

TECHNICAL SPECIFICATIONS

Modena, 28/02/2011

MATERIALS

CARTRIDGES AND INTERNAL COMPONENTS: Cartridge bodies are manufactured from high grade cold drawn steel bar and all the external parts are zinc plated for a long durability also in difficult environments. Valve's internal working parts are hardened and ground or lapped for maximum performance and durability.

MANIFOLDS: Cartridge and parts in body valve manifolds and integrated circuit blocks are manufactured from high strength aluminum bar and high quality steel. As a standard, steel manifolds are always zinc plated (Crome 3 treatment) while aluminum bodies can be anodized on request. For complete specifications and compatibilities, please consult our Engineering department.

For pressures above 210 bar we recommend to use steel bodies. In most cases the aluminum bodies are strong enough, but if transient peak pressures are frequently encountered, there is a possibility of fatigue cracks.

COILS: external encapsulating material of our coils is made of class H thermoplastic compound as well as internal copper wire.

PORTS

Standard port dimension on our valves, when not flanged, is BSPP size, ranging normally between G1/4" and G1-14". SAE 'O' Ring and NPT ports are available on request, as well as special flange dimensions.

SEALS, BACK-UP RINGS AND SLIDE RINGS

We use Acryl-Nitrile Butadiene NBR (BUNA-N) seals as standard for temperatures between -30°C and +100°C. Viton seals or other compounds are available on request.

Back-up rings and slide rings are made of reinforced poly-tetrafluoroethylene (PTFE).

STORAGE OF NEW VALVES

The valves must be stored in their original plastic envelope or cartoon box in a dry, dust-free atmosphere, free of corrosive agents, with a low moisture content and no large variations in temperature and not exposed to direct sun light or sources of heat or ozone (this could cause fast wearing of valve seals). Storage temperature must be between -20°C and +50°C.

FLUIDS AND WORKING TEMPERATURE RANGE

Recommended fluid is mineral oil based fluid, such as HL type (DIN 51524 part 1) or HLP type (DIN 51524 part 2) with operating viscosity comprehended between 10 and 380 cSt. High viscosity and low temperatures may lead to a slower valves response than in warm oil conditions.

For water based fluids, such as 95/5 and 60/40 emulsions, please consult Factory.

Fluid working temperature should be comprehended between -30°C and +100°C. For other working conditions, please consult our Engineering dept.

FUNCTIONAL TEST

All the valves we sell are subjected to functional test. The tests are carried out using ISO VG 46 hydraulic oil (viscosity of 46cSt at 40°C) and with oil temperature comprehended between 30 and 40 °C.

FILTRATION

Our valves are made of precision machined mechanical components: hydraulic circuits contamination is the main cause of the majority of failures which occurs during normal working conditions. We recommend the following filtration levels:

SYSTEM WORKING PRESSURE:	NOM. FILTRATION	CONTAMINATION CLASS:	
> 250 BAR:	10 µm	ISO 4406: 17/14	NAS 1638: 8
BETWEEN 100-250 BAR:	15 µm	ISO 4406: 18/14	NAS 1638: 9
< 100 BAR:	25 µm	ISO 4406: 19/15	NAS 1638: 10-11

INTERNAL LEAKAGE

Many of our valves have a leak proof seat design: this means that the maximum allowed oil leakage value is 1 cc/min (about 15-20 drops/min) measured with 46cSt oil at 40°C and at the maximum allowed pressure. Anyway, normally leakage is found to be less than 10 drops/min and tends to decrease or disappear after few seconds of rest of the valve. These are the maximum acceptable limits, but anyway each type of valve has different performances according to its design: please refer to our Engineering dept. for information about each valve type.

VALVE SETTING AND TAMPERPROOF DEVICES

SETTING: Our valves are supplied Factory set as stated on the corresponding catalogue page. The adjustment range and maximum setting figures shown on the catalogue are the safe limits according to each valve specific design: in the majority of the cases higher or lower values could be attainable, but they should be used only with written approval of our Engineering dept. In any case, setting must always be carried out using an appropriate gauge or pressure/flow measuring equipment.

TAMPERPROOF: The majority of our cartridges and parts in body valves have the possibility to be equipped with a plastic tamperproof cap to prevent any undesired modification of valve setting: please refer to each catalogue page for the choice of the correct cap. On request, valve can be supplied already Factory set and sealed.

CARTRIDGE VALVE INSTALLATION

The correct machining of the cavities is critical to ensure best performance of our cartridges. Cavity tools are available for sale and cavity drawings can be found in the specific section of our catalogue or requested to our Engineering dept.

To correctly install cartridges into their cavity, please follow this procedure:

- Check that external seals and back-up ring are correctly fitted and without any damage;
- Ensure that cavity and cartridge body are clean and without any visible contamination;
- If necessary, immerge cartridge body into clean oil to take away any impurity and to lubricate the seals;
- Screw the cartridge into its cavity by hand, until mechanical contact is reached, being sure that during screwing there is no abnormal friction between cartridge and cavity;
- Tighten the cartridge with a calibrated torque wrench applying the correct torque as specified on the corresponding catalogue page.



TORQUE FIGURES

For correct cartridge behavior and to prevent any failure due to cartridge internal parts sticking together, the correct torque must always be applied when fitting cartridges into their cavities: the correct torque value can be found on each cartridge catalogue page.

COILS

ED RATE: All our coils are rated ED 100%, so they can stay energized during 100% period of the working cycle, provided that nominal voltage and maximum ambient temperature are not exceeded.

TEMPERATURE CLASS: As standard, encapsulating material and copper wire are rated CLASS H: this means that ambient temperature + temperature rise due to coil operation cannot exceed 180 °C. Class F coils are available on request (maximum 155 °C). External surface of the coil can easily reach very high temperature after long energizing period (80-100°C): particular care must be taken to avoid accidental injuries to workers and operators. To prevent premature burning of the coils, it is also requested that coils are installed in such a way to grant air circulation around them and to prevent excessive heating of the surrounding ambient.

IP PROTECTION CLASS: Standard insulation class of our coils is IP65, provided that all the seals between coil and solenoid cartridge tube/nut and between coil and connector are all properly fitted. Coil with Deutsch connector are rated for IP69K insulation class.

INLET VOLTAGE: Normally, our coils can accept fluctuations of inlet voltage comprehended between $\pm 10\%$ without compromising normal functionality, unless specified on each coil catalogue page. In case of different requirements, please refer to our Engineering dept.

POWER SUPPLY: Our solenoid operated cartridges are designed to operate only with DC (direct current) power supply: in case of AC (alternate current) applications, please apply between power supply and coil a current rectifier and use the proper RAC (rectified alternate current) coil.

Engineering Department

