

TECHNICAL ASSEVERATED APPRAISAL

DIAPHRAGM VALVES P.E.D.- 1997 EUROPEAN DIRECTIVE & RELEVANT NATIONAL LEGISLATION CONTAINMENT & SAFETY INSPECTION

Assignment: RUPNIK Ltd. Located in Via R. Ceccardi 2/11-Genova-Italy

PREMISE

The undersigned Engineer Dott.Ing Mario SANTINI, born in Rome the 03-06-45, with office located in C.so Sardegna 42/32, Genova, Italy, associated to the Order of the Engineers of Genoa Province, with n°4640 and to the bulletin-board of the Experts of the Court in Genoa, **was entrusted by the person responsible of the RUPNIK Srl Co, Engineer Dr. G.B. Rupnik, to do make a “Technical Check” on the commercial Diaphragm Valves, primarily used in the Chemical Industry area, to ascertain the specific “Containment and Safety” state in respect of the legislation concerning the 1997 P.E.D. with the relevant adjournment and relevant National Laws.**

ANALYSIS

The undersigned proceeded in date 16/04/2003, along a specific product analysis both in office and store stages, relevant to the Rupnik Co., in order to examine the various types of Diaphragm Valves existing in commerce, and to deepen all the various technical aspects, with special reference to the “Containment and Safety” concept, concerning the European P.E.D. (Pressure European Directive 1997) ¹⁾ and relevant National Legislation ²⁾.

With reference to what concerns all the industrial equipment, as pipelines, tanks, valves, pumps and accessories and general plants to be supplied in conformity to the new national laws issued since last year, ***which by law must comply with the "Containment" concept so that nothing that is contained in the new plants can possibility leak into the surrounding environment, above all toxic or explosive products,*** as in the past and recent cases (as for instance Diossina: Milan; Cancer Enichem: Veneto; Mercury: Sicily; Explosion French Riviera. etc.), we are presently highly concerned. Particularly for the " Diaphragm Valves", we are not certain of the rigorous compliance to the above legislation for the various types of valves, specially for the chemical plants for low and medium pressure (when dealing with dangerous products for our health).

Particularly, "Diaphragm Valves", both manual and actuated, in such cases if out of Compliance, can allow the most great environmental dangers, with alarming consequences.

In fact metal being, by its own merits, excluded for such interception system, the use of elastomers is a must for such function as it can allow the use of the most different products, liquid or gaseous (among which also the most dangerous, included the very toxic and explosive ones). The characteristic of this diffused type of interception, based on a diaphragm of various rubbers types or plastic (including “teflon” which can be employed, for instance, for sulphuric acid up to some 120°C), together with the most appropriate body linings, can be employed for a vast range of products, acids and basics.

Therefore the danger has to be found in case of a diaphragm failure (even though rare but not excluded), where the “operating system” needs by law to assume the duty of Containment with the purpose to avoid tragedies as those above indicated, which appear in some cases to be disregarded, as shown in the present text concerning type “B”.

In respect of the market position of this type of valves, the undersigned has been confronted with advertising showing cases breaching the new normative due to possible serious dangers for gas or liquid escapes, with consequent poisonings e/o explosions.

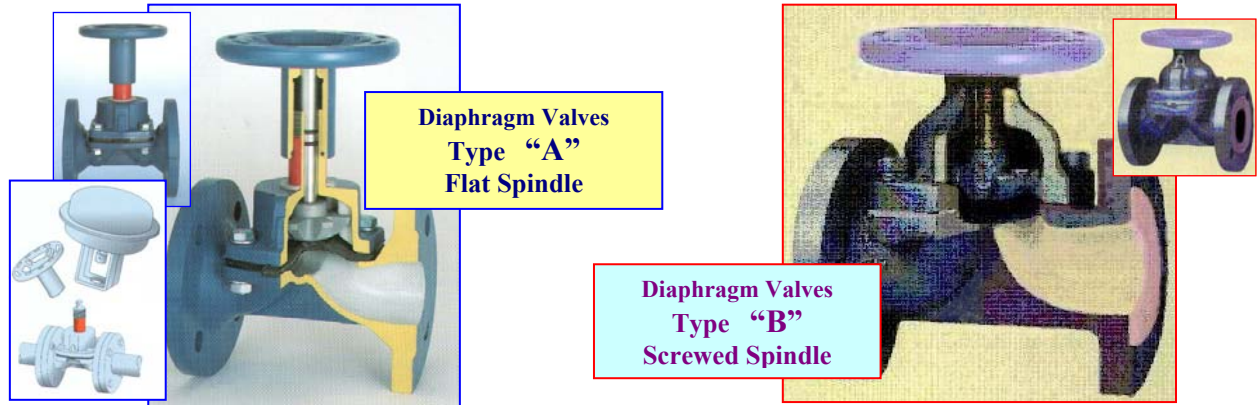
Moreover such infringement could be motive for inevitable damage to the European industry, on account of the possible competition from low cost (and low quality) products from the most different origin, as signalled by ANIMA (National Association Metalmeccanici).

1) Directive 97/23/CE of the European Parliament for the approximation of legislations of States Members in subject of pressure equipments - *Official Gazette* n. L 181 of 09/07/1997; with 29/07/2002 updating;

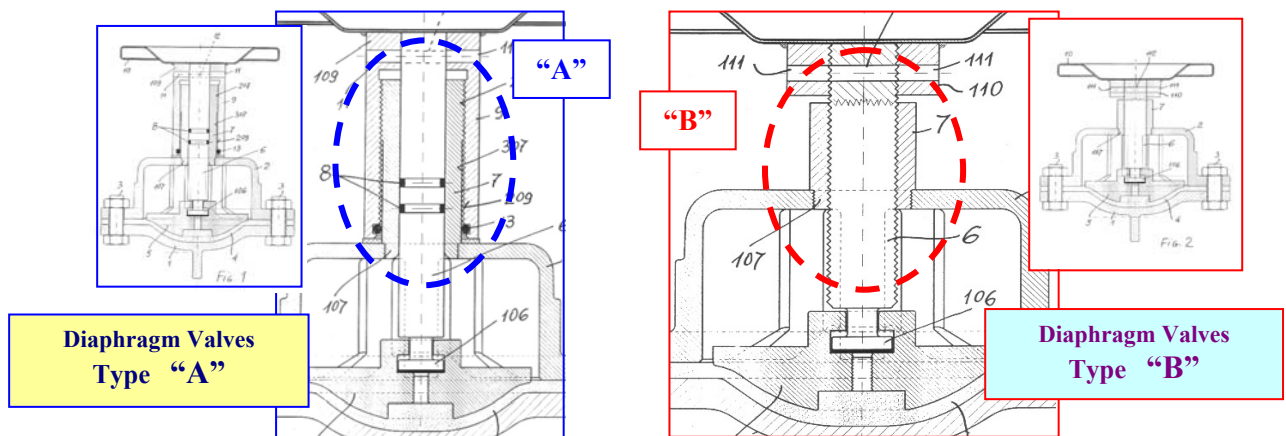
2) DECRETO LEGISLATIVO 25 febbraio 2000, n. 93 - Attuazione della direttiva 97/23/CE in materia di attrezzature a pressione. - (SUPPLEMENTO ORDINARIO N. 62/L) - *Gazzetta Ufficiale* n. 91 del 18-04-2000.

TECHNICAL INSPECTION

The Diaphragm Valves considered in the present Technical Investigation are of two main Weir type, practically represent the existing, both National and World Wide production:



The substantial difference among the two types of Diaphragm Valves concerns the inside screw for the operating system of the spindle, as shown by sketch "A" and "B":



Precisely, for Diaphragm Valves type "A" the undersigned verified that the inside spindle results to be smooth (that is without a screw), such screw being located in hand-wheel set-up.

In such a way, with appropriate "tolerances", the function of the "o-ring" is definitely a guarantee of full safety and superior containment values in respect of the valve specifications, with consequent full compliance with the 1997 P.E.D. and the relevant national laws.

Moreover the actuation of this solution is simple and effective in manufacturing terms and flexibility, allowing the change to actuation just taking off the hand-wheel and fitting the actuator to the bonnet and to the existing spindle, maintaining the full containment version with a simple, low-cost solution.

On the other side, for the type "B" Diaphragm Valve the undersigned verified that the inside spindle appears to have a screw which cannot guarantee "Containment" in case of diaphragm failure, allowing the line fluid to have access to the external ambient.

Moreover "pneumatic actuation" requires the complete substitution of the bonnet, leaving the "containment" problem to the actuation unit.

CONCLUSION

Summarizing what deducted and stated, the undersigned declares to have carried out the demand with the maximum scruple, *expanding the verification complied with objectivity concerning Diaphragm Valve normally produced, assessing that type "B" of such version is not coherent and not conforming to the present National law and the European Directive (P.E.D.: Pressure European Directive).*

Genova, 29/09/2003

The Technical Consultant:
Dott.Ing. Mario SANTINI