



\*\*\*NOTE: THERE IS A .001" TAPER ON CAMLOBE FACE

VALVE SPRING LENGTH UNDER LOAD INFO:

OUTER (RIGHT SPIRAL) 28.9 kg +/-1.6 @ 39mm  
60.0 kg +/-3.2 @ 30.5mm

INNER (LEFT SPIRAL) 12.6 kg +/-1.0 @ 31mm  
25.0 kg +/- 1.0 @ 22mm

UPDATED: August 26, 2001  
(c) Adam Reif

## CITROËN DS-21 (type DX2) CAMSHAFT

NOTE: DIMENSIONS ARE IN MILLIMETERS

\*\*\*NOTE: GRIND .0005" DOME ONTO CAMFOLLOWER FACE (NOT FLAT!)

\*\*\*NOTE: MINIMUM CLEARANCE FROM CAM BEARINGS TO BUSHES INSTALLED IN THE BLOCK IS ESSENTIAL IN ORDER TO MAINTAIN OIL PRESSURE TO THE HEAD (FEED FROM BEARING #1) BUSH MATERIAL IN THE ENGINE ARE BROZE COATED STEEL. DIAMETRICAL CLEARANCE GREATER THAN .0050" IS DEEMED EXCESSIVE (.0025 ANNULAR RING) AT THAT CLEARANCE, HEAD PRESSURE WILL DIMINISH, AND START TO OIL STARVE AT THE ROCKERS WHICH IN TURN STARVES THE CAM FOLLOWER WHICH IN TURN STARVES THE CAM LOBES, LEADING TO SELF-DESTRUCTION. .0025" IS CONSIDERED OPTIMAL/STOCK CLEARANCE (.0012" ANNULAR RING)

Date: June 1, 1998

**Measurements of NEW Citroen cam P/N DV123A9810**

Seems to be identical to a DX2 cam, but with an extra lobe for a hydraulic mono-pump

<u>DURATION OF INTAKE</u>	<u>CAM LIFT</u>	<u>DURATION OF EXHAUST</u>
	0.011	
259.7	0.012	260.9
255.8	0.013	257.1
252.2	0.014	253.7
248.2	0.015	250.7
245.1	0.016	248.0
242.9	0.017	245.4
240.8	0.018	243.0
238.9	0.019	240.8
237.1	0.020	238.7
229.4	0.025	229.8
213.3	0.040	210.7
204.9	0.050	200.6
171.0	0.100	161.8
102.8	0.200	83.9
	0.300	

<u>HEEL DIAMETER</u>	
INTAKE=	1.130
EXHAUST=	1.130
<u>RUN OUT</u>	
INTAKE=	
EXHAUST=	
<u>ROCKER RATIO</u>	(APPROX)
INTAKE=	1.5:1
EXHAUST=	1.5:1
<u>VALVE LASH</u>	(HOT)
INTAKE=	0.008
EXHAUST=	0.010
<u>LIFTER USED:</u>	FLAT

0.2611	MAX LIFT	0.2415
19.91	LOBE AREA	18.12

NOTES: CONSTANT VELOCITY RAMPS  
HEMI STYLE CHAMBER; CROSS FLOW

## Cam data

Imperial

### CAM DOCTOR analysis of NEW DV123A9810 cam

#### CYL#1 @.050 LIFT (ZERO LASH)

##### INTAKE & EXHAUST

LOBE CENTER SEP = 109.0 CAM DEGREES  
VALVE OVERLAP = 15.3 CAM DEGREES

##### INTAKE

VALVE OPENING = -8.6° BTDC  
LOBE CENTER = 108.9° ATDC  
VALVE CLOSURE = 29.2° ABDC  
DURATION = 204.9 CRANK DEGREES  
MAX CAM LIFT = 0.2611 IN.  
NET VALVE LIFT = 0.39165 IN.  
LOBE AREA = 19.91 IN-DEGREES

##### EXHAUST

VALVE OPENING = 31.5° BBDC  
LOBE CENTER = 108.9° BTDC  
VALVE CLOSURE = -6.7° ATDC  
DURATION = 200.6 CRANK DEGREES  
MAX CAM LIFT = 0.24154 IN.  
NET VALVE LIFT = 0.3623 IN.  
LOBE AREA = 18.12 IN-DEGREES

### CAM DOCTOR analysis of USED DX2 cam

#### CYL#1 @.050 LIFT (ZERO LASH)

##### INTAKE & EXHAUST

LOBE CENTER SEP = 104.5 CAM DEGREES  
VALVE OVERLAP = -8.6 CAM DEGREES

##### INTAKE

VALVE OPENING = -3.7° BTDC  
LOBE CENTER = 104.5° ATDC  
VALVE CLOSURE = 25.8° ABDC  
DURATION = 202.8 CRANK DEGREES  
MAX CAM LIFT = 0.2615 IN.  
NET VALVE LIFT = 0.39224 IN.  
LOBE AREA = 20.06 IN-DEGREES

##### EXHAUST

VALVE OPENING = 27.6° BBDC  
LOBE CENTER = 104.5° BTDC  
VALVE CLOSURE = -4.9° ATDC  
DURATION = 202.0 CRANK DEGREES  
MAX CAM LIFT = 0.24154 IN.  
NET VALVE LIFT = 0.3623 IN.  
LOBE AREA = 18.34 IN-DEGREES

Cam data  
Metric

**CAM DOCTOR analysis of NEW DV123A9810 cam**

**CYL#1 @ 1.27 mm LIFT (ZERO LASH)**

**INTAKE & EXHAUST**

LOBE CENTER SEP = 109.0 Cam degrees  
VALVE OVERLAP = 15.3 Cam degrees

**INTAKE**

VALVE OPENING = -8.6° BTDC  
LOBE CENTER = 108.9° ATDC  
VALVE CLOSURE = 29.2° ABDC  
DURATION = 200.6 Crank degrees  
MAX CAM LIFT = 6.632 mm.  
NET VALVE LIFT = 9.948 mm.  
LOBE AREA = 504.714 mm-degrees

**EXHAUST**

VALVE OPENING = 31.5° BBDC  
LOBE CENTER = 108.9° BTDC  
VALVE CLOSURE = -6.7° ATDC  
DURATION = 204.9 Crank degrees  
MAX CAM LIFT = 6.135 mm.  
NET VALVE LIFT = 9.202 mm.  
LOBE AREA = 460.248 mm-degrees

**CAM DOCTOR analysis of USED DX2 cam**

**CYL#1 @ 1.27 mm LIFT (ZERO LASH)**

**INTAKE & EXHAUST**

LOBE CENTER SEP = 104.5 Cam degrees  
VALVE OVERLAP = -8.6 Cam degrees

**INTAKE**

VALVE OPENING = -3.7° BTDC  
LOBE CENTER = 104.5° ATDC  
VALVE CLOSURE = 25.8° ABDC  
DURATION = 202.8 Crank degrees  
MAX CAM LIFT = 6.642 mm.  
NET VALVE LIFT = 9.963 mm.  
LOBE AREA = 509.524 mm-degrees

**EXHAUST**

VALVE OPENING = 27.6° BBDC  
LOBE CENTER = 104.5° BTDC  
VALVE CLOSURE = -4.9° ATDC  
DURATION = 202.0 Crank degrees  
MAX CAM LIFT = 6.135 mm.  
NET VALVE LIFT = 9.202 mm.  
LOBE AREA = 465.836 mm-degrees

## Valve timing for 5-bearing D engines

Nominal valve clearance:	1 mm	1.1 mm
	pre. 10/1968	post. 10/1968
Inlet opens at	5°	0° 30' BTDC
Inlet closes at	37°	42° 30' ABDC
Exhaust opens at	40° 30'	38° 30' BBDC
Exhaust closes at	6° 30'	4° 30' ATDC

### Valve lift (mm):

Inlet pre. 10/1968	6.199 ±0.02
post 10/1968	6.638 ±0.02
Exhaust (all)	6.144 ±0.02

Rocker clearance:	hot	cold
Inlet	0.20 mm	0.15 mm
Exhaust	0.25 mm	0.20 mm