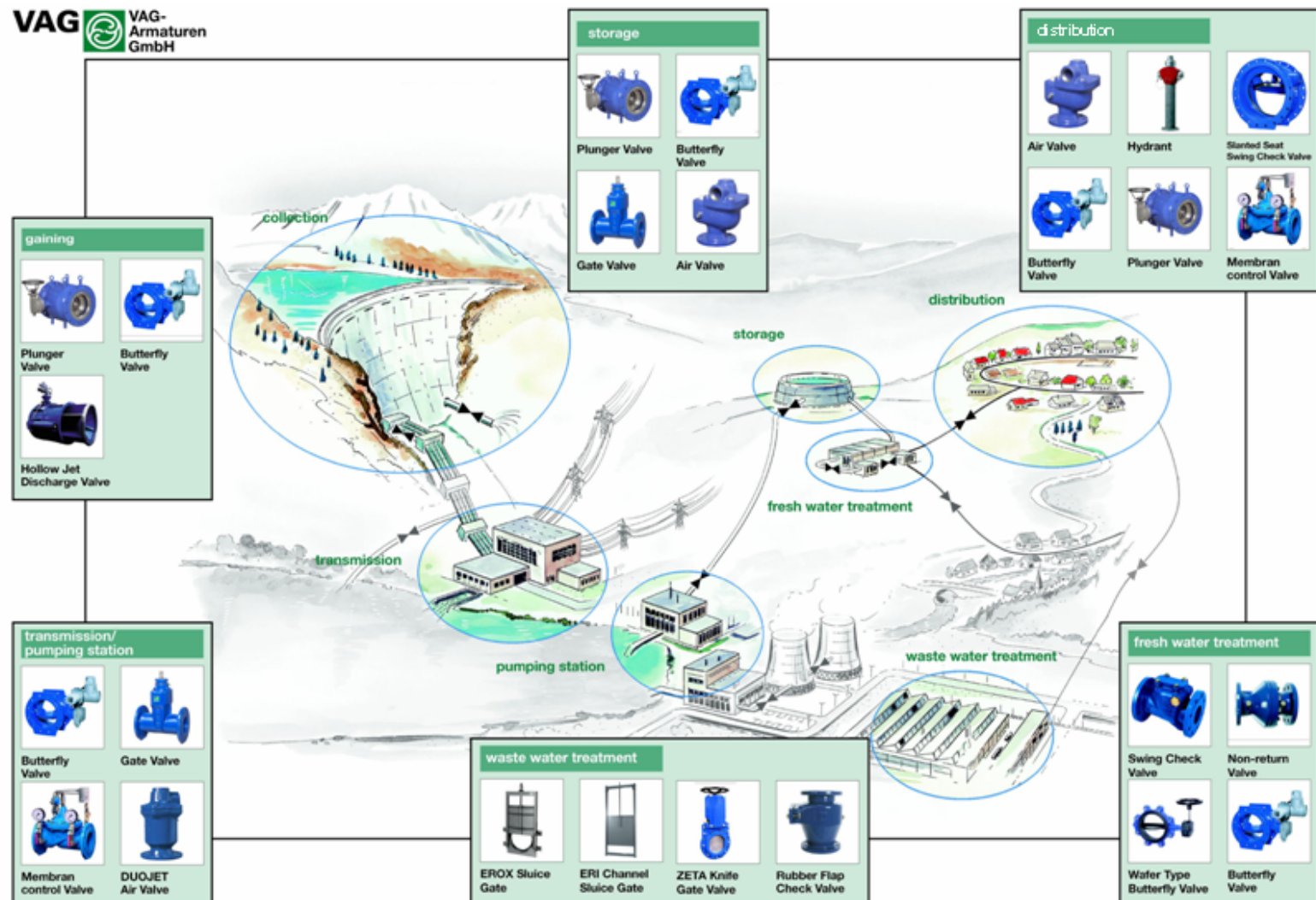
**VAG Valves
for a lifetime of 50 years**

**products and it's main
advantages**

Valves for the Water Supply System



Valves for the Water Supply System



sales programme

Gate valves



**Penstocks/
Sluice Gates**



Hydrant



House connections



Butterfly valves



**Control valves/
Air valves**



Non return valves



Accessories

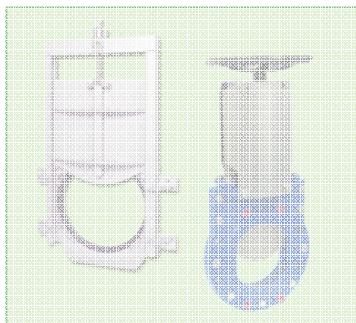


sales programme

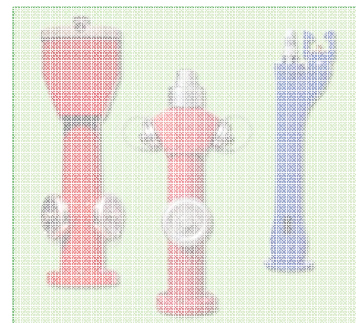
Gate valves



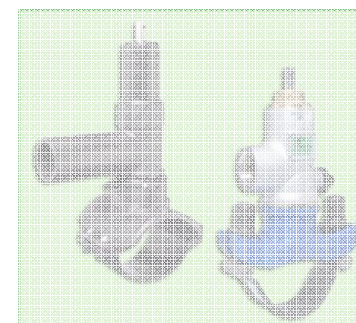
**Penstocks/
Sluice Gates**



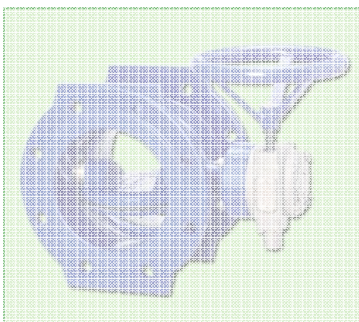
Hydrant



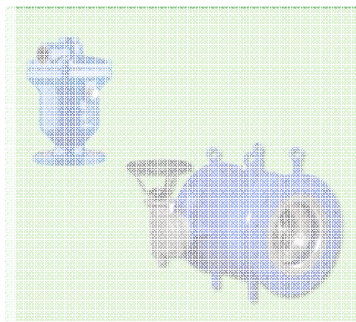
House connections



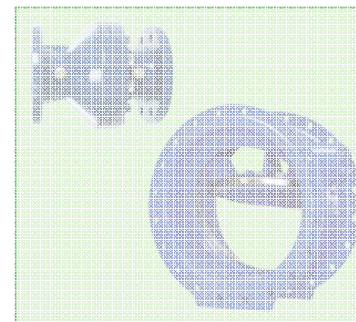
Butterfly valves



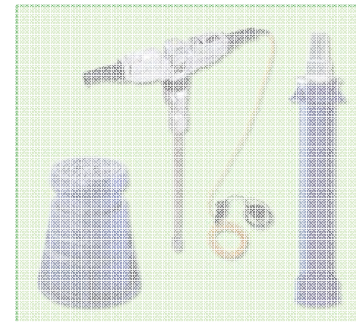
**Control valves/
Air valves**



Non return valves



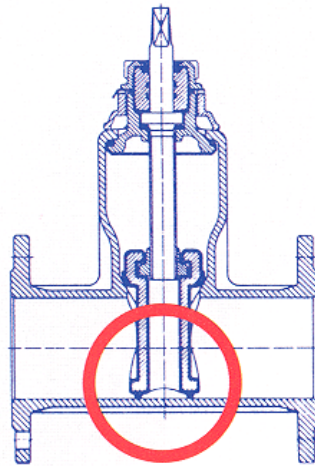
Accessories



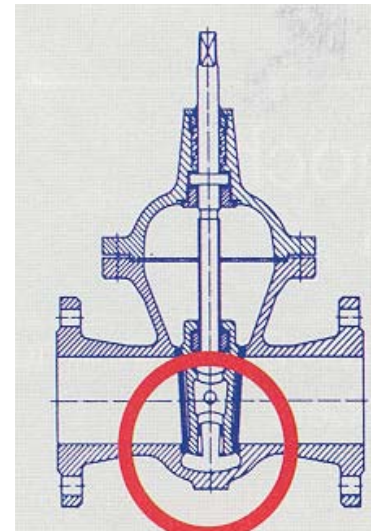
sales programme Gate Valves



•Resilient Seated



•Metal Seated



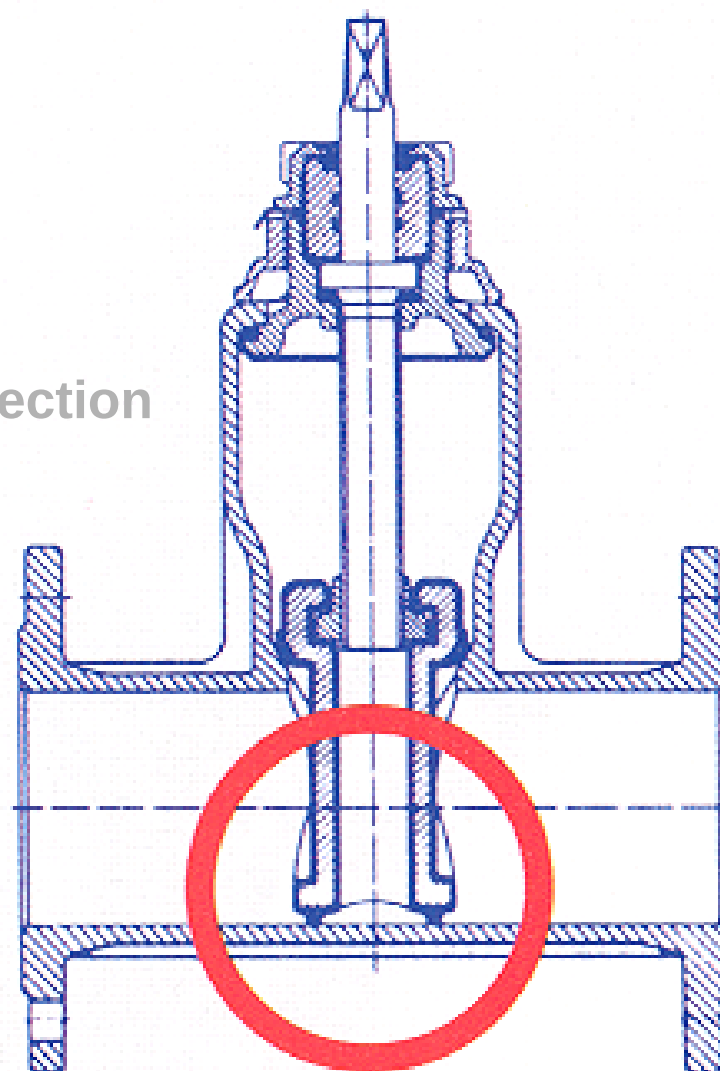
sales programme Gate Valves

•Resilient Seated

•Advantages

•Flat Bottom

•Not interrupted surface protection



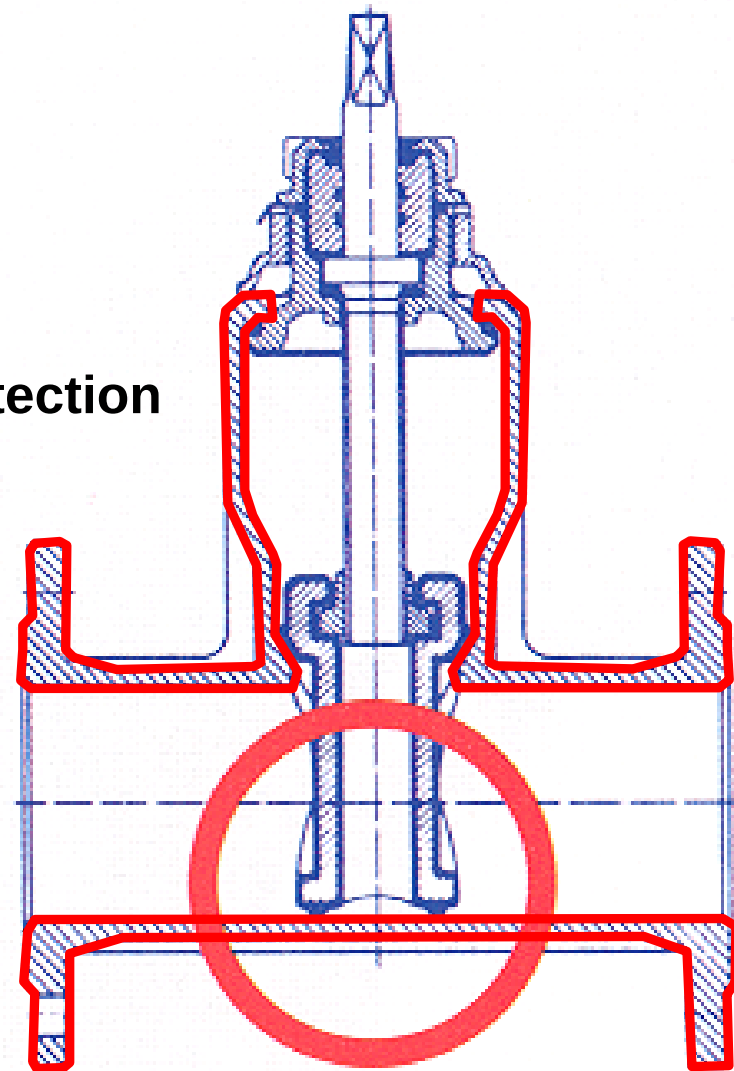
sales programme Gate Valves

•Resilient Seated

•Advantages

•Flat Bottom

•Not interrupted surface protection



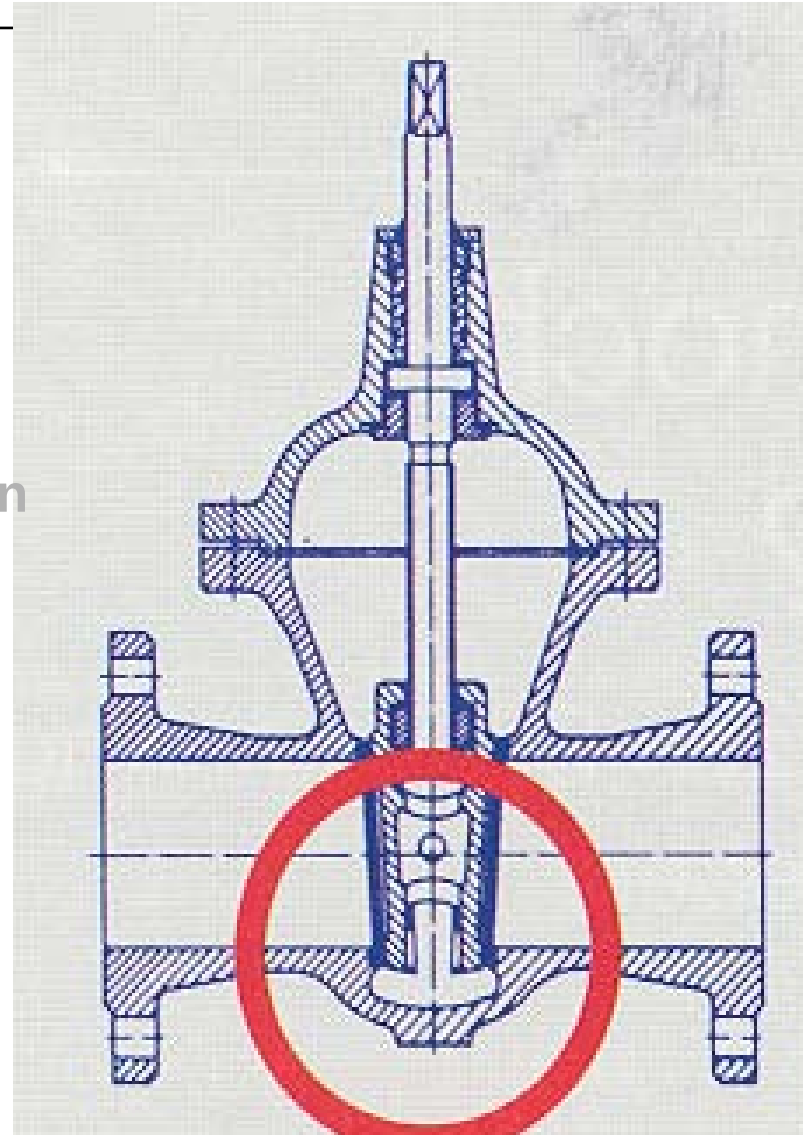
sales programme Gate Valves

- **Metal Seated**

- disadvantages

- flat bottom

- interrupted surface protection

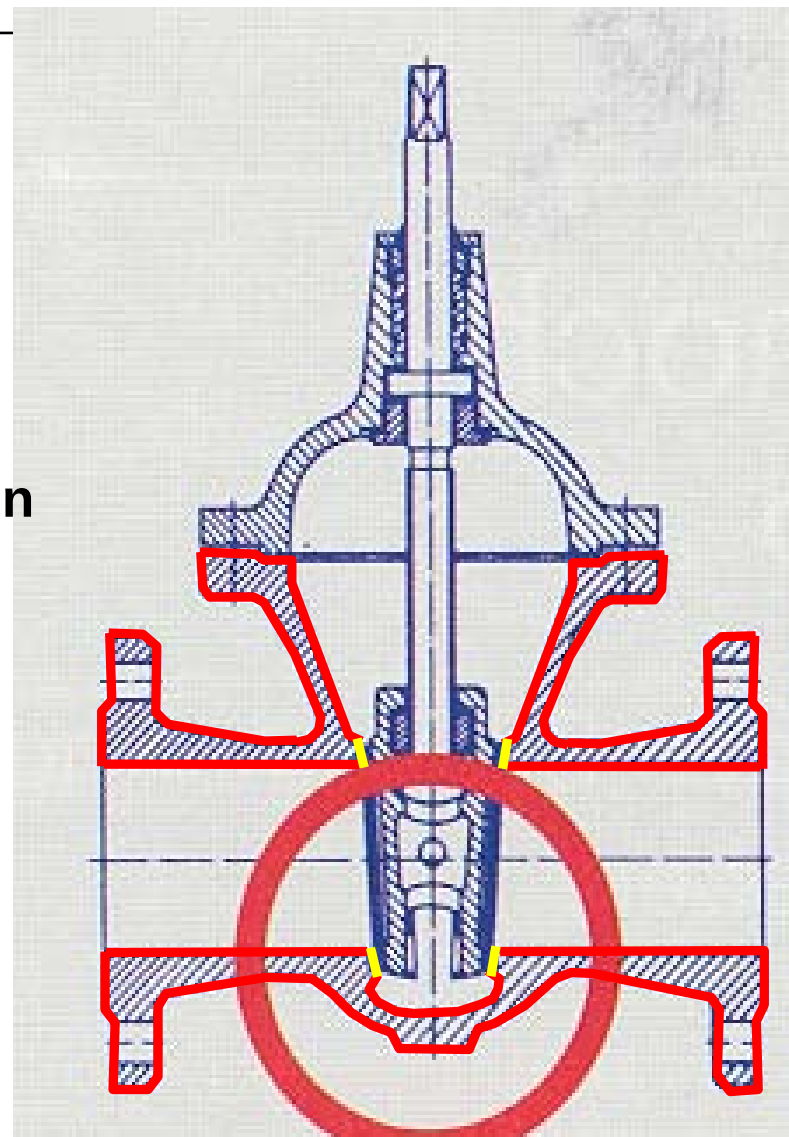


sales programme Gate Valves

•Metal Seated

•Disadvantages

- No flat bottom
- interrupted surface protection
- at the seat faces



sales programme Gate Valves

•resilient seated

- for water at all*
- distribution lines*
- buried under earth*
- above ground*
- dn 40 – 600 pn 10 / 16*
- dn 40 – 300 pn 25*

•metal seated

- in water only when the:*
 - nominal diameter DN > 600*
 - temperature $t \geq 50^{\circ}\text{C}$*
 - nominal pressure PN > 25 bar*

Gate Valves

RESILIENT - SEATED
GATE VALVES

EKO plus



BETA

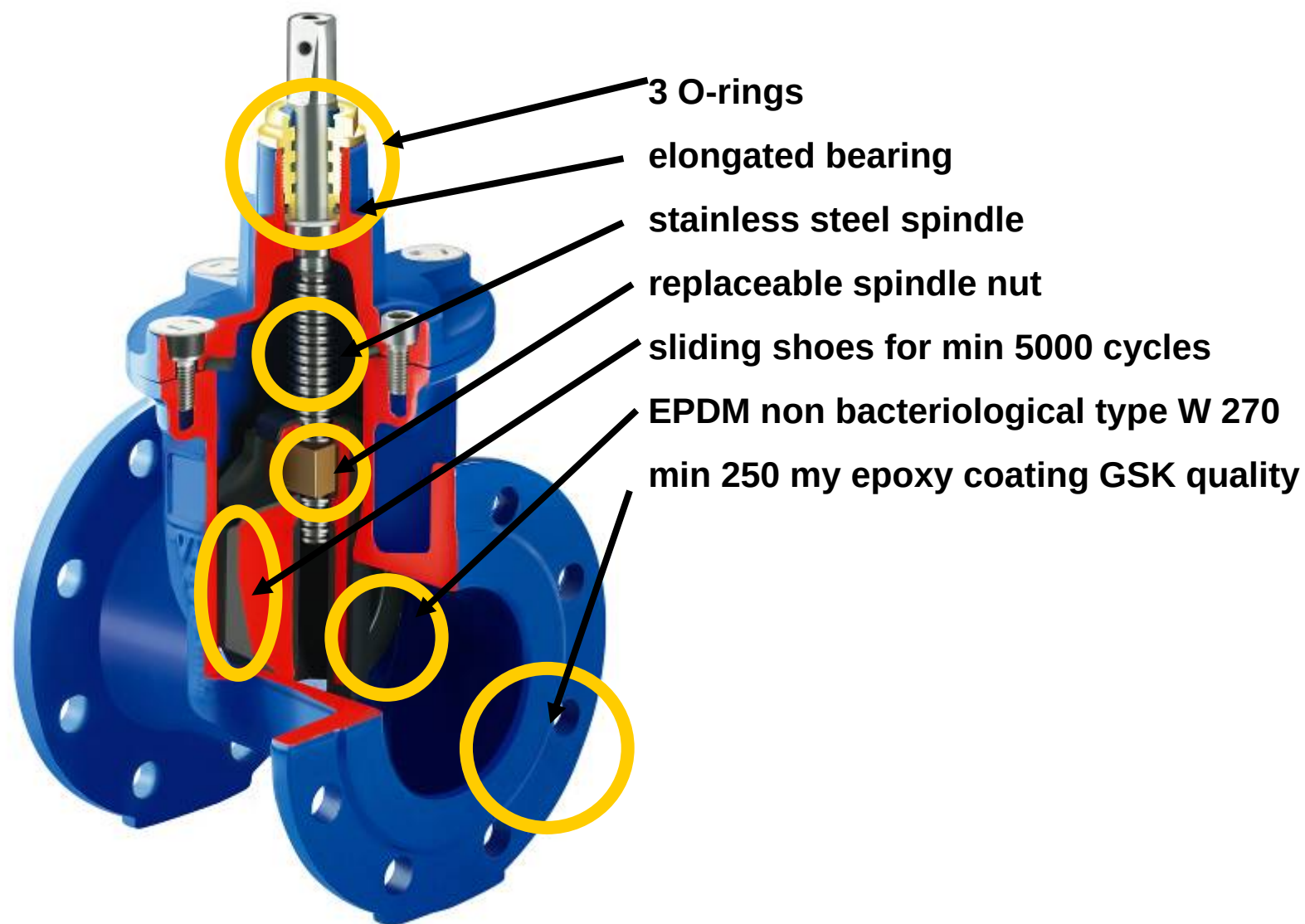


METAL - SEATED
GATE VALVES

Not in water network !!!!

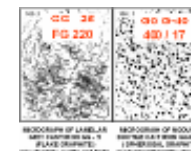


EKO® plus Material materials



EKO® plus optimising of the product

- ductile iron GGG-40 standard
- design optimised in terms of weight
- elongated stem bearing
- replaceable spindle nut
- sliding shoes
- 250 my Epoxy Coating GSK Quality



GSK
Quality Assurance
RAL-GZ 662

EKO ® plus

hygienic requirements W270

DVGW - report / July 2001

Coliforme-findings (bacteria) in drinking water due to rubber lined Valves

In some cities in the north of Germany water works found long term coli bacteria in the drinking water system.

They had been growing on the EPDM rubber lined wedges of Gate Valves.

These hygienic findings were appearing in newly erected water networks and within new Gate Valves.

On the rubber lining, significant bio films of bacteria and slime were growing upon which was also the coli bacterium

„Citrobacter freundii“

Evidence of the above was proven..



EKO® plus

hygienic requirements W270

**This was resulting in the new hygienic
requirement W 270**

**and furthermore in a so called
W270 approved EPDM rubber type**



Vermehrung von Mikroorganismen auf
Werkstoffen für den Trinkwasserbereich
– Prüfung und Bewertung

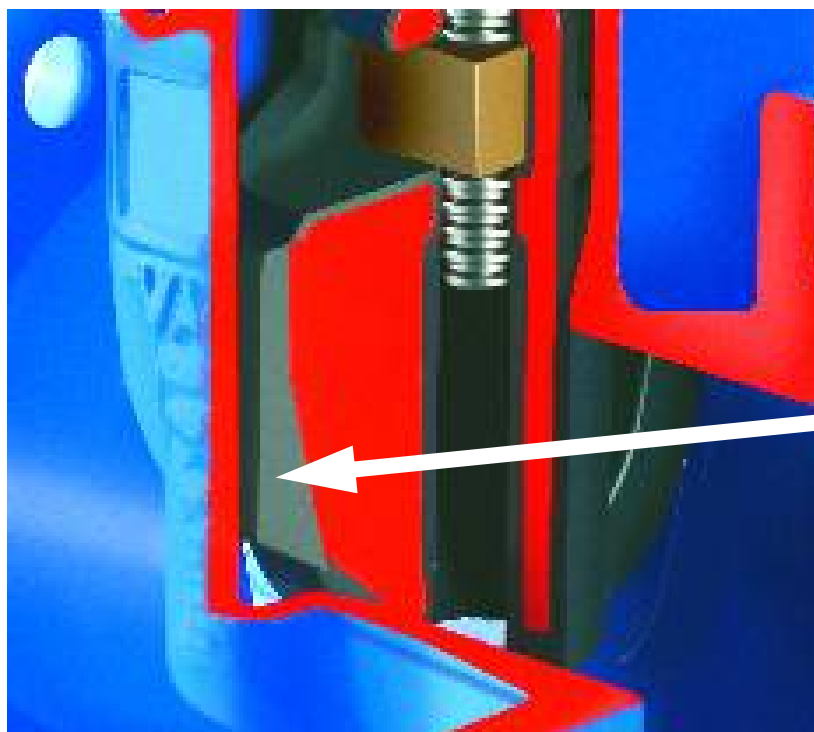
The growth of microorganisms on materials intended
for use in drinking water systems – examination and
assessment

Multiplication des microorganismes sur les matériaux
utilisés pour les systèmes d'alimentation en eau po-
table – Essais et évaluations

EKO® plus
optimising the product

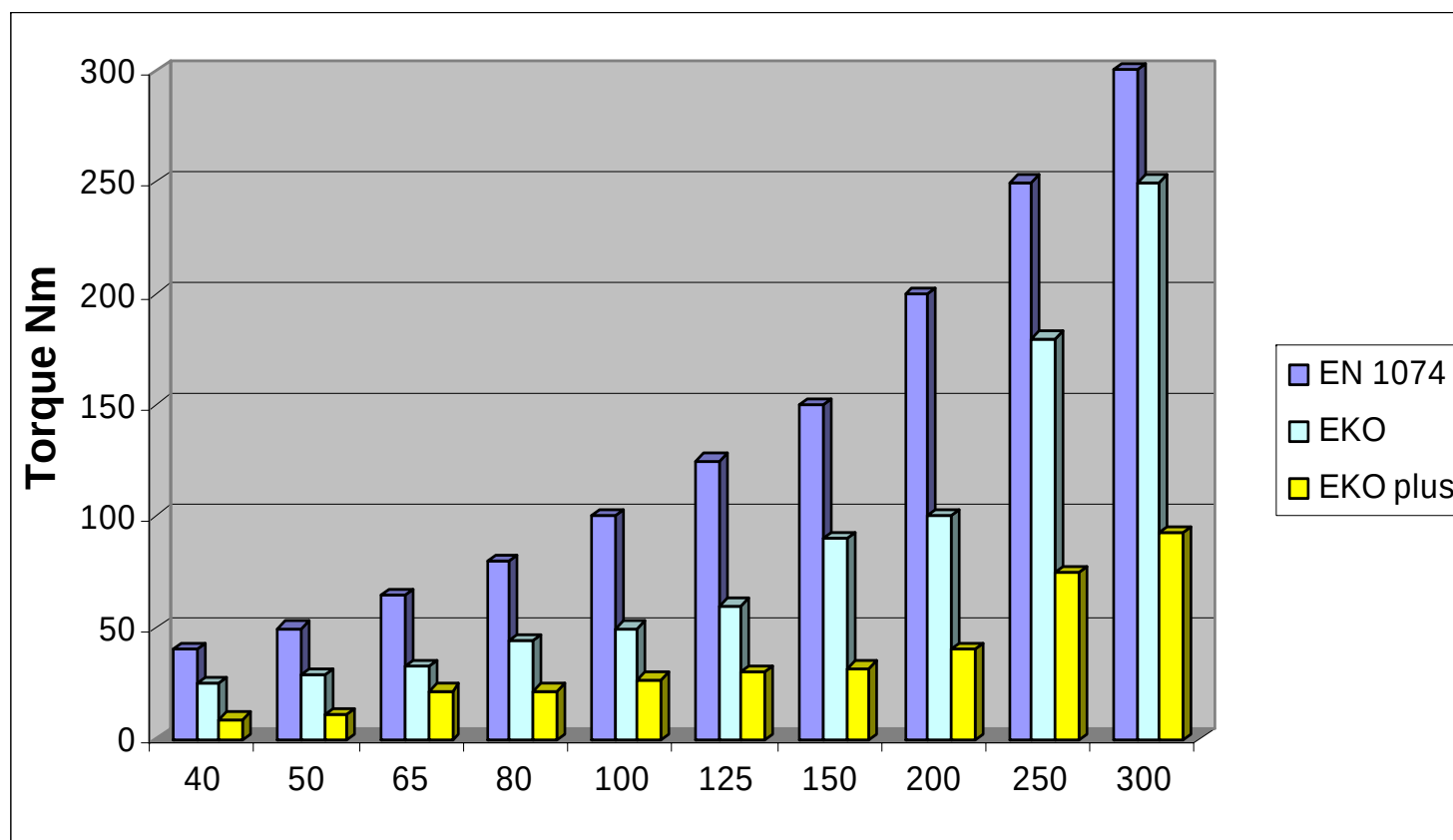
•*sliding guides*

•are reducing the operation torque's



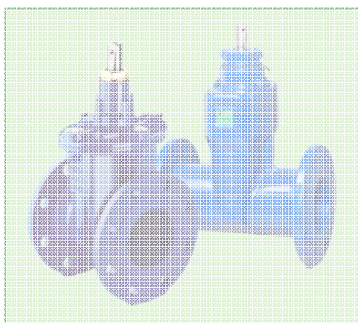
EKO® plus optimising the product

•sliding guides



sales programme

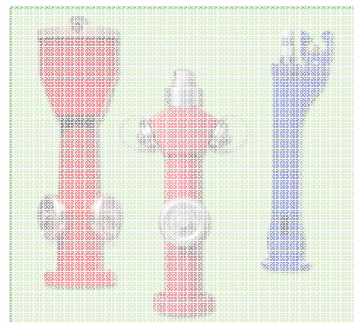
Gate valves



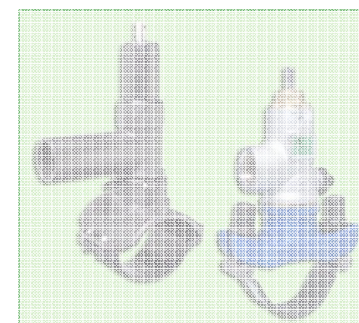
**Penstocks/
Sluice Gates**



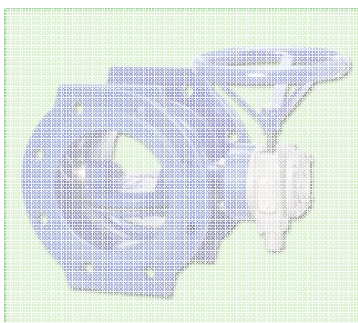
Hydrant



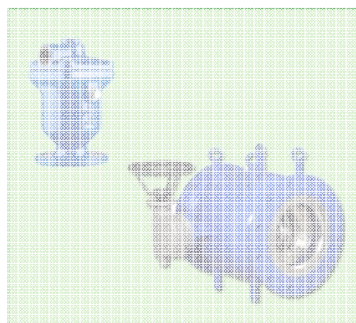
House connections



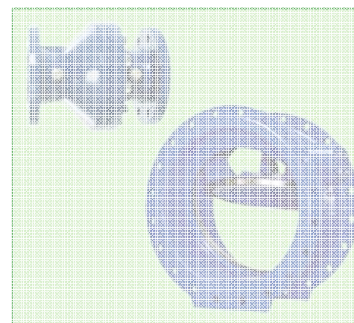
Butterfly valves



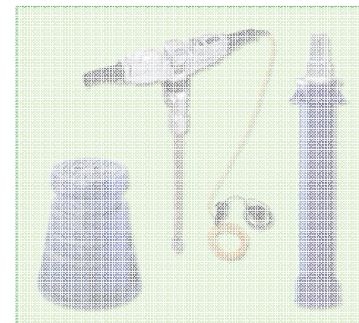
Control valves/
Air valves



Non return valves



Accessories



sales programme penstocks

knife gate valves

DUO



MONO



ZETA



penstocks

EROX



ERI



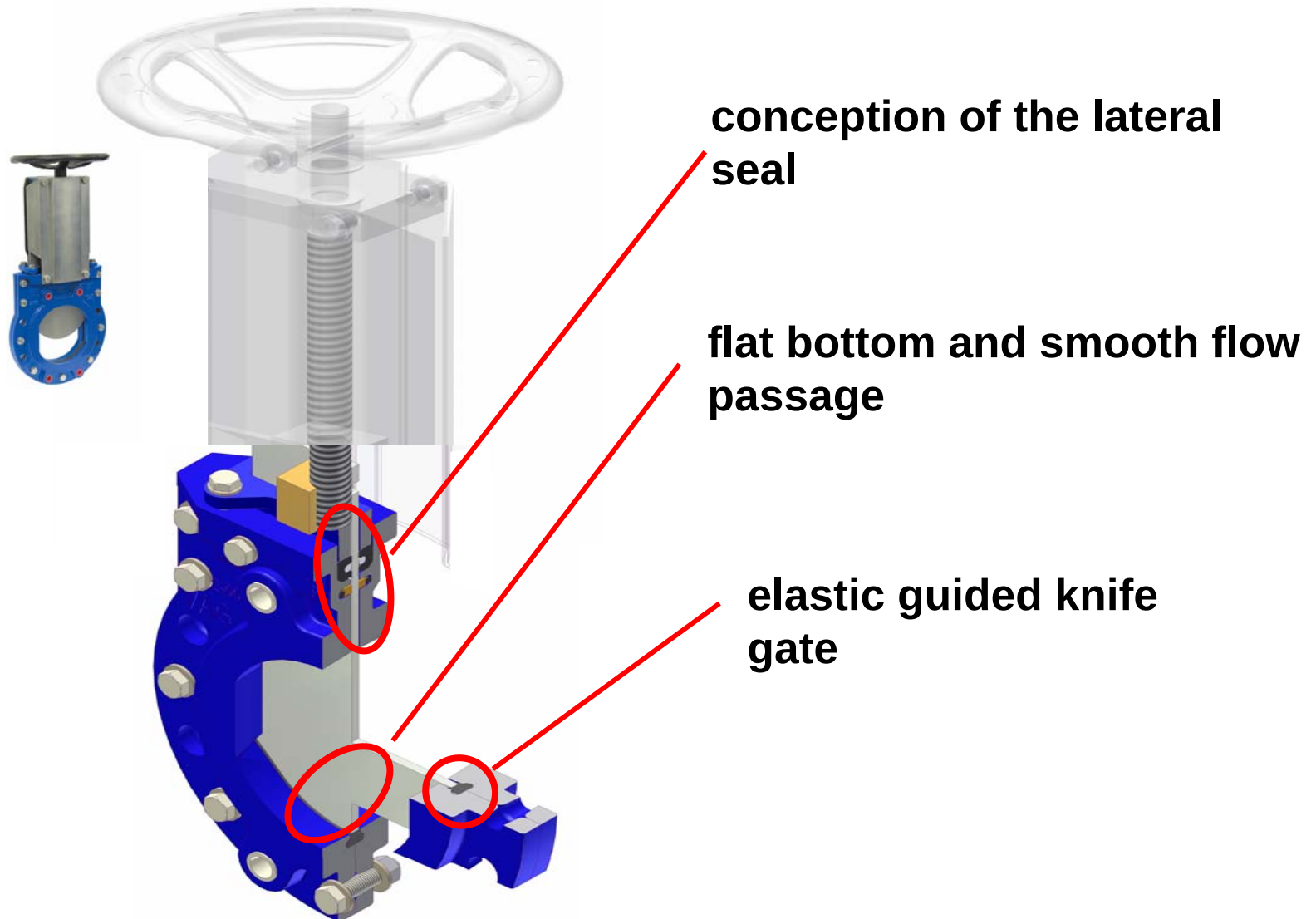
VAG ZETA-Knife Gate Valve overview pressure rates



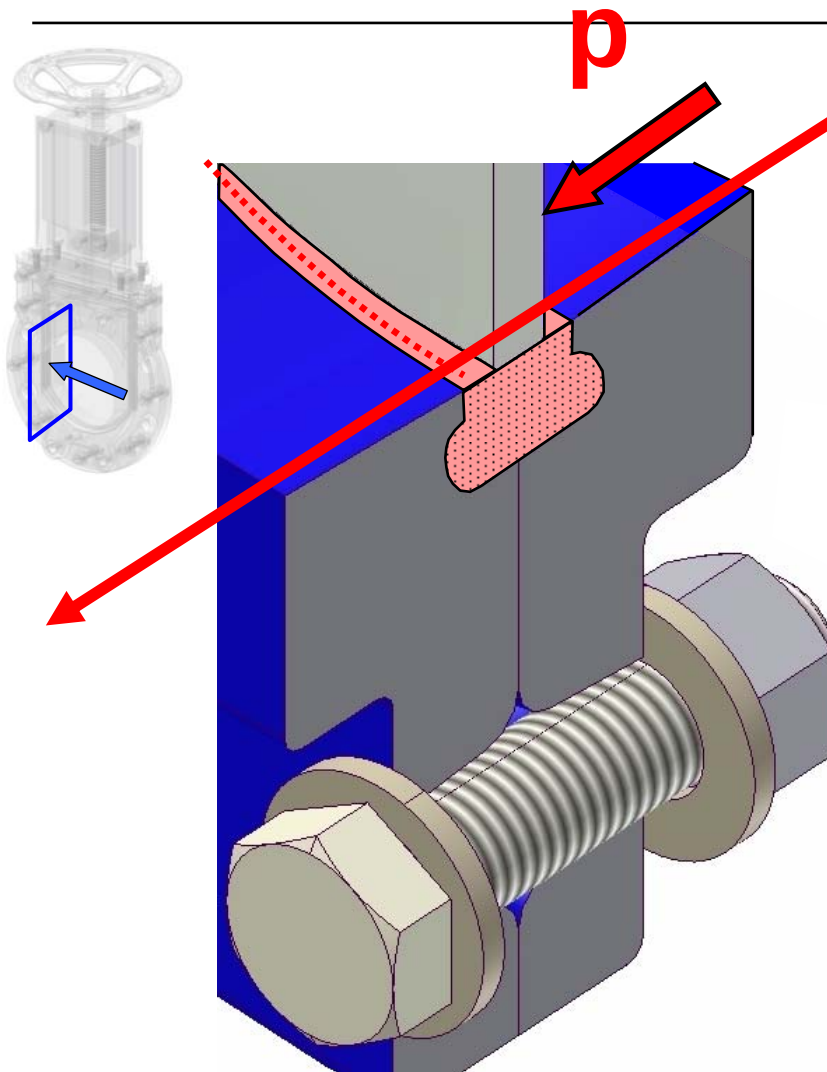
⇒ advantages due to pressure rates

Pos.	competitor	type	pressure rate PN						dimension DN						
			50	65	80	100	125	150	200	250	300	350	400	500	600
1	Erhard	ERU						PN 10				PN 6		PN 4	
2	Sistag	MFA					PN 10					PN 6		PN 4	
3	Sistag	VNA				PN 10				PN 6		PN 4			
4	EBRO	EBES					PN 10					PN 6		PN 4	
5	WECO	DUO				PN 10				PN 8	PN 6		PN 4		PN 3
6	VAG	ZETA					PN 10					8		PN 6	

ZETA-Knife Gate Valve sealing system

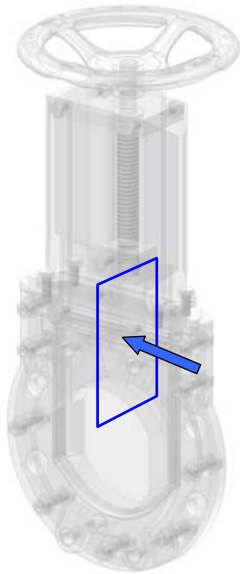


ZETA-Knife Gate Valve unobstructed and smooth flow passage



- flat bottom, no risks for deposits or malfunctions caused by foreign particles
- a wide sealing surface at the bottom of the valve guarantees a safe sealing even under high lateral forces
- big elastomer volume of the seal guarantees high sealing reserves even at partial destruction

ZETA-Knife Gate Valve conception of the lateral seal



- special profiled lateral seal guarantees tightness to the outside

- maintenance friendly lateral seal allows adjustment during operation

- integrated PTFE-guiding rods guarantee an optimum guiding of the knife and lowest operation torque's

- easy replacement of the lateral seal without dismantling the valve from the pipeline

- high operational safety due to integrated scraper system for permanent cleaning of the knife at every stroke

- high durability of the sealing system as the lateral seal will not be effected by strong abrasion of the dirty knife

High Performance Sluice Gates – The New Generation



VAG EROX Sluice Gate

- **Compact Design**

self-supporting frame design

- **Sealing forces** are dissipated **directly into the wall**

- **Directly attached bearing block**

- **Patented sealing system**
with vulcanised
SEALINGRING



High Performance Sluice Gates – The New Generation

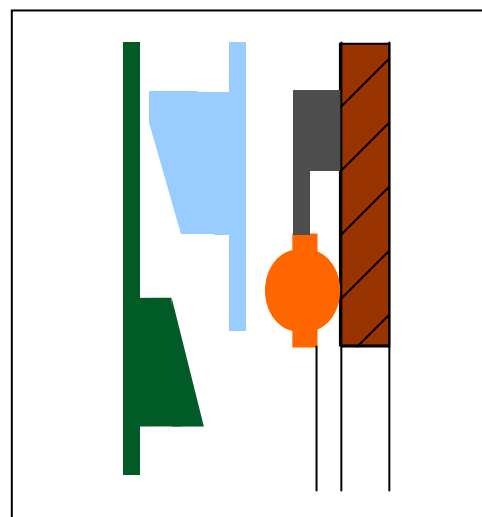
EROX® Patented Sealing System

Sealing is separated from the frame.

Advantage:

Frame distortions cannot influence EROX® sealing performance.

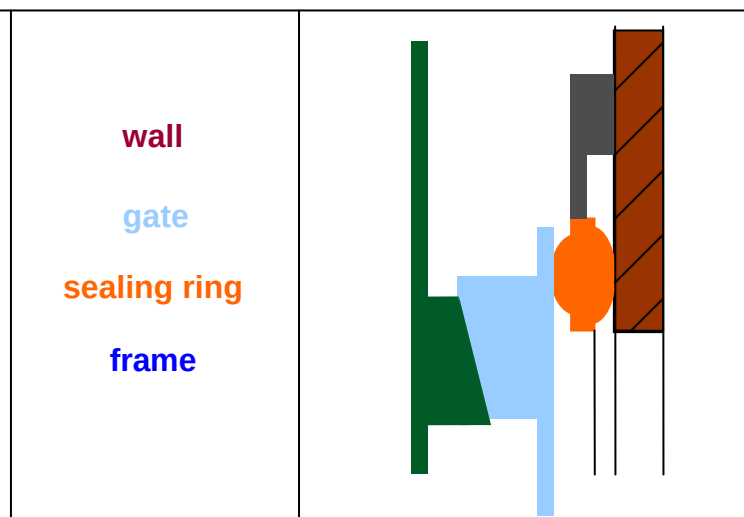
EROX® open



Gate open:

No pressure on sealing ring

EROX® closed



Gate closed:

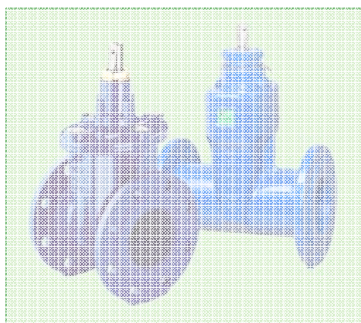
Sealing ring is ideally adapted to wall.

High Performance Sluice Gates – The New Generation

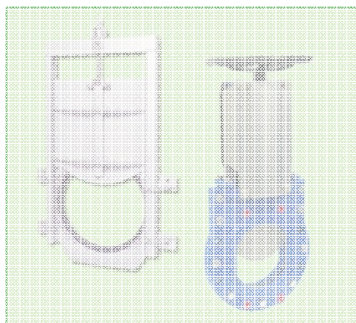


sales programme

Gate valves



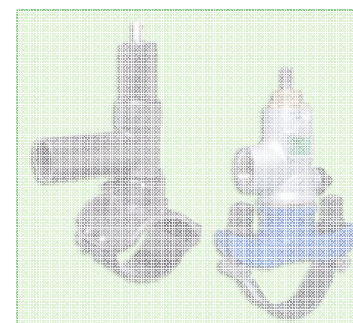
Penstocks/
Sluice Gates



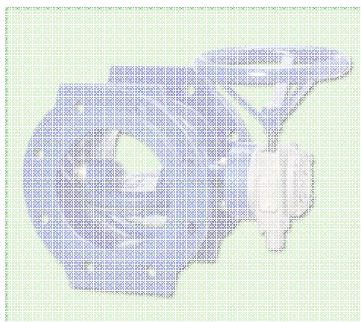
Hydrant



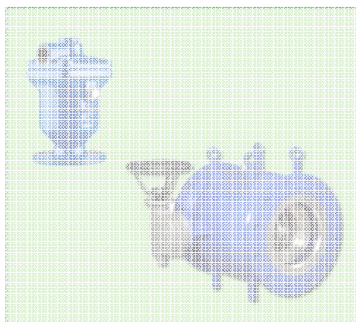
House connections



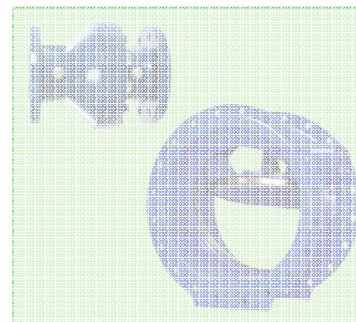
Butterfly valves



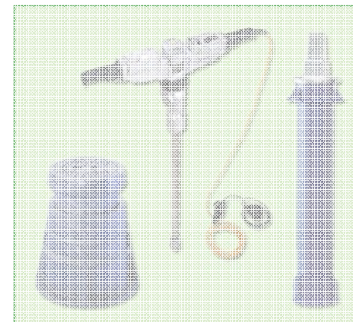
Control valves/
Air valves



Non return valves



Accessories



sales programme hydrants



Stand Post Type

for airports



Nova 284
DN 80

140 m³/h



Nova 284
DN 100

290 m³/h



Nova Niro

210 m³/h



Nova 284
Fallmante
I

290 m³/h



Nova 1885

210 m³/h



Nova DN 150
Neuentwicklung

890 - 930 m³/h

**AIRBUS 380
required**

sales programme hydrants



Underground Type

SUPRA

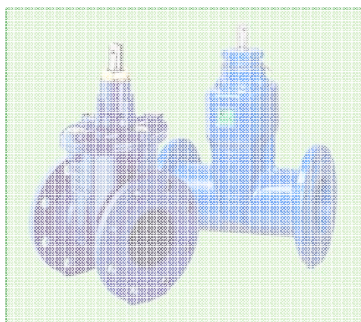


Chamber Hydrant

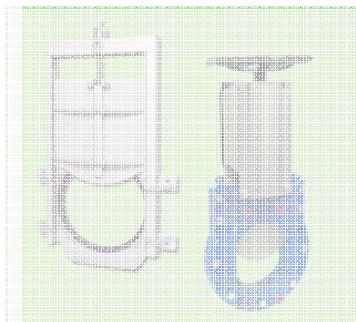


sales programme

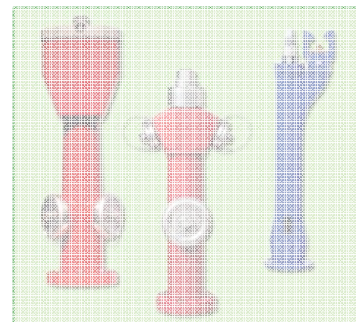
Gate valves



Penstocks/
Sluice Gates



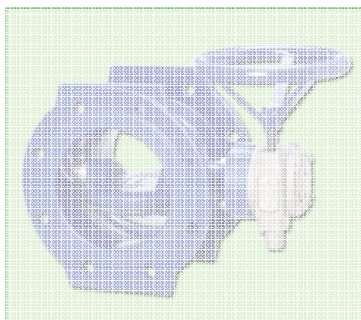
Hydrant



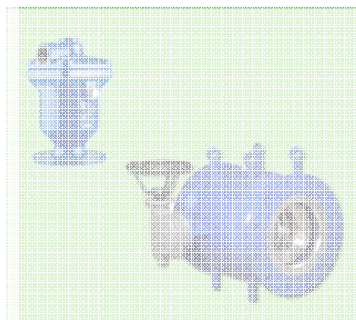
House connections



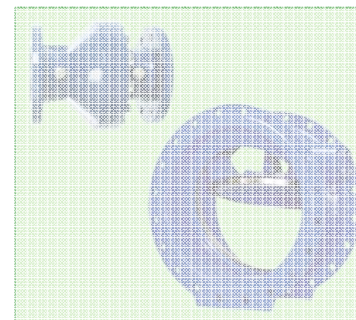
Butterfly valves



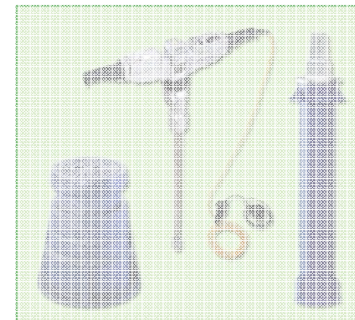
Control valves/
Air valves



Non return valves



Accessories

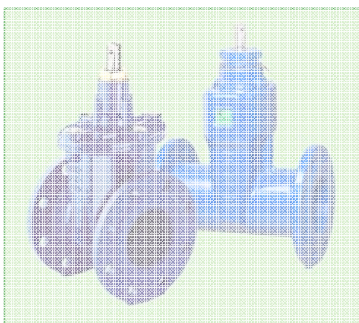


sales programme tapping bridges

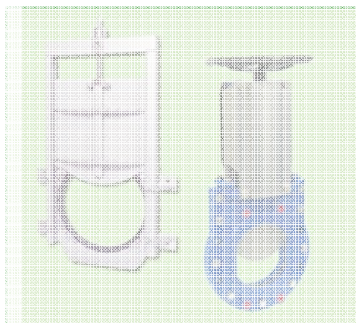


sales programme

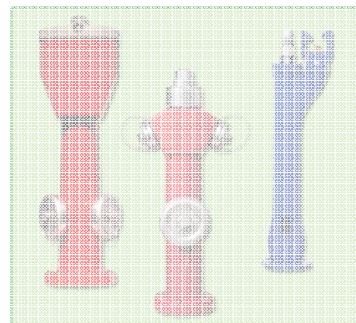
Gate valves



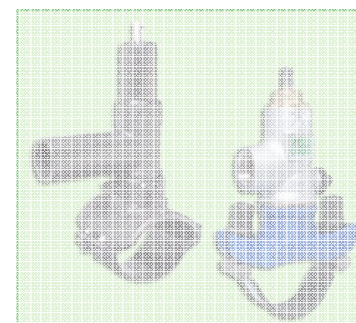
Penstocks/
Sluice Gates



Hydrant



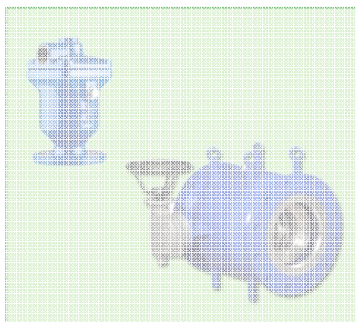
House connections



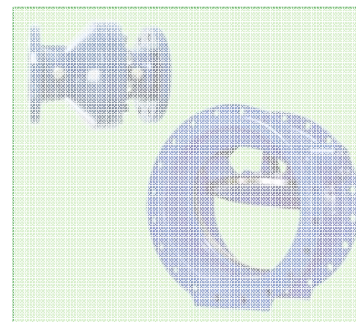
Butterfly valves



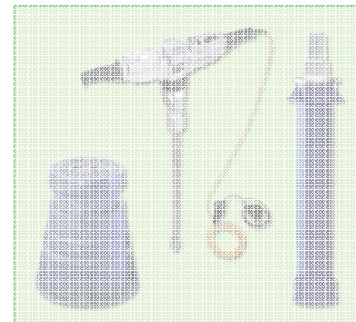
Control valves/
Air valves



Non return valves



Accessories



sales programme Butterfly Valve

wafer type



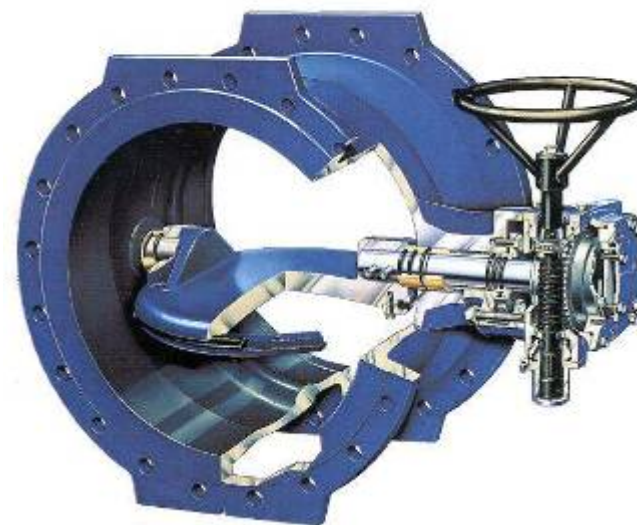
with gear



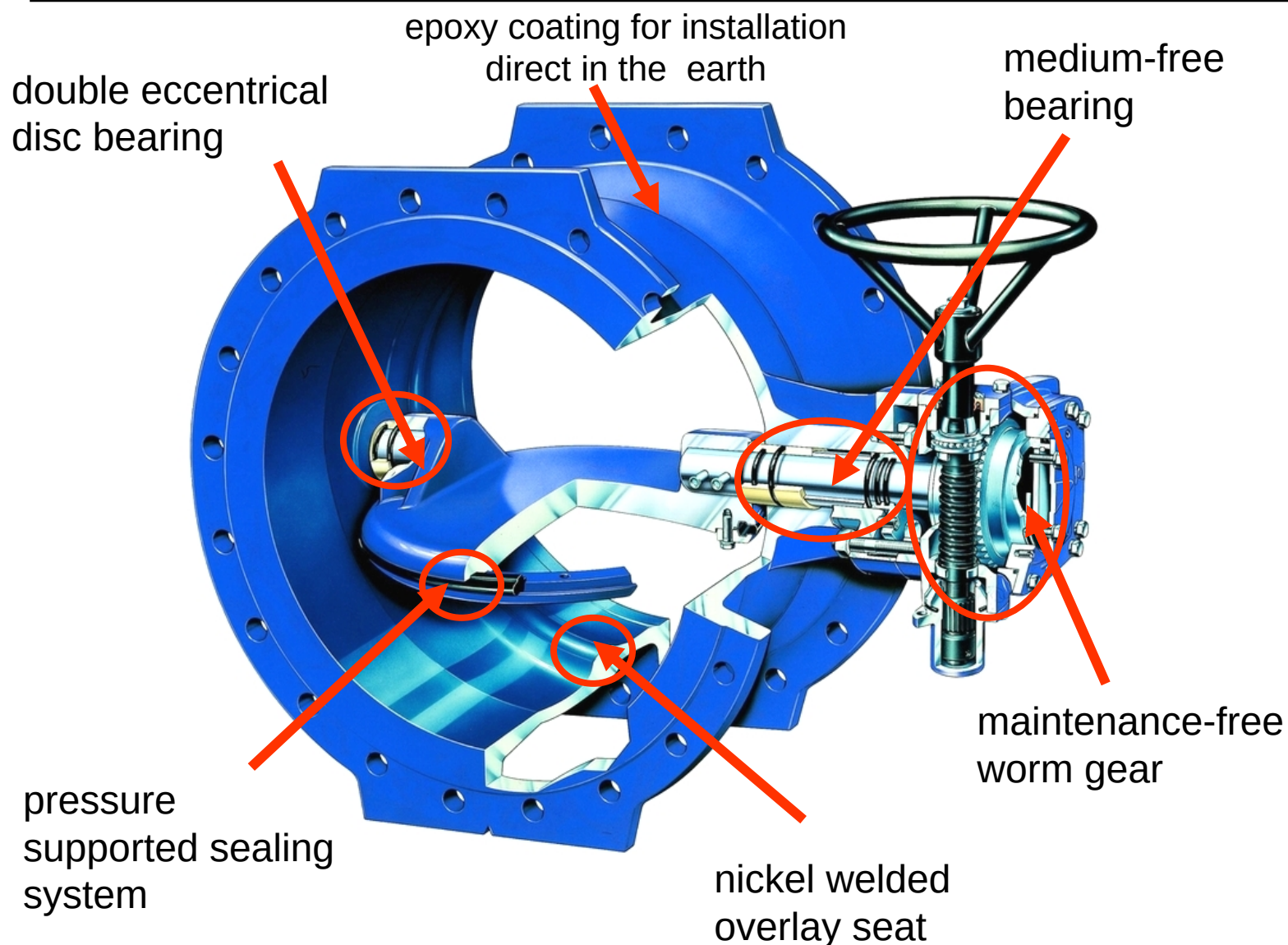
with lever and
weight

flanged type

EKN



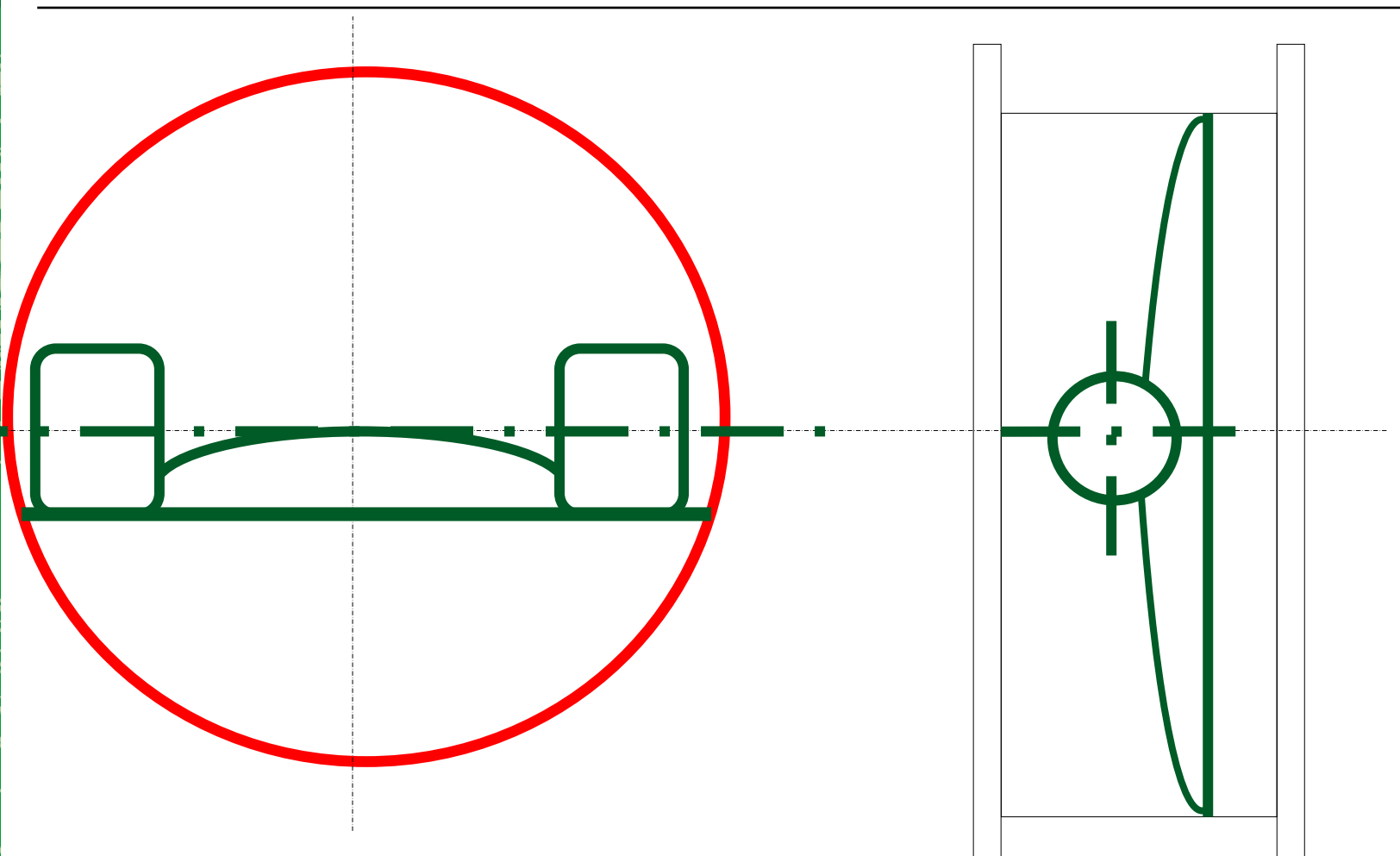
VAG EKN Butterfly Valve quality features for 50 years operation



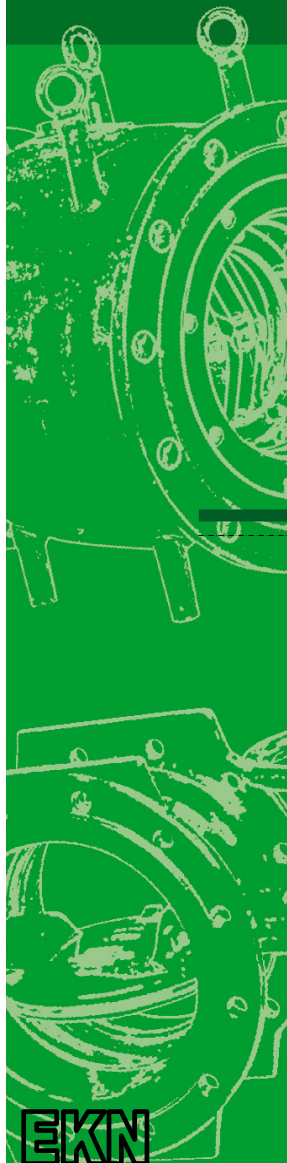
VAG EKN Butterfly Valve double eccentric



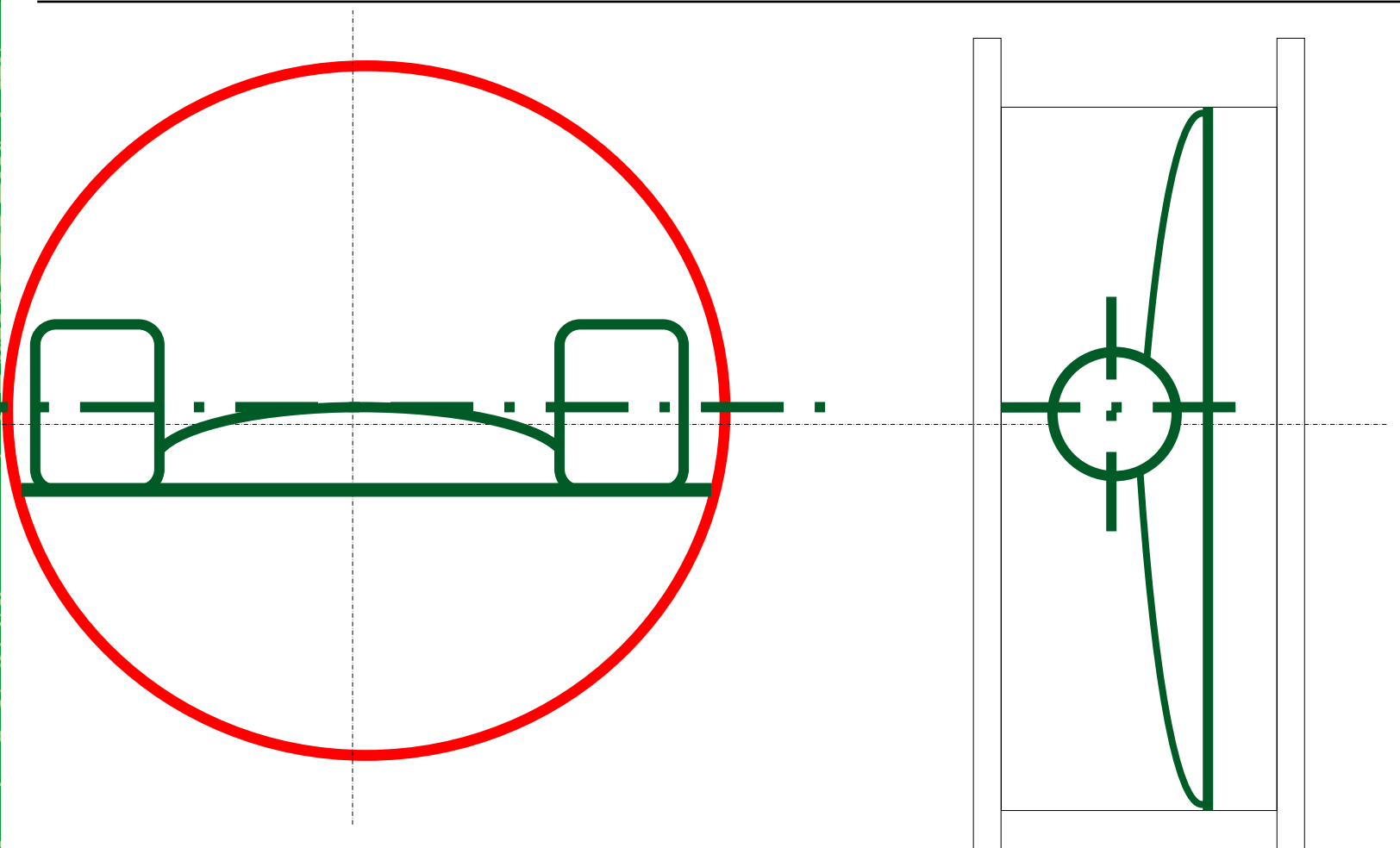
EKN



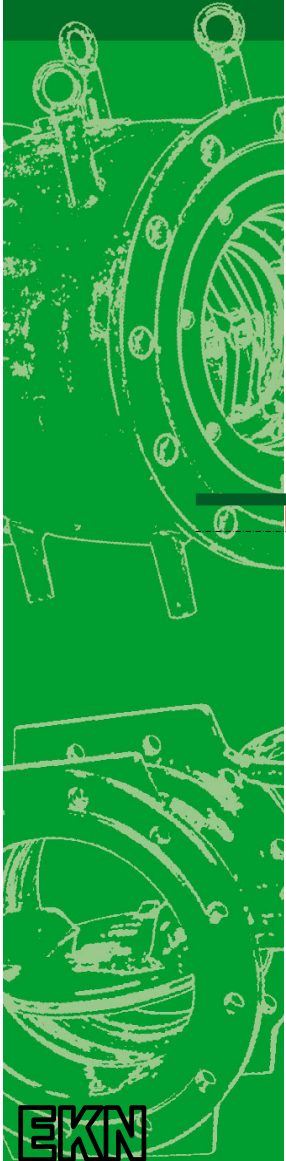
VAG EKN Butterfly Valve double eccentric



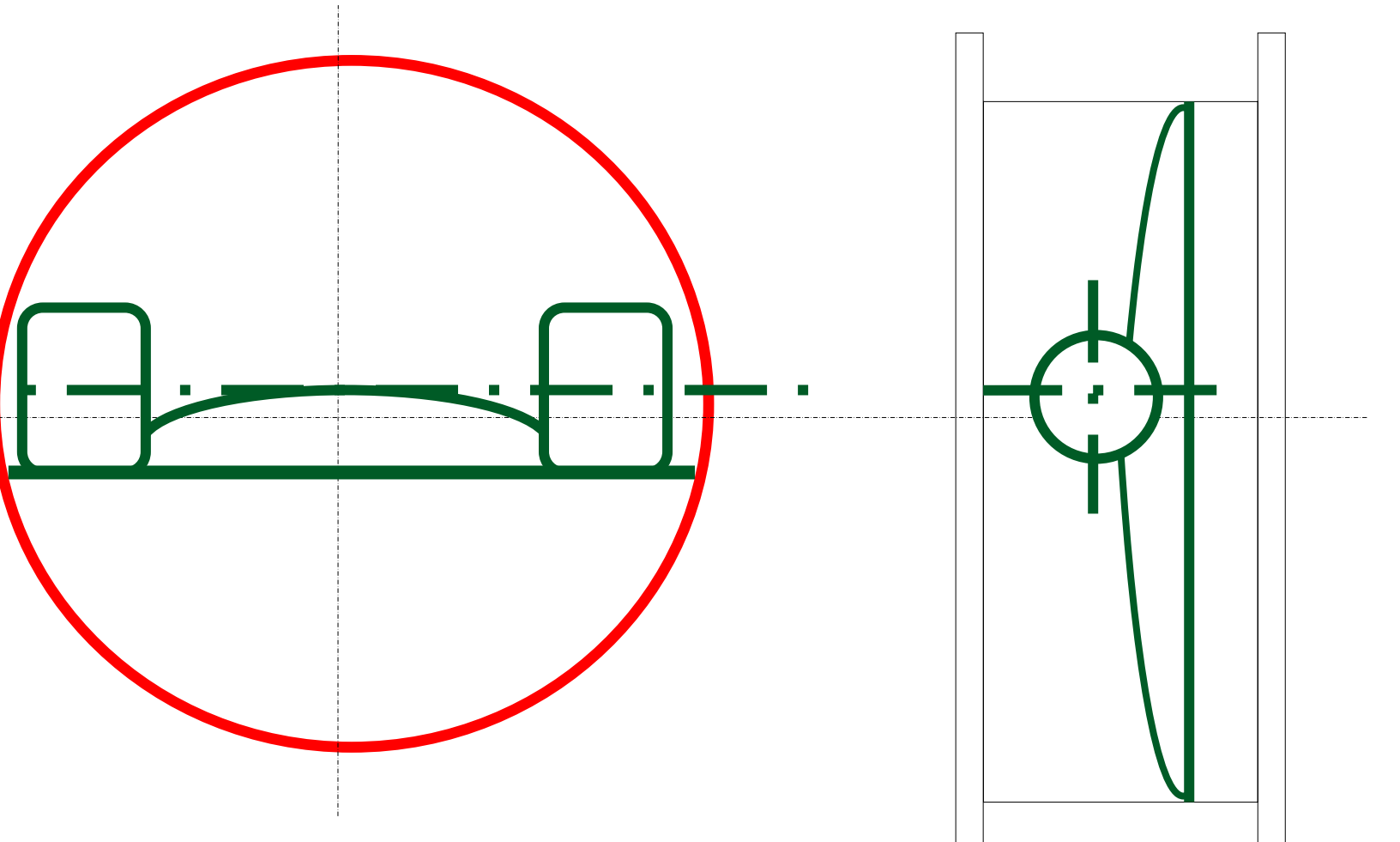
EKN



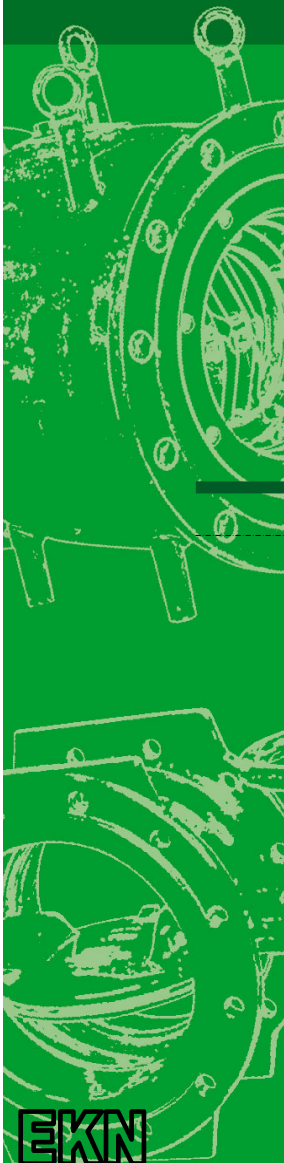
VAG EKN Butterfly Valve double eccentric



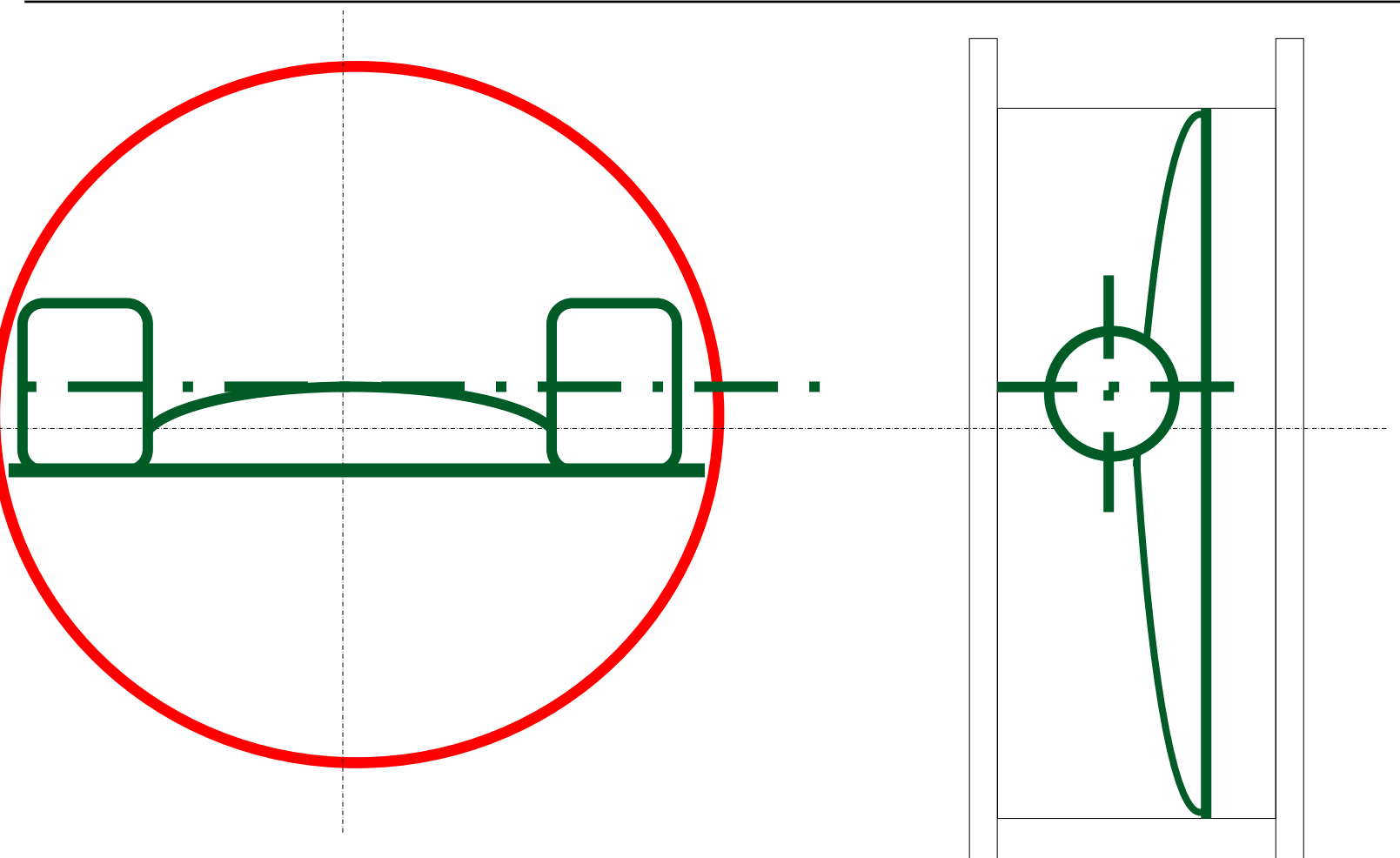
EKN



VAG EKN Butterfly Valve double eccentric



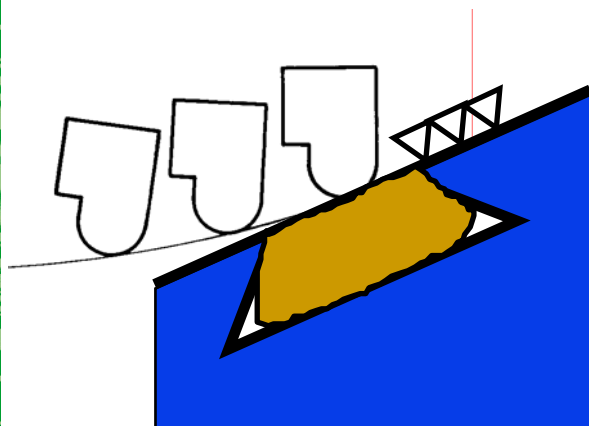
EKN



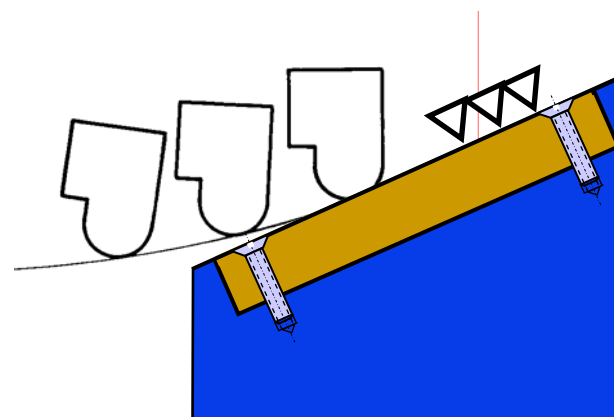
VAG EKN Butterfly Valve seat of welded Ni Cr material



ROLLED - IN and SCREWED - IN SEAT RINGS



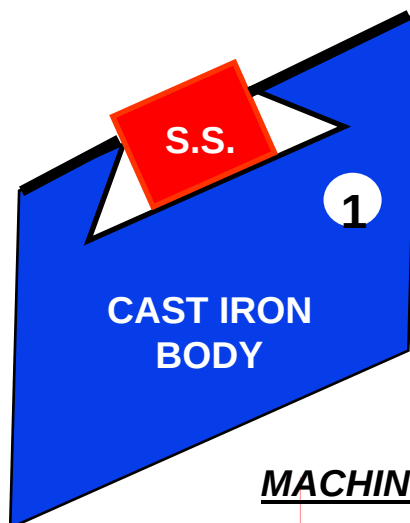
"ROLLED - IN" SEAT RING



"SCREWED - IN" SEAT RING

DISADVANTAGES OF ROLLED - IN SEAT RINGS

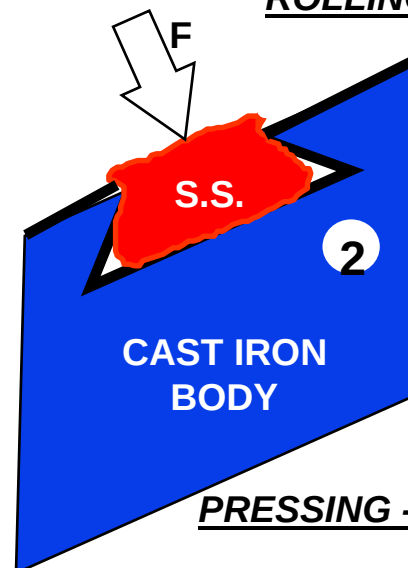
PLACING OF SEAT RING



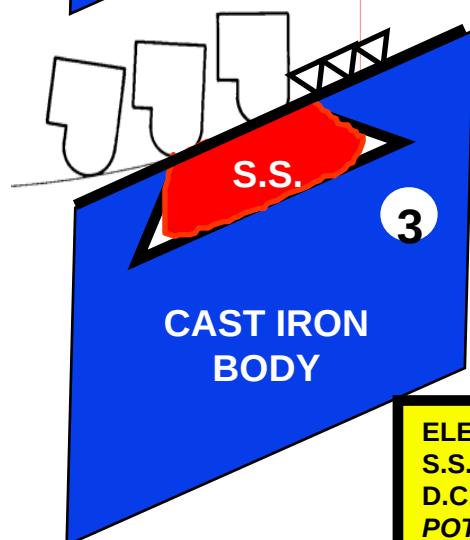
CORROSION RATE "Fe":

$$9,1 \frac{\text{kg}}{\text{m}^2 \cdot \text{a}} \approx 1,1 \frac{\text{mm}}{\text{a}}$$

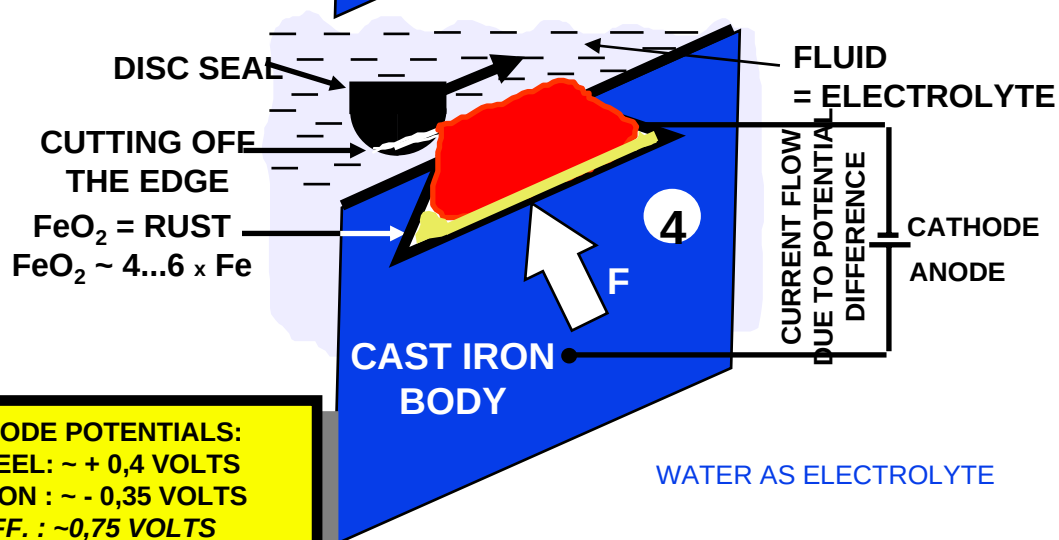
ROLLING - IN OF SEAT RING



MACHINED SEAT FACE



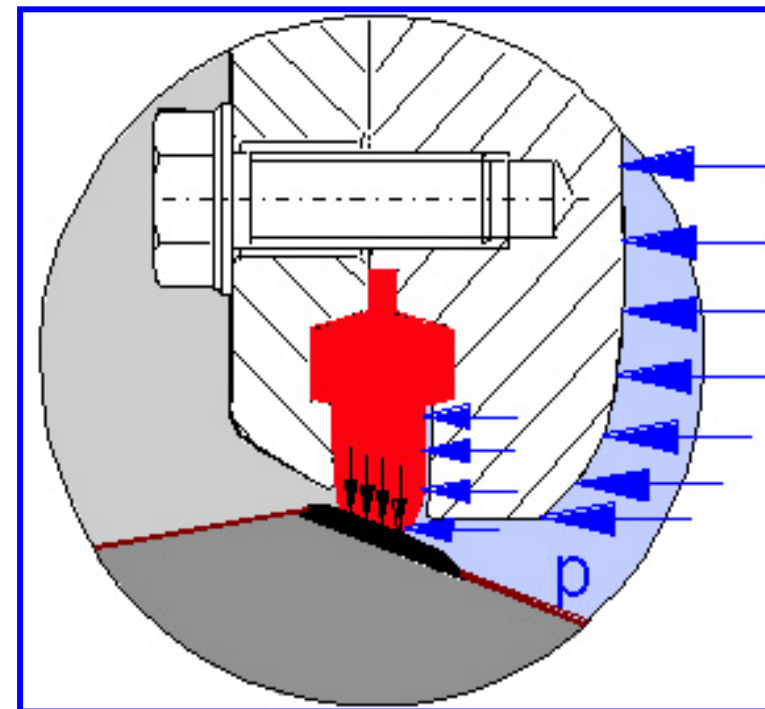
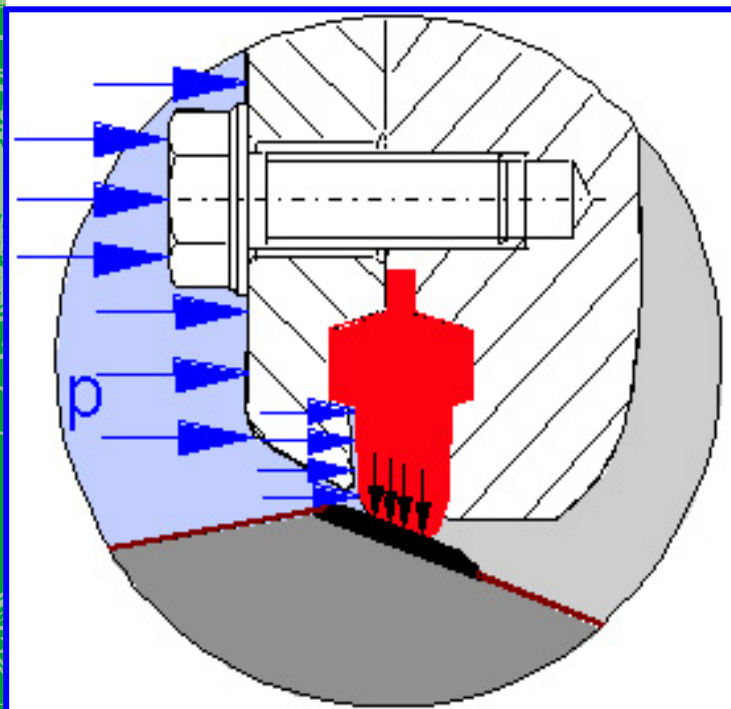
PRESSING - OUT OF SEAT RING



ELECTRODE POTENTIALS:
S.S.- STEEL: ~ + 0,4 VOLTS
D.C. - IRON : ~ - 0,35 VOLTS
POT. DIFF. : ~0,75 VOLTS

WATER AS ELECTROLYTE

VAG EKN Butterfly Valve sealing system

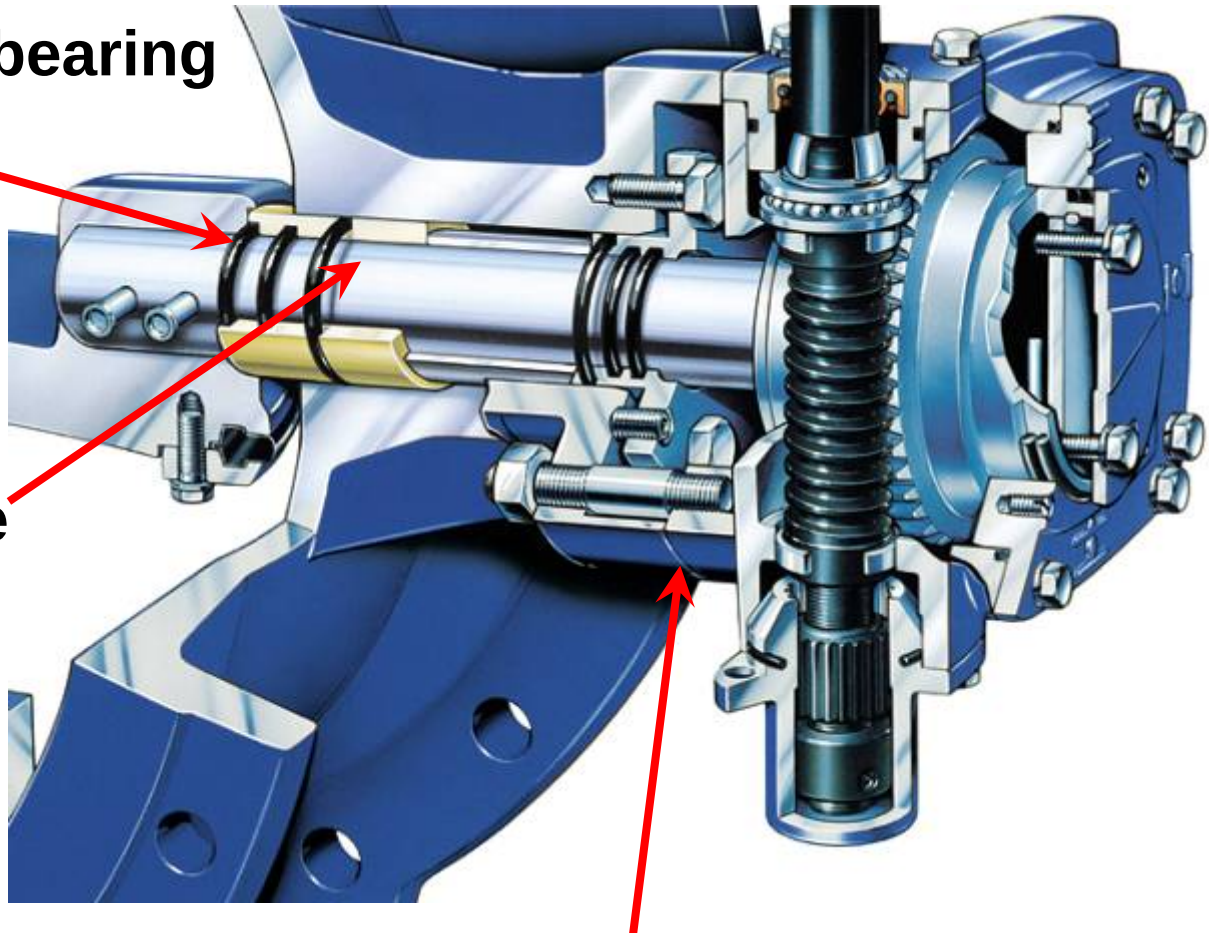


VAG EKN Butterfly Valve shaft sealing / gear



closed disc bearing

**medium free
bearing**



direct gear connection

Butterfly Valves underground installation



installation
without chamber



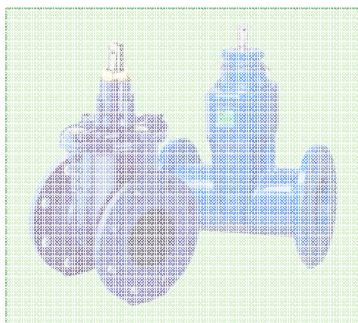
VAG EKN Butterfly Valve placed direct in the earth no chamber needed



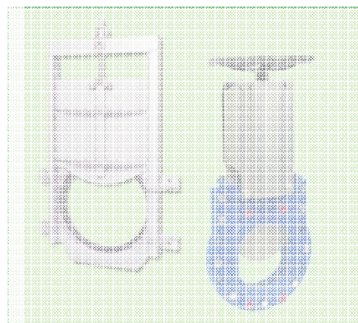
EKO-SKR-DUOJET

sales programme

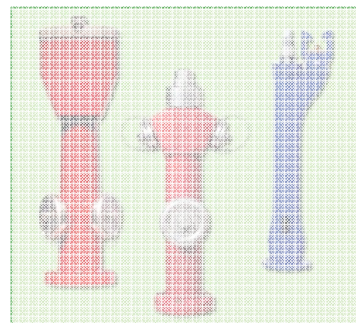
Gate valves



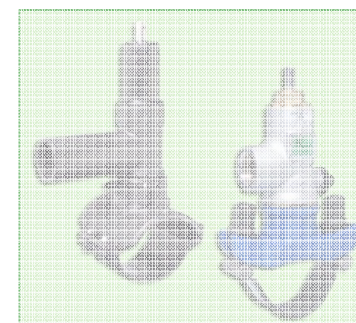
Penstocks/
Sluice Gates



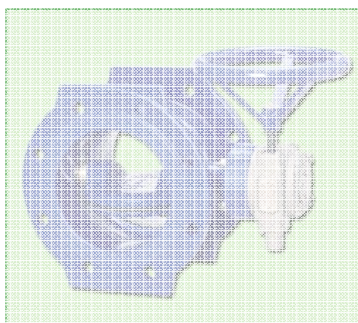
Hydrant



House connections



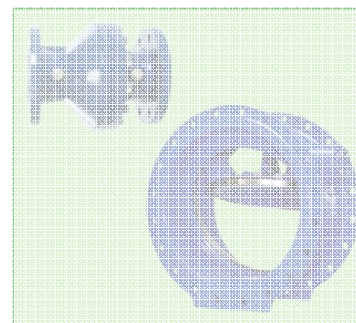
Butterfly valves



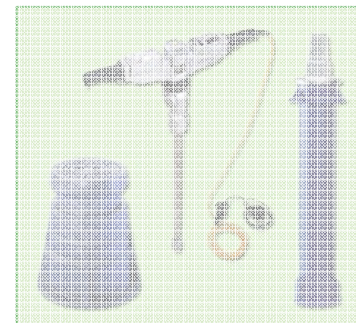
**Control valves/
Air valves**



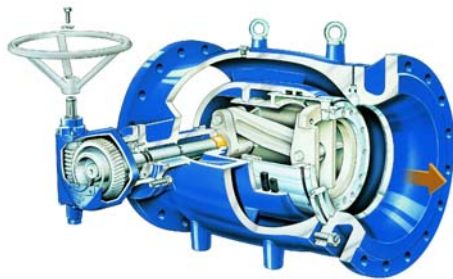
Non return valves



Accessories



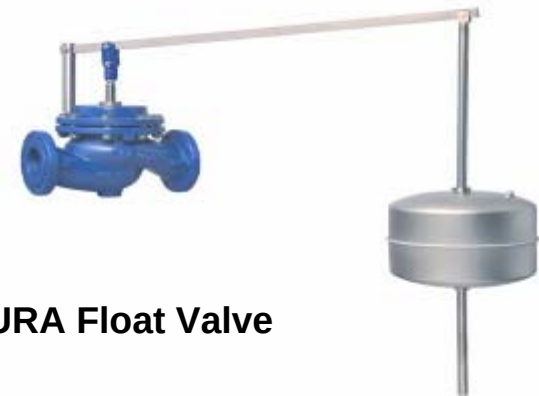
sales programme control valves



Plunger Valve



DURA Control Valve



DURA Float Valve



Diaphragm Valve

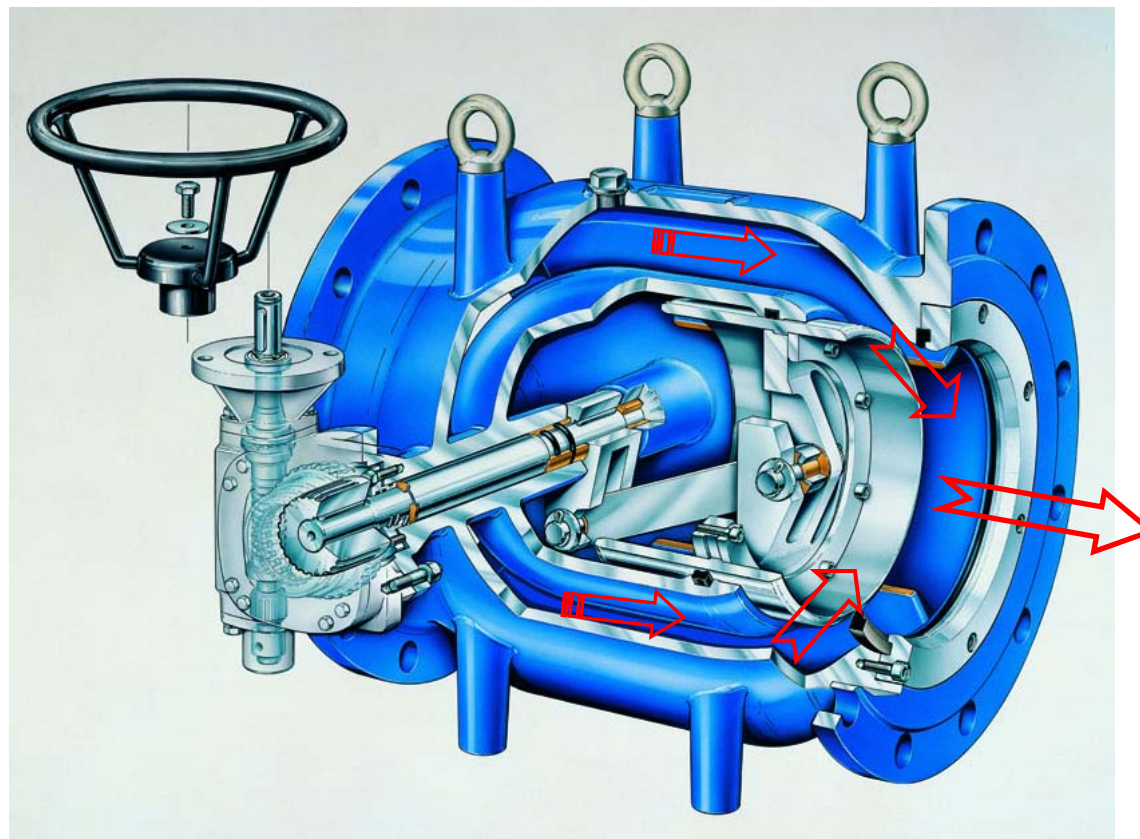


MONO Control Valve



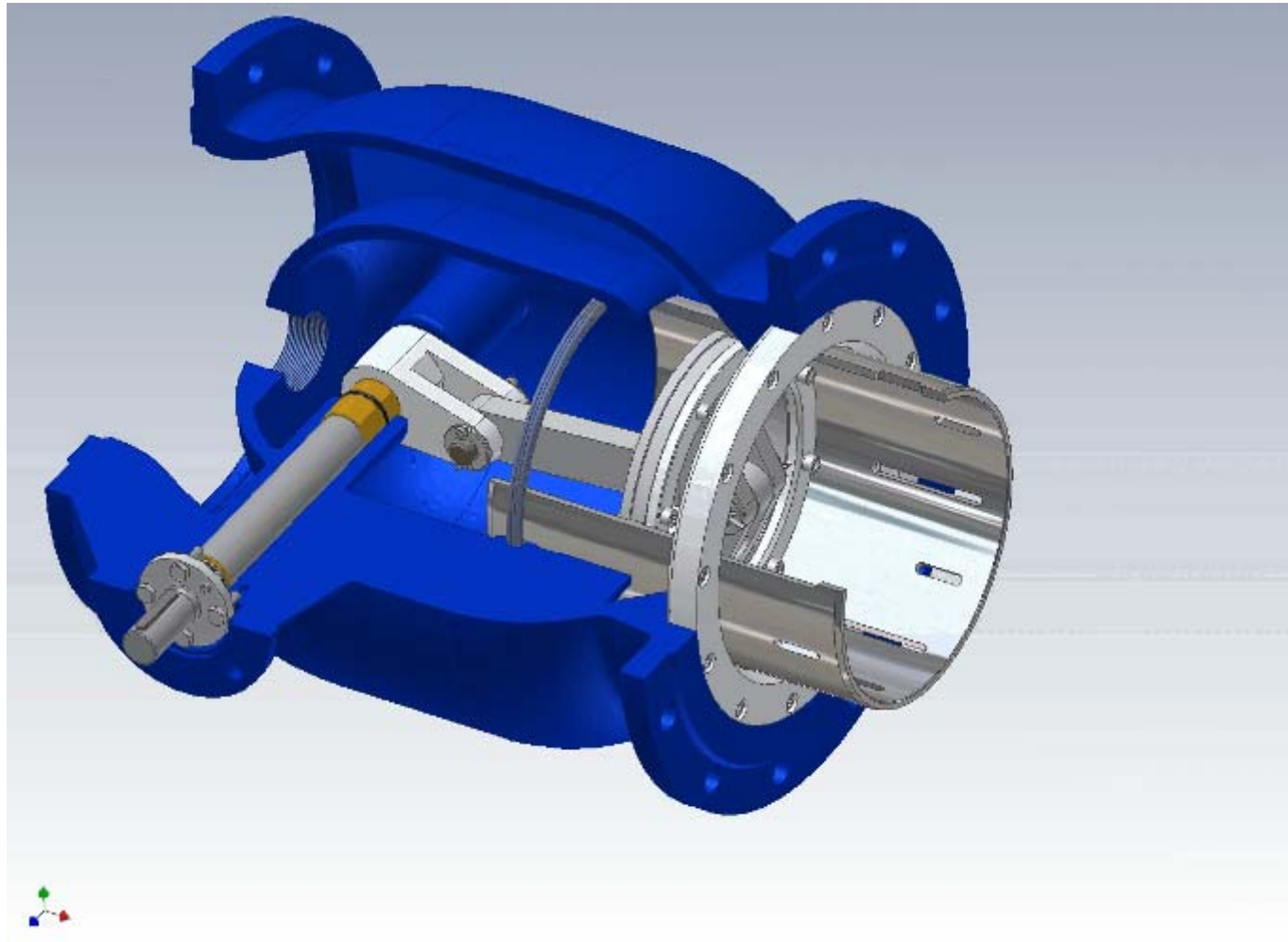
Hollow Jet Valve

Design of RKV Riko® Plunger Valve

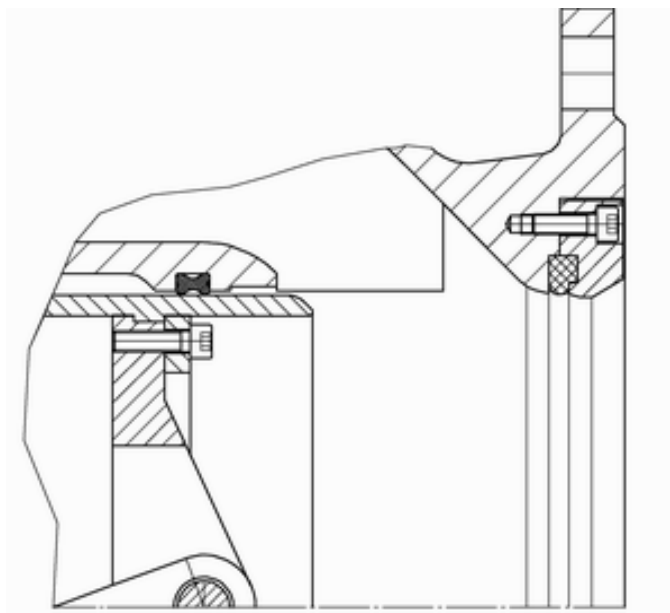


Symetrical streamlining around the inner body, controlled by the piston

Design of RKV Riko® Plunger Valve



Control of Flow Form „E“

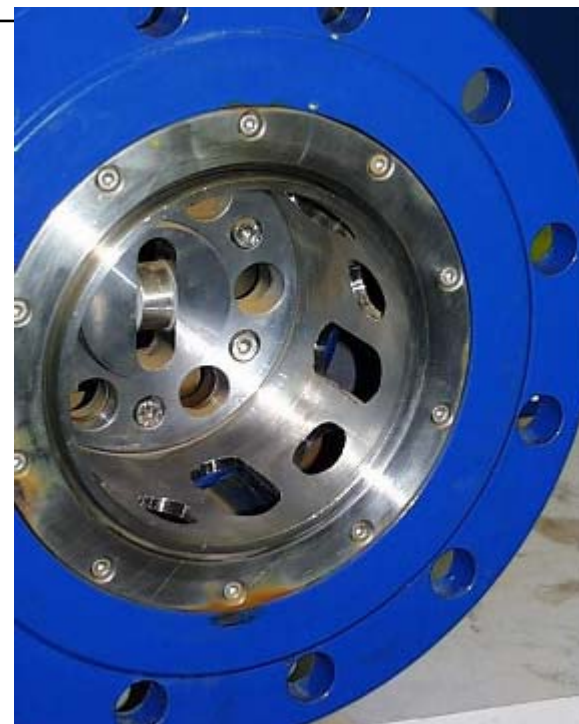
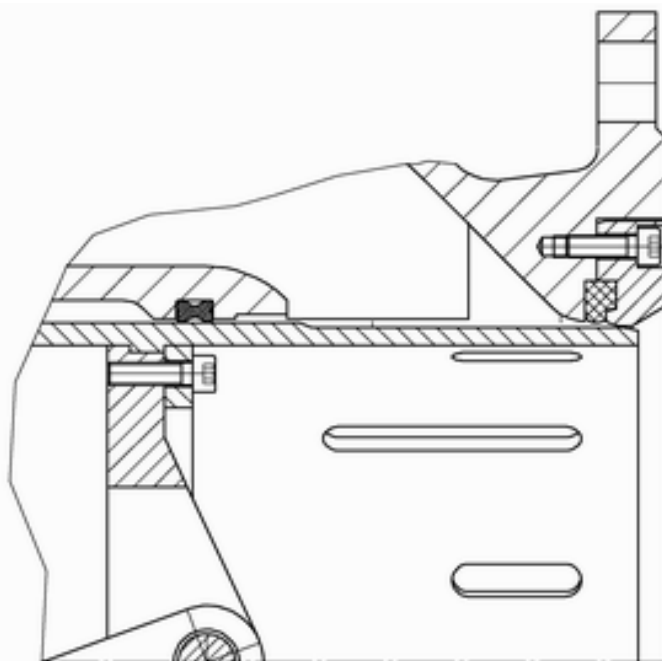


with breakway edge and sudden enlargement of cross sectional area

- Low flow resistance
- For low differential pressures
- Used as Pump starting valve
- Used as bottom outlet valve (Dams)



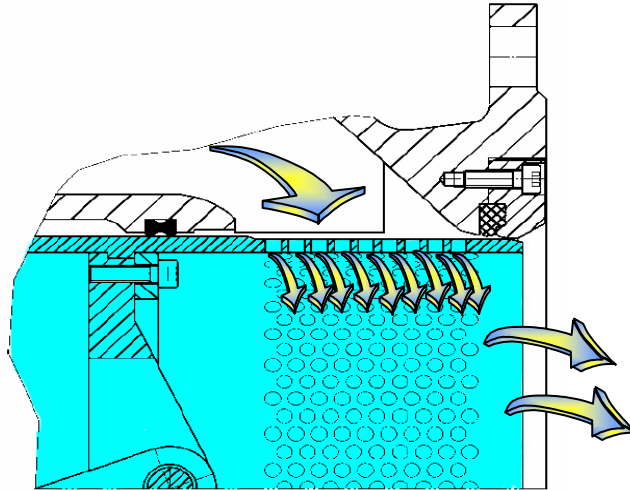
Control of Flow slotted cylinder



Slotted cylinder

- Adapted flow coefficient to pipeline
- For high diff. Pressures
- good control behaviour
- for raw water

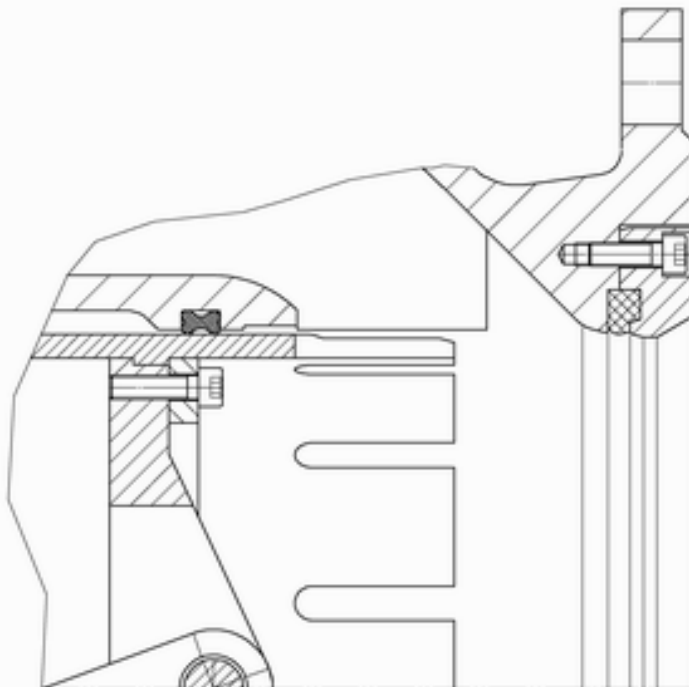
Control of Flow multiple orifice cylinder „LH“



Special design

- to adapt the optimum flow characteristic in the pipeline
- good control behaviour

special control device SZ 30% type



SZ-30% type

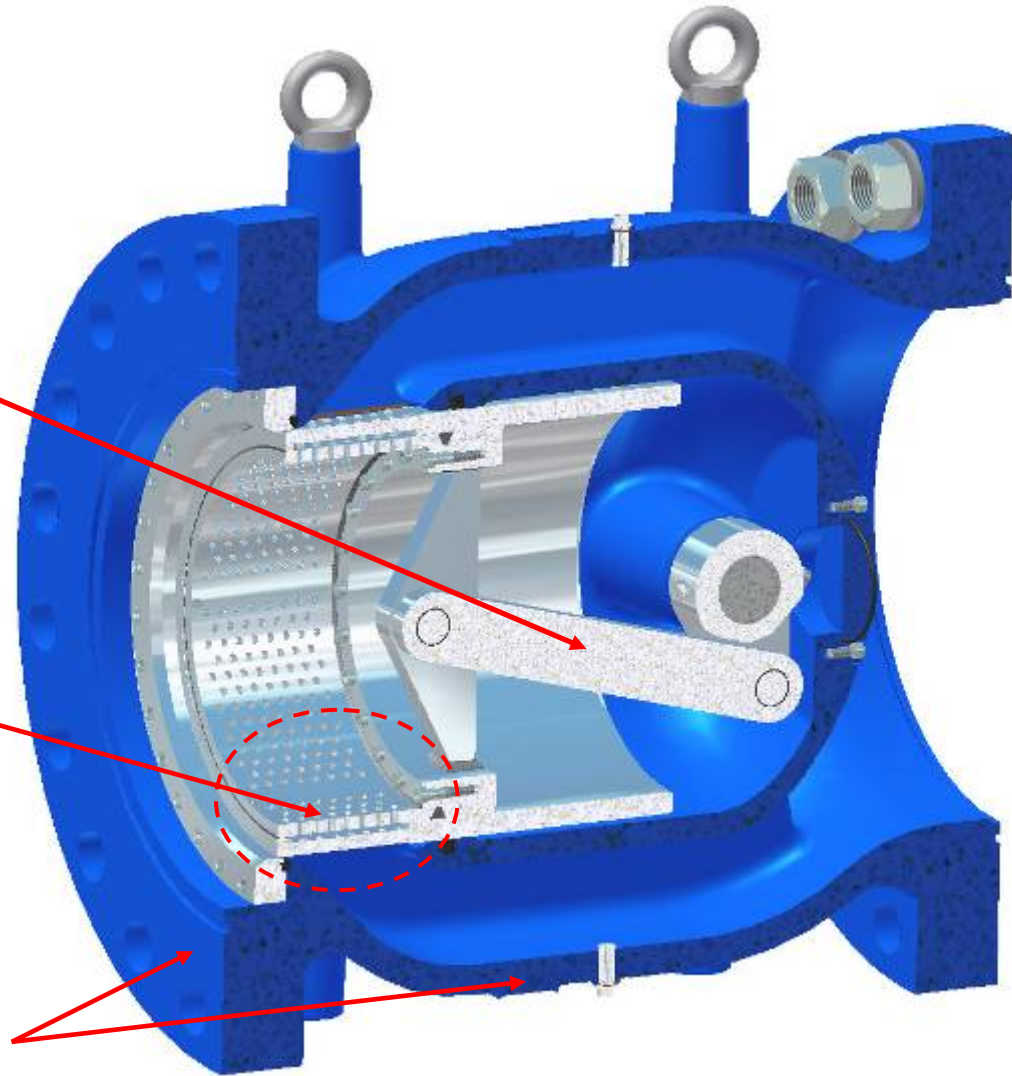
- calculated headloss under special opening / closing characteristics
- adapted control characteristic of the whole system
- e.g. automatic flushing

RIKO PN 100

**PN 100 design
Actuating parts**

**Multi stage control
cylinder**

**PN 100 design
Body**



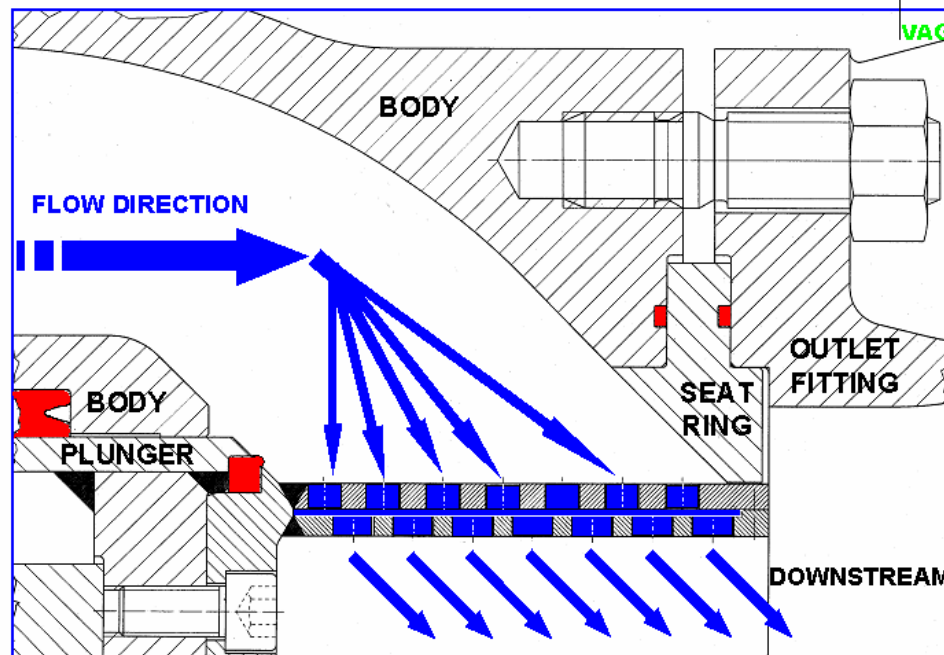
Plunger Valve - Type „LHD“ Outlet part: Multiple Orifice Cylinder



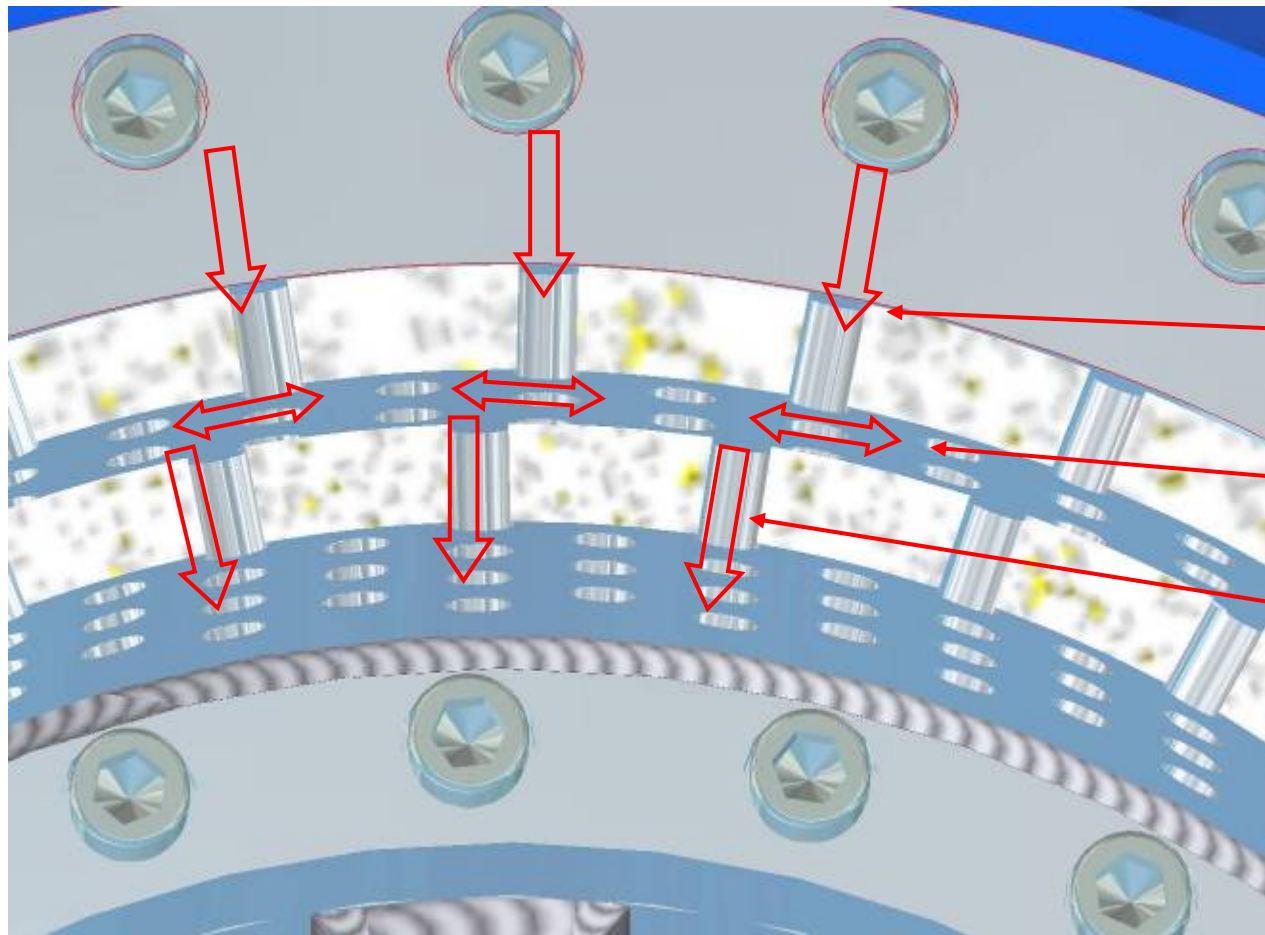
For highest pressure differences up to

16 bars against 0

DOUBLE MULTIPLE ORIFICE CYLINDER VERSION LH .. D



Multi stage control cylinder



1st reduction

2nd reduction

3rd reduction

DN 500 PN 10

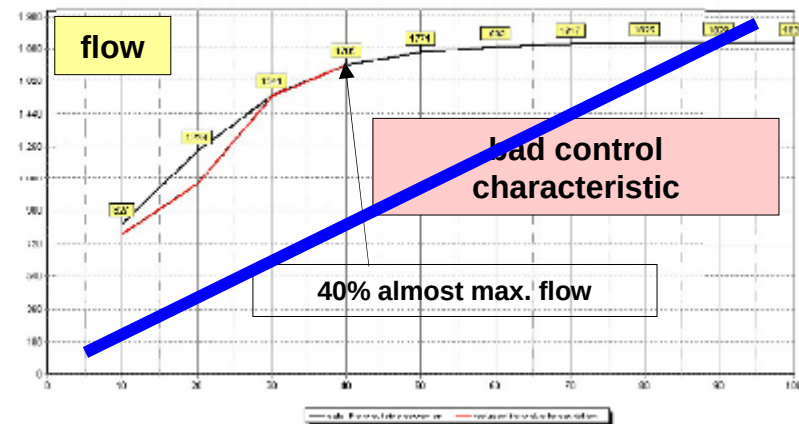
$p_{\text{upstream}} = 4 \text{ bar}$
 $p_{\text{downstream}} = 0,5 \text{ bar}$
 Control Characteristic



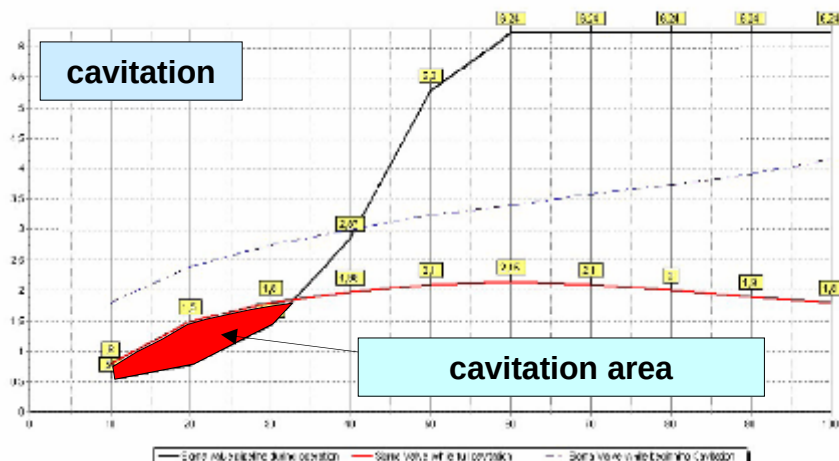
Butterfly Valve



Capacity in m³/h



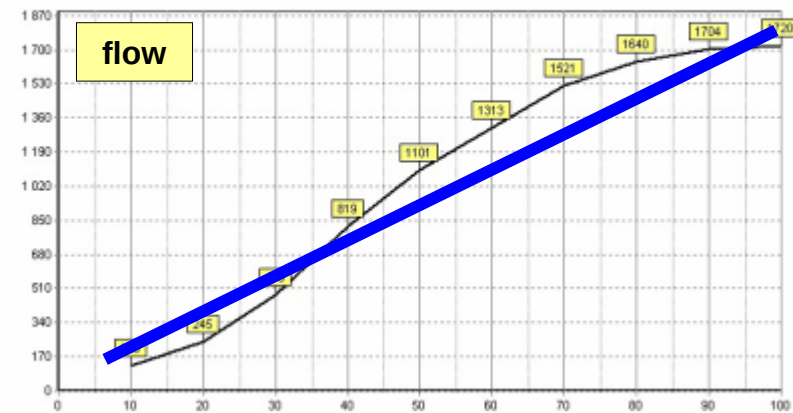
Cavitation index Sigma



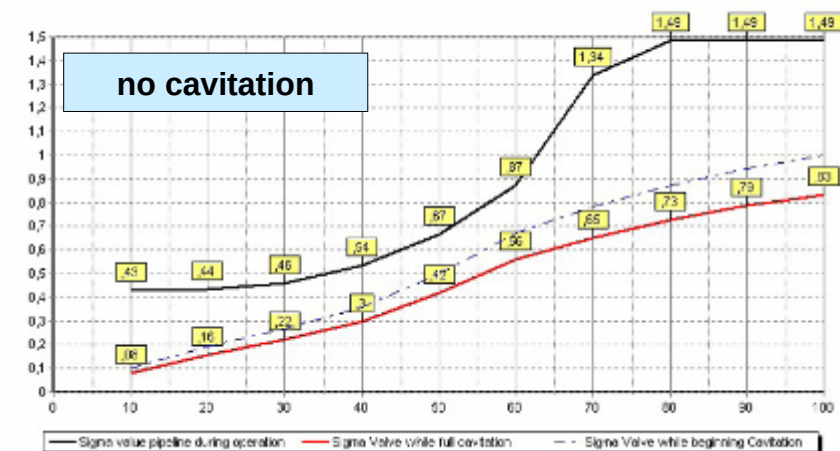
Plunger Valve



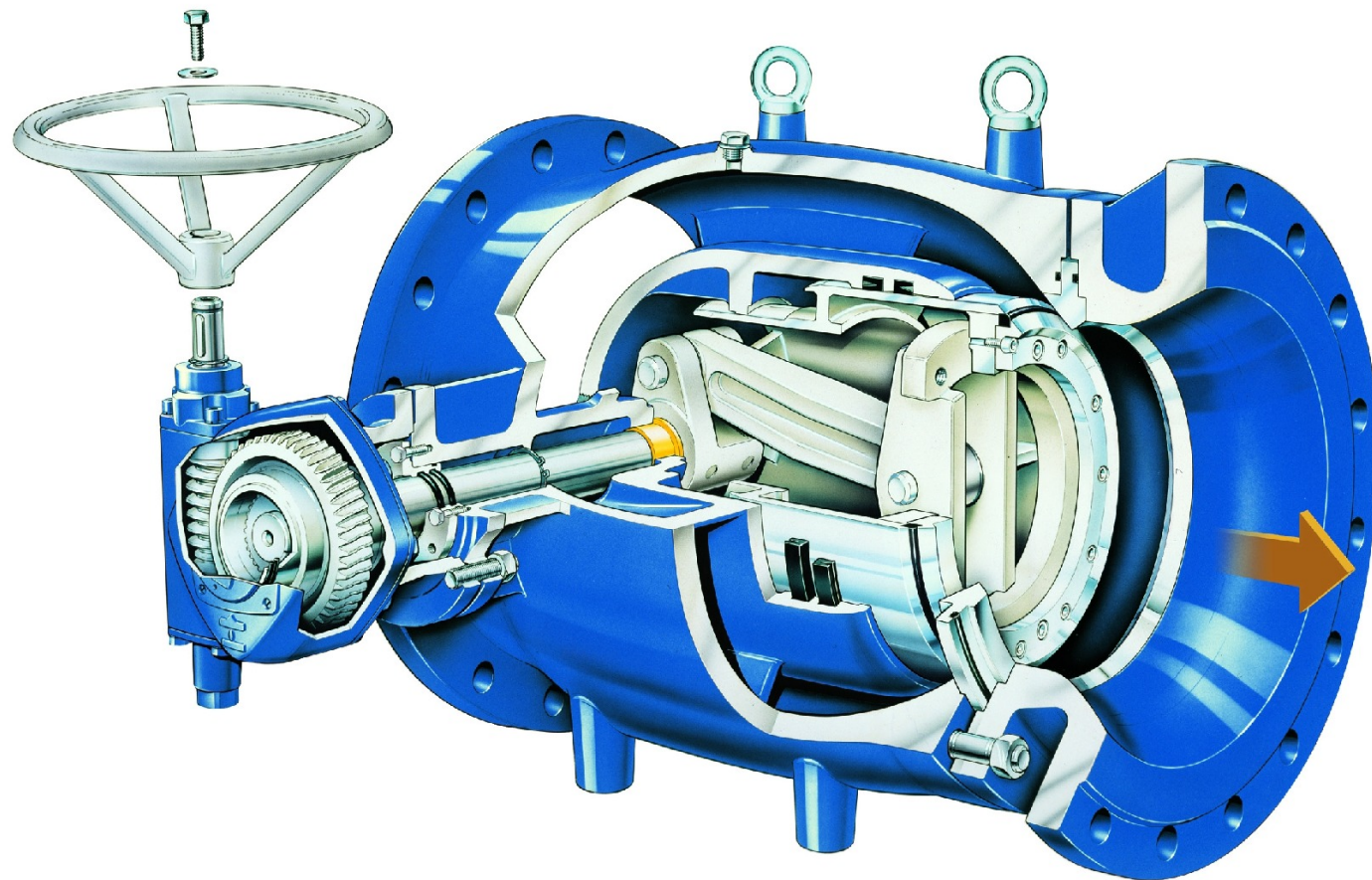
Capacity in m³/h



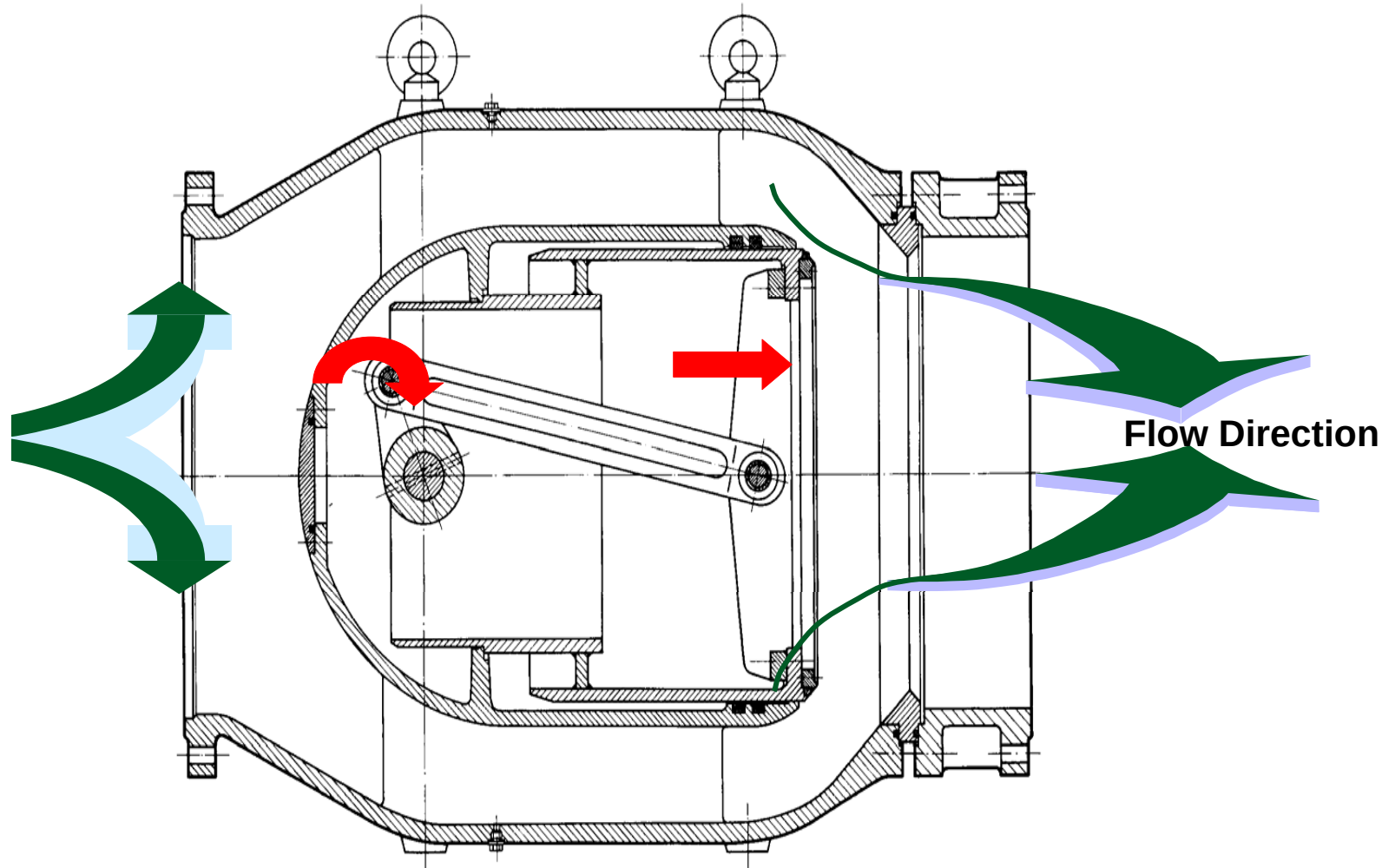
Cavitation diagram



Plunger Valve RKV

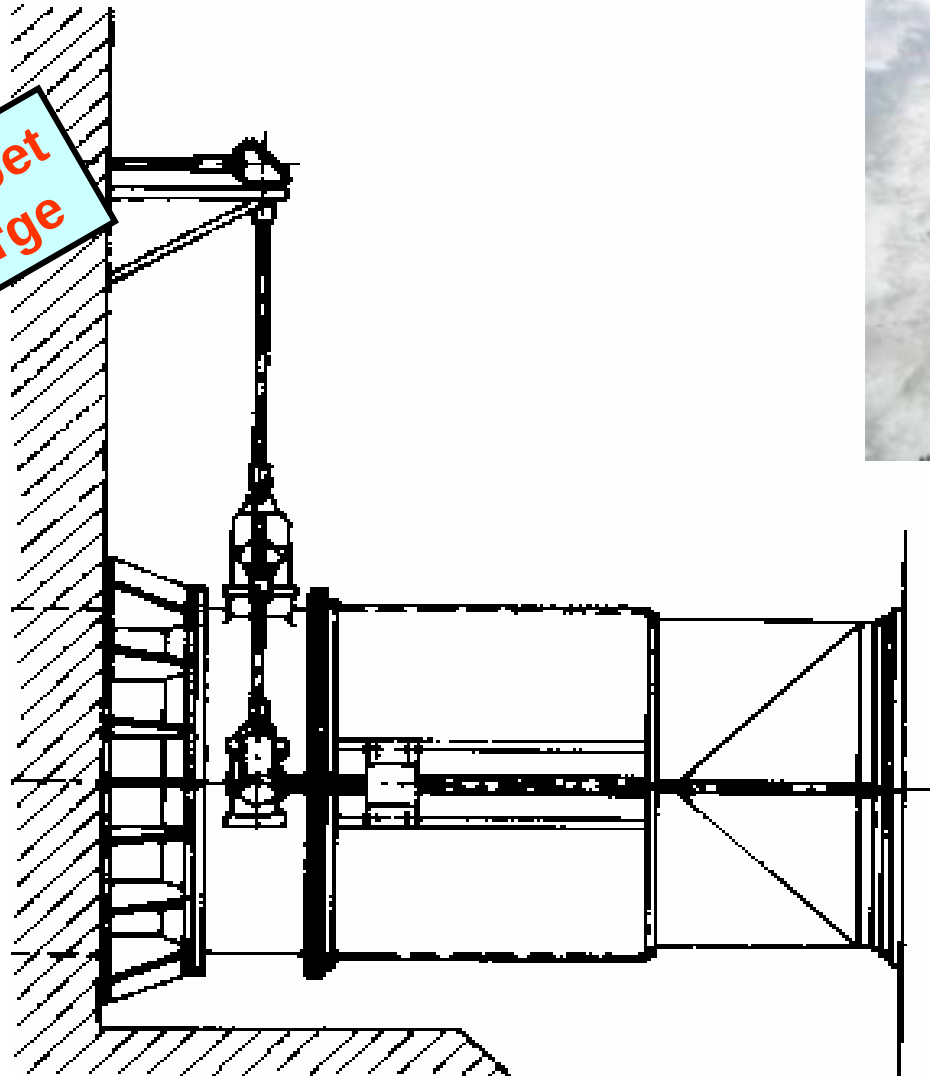


VAG Plunger Valve RKV



Location of Hollow Jet Valves

**VAG Hollow Jet
free discharge**



Shape of discharge

**Hollow Jet
without hood**



VAG Hollow Jet Valve DN 1800



Rurtalsperre, Germany

Hollow Jet
with hood



VAG Hollow Jet Valve DN 1800



Hollow Jet
with hood

Rurtalsperre, Germany



sales programme air valves



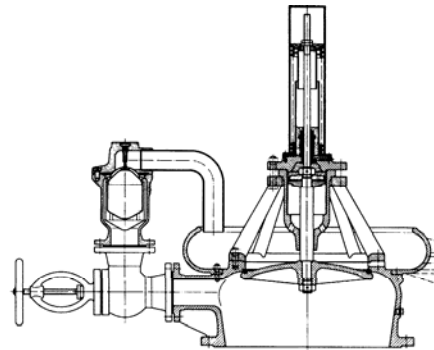
single chamber

Spring loaded valve

double chamber



VAG DUOJET



VAG TWINJET



VAG TWINJET-S

VAG Test Centre



Air Valves

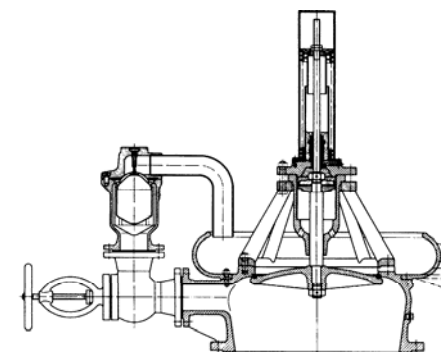
single chamber

VAG DUOJET



Air velocity more than
300 m/s

Spring loaded valve



FLOWJET
for Waste Water

VAG DUOJET®

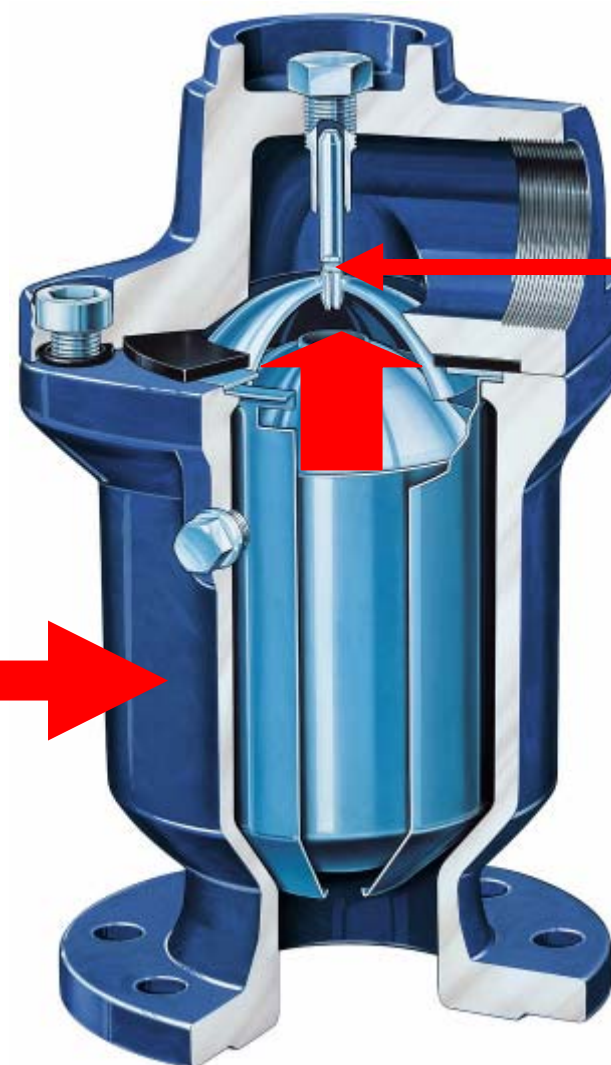
- Single chamber

- Two orifices

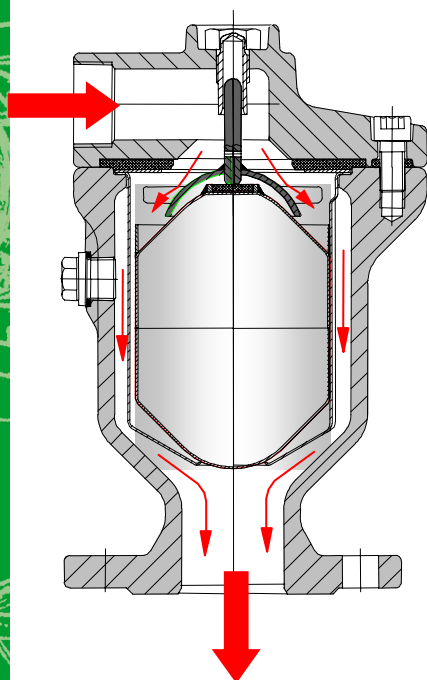
1. Big venting orifice
2. Small venting orifice

- Three functions

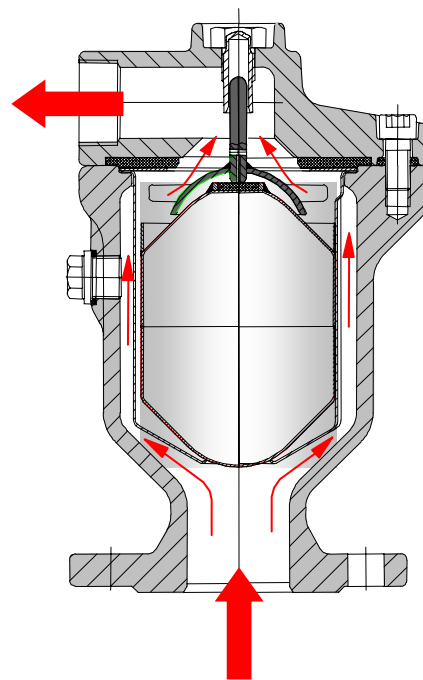
1. Admission
2. Venting
3. Venting during operation



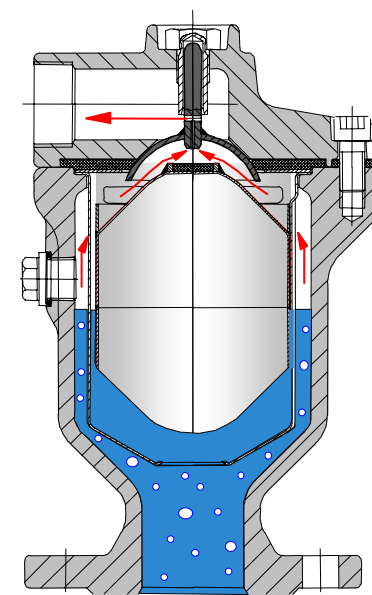
SINGLE CHAMBER: THREE FUNCTIONS



1. Admission during draining



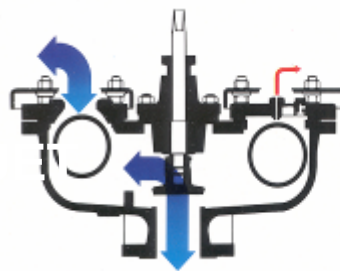
2. Venting during filling



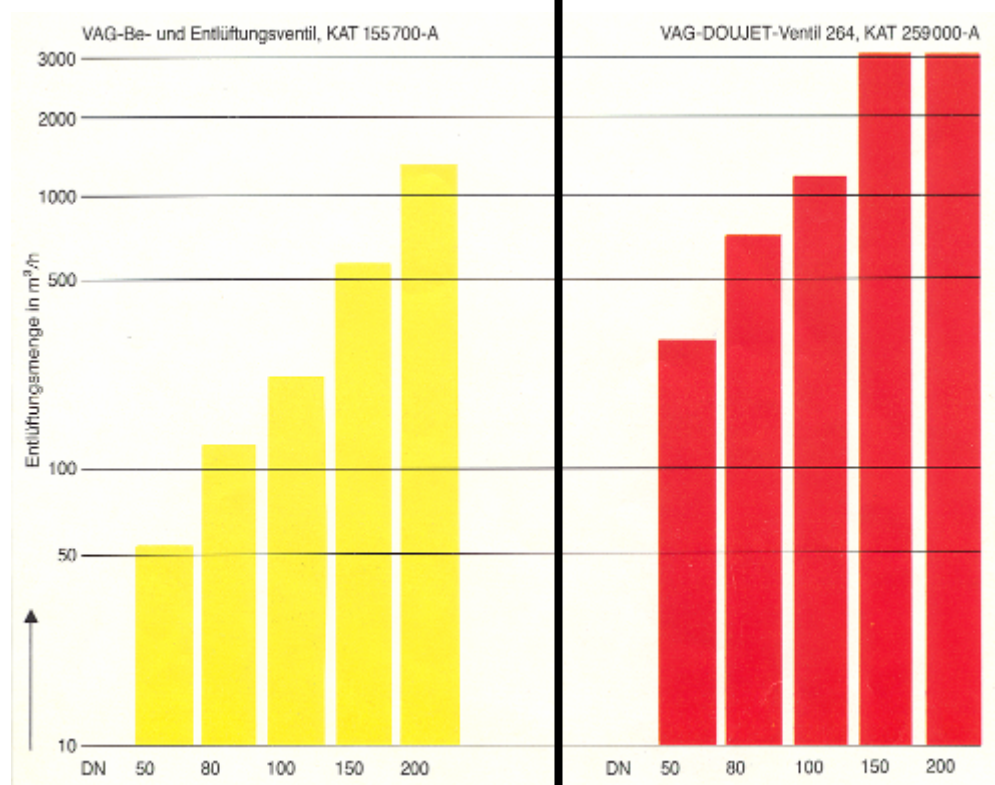
3. Venting during operation

CAPACITY COMPARISON

Double chamber

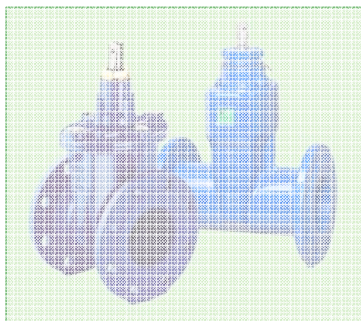


DUOJET

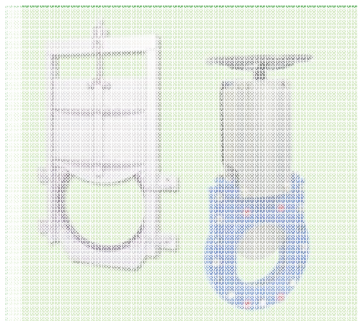


sales programme

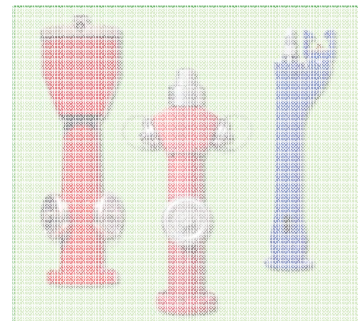
Gate valves



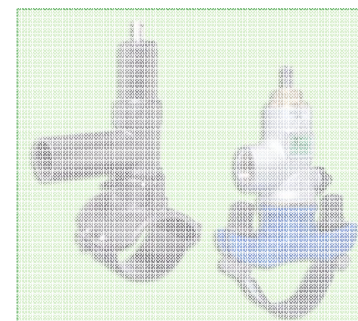
Penstocks/
Sluice Gates



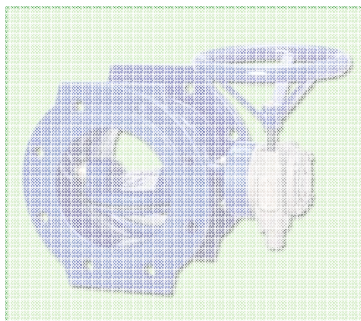
Hydrant



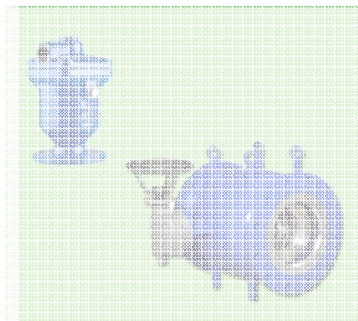
House connections



Butterfly valves



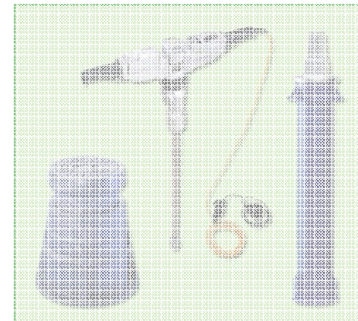
Control valves/
Air valves



Non return valves



Accessories



Delivery Programme non return valves



VAG TOP-STOP



VAG RETO-STOP



**VAG Straight Seat Swing
Check Valve**



**VAG Slanted Seat Swing
Check Valve**



**VAG Check Valve
with lever and weight**



VAG Rubber Flap

VAG Check Valves

Check Valves

not controlled



VAG **Slanted** Seat Swing
Check Valve

controlled

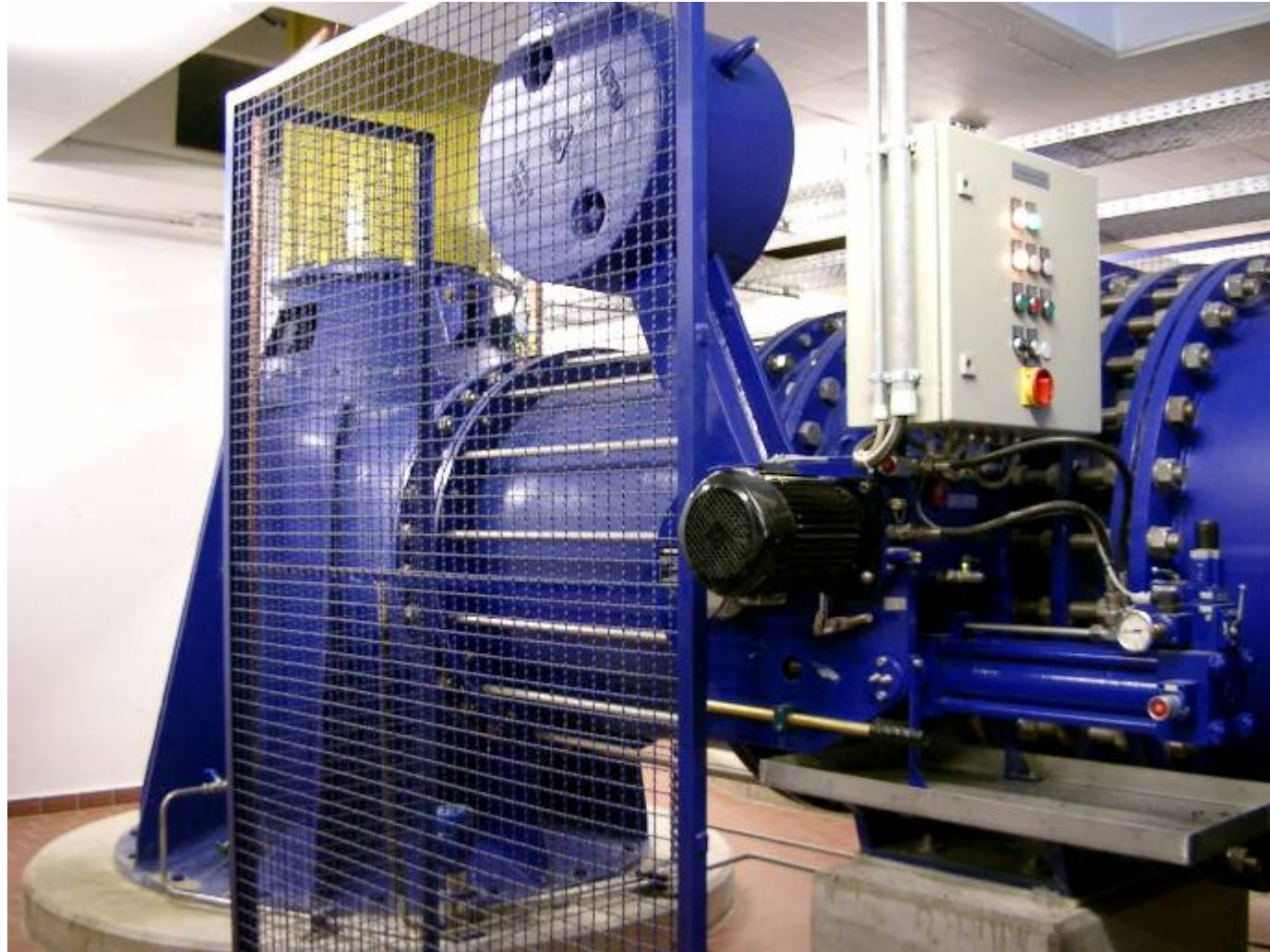


EKN Butterfly Valves
with lever and weight

VAG EKN BV with hydraulic actuator HB-HV as non-return protecting device



controlled



VAG Slanted Seat Tilting Disc Swing Check Valve

not controlled



VAG Slanted Seat Tilting Disc Swing Check Valve

not controlled

Hard Faced Nickel
superfinished

Cushioning
System

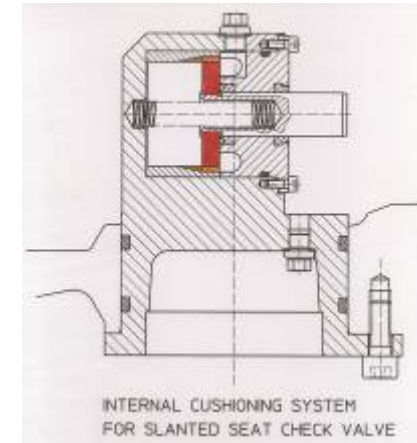
Position Indicator

Pin

10°

60°

VAG Slanted Seat Swing Check Valve Hydraulic Damper

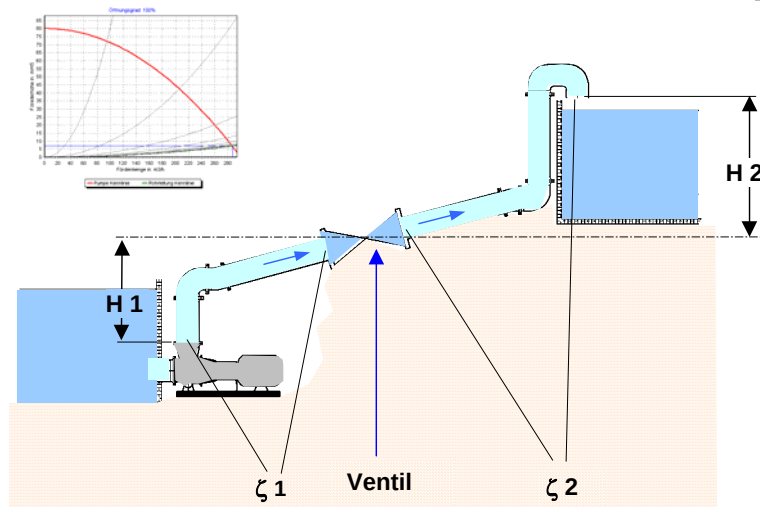


animation

Delivery Programme Service

Engineering Support

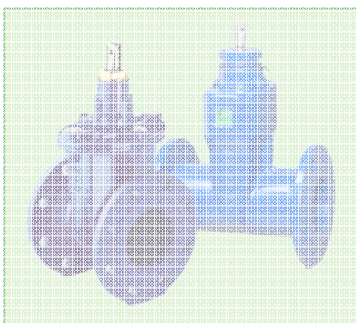
Valve calculation
with Use CAD



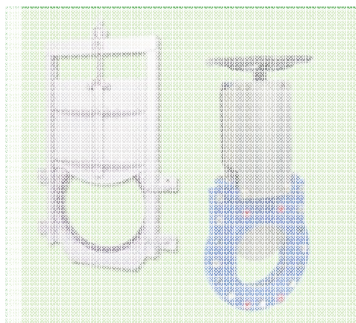
Service/ Maintenance at Valves

sales programme

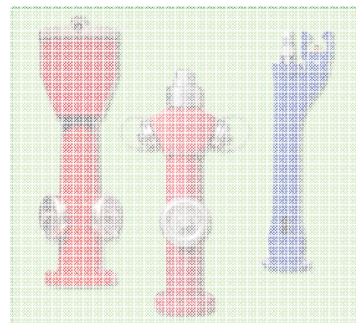
Gate valves



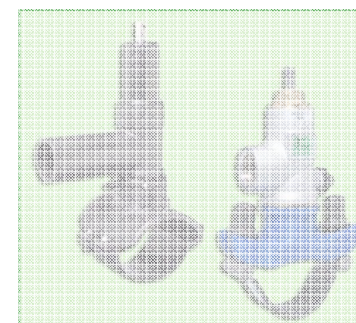
Penstocks/
Sluice Gates



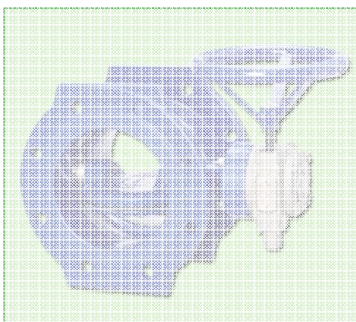
Hydrant



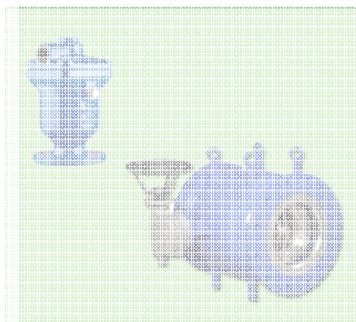
House connections



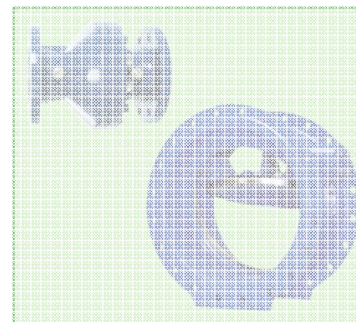
Butterfly valves



Control valves/
Air valves



Non return valves



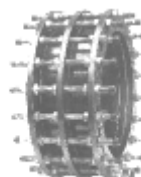
Accessories



sales programme accessories



**Dismantling Piece
non rigid**



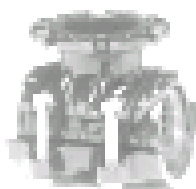
**Dismantling Piece
rigid**



ROTOP



Strainer



Split Tee



Pipe Connector



Flange Adapter



Strainer Basket



Electrical position indicator



Surface Boxes



Thanks for your attention

