APPENDIX IV

DATA ON EXISTING WANKEL ENGINES

The data sheets forming this appendix give basic information on engines which, with the exception of one manufacturer, are in full or experimental production. The exception is Curtiss-Wright, whose engines have been included for reasons of general interest because, although not in production status, their prototypes have been sufficiently developed to have been tried in a range of applications, and because an exceptional amount of information is available on them from the papers of Mr C.Jones.

The inclusion of engines which are being manufactured in production quantities does not imply that such engines are necessarily available. Comments on availability are given in Section 3. The reasons for non-availability may be one or more of the following:

1. Company not licensed to sell for certain uses.
2. Company policy.
3. Insufficient quantities available.
4. Not sufficiently developed.
5. Outside of licence territory.

Where information is available on a complete unit of which the engine forms a part, for example an outboard motor, information on the complete unit is included.

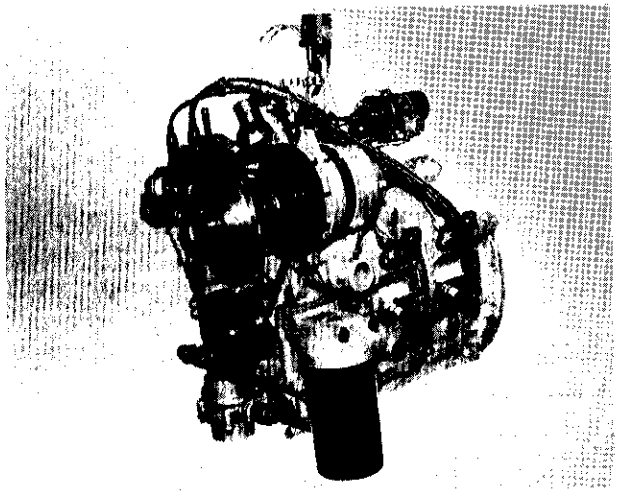
Powers quoted are bhp, DIN except for the Curtiss-Wright engines where they are bhp S.A.E.

The prices mentioned are for quantity purchase; engines brought singly may be slightly more expensive. Discounts would be negotiable with suppliers.

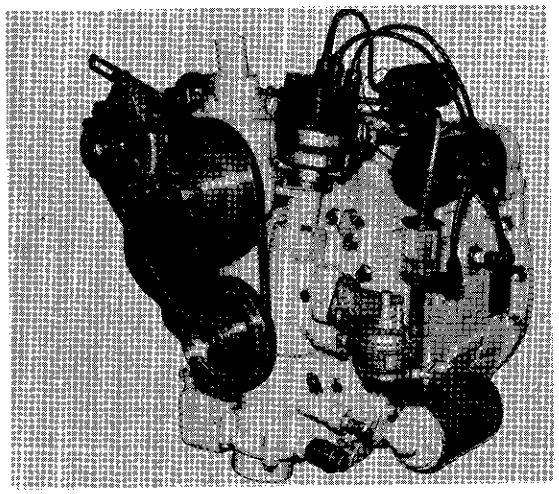
The reference to displacement means the total swept volume for one revolution of the eccentric shaft.

Where information is not available, this is indicated by N/A.

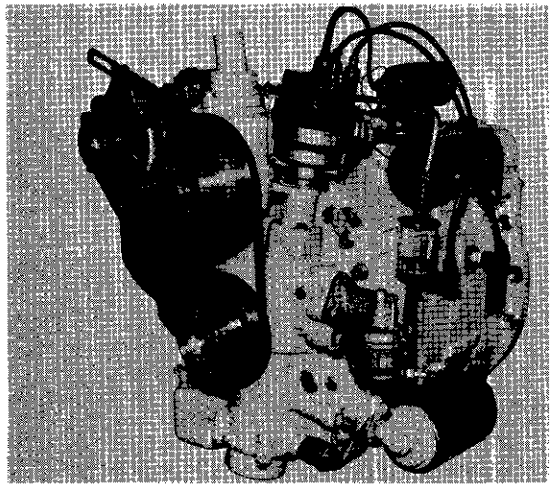
Where a point is not relevant, this is indicated by N/R.



MANUFACTURER:	Curtiss-Wright Corporation
ENGINE MODEL:	RC2-60-U10
USE:	Automotive
COOLING;	Liquid
MAX. POWER:	165 bhp at 5,000 rev./min.
MAX. TORQUE:	N/A
DISPLACEMENT:	121.7 cu. in.
NO. OF ROTORS:	2
FUEL:	Diesel No.2, JP-4, JP-5
SPECIFIC FUEL CONSUMPTION:	N/A
CARBURATION:	High pressure injection
WEIGHT, DRY:	325 lb
INSTALLATION ANGLES:	N/A
OUTPUT DRIVE:	Direct
DIMENSIONS (L x W x H) IN.:	24.3 x 24.8 x 23.3
COST:	N/A
AVAILABILITY:	Not available



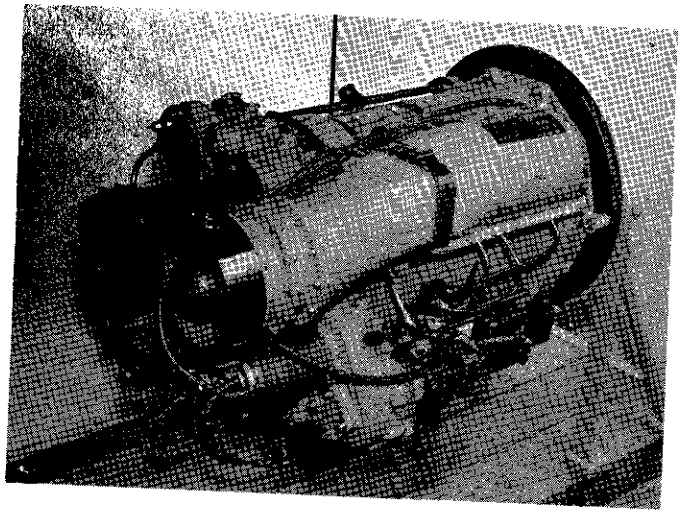
MANUFACTURER:	Curtiss-Wright Corporation
ENGINE MODEL:	RC2-60-U12
USE:	Automotive
COOLING:	Liquid
MAX. POWER:	175 bhp at 5,000 rev./min.
MAX. TORQUE:	N/A
DISPLACEMENT	121.7 cu. in.
NO. OF ROTORS:	2
FUEL:	Petrol, regular
SPECIFIC FUEL CONSUMPTION:	N/A
CARBURATION:	Carburettor
WEIGHT, DRY:	257 lb
INSTALLATION ANGLES:	N/A
OUTPUT DRIVE:	Direct
DIMENSIONS (L x W x H) IN.:	21.5 x 22 x 18.5
COST:	N/A
AVAILABILITY:	Not available



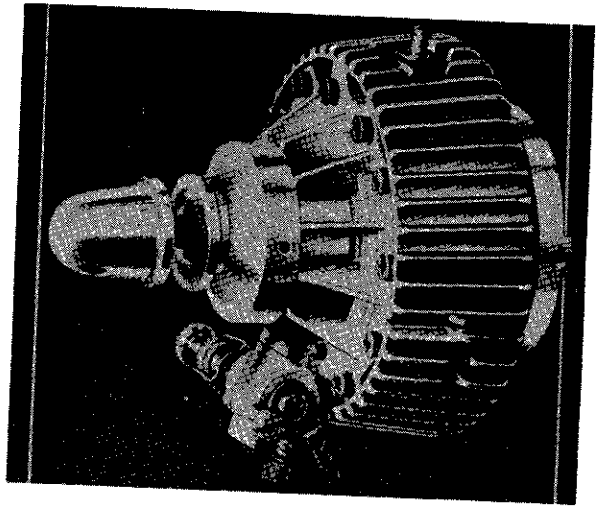
MANUFACTURER:	Curtiss-Wright Corporation
ENGINE MODEL:	RC2-60-N10
USE:	Aircraft
COOLING:	Liquid
MAX. POWER:	183 bhp at 4,800 rev./min. (sea level)
MAX. TORQUE:	N/A
DISPLACEMENT:	121.7 cu. in.
NO. OF ROTORS:	2
FUEL:	Petrol MIL-G-3056 B
SPECIFIC FUEL CONSUMPTION:	N/A
CARBURATION:	Carburettor + altitude control
WEIGHT, DRY:	297 lb
INSTALLATION ANGLES:	N/A
OUTPUT DRIVE:	Direct
DIMENSIONS (L x W x H) IN.:	22.1 x 23.1 x 23.2
COST:	N/A
AVAILABILITY:	Not available

NO PHOTOGRAPH AVAILABLE

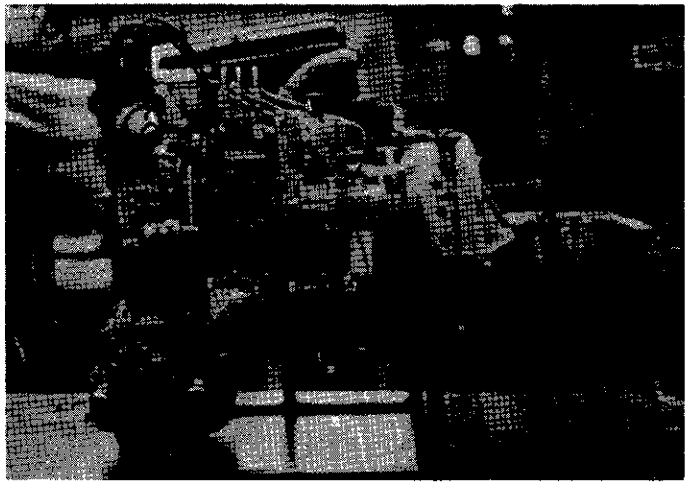
MANUFACTURER:	Curtiss-Wright Corporation
ENGINE MODEL:	RC2-60-M4
USE:	Marine
COOLING:	Liquid
MAX. POWER:	200 bhp at 5,500 rev./min.
MAX. TORQUE:	N/A
DISPLACEMENT:	121.7 cu. in.
NO. OF ROTORS:	2
FUEL:	Petrol, Marine regular
SPECIFIC FUEL CONSUMPTION:	N/A
CARBURATION:	Carburettor
WEIGHT, DRY:	360 lb
INSTALLATION ANGLES:	N/A
OUTPUT DRIVE:	Direct
DIMENSIONS (L x W x H) IN.:	20 x 24 x 24
COST:	N/A
AVAILABILITY:	Not available



MANUFACTURER:	Curtiss-Wright Corporation
ENGINE MODEL:	RC2-90-Y2
USE:	Aircraft
COOLING:	Air
MAX. POWER:	310 bhp at 6,000 rev./min.
MAX. TORQUE:	N/A
DISPLACEMENT:	183 cu. in.
NO. OF ROTORS:	2
FUEL:	JP-5
SPECIFIC FUEL CONSUMPTION:	N/A
CARBURATION:	High pressure direct injection
WEIGHT, DRY:	285 lb
INSTALLATION ANGLES:	N/A
OUTPUT DRIVE:	Direct
DIMENSIONS (L x W x H) IN.:	34 x 25 x 19.5
COST:	N/A
AVAILABILITY:	Not available

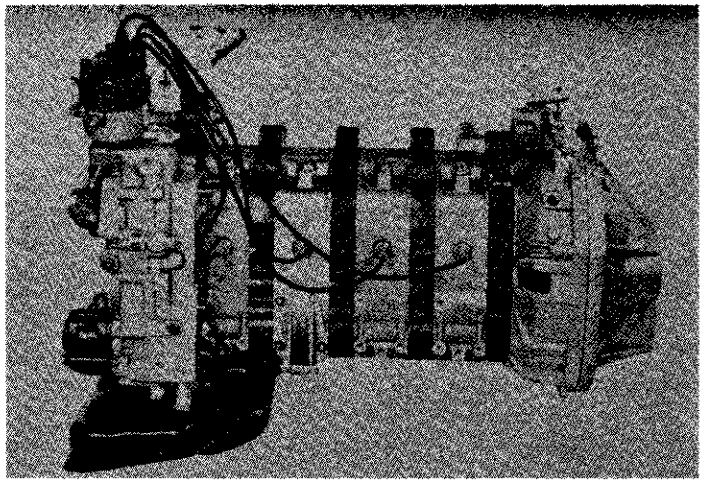


MANUFACTURER:	O.S. – Graupner
ENGINE MODEL:	Flugmotor
USE:	Models
COOLING:	Air
MAX. POWER:	Suitable for 10" dia. x 4" pitch propeller
MAX. TORQUE:	N/A
DISPLACEMENT:	4.9 cc
NO. OF ROTORS:	1
FUEL:	Model fuel Titan G
SPECIFIC FUEL CONSUMPTION:	N/A
CARBURATION:	Carburettor
WEIGHT, DRY:	0.75 lb
INSTALLATION ANGLES:	Level or inverted (turn carburettor 180°)
OUTPUT DRIVE:	Stub shaft
DIMENSIONS (L (L x W x H) IN.:	2½ x 3 x 3
COST:	$20 retail
AVAILABILITY	Many model shops



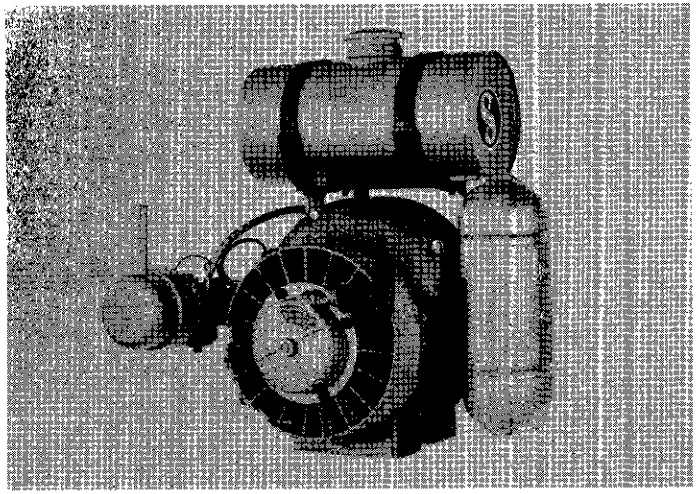
MANUFACTURER:	Daimler-Benz (Mercedes)
ENGINE MODEL:	M 950 – 3 rotor
USE:	C 111 1969 Test car
COOLING:	Liquid
MAX. POWER:	280 bhp at 7,000 rev./min.
MAX. TORQUE:	217 lb ft. at 5,000 rev./min.
DISPLACEMENT:	1,800 cc
NO. OF ROTORS:	3
FUEL:	Petrol
SPECIFIC FUEL CONSUMPTION:	0.48 lb/bhp hr.
CARBURATION:	Injection
WEIGHT, DRY:	365 lb
INSTALLATION ANGLES:	25° fore/aft, 5° side
OUTPUT DRIVE:	Rear, auto clutch; front, 25 kg. m.
DIMENSIONS (L x W x H) IN.:	27.5 x 28.5 x 20
COST:	First production £1,200; full production £600*
AVAILABILITY:	See 3.2.1

* Approximate 'off-the-cuff' forecast.



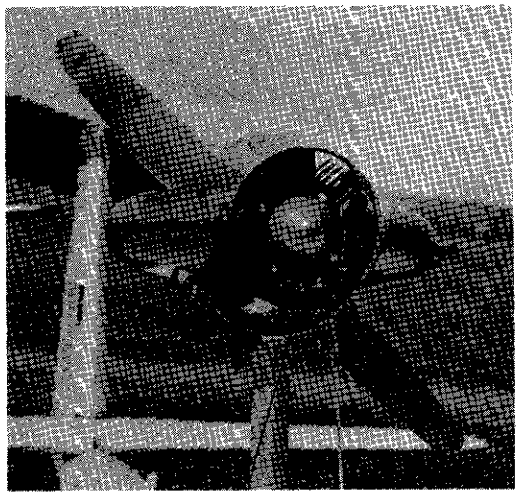
MANUFACTURER:	Daimler-Benz (Mercedes)
ENGINE MODEL:	M 950 – 4 rotor
USE:	C 111 1970 Test car
COOLING:	Liquid
MAX. POWER	350 bhp at 7,000 rev./min.
MAX. TORQUE:	289 lb ft. at 4,000 rev./min.
DISPLACEMENT:	2,400 cc
NO. OF ROTORS:	4
FUEL:	Petrol
SPECIFIC FUEL CONSUMPTION:	0.49 lb/bhp hr.
CARBURATION:	Injection
WEIGHT, DRY:	396 lb
INSTALLATION ANGLES:	25° fore/aft, 5° side
OUTPUT DRIVE:	Rear, auto clutch; front, 25 kg. m.
DIMENSIONS (L x W x H) IN.:	31.5 x 28.5 x 20
COST:	First production £1,000, full production £600*
AVAILABILITY:	See 3.2.1

* Approximate 'off-the-cuff' forecast.

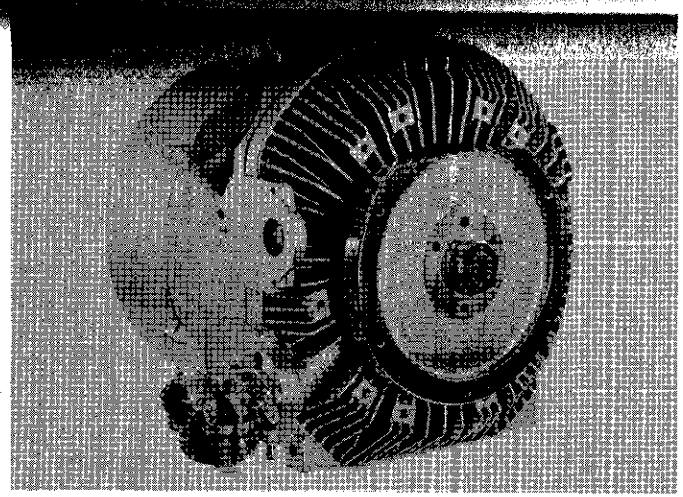


MANUFACTURER:	Fichtel & Sachs AG
ENGINE MODEL:	KM 48
USE:	General purpose
COOLING:	Air
MAX. POWER:	8.0 bhp at 4,800 rev./min.
MAX. TORQUE:	9.4 lb ft. at 3,500 rev./min.
DISPLACEMENT:	160 cc
NO. OF ROTORS:	1
FUEL:	Petroil 50:1
SPECIFIC FUEL CONSUMPTION:	0.68 lb/bhp hr.
CARBURATION:	Carburettor
WEIGHT, DRY:	37.5 lb (less fuel tank)
INSTALLATION ANGLES:	Any
OUTPUT DRIVE:	Flange (gearboxes available)
DIMENSIONS (L x W x H) IN.:	13 x 17 x 18
COST:	£71*
AVAILABILITY:	Full production

* Price for small batches

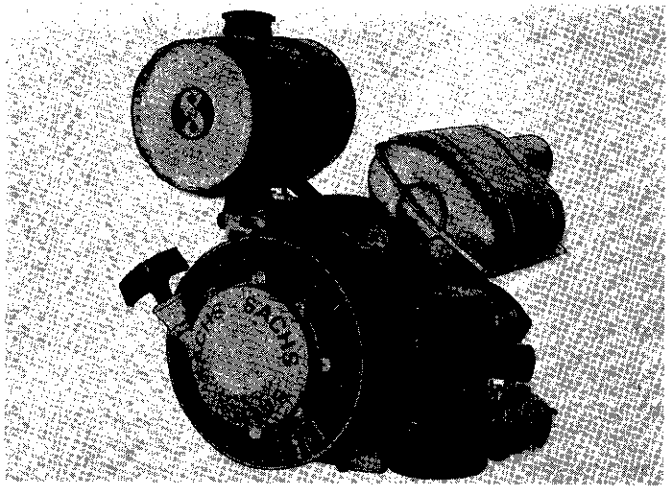


MANUFACTURER:	Fichtel & Sachs AG
ENGINE MODEL:	KM 48 (basic), no fan
USE:	Glider power unit
COOLING:	Air
MAX. POWER	10 bhp at 5,000 rev./min.
MAX. TORQUE:	N/R
DISPLACEMENT:	160 cc
NO. OF ROTORS:	1
FUEL:	Petroil 40:1
SPECIFIC FUEL CONSUMPTION:	0.56 lb/bhp hr.
CARBURATION:	Aerobatic carburettor
WEIGHT, DRY:	42 lb (engine 22 lb)
INSTALLATION ANGLES:	N/R
OUTPUT DRIVE:	Shaft
DIMENSIONS (L x W x H) IN.:	Propeller dia. 35.4 in.
COST:	£230
AVAILABILITY	



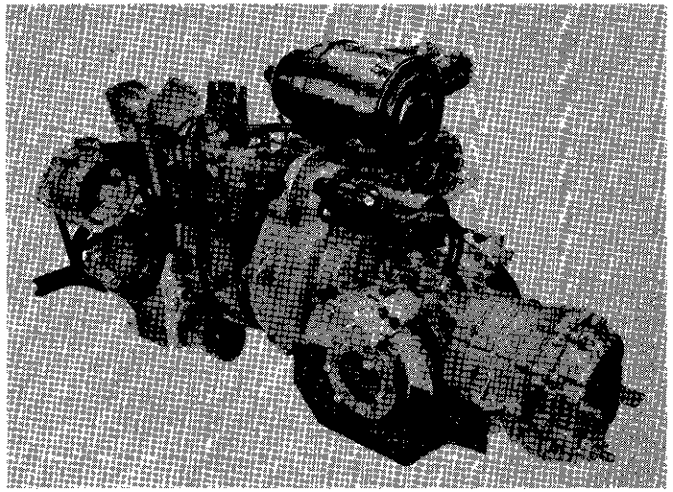
MANUFACTURER:	Fichtel & Sachs AG
ENGINE MODEL:	KM 914 B
USE:	Snow vehicles
COOLING:	Air
MAX. POWER:	18 bhp at 5,500 rev./min.
MAX. TORQUE:	21.7 lb ft. at 3,600 rev./min.
DISPLACEMENT:	300 cc
NO. OF ROTORS:	1
FUEL:	Petroil 40:1
SPECIFIC FUEL CONSUMPTION:	0.68 lb/bhp hr.
CARBURATION:	Carburettor
WEIGHT, DRY:	62 lb
INSTALLATION ANGLES:	Any
OUTPUT DRIVE:	Shaft
DIMENSIONS (L x W x H) IN.:	14½ x 12 x 12½ bare
COST:	£95*
AVAILABILITY:	Full production

* Price for small batches

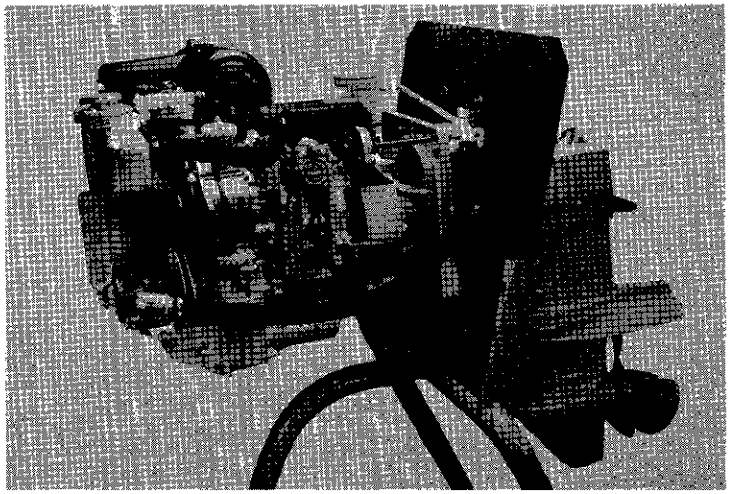


MANUFACTURER:	Fichtel & Sachs AG
ENGINE MODEL:	KM 914 A
USE:	General purpose
COOLING:	Air
MAX. POWER:	16 bhp at 4,500 rev./min.
MAX. TORQUE:	18.8 lb ft. at 3,500 rev./min.
DISPLACEMENT:	300 cc
NO. OF ROTORS:	1
FUEL:	Petroil 50:1
SPECIFIC FUEL CONSUMPTION:	0.68 lb/bhp hr.
CARBURATION:	Carburettor
WEIGHT, DRY:	70.5 lb
INSTALLATION ANGLES:	Any
OUTPUT DRIVE:	Flange (gearboxes available)
DIMENSIONS (L x W x H) IN.:	17½ x 18 x 18 overall
COST:	£90*
AVAILABILITY:	Full production

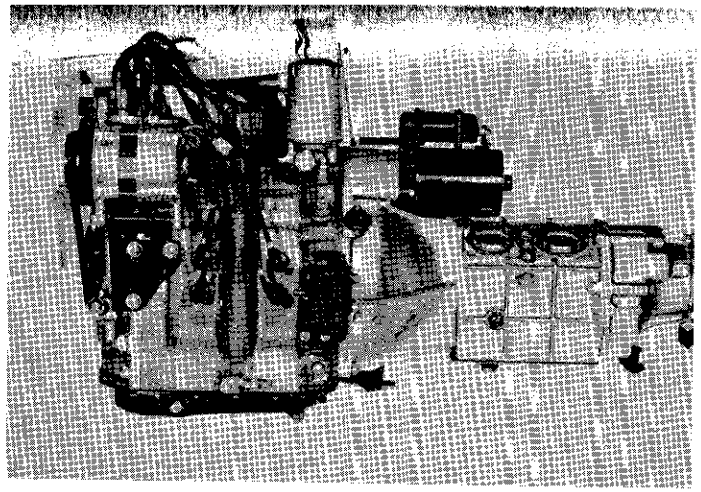
* Price for small batches



MANUFACTURER:	NSU AG
ENGINE MODEL:	KKM 612
USE:	Ro80 motor car
COOLING:	Liquid
MAX. POWER:	113.5 bhp at 5,600 rev./min.
MAX. TORQUE:	118 lb ft. at 4,800 rev./min.
DISPLACEMENT:	995 cc
NO. OF ROTORS:	2
FUEL:	Petrol, regular
SPECIFIC FUEL CONSUMPTION:	0.62 lb/bhp hr.
CARBURATION:	Carburettor, automotive
WEIGHT, DRY:	290 lb
INSTALLATION ANGLES:	N/A
OUTPUT DRIVE:	Automltive clutch + torque converter
DIMENSIONS (L x W x H) IN.:	23 x 27 x 21
COST:	Approx. DM 3,000
AVAILABILITY:	NSU are prepared to make 6 engines available for hovercraft trials. No modifications will be made by NSU



MANUFACTURER:	NSU AG
ENGINE MODEL:	KKM 612
USE:	Ro135 marine unit
COOLING:	Water
MAX. POWER:	135 bhp at 6,000 rev./min.
MAX. TORQUE:	117 lb ft. at 4,000 rev./min.
DISPLACEMENT:	995 cc
NO. OF ROTORS:	2
FUEL:	Petrol, regular
SPECIFIC FUEL CONSUMPTION:	0.66 lb/bhp hr.
CARBURATION:	Carburettor
WEIGHT, DRY:	N/A
INSTALLATION ANGLES:	Level
OUTPUT DRIVE:	Propeller stub shaft
DIMENSIONS (L x W x H) IN.:	28 x 25.5 x 22 approx.
COST:	N/A
AVAILABILITY:	Believed production will cease. Not available for U.K.

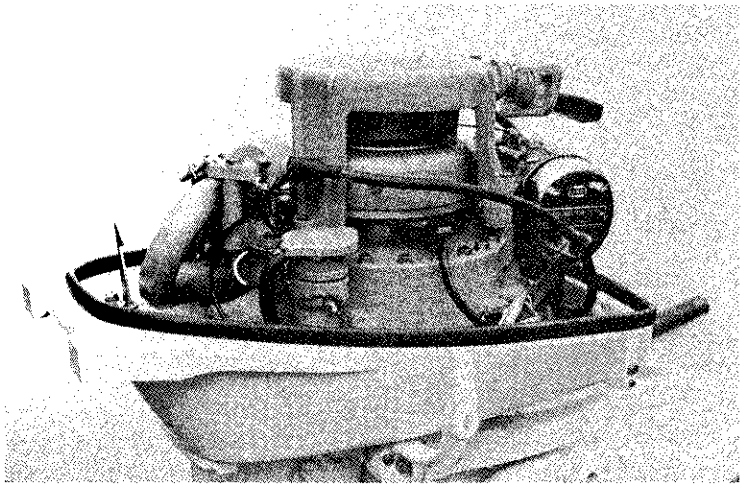


MANUFACTURER:	Toyo Kogyo Co. Ltd.
ENGINE MODEL:	10A
USE:	Mazda R 100 motor car
COOLING:	Liquid
MAX. POWER:	110 bhp at 7,000 rev./min.
MAX. TORQUE:	100 lb ft. at 4,000 rev./min.
DISPLACEMENT:	982 cc
NO. OF ROTORS:	2
FUEL:	Petrol
SPECIFIC FUEL CONSUMPTION:	0.6 lb/bhp hr.
CARBURATION:	Automotive carburettor
WEIGHT, DRY:	N/A
INSTALLATION ANGLES:	N/A
OUTPUT DRIVE:	Automotive clutch
DIMENSIONS (L x W x H) IN.:	19.5 x 24 x 25.5
COST:	£300*
AVAILABILITY:	

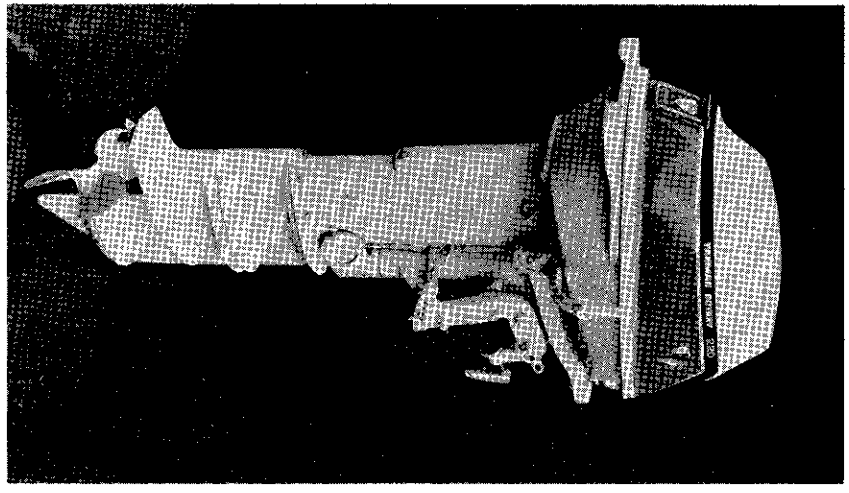
* Purchased as spare units, engines not otherwise available. See 3.1.2.

NO PHOTOGRAPH AVAILABLE.
APPEARANCE GENERALLY SIMILAR
TO TOYO KOGYO 10A

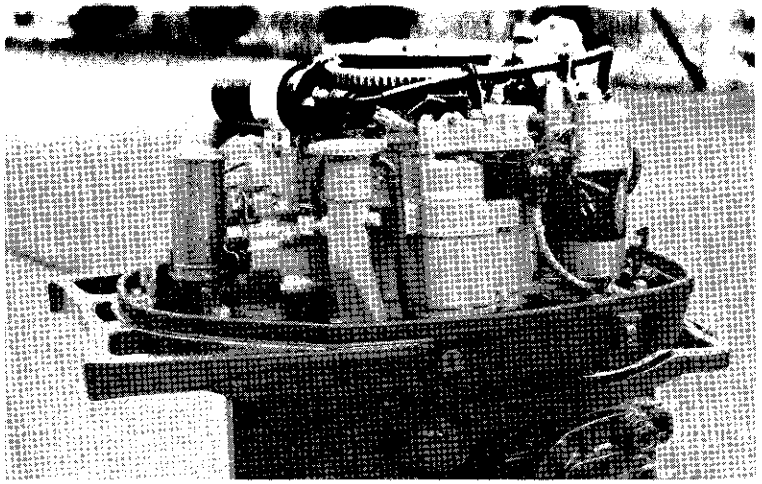
MANUFACTURER:	Toyo Kogyo Co. Ltd.
ENGINE MODEL:	110S
USE:	Mazda 110 Cosmo motor car
COOLING:	Liquid
MAX. POWER:	110 bhp
MAX. TORQUE:	N/A
DISPLACEMENT:	982 cc
NO. OF ROTORS:	2
FUEL:	Petrol
SPECIFIC FUEL CONSUMPTION:	N/A
CARBURATION:	Carburettor, automotive
WEIGHT, DRY:	N/A
INSTALLATION ANGLES:	N/A
OUTPUT DRIVE:	Automotive clutch
DIMENSIONS (L x W x H) IN.:	N/A
COST:	N/A
AVAILABILITY:	Probably available in spare par



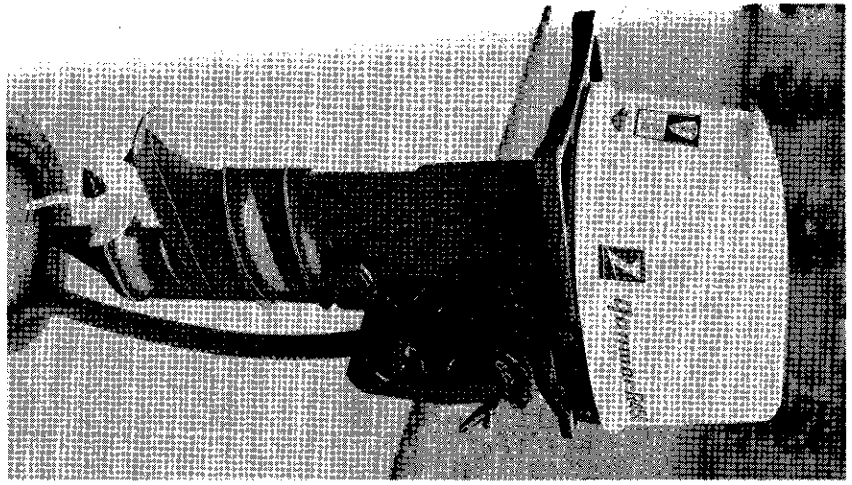
MANUFACTURER:	Yanmar Diesel Engine Co. Ltd.
ENGINE MODEL:	R 220
USE:	As a power plant
COOLING:	Liquid
MAX. POWER:	20 bhp at 6,000 rev./min.
MAX. TORQUE:	N/A
DISPLACEMENT:	220 cc
NO. OF ROTORS:	1
FUEL:	Petroil
SPECIFIC FUEL CONSUMPTION:	N/A
CARBURATION:	Carburettor
WEIGHT, DRY:	N/A
INSTALLATION ANGLES:	N/A
OUTPUT DRIVE:	Shaft
DIMENSIONS (L x W x H) IN.:	22.5 x 14.5 x 12.5
COST: / AVAILABILITY:	Could be made available for projects for approximately ¥1,000,000, (£1,080)



MANUFACTURER:	Yanmar Diesel Engine Co. Ltd.
ENGINE MODEL:	R 220
USE:	Outboard motor unit
COOLING:	Water
MAX. POWER:	20 bhp at 6,000 rev./min.
MAX. TORQUE:	
DISPLACEMENT:	220 cc
NO. OF ROTORS:	1
FUEL:	Petroil 100:1
SPECIFIC FUEL CONSUMPTION:	
CARBURATION:	Carburettor
WEIGHT, DRY:	96 lb
INSTALLATION ANGLES:	66° tilt
OUTPUT DRIVE:	N/R
DIMENSIONS (L x W x H) IN.:	Complete 22.5 x 14.5 x 49
COST:	¥300.000, (£324)
AVAILABILITY:	



MANUFACTURER:	Yanmar Diesel Engine Co. Ltd.
ENGINE MODEL:	R 450
USE:	As a power plant
COOLING:	Liquid
MAX. POWER:	45 bhp at 5,500 rev./min.
MAX. TORQUE:	N/A
DISPLACEMENT:	450 cc
NO. OF ROTORS:	1
FUEL:	Petrol
SPECIFIC FUEL CONSUMPTION:	N/A
CARBURATION:	Carburettor
WEIGHT, DRY:	
INSTALLATION ANGLES:	N/A
OUTPUT DRIVE:	Shaft
DIMENSIONS (L x W x H) IN.:	25 x 16.5 x 14.5
COST: / AVAILABILITY:	Could be made available for projects at approximately ¥2,000,000, (£2,160)



MANUFACTURER:	Yanmar Diesel Engine Co. Ltd.
ENGINE MODEL:	R 450
USE:	Outboard motor unit
COOLING:	Water
MAX. POWER:	45 bhp at 5,500 rev./min.
MAX. TORQUE:	
DISPLACEMENT:	450 cc
NO. OF ROTORS:	1
FUEL:	Petroil 100:1
SPECIFIC FUEL CONSUMPTION:	
CARBURATION:	
WEIGHT, DRY:	176 lb
INSTALLATION ANGLES:	65° tilt
OUTPUT DRIVE:	N/R
DIMENSIONS (L x W x H) IN.:	Complete: 25 x 16.5 x 52
COST:	¥560,000, (£600)
AVAILABILITY:	