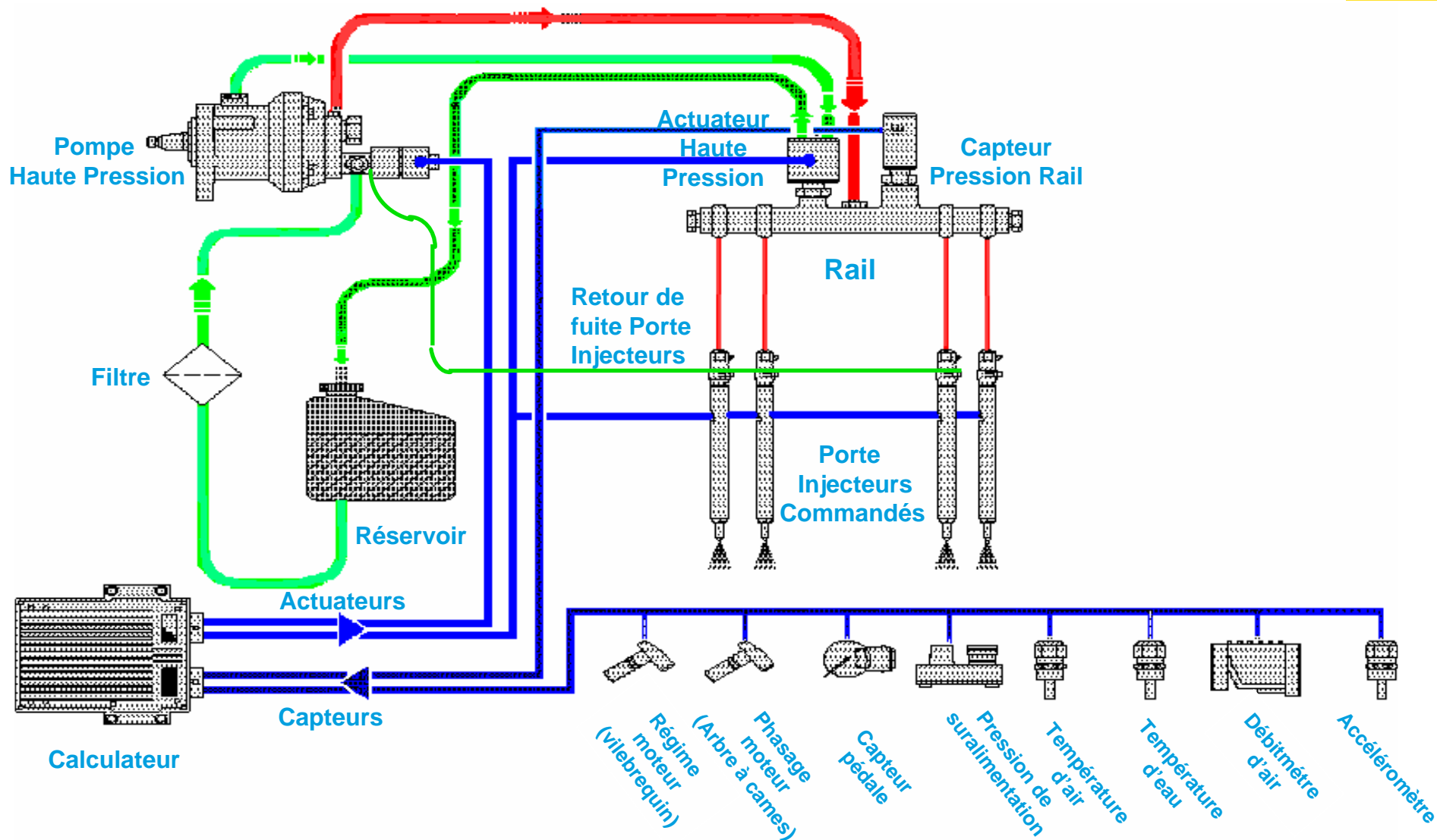


LUCAS VARITY COMMON RAIL APPLICATION Moteur K9

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SCHEMA GLOBAL DU SYSTEME

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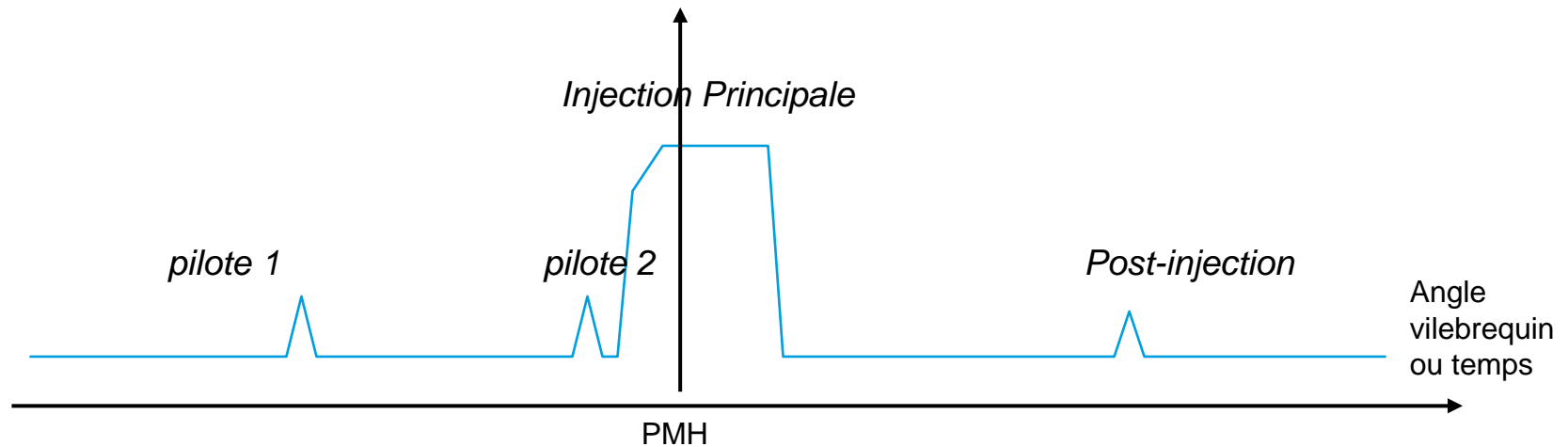
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Domaines d'utilisation

Puissance nominale	10 à 30 kW par cylindre
Cylindrée	0.25 à 1.0 litre par cylindre
Nombre de cylindres	3, 4, 5 & 6
Disposition des cylindres	En ligne, en V
Régime moteur (tr/min)	
■ Démarrage	100 à 200
■ Démarrage à froid avec aide ($T > -40^{\circ}\text{C}$)	100
■ Régime de ralenti	>500
■ Régime de couple maximum	1500 à 3500
■ Régime de pleine charge	0 à 5000
■ Régime maximum	5500
■ Régime limite	6000
Processus de combustion	Injection Directe (DI)
Refroidissement du moteur	Eau ou air
Rotation	Sens des aiguilles d'une montre ou l'inverse
Admission d'air	Atmosphérique, Turbocompressé
Refroidisseur d'air	Avec, Sans
Contrôle de la waste gate	Avec, Sans
Turbo à géométrie variable	Avec, Sans
Recyclage des gaz d'échappement (EGR)	Avec, Sans
Distribution variable	Avec, Sans
Swirl variable	Avec, Sans
Catalyseur DeNOx	Avec, Sans
Température maxi carburant:	70° en continu, 85° en pointe à l'entrée pompe
Durée de vie:	300 000 kilomètres

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INJECTIONS MULTIPLES



- ° schéma d'injection variable
- ° pression jusqu'à 1600 bar
- ° contrôle des faibles débits jusqu'à 1600 bar
- ° 100 μ s de séparation mini entre les injections

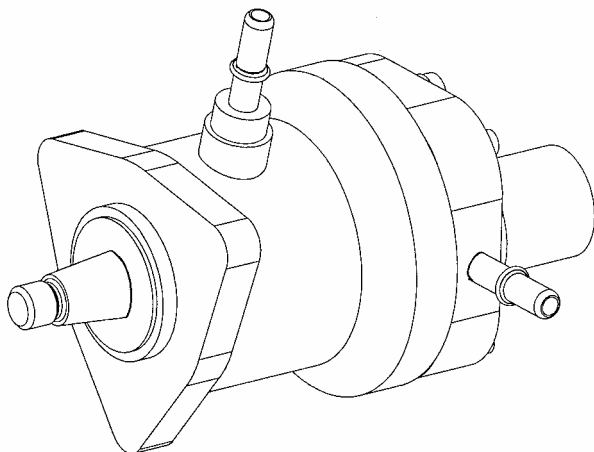
COMPOSANTS

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POMPE

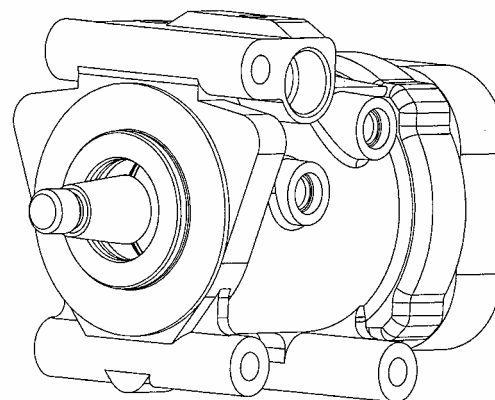
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TYPES de fixation POMPE HP



Pompe HP à 2 chambres
Fixation axiale standard

Pompe HP à 1 chambre
Fixation sur le côté



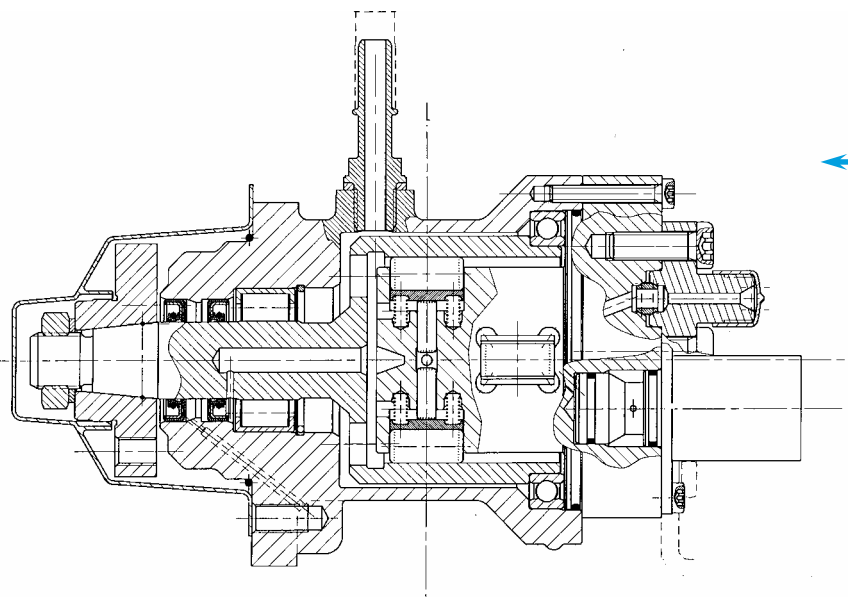
Pompe à entraînement
sur ligne d'arbre à cames



A DEVELOPPER
AVEC LE CONSTRUCTEUR

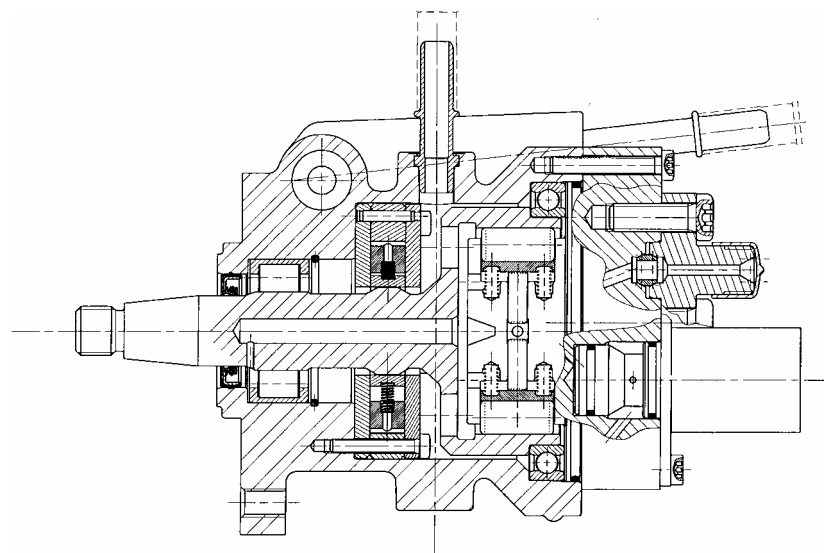
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POMPES HAUTE PRESSION



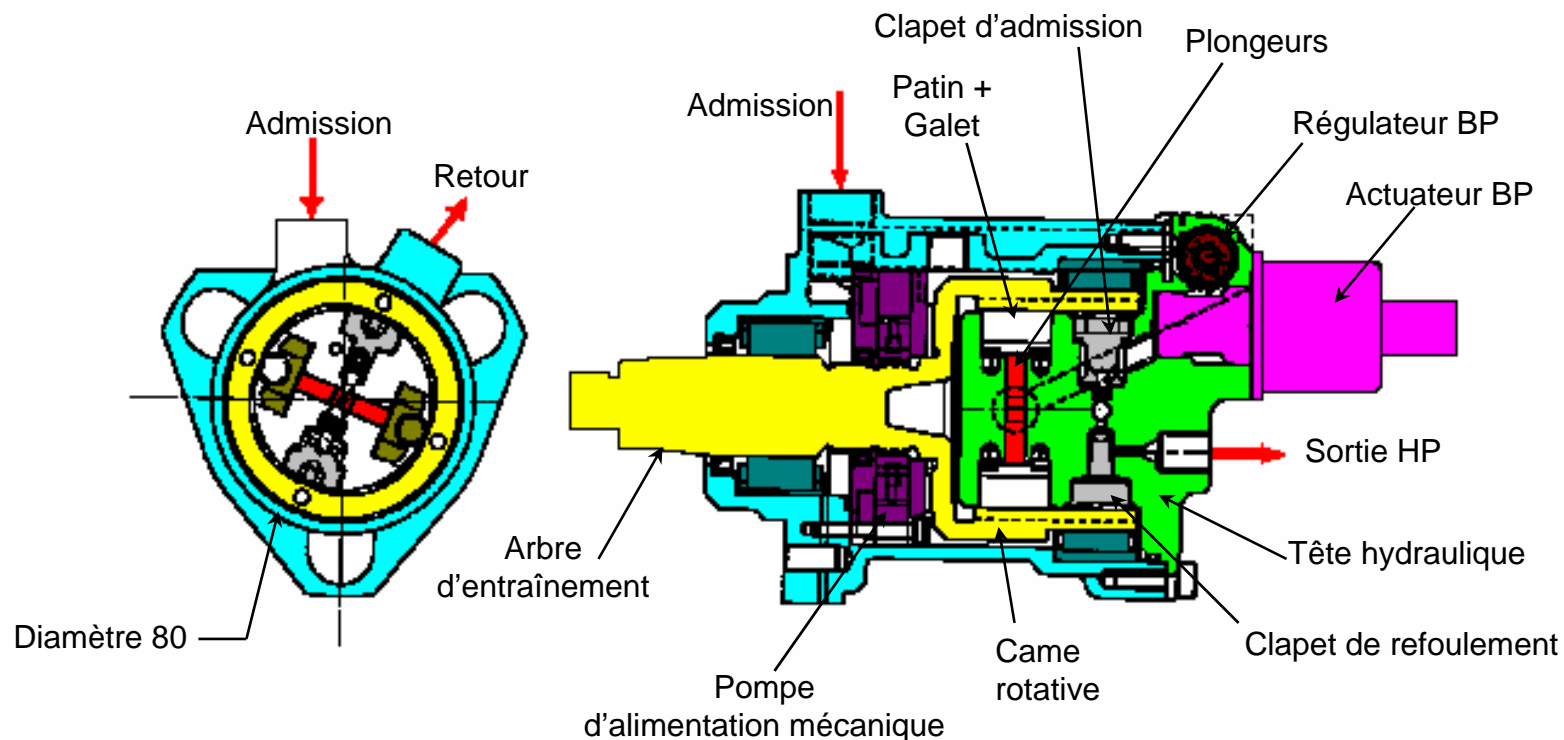
Pompe avec 2 chambres 0,9 cm³/tr

Pompe avec 1 chambre 0,6 cm³/tr
entraînement par courroie



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POMPE HP LVCR



- Entraînement par chaîne ou par courroie.
- 2 chambres de pompage.
- 1-1,2 cm³/tr.
- Actuateur BP.

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CARACTERISTIQUES POMPE

Masse : 5kg

Rapport d'entraînement : 0,5

Vitesse maxi : 3275 tr/min pompe

POMPE TRANSFERT :

pression d'alimentation intégrée (pompe à palettes)

pression régulée à 6 bar

volume brassé : 5,6 cm³/tr

débit : 90 l/h à 300 tr/min pompe ; 650 l/h à 2500 tr/min pompe

capacité d'aspiration : -65 mbar à 100 tr/min pompe

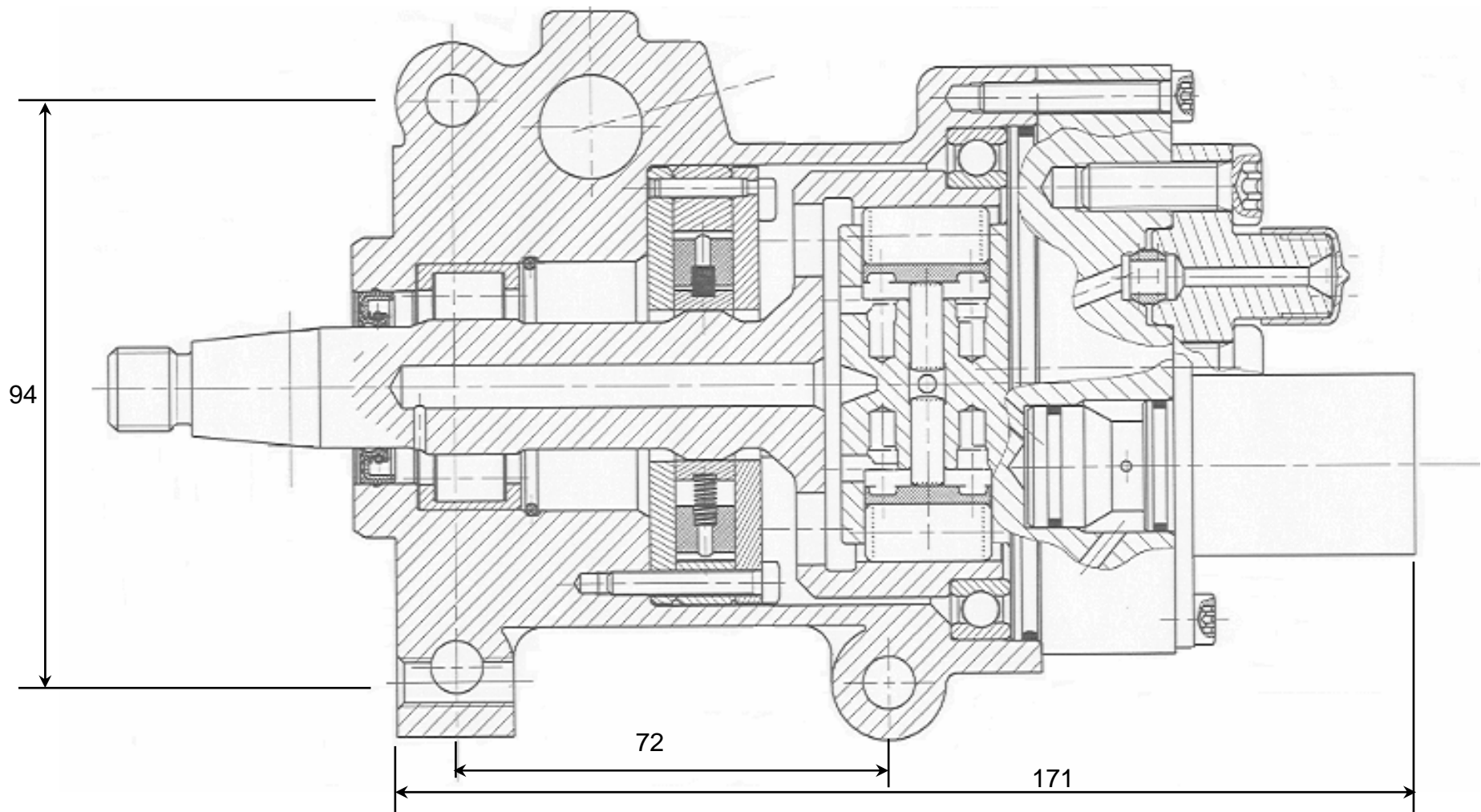
POMPE HP :

une chambre de pompage de 0,6 cm³/tr

entraînement par courroie

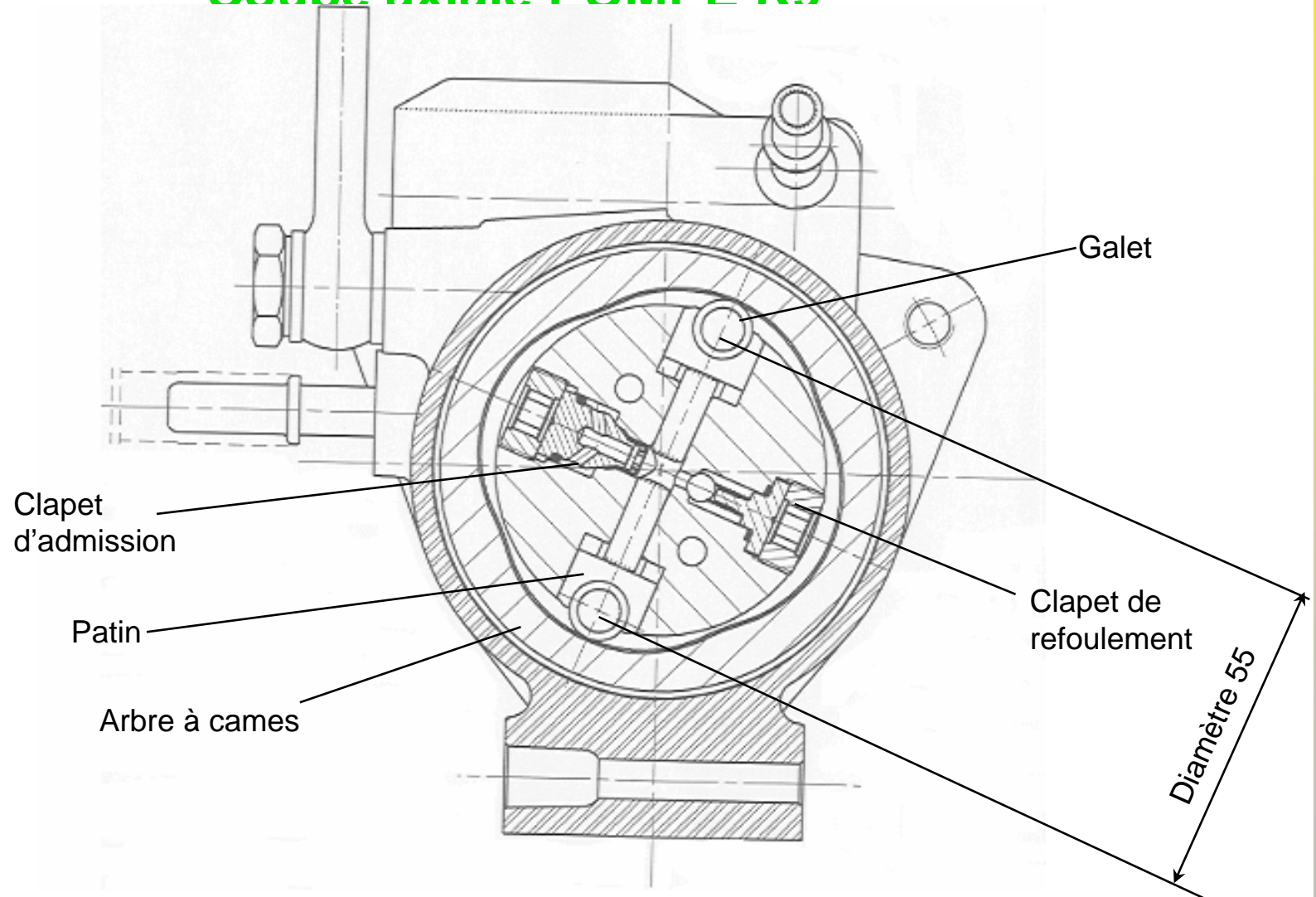
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Coupe longitudinale POMPE K9



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Coupe axiale POMPE K9



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KIT RAIL

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RAIL & TUBES HP

Solution actuelle :

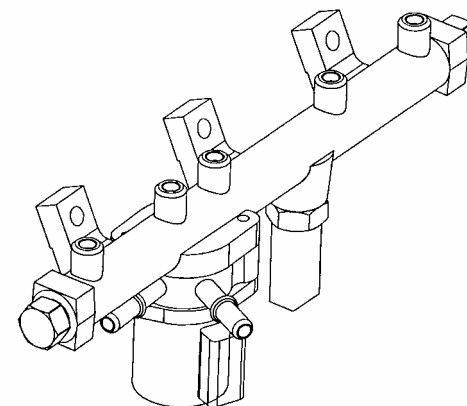
- Rail sphérique

Lucas Varity fournit des tubes HP d'un fournisseur agréé.



Solution standard :

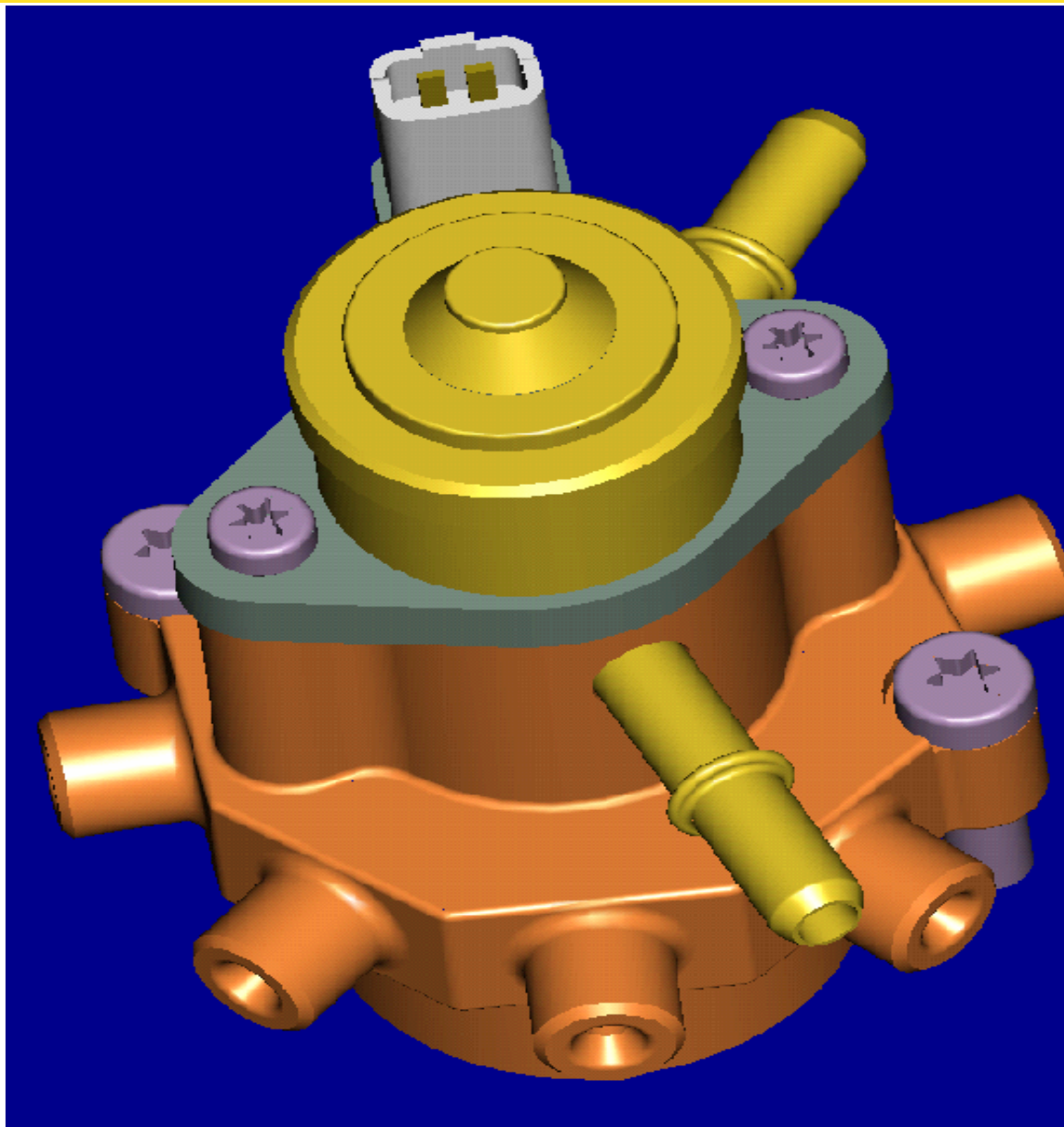
- Rail tubulaire forgé



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RENAULT



RAIL K9

Poids : 1,2 kg

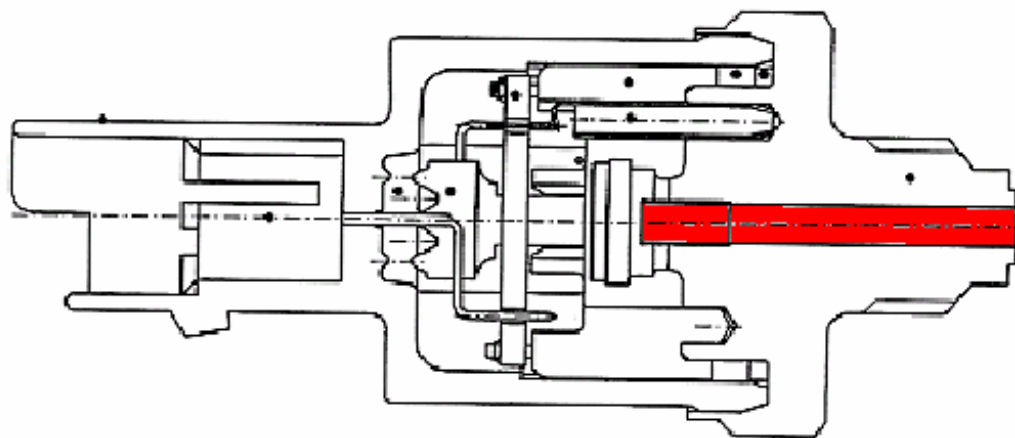
Volume : 12 cm³

Pression d'utilisation :
1600 bar

Pression d'éclatement :
>7000 bar

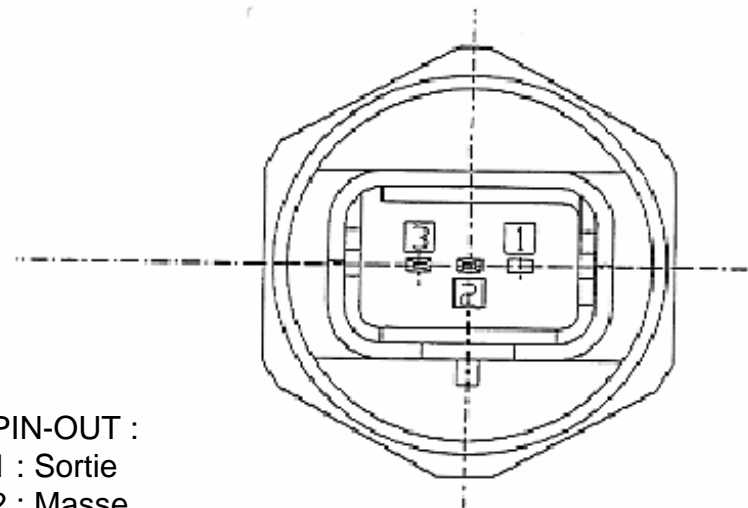
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CAPTEUR HP



PIN-OUT :

- 1 : Sortie
- 2 : Masse
- 3 : +5 V

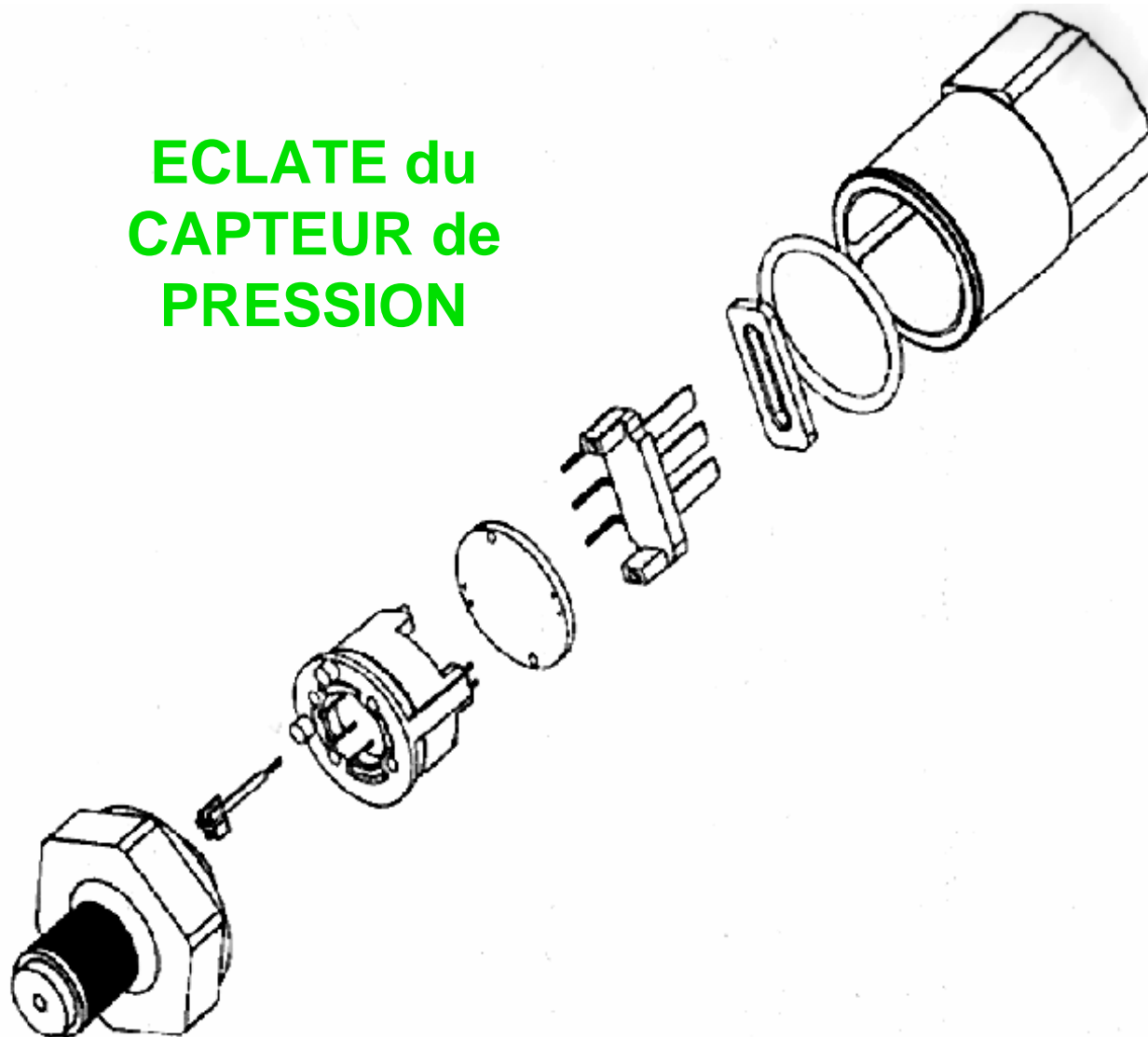


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RENAULT

ECLATE du CAPTEUR de PRESSION



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Caractéristiques capteur HP

Alimentation électrique

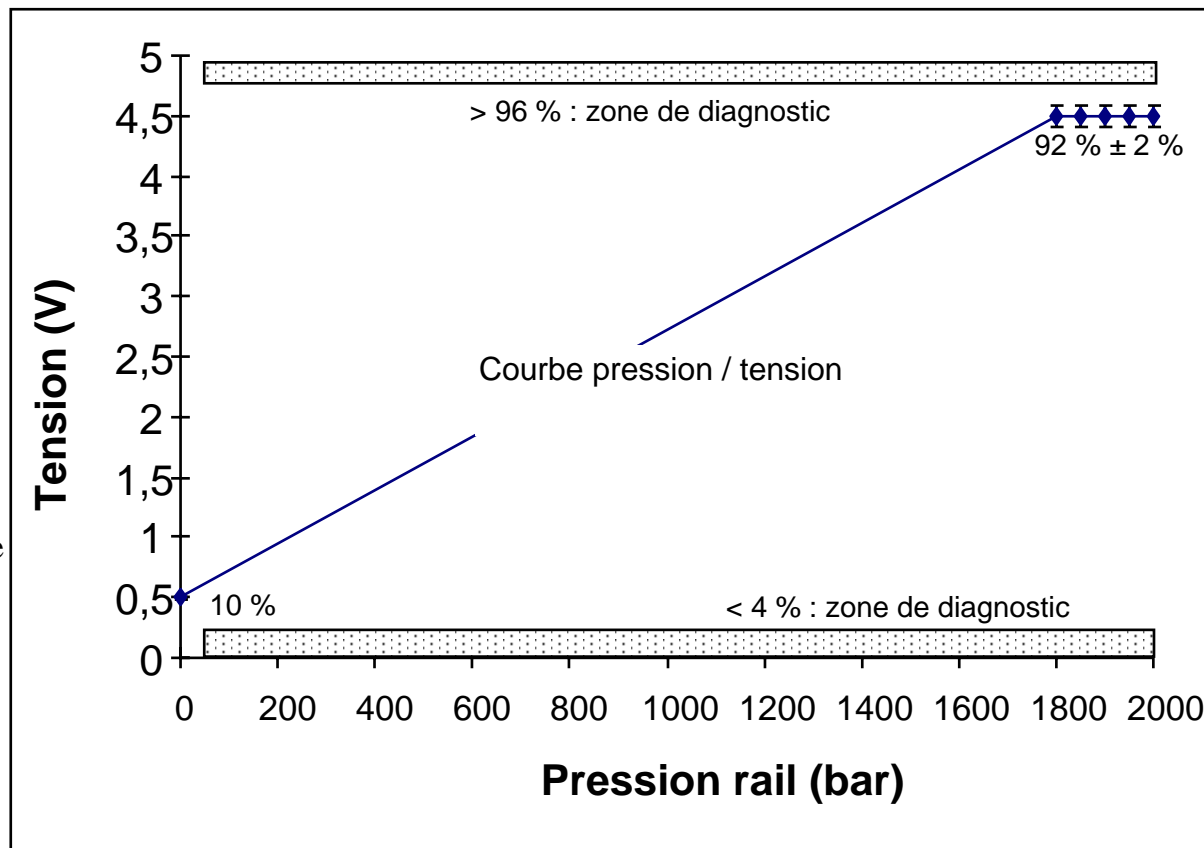
- $5 \pm 0,25$ Volt.
- 16 Volt pendant 2 heures jusqu'à 70°C .

Sorties électriques

- De 0,5 à 4,5 Volt.
- Mode diagnostic :
de 0 à 0,2 Volt & de 4,8 à 5 Volt.

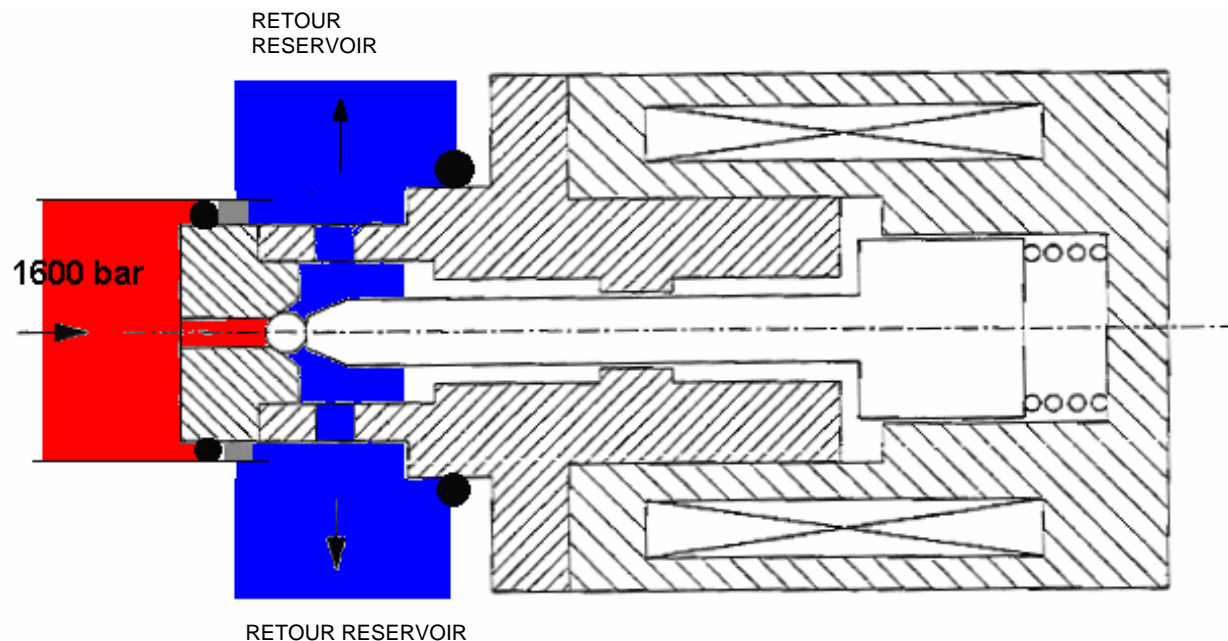
Cahier des charges

- Sensibilité de pression de 0 à 1800 bar avec une sortie proportionnelle de 0,5 à 4,5 Volt.
- Pression d'épreuve 2200 bar.
- Pression d'éclatement sous 2500 bar.



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ACTUATEUR HP



I Max = 2 A

CARACTERISTIQUES :

DIAMETRE TROU : 0,65 mm

LEVÉE D'AIGUILLE : environ 20 μ m

DIAMETRE BILLE : 1,2 mm

FILTRE TIGE : ép < 46 μ m

MASSE : 380 gr

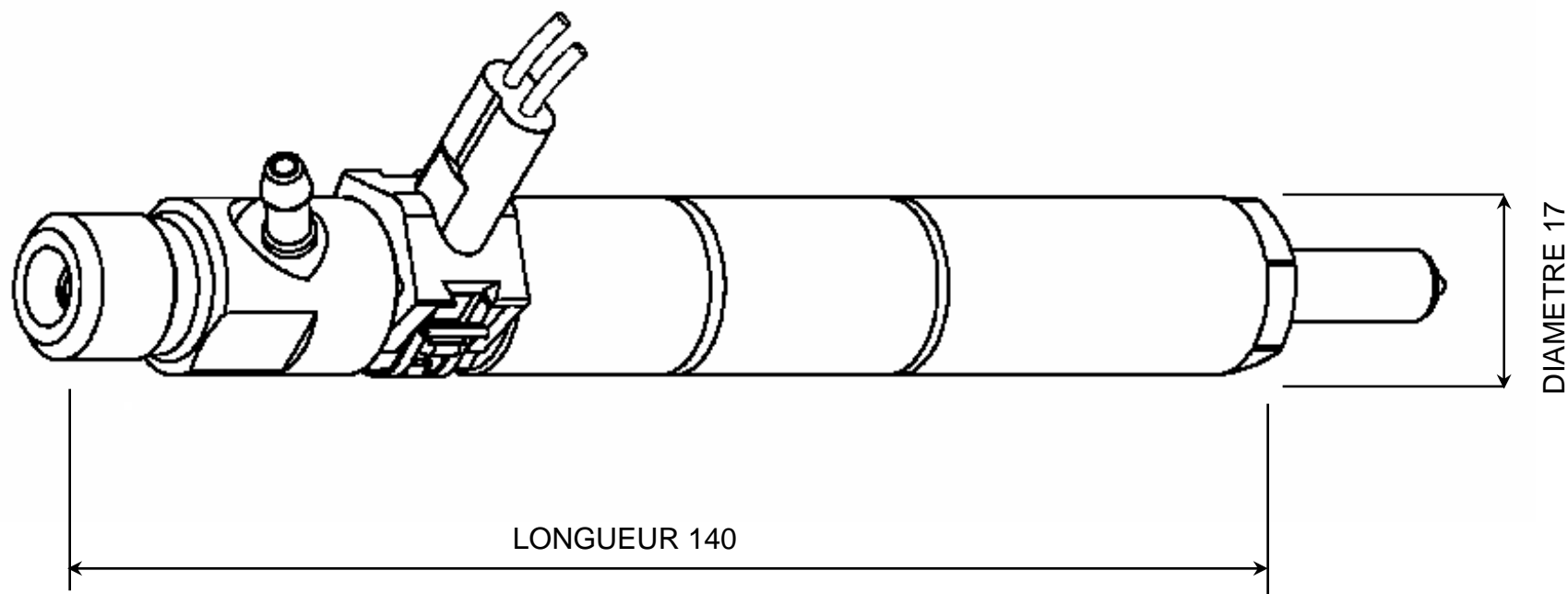
PRESSION régulation naturelle : 170 bar \pm 20 bar (non alimenté)

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INJECTEUR

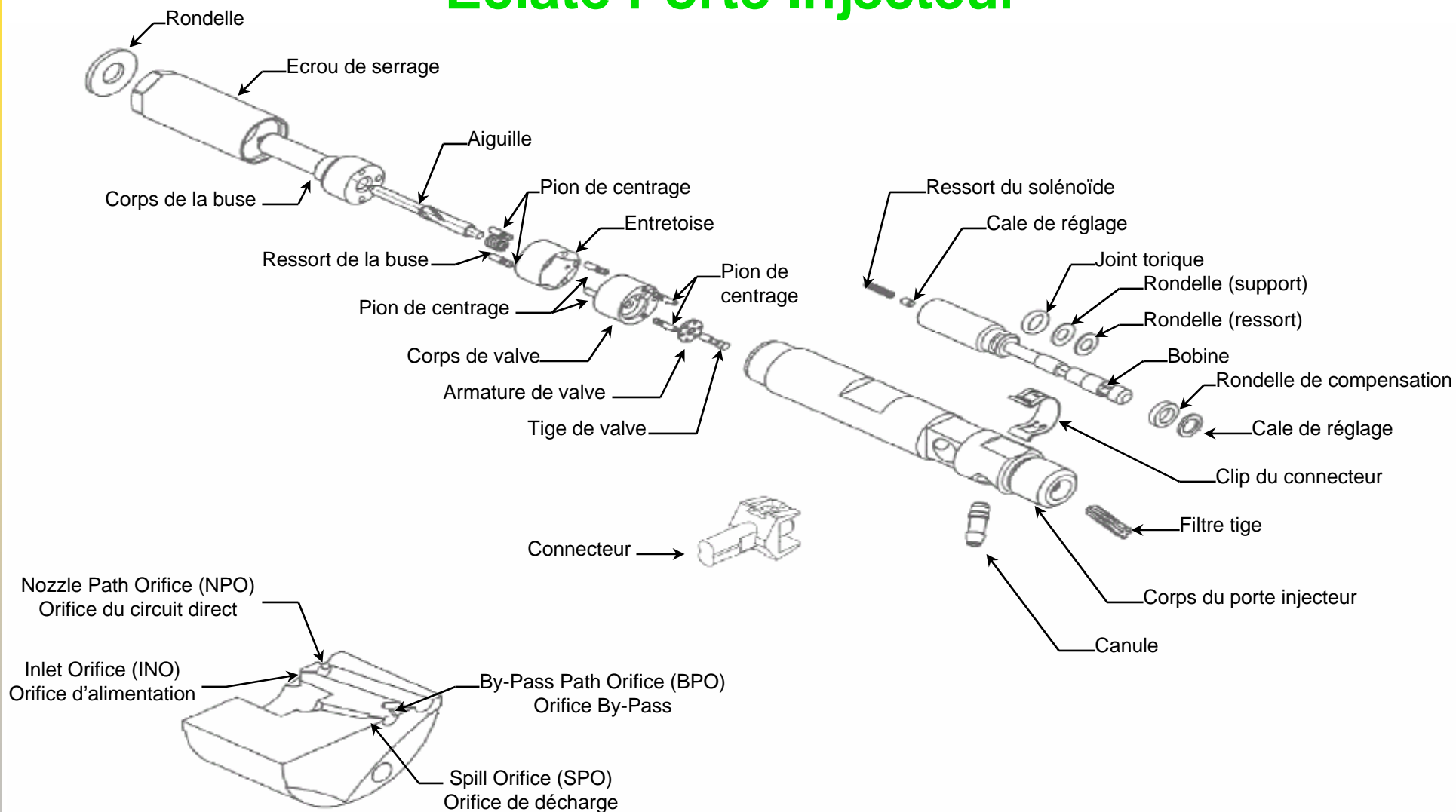
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INJECTEUR Moteur K9



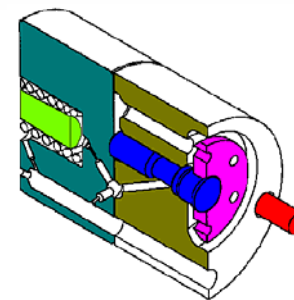
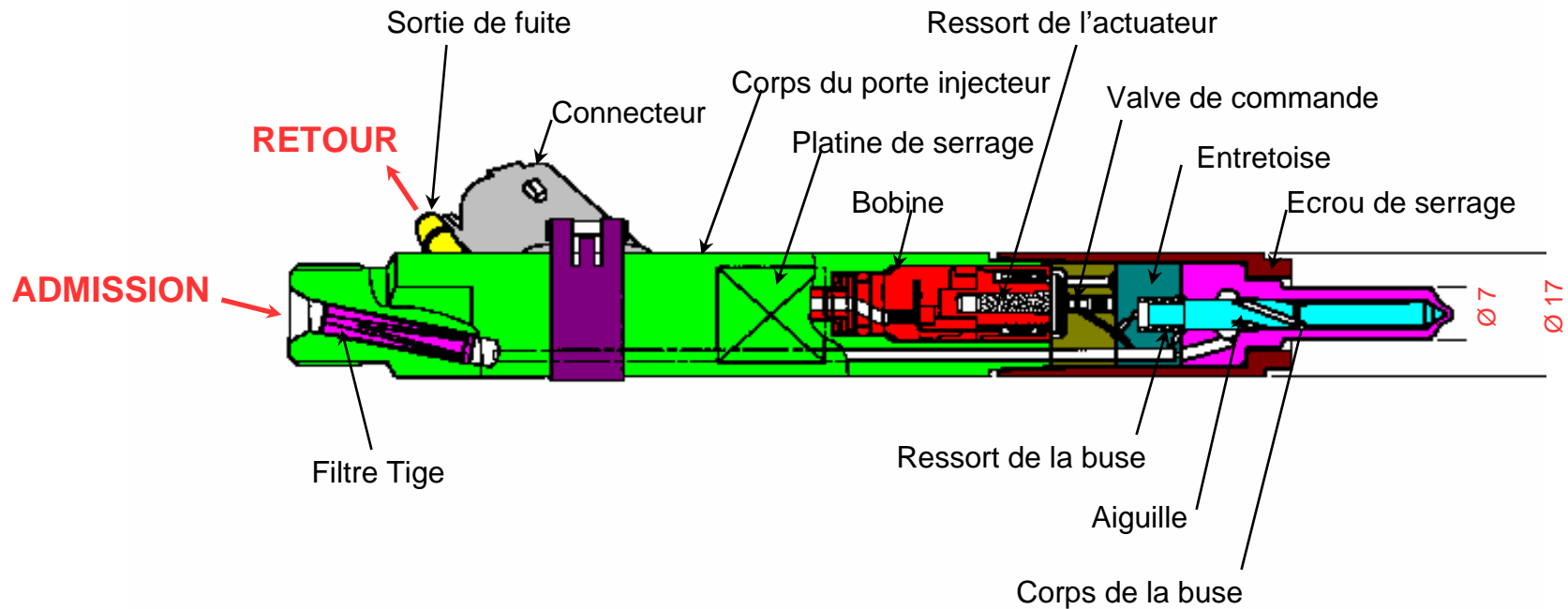
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Eclaté Porte Injecteur



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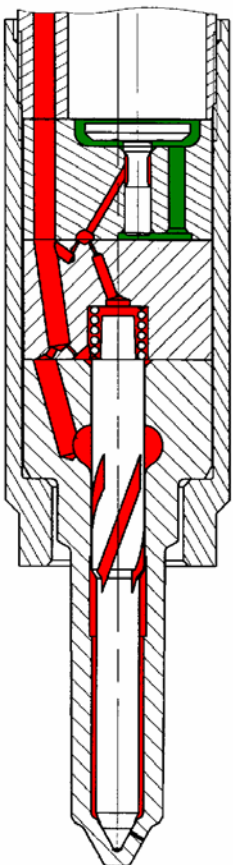
PORTE INJECTEUR



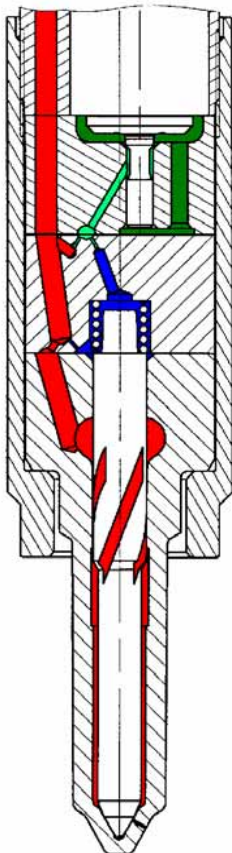
**Entretoise
+
Valve de commande**

PRINCIPE DE FONCTIONNEMENT DE L'INJECTEUR

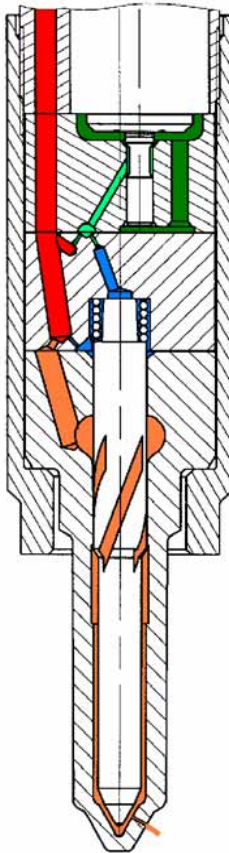
VALVE FERMÉE
BUSE FERMÉE
PAS D'INJECTION



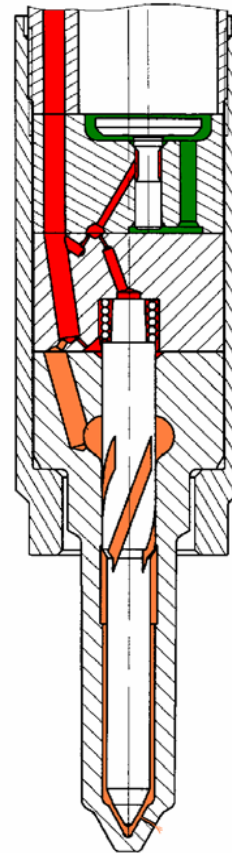
VALVE OUVERTE
BUSE FERMÉE
DECHARGE DE LA
CHAMBRE DE COMMANDE



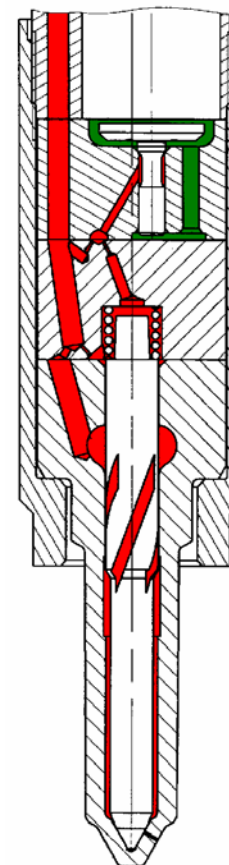
VALVE OUVERTE
BUSE OUVERTE



VALVE FERMÉE
BUSE SE FERMANT

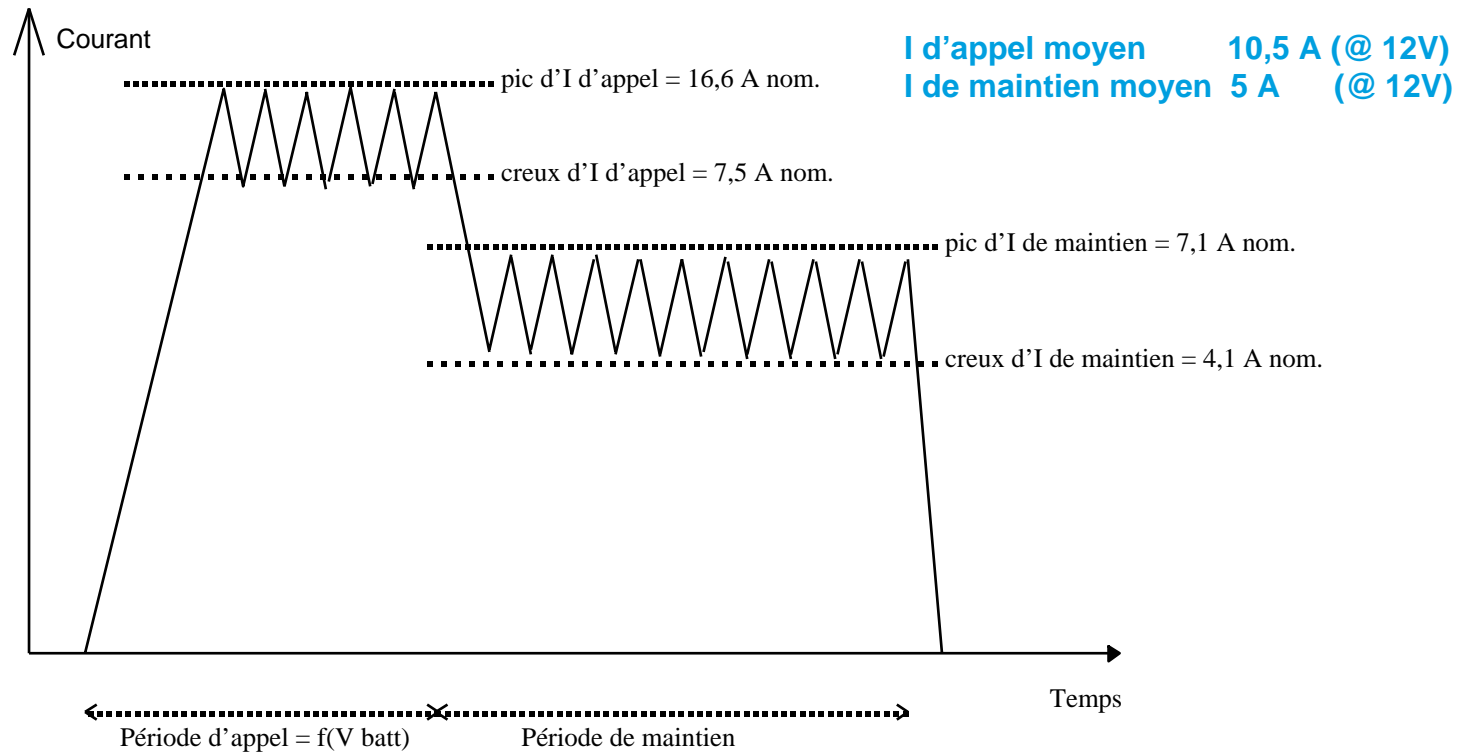


VALVE FERMÉE
BUSE FERMÉE
PAS D'INJECTION



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COURANT DE COMMANDE



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**Orifice du circuit direct (NPO) = fonction des besoins moteur
environ 1 mm de diamètre.**

**Moteur K9 => HP (60kw) = 0,64 l/mn buse : 5 trous
 BP (50kw) = 0,56 l/mn buse : 5 trous**

Diamètre trou de buse = 0,15 mm

Buse type VCO

Caractéristiques injecteur

Tension nominale	V batt
Courant d'appel	10,5 A moyen
Courant de maintien	5 A moyen
Impédance de la bobine	0,170 Ohm
Gamme de pression	100 à 1600 bar
Diamètre extérieur	17 mm
Plus petite séparation entre 2 temps d'activation	100 μ s (fin pré-inj.– début principale)
Temps de réponse	environ 300 μ s

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