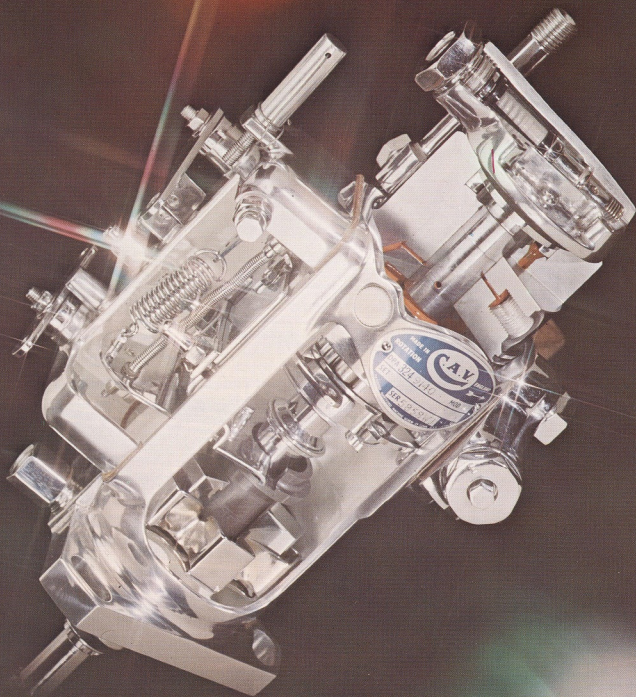


# CAV

## AN INTRODUCTION TO THE DPA ROTARY FUEL INJECTION PUMP



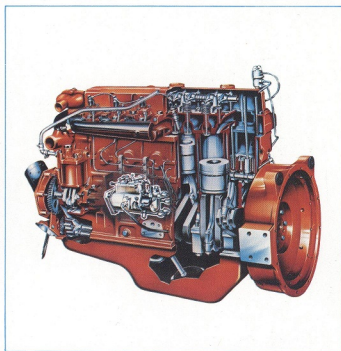
# CAV DPA Pump

The DPA pump is the most popular rotary pump in the world. There are more than 6 million in service. It is fitted to 2, 3, 4, 6 and 8 cylinder engines up to 2 litres/cylinder for agricultural, industrial, marine and vehicle applications.

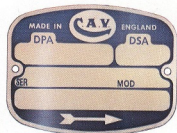
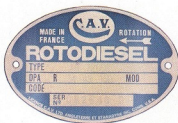
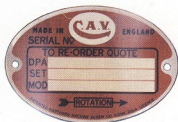
These pumps are compact (about half the size of an equivalent inline pump) and can be mounted on an engine at any angle.

The main difference between the DPA and an Inline pump is that the DPA utilises a single pumping element irrespective of the number of engine cylinders, fuel being fed to the correct cylinder by means of a distributor rotor housed within the pump. The DPA comes in two basic versions fitted with either a hydraulic or mechanical governor to suit the engine manufacturer's requirements.

Major users include AEC, BMC, CHRYSLER, DAVID BROWN, FIAT, FORD, HYSTER, INTERNATIONAL HARVESTER, LAND ROVER, MASSEY-FERGUSON, BRITISH LEYLAND, PERKINS, VAUXHALL and VOLKSWAGEN.



## RECOGNISING THEM



Every DPA whether produced by CAV or by a CAV licensee, carries a type label on the pump body. The label gives the following information:—

PUMP NUMBER (DPA)	Ordering number and your number for technical queries.
SERIAL NUMBER (SER)	Date of manufacture.
CODING DETAILS (SET or space at bottom of label)	Giving particular pump test bench fueling details
ARROW	Giving direction of rotation of pump.

The Despatch number gives the following information

e.g.  $\frac{32\ 6\ 6\ F\ 72\ 8}{a\ b\ c\ d\ e\ f}$

### Key

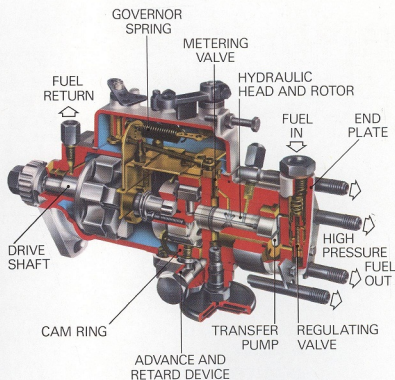
- a product group and design group 32–33 UK, 34–39 CAV licensees.
- b number of outlets
- c governor type 4, 5, 6, 7 = hydraulic, 0, 1, 2, 3, 8, 9 = mechanical.
- d design change letter
- e individual features
- f pump modification (0–9)

## WHAT THEY DO

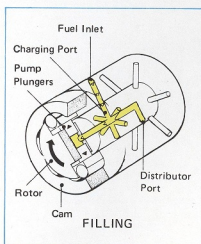
The DPA controls the quantity of fuel delivered to the injectors and thus to the combustion chambers to suit all engine load and speed conditions. It ensures that this fuel is provided at the right time and at the right pressure (in excess of 7000 lb/sq inch) so that efficient combustion can take place.

The DPA offers the following optional features to engine designers to achieve the required engine performance.

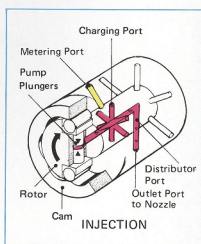
Automatic Advance and Retard	-to allow timing of the injection of the fuel into the engine to be varied according to speed and load conditions
Start Retard	-to aid cold starting
Four Pumping Plungers	-to increase the rate of injection
Excess Fuel	-to improve cold starting
Reduced fuel at low speeds	-for turbocharged engines



## HOW THEY WORK



METERING PRESSURE



INJECTION PRESSURE

The DPA is driven at half engine speed. Fuel enters the pump and is raised in pressure by the TRANSFER PUMP under the control of the REGULATING VALVE in the ENDPLATE. When the METERING PORT and CHARGING PORT align, fuel is passed via the METERING VALVE and HEAD to the ROTOR and PUMPING PLUNGERS. The quantity of fuel is controlled by the GOVERNOR and throttle lever. As the rotor rotates, fuel is isolated in the ROTOR. When the DISTRIBUTOR PORT aligns with one of the OUTLET PORTS, the plungers are brought quickly together by action of the cam and pressurised fuel passes via a high pressure pipe to an injector and thus to the engine.

This whole cycle is repeated once for each engine cylinder per pump revolution.

## CAV PARTS AND SERVICE

Over 300 specialist CAV Agents nationwide can offer you the best possible choice of service.

### LOCAL REPAIR

Trained staff working to repair standards set by CAV, using genuine CAV parts, tools and test equipment specifically designed for the DPA and regularly checked by CAV. Supported by up to date technical literature with the backing of regional and head office staff enables the agent to offer the best local repair.

### NEW UNITS

To provide operators with shelf stock or replacements where the old unit is beyond economical repair.

### GENUINE SERVICE PARTS

For operators with their own FIE workshops, who recognise the importance of parts produced to the same high standards as the original equipment.

## KIT PARTS



Cam ring, rollers and shoes



Transfer pump liner and blades



Mechanical metering valve



Hydraulic head and rotor



End plate

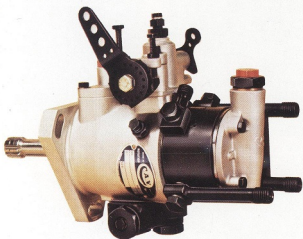


DPA sundry parts kit

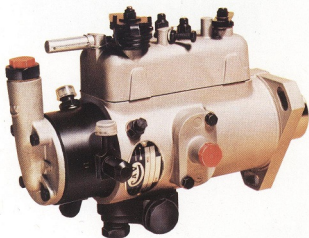
## SERVICE POINTS

- Faulty injectors will impair pump performance and may cause premature pump wear, they should therefore be replaced/reconditioned whilst the pump is being repaired.
- Ensure that a new/repaired pump gets off to a good start by replacing the fuel filter element with a CAV 7111-296 or 7111-796 according to specification.
- Remember to replace all seals and gaskets when overhauling the DPA using the correct DPA Sundry Parts Kit 7135-68, 69, 70 or 71.
- Service Kits are available to facilitate easier and more economical servicing of worn parts.

## PRODUCT RANGE

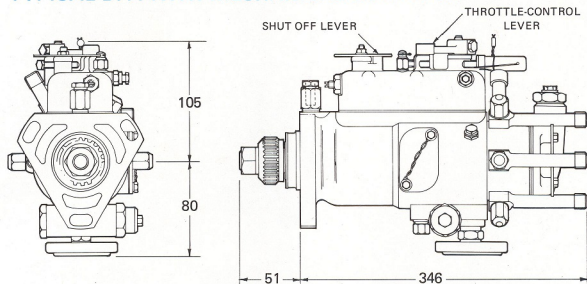


Hydraulically governed DPA

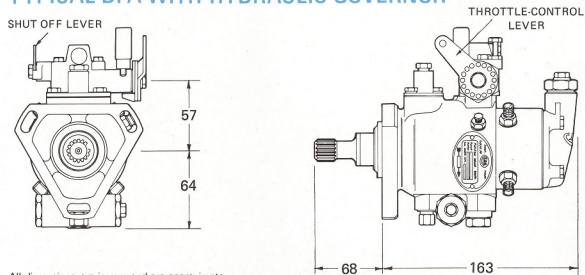


Mechanically governed DPA

## TYPICAL DPA WITH MECHANICAL GOVERNOR



## TYPICAL DPA WITH HYDRAULIC GOVERNOR



All dimensions are in mm and are approximate

DEALERS STAMP

# CAV

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