

CONSIGNES

L'utilisation du dictionnaire bilingue est autorisée.

Lire attentivement tout le document « Maxroy Dosing Pumps ».

EXAMEN : BEP MAINTENANCE DES ÉQUIPEMENTS DE COMMANDE DES SYSTÈMES INDUSTRIELS - Épreuve : Anglais		N° d'anonymat
<i>GROUPEMENT INTERACADÉMIQUE II</i> Session 2002 Feuille : 1/4		N° d'anonymat
EXAMEN : BEP MAINTENANCE DES ÉQUIPEMENTS DE COMMANDE DES SYSTÈMES INDUSTRIELS - Épreuve : Anglais		
Durée :	Coef :	
NOM :	Prénom :	

A - TRAVAIL À FAIRE EN FRANÇAIS

I - Rédigez un compte rendu en français dans lequel vous ferez apparaître les points suivants du système présenté (8 points) :

- a) quatre domaines d'application (2 points),
- b) quatre caractéristiques (2 points),
- c) deux avantages de ce système (2 points),
- d) la précision du système (2 points).

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II - Traduisez en français le paragraphe « Security » de « The integrated safety valve... » jusqu'à « ... under pressure equilibrium ». (6 points)

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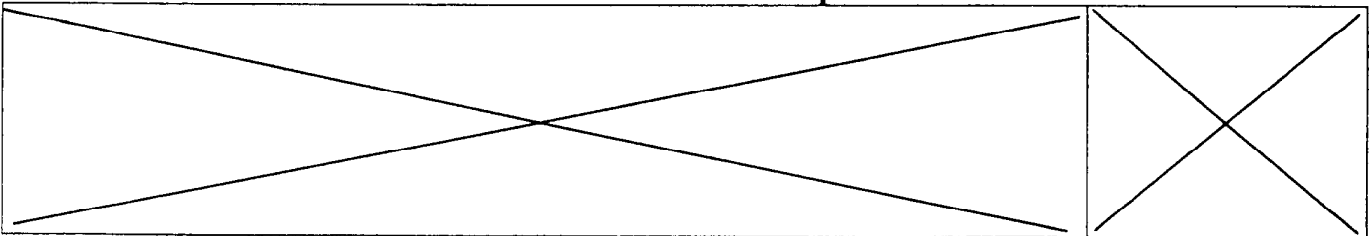
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BEP Maintenance des Équipements de Commande des Systèmes Industriels	Anonymat
Anglais	Feuille 2/4

Ne rien inscrire sur les parties



B - TRAVAIL À FAIRE EN ANGLAIS

III - Répondez en anglais aux questions suivantes en faisant des phrases complètes (6 points) :

a) How long can the diaphragm last? Explain why. (2 points)

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b) What can the maximum suction pressure condition be? (1 point)

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c) For the flow rate adjustment, where does the make up oil come from? (1 point)

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d) Give two options for the Maxroy dosing pumps. (1 point)

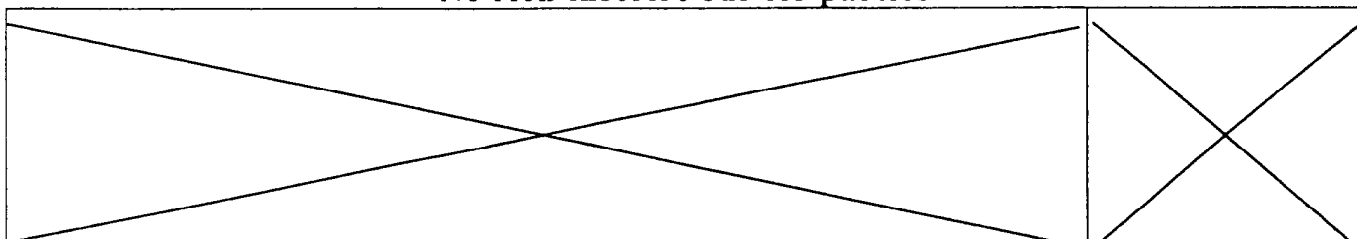
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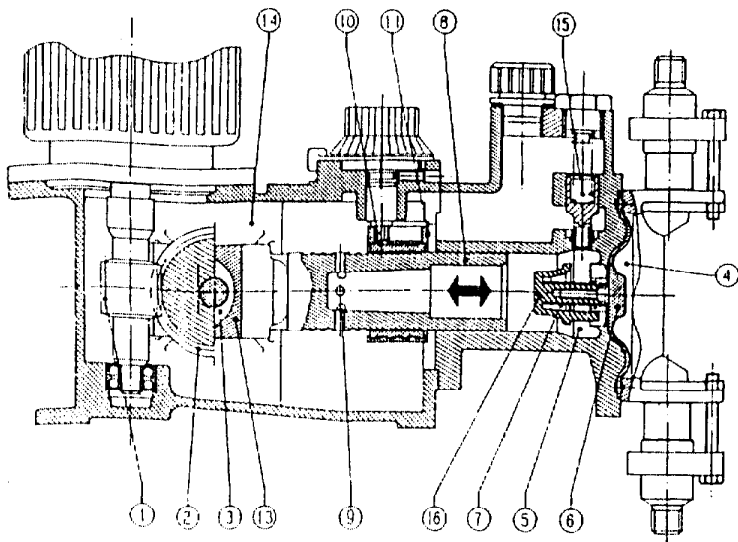
e) Why is the air purge incorporated in the safety valve? (1 point)

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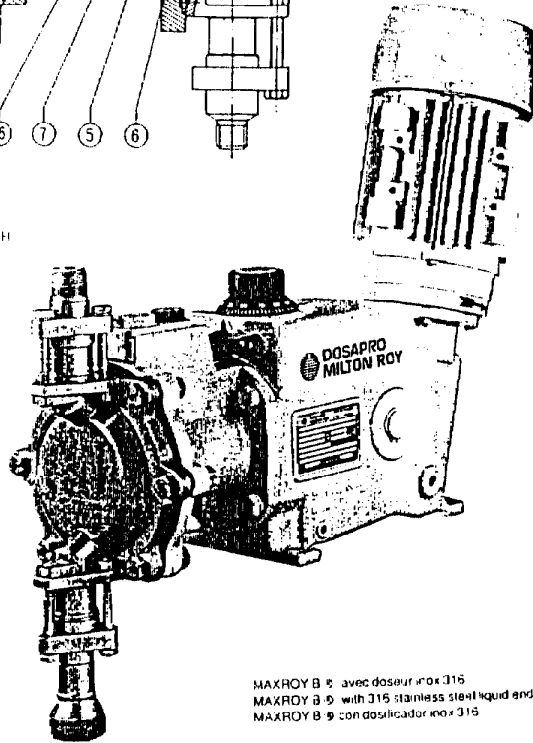
BEP Maintenance des équipements de commande des systèmes industriels	Rappel codage
Anglais	3/4

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Modelo presentado RA 96 G 5 H
 Model shown RA 96 G 5 H
 Modelo presentado RA 96 G 5 H



MAXROY B avec doseur inox 316
 MAXROY B with 316 stainless steel liquid end.
 MAXROY B con dosificador inox 316

Principal characteristics

- Hydraulically actuated diaphragm
- Capacity : up to 1100 l/h.
- Pressure : 28 bar max.
- Single or double diaphragm
- Max temperature for pumped fluid :
 - 50°C for plastic liquid end
 - 90° C for metallic liquid end
- Flow is adjustable, while stopped or running from 0 - 100 % of nominal flow.
- Accuracy, within the range 10 to 100 % of the nominal flow $\pm 1\%$.
- Oil bath lubricated
- Cast iron housing
- Integral relief valve, normally set at the factory.
- Optional relief valve settings
 - 6 to 12 bar (Maxroy A105 and B145)
 - 12 to 32 bar (Maxroy B105)
- Maximum suction pressure condition : 2 bar
- Minimum back pressure : 2 bar
- Working life of the diaphragm can exceed 20.000 hours depending on the pumped fluid, working conditions and installation.
- Can comply with API 675.
- Duplex and triplex version on request.

Operating principal

The worm and wheel (1) & (2) drive, by means of an intermediate eccentric (3), the parallel bushing (13), which transmits a fixed stroke reciprocating motion to the hollow piston (8). The piston displaces the intermediate oil contained in the chamber (5) which actuates the diaphragm (6). The hydraulic chamber (5) connects with the housing (14) by means of radial orifices (9) in the hollow piston (8). The pinion (10) acts on the piston sleeve (11). The orifices (9) are opened or closed by the sleeve (11) according to the position of the piston (8). The spring (7) ensures accurate dosing by maintaining a relative pressure in the chamber (5) whilst the orifices (9) are open, this pressure being greater than the hydraulic loss through the control orifices.

Flow rate adjustment

The case of a pump set to give 66% of its nominal flow rate :

SUCTION PHASE :

The hollow piston moves back. During the first two thirds of its stroke length the orifices (9) are blocked by the piston sleeve (11); a suction pressure exists in the chamber (5); the diaphragm (6) follows the hollow piston (8); the pumped fluid enters into the pumping chamber (4). During the last third of its stroke, the orifices (9) are open putting the chamber (5) and the housing (14) in direct communication; the diaphragm is pushed to its back position by the spring (7); the make up oil drawn in by the retreat of the hollow piston (8) is supplied from the housing (14).

DELIVERY PHASE :

The hollow piston moves forward. During the first third of its stroke the orifices (9) are open; the diaphragm (6) is pushed to its back position by the spring (7); oil displaced by the hollow piston (8) is delivered into the housing (14) by way of the orifices (9). During the last two thirds of its stroke the orifices (9) are blocked by the piston sleeve (11); the hollow piston (8) puts the hydraulic chamber (5) under pressure; the diaphragm (6) moves forward pushing the pumped liquid out of the doser.

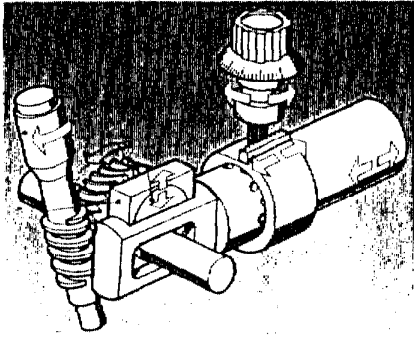
Security and accuracy

Security

The integrated safety valve (15) protects the pump against possible excess pressures in the discharge. The safety valve (16) mechanically limits the play of the diaphragm and thus prevents its rupture if excess hydraulic oil enters into the chamber (5), as occurs, for example, if the pump is badly installed with an excessive vacuum at the suction. Due to the safety valve (16), the diaphragm (6) always works under pressure equilibrium. In the closed position the safety valve isolates the diaphragm. The pressure in the chamber (5) is then only applied to mechanical elements.

Accuracy

The air purge incorporated in the safety valve (15) guarantees the precision of dosing. The spring (7) ensures an exact and repetitive positioning of the diaphragm in the back position.



MAXROY® DOSING PUMPS

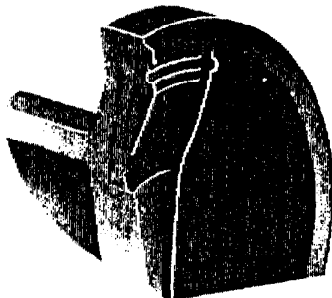
MAXROY® Modular

MAXROY® The performance of the composite diaphragm

The composite diaphragms with integral "O" ring give the MAXROY® dosing pumps their remarkable performance :

- **An exceptional lifespan**

Working lives greater than to 20,000 hours have been recorded during laboratory tests at maximum pressure and flow rate. This performance is explained by the specific shape of the diaphragm which only works with a rolling action, thus avoiding all stretching and deformation of the PTFE.



- **Total sealing**

The reliability of this diaphragm allows corrosive, polluting or dangerous products to be dosed. On double diaphragm dosing pumps a rupture detection system, visual or electric (1), reinforces security of use.

- **Easy maintenance**

The diaphragm's conception simplifies the assembly and disassembly of the liquid end, the diaphragm remains reusable after disassembly due to its elastomer support which prevents deformation of the PTFE.

- **Very versatile**

MAXROY® pumps can easily be fitted with the following optional items :

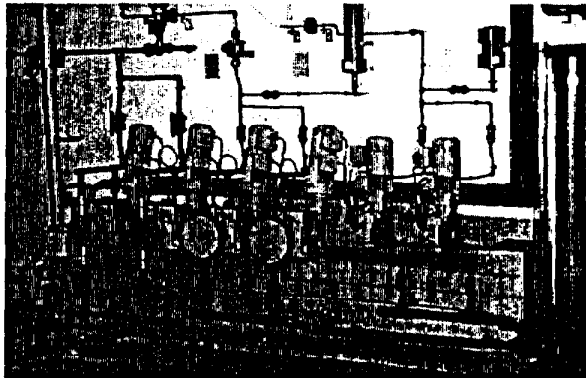
- Check valves adapted to all fluids.
- Screwed, flanged or food grade connections.
- Electric or pneumatic servo-motors.
- Frequency inverter.
- Stroke counter.

MAXROY® pumps can also be multiplexed. For further information, consult us.

- **Conformity with the API 675 standard can be obtained :**

The semi-elastic drive coupling and the adjustable safety valve mean that the MAXROY® pumps conform to the API 675 (1) standard as required in the oil related industries.

(1) - API : American Petroleum Institute



Applications

- Water treatment
- Chemical industry
- Petrochemical industry
- Oil and Gas
- Food industry
- Paper industry
- Mining
- Cosmetics
- Nuclear industry
- Horticulture and market gardening:

(1) - optional