

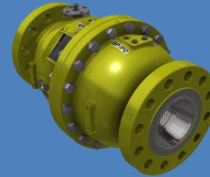
THE HYREVAL® WORLD PATENTED MULTI-FUNCTIONAL AXIAL VALVE SYSTEM

CLASSIFICATION OF HYREVAL® VALVE DEPEND OF DRIVE MODE AND DESIGN: HYDRAULIC DRIVE - TYPE HD.EXP & HD.FMO



- DRIVE AND DESIGN OPTIONS:
 - WITH EXTERNAL PRESSURE SOURCE AS A HYDRAULIC OIL PRESSURE, COMPRESSED AIR, WATER OR WATER EMULSIONS, OIL AND GAS...
 - DIRECTLY BY FLOW MEDIUM
- VALVE FUNCTIONS: EXTREMELY RELIABLE AND PRECISE FLOW CONTROL AND/OR ON/OFF, EMERGENCY SHUT-OFF AND DIFFERENT SAFETY OPERATIONS IN THE MOST DIFFICULT WORKING CONDITIONS IN DIFFERENT AREAS OF APPLICATION.
- DRIVE COMBINATIONS: SINGLE ACTING WITH OPTIONS FAIL TO CLOSE OR FAIL TO OPEN AND DOUBLE ACTING.

PNEUMATIC DRIVE - TYPE PHD & PD



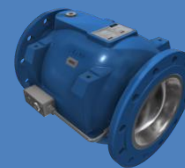
- DRIVE AND DESIGN OPTIONS:
 - PNEUMATIC MAIN DRIVE AND HYDRAULIC AS A EMERGENCY DRIVE TO OPEN AND/OR CLOSE DIRECTION, TYPE PHD
 - PNEUMATIC DRIVE ONLY, TYPE PD
- DRIVE WITH EXTERNAL PRESSURE SOURCE UP TO 10 BAR AS A COMPRESSED AIR OR BY FLOW MEDIUM DIRECTLY.
- AUTOMATIC VALVE FUNCTIONS, OPERATING DIRECTLY WITH FLOW MEDIUM AND PILOT VALVE.
- VALVE FUNCTIONS: FLOW CONTROL AND/OR ON/OFF, EMERGENCY SHUT-OFF AND DIFFERENT SAFETY OPERATIONS.
- DESIGN WITH SOLID PNEUMATIC PISTON OR ELASTIC DIAPHRAGM.
- DRIVE MODE AND VALVE DESIGN PROVIDES A VERY WIDE AREA OF APPLICATION FROM CRYOGENIC AREAS TO HOT STEAM.
- DRIVE COMBINATIONS: SINGLE ACTING WITH OPTIONS FAIL TO CLOSE OR FAIL TO OPEN AND DOUBLE ACTING.

MECHANICAL DRIVE - TYPE MD



- DRIVE AND DESIGN OPTIONS: HAND WHEEL ONLY, ELECTRO-MECHANICAL DEVICES LIKE „AUMA” BRAND OR SIMILAR, CLASSICAL OR SPECIAL ELECTRO-MOTORS, AIR-MOTORS, HYDRO-MOTORS,
- MANUAL OVERRIDE WITH HAND WHEEL AT THE ALL DRIVE OPTIONS,
- VALVE FUNCTIONS: FLOW CONTROL AND ON/OFF OPERATIONS
- FLOW MEDIUM: WATER (POTABLE, PROCESS, WASTE, RAW, SEA) OIL, GAS, ACID GASES CONTAINING H₂S, COMPRESSED AIR, LOW AND HIGH TEMPERATURE MEDIUMS (CRYOGENIC AREAS TO HOT STEAM)
- PERFORMANCE OF FEEDBACK TO VALVE OPENNESS IS DEPEND ON MECHANICAL DRIVE TYPE.

CHECK VALVE



- DESIGN OPTIONS AT OPERATING WITH FLOW MEDIUM ONLY:
 - CLASSICAL SOLUTION WITH SPRING, TYPE CV.SC
 - SOLUTION WITH ADJUSTABLE CHARACTERISTIC BY EXTERNAL FLUIDS AS A MINERAL OIL, TYPE CV.SH & CV.AC
 - ADVANCED THE MOST RELIABLE AND COST EFFECTIVE SOLUTIONS WITHOUT FLOW LOSSES ARISING FROM SPRING OR ACCUMULATOR ACTION, TYPE CV.SFMO & CV.AFMO & CV.EXP
- NOMINAL SIZE DN50-1400 (2"-56"), PRESSURE RATING PN16-400 (ANSI 150-2500), API 10000 (UP TO 700 BAR)
- ALL OPTIONS CAN BE EQUIPPED WITH DEVICE TO VISUAL CONTROL OF VALVE OPENNESS OR/AND LIMIT SWITCHES FOR REMOTE MONITORING

IN TERMS OF FUNCTIONS:

- FLOW CONTROL, ON-OFF, FLOW MEASURING
- DIFFERENT SAFETY FUNCTIONS AS A:
 - CHECK VALVES STANDARD OR ADVANCED DESIGN
 - SURGE RELIEF VALVE STANDARD OR REMOTE CONTROLLED
 - COMBINED CHECK AND RELIEF FUNCTION
 - EMERGENCY CLOSE AND/OR OPEN
 - SHUT-OFF WITH THROTTLING SERVICE AND HIGH INTEGRITY PRESSURE PROTECTION SYSTEMS - HIPPS
- DIFFERENT FUNCTIONS AS A AUTOMATIC VALVES OPERATED BY FLOW MEDIA

BY TYPE OF FLOW MEDIUM:

- WATER: POTABLE, PROCESS, WASTE, RAW, SEA
- OIL, GAS, ACID GASES CONTAINING H₂S
- COMPRESSED AIR
- LOW TEMPERATURE MEDIUMS, CRYOGENIC AREAS
- HIGH TEMPERATURE MEDIUMS, HOT STEAM

APPLICATION AREA:

- WATER, WATER DISTRIBUTION AND WATER MANAGEMENT
- ENERGY; HYDRO, THERMAL AND NUCLEAR POWER PLANTS
- PROCESS INDUSTRY
- OIL & GAS
- REFINING & PETROCHEMICAL
- OFF SHORE & MARINE EQUIPMENT
- LNG FACILITIES AND CARRIERS
- CRYOGENIC AREA TO HOT STEAM
- FUELS, AVIATION AND ROCKET ENGINEERING
- UNDER WATER AND SUBMERGED INSTALLATIONS

SENSORS AND FEEDBACK SYSTEMS

OF VALVE OPENNESS:

- INTERNAL INSTALLED MEASURING DEVICE - FEEDBACK SYSTEM TYPE INCP
- EXTERNAL MEASURING SYSTEM - FEEDBACK SYSTEM TYPE EXCP



THE HYREVAL® NOMINAL SIZES



AND PRESSURE RATINGS

HYREVAL® AXIAL FLOW VALVE SYSTEM, CONSTRUCTIVE AND TECHNOLOGICAL SOLUTIONS WITH THE USE OF APPROPRIATE MATERIALS RESULT FOR RELIABLE OPERATION WITH:

- A WIDE RANGE OF VALVE SIZE UP TO 2000 MM
- VERY HIGH OPERATING PRESSURE, UP TO 700 BAR
- VERY WIDE OF APPLICATION AREA

SYSTEM REVIEW

RANGE OF VALVE SIZE AND PRESSURE RATING - COMPREHENSIVE SCOPE



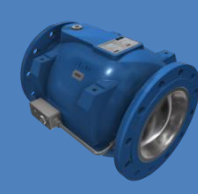
HYDRAULIC DRIVE



PNEUMO AND PNEUMO-HYDRAULIC DRIVE

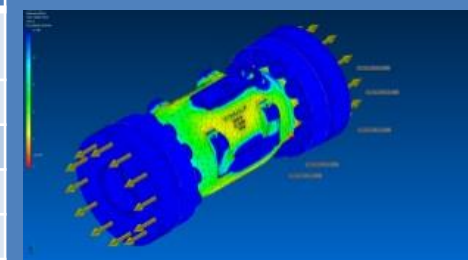


MECHANICAL DRIVE



CHECK VALVE

| HYREVAL® NOMINAL SIZE MM (NPS - INCH) | PRESSURE RATING | | | | | | |
|---|-------------------|-------------------|--------------------|--------------------|---------------------|---------------------|---------------------|
| | PN 20 ANSI 150 | PN 50 ANSI 300 | PN 100 ANSI 600 | PN 150 ANSI 900 | PN 250 ANSI 1500 | PN 400 ANSI 2500 | PN 690 API 10000 |
| ≤ 400 (16") | → | | | | | | → |
| ≤ 600 (24") | → | | | | | | |
| ≤ 1200 (48") | → | | | | | | |
| ≤ 2000 (80") | → | | | | | | |



PRESSURE RATINGS ACCORDING TO REGULATIONS:

- EN 1092 AND DIN 2543-2551
- ANSI, ASME AND API

TESTING:

HYDROMAT® PRODUCTS ARE MANUFACTURED AND TESTED IN STRICT ACCORDANCE TO DIN EN 12266-1&2 OR ASTM, ASME, ANSI, API AND OTHER APPLICABLE INDUSTRY CODES AND SPECIFICATIONS. QUALITY ASSURANCE PROCEDURES INCLUDE 100% HYDROSTATIC AND PNEUMATIC TESTING OF ALL VALVES.

MATERIAL:

- DUCTILE CAST IRON EN-GJS 400-15 (GGG 40) PRESSURE/TEMPERATURE RATINGS ACC. TO EN 1092-2
- CARBON STEEL CAST - PRESSURE/TEMPERATURE RATINGS ACC. TO EN 1092-1 MATERIAL GROUP 3E0 (1.0425; 1.0460; 1.0619) AND DIFFERENT HIGH TENSILE STAINLESS STEEL
- WELDED DESIGN POSSIBILITY:
 - THE VALVE BODY MADE IN CARBON STEEL, INTERNAL PARTS MADE IN DIFFERENT STAINLESS STEEL
 - ALL VALVE PARTS, INCLUDE THE VALVE BODY ARE MADE IN DIFFERENT STAINLESS STEEL

THE CONSTRUCTION AND DESIGN ACCORD TO:

- SPECIFICATION AD 2000 AND EN 13445 FOR PRESSURE VESSELS
- PED 97/23 EU (PRESSURE EQUIPMENT DIRECTIVE)
- 89/336 EEC EU ELECTROMAGNETIC DIRECTIVE

DUCTILE CAST IRON



DIFFERENT MATERIAL OF CASTING THE VALVE BODY, FROM CARBON STEEL, STAINLESS STEEL INCLUDED SUPER DUPLEX

