

TYPE-APPROVAL CERTIFICATE

Communication concerning the type-approval of an engine type or family of engine types with regard to the emission of pollutants pursuant to Directive 97/68/EC, as last amended by Directive 2011/88/EU.

Type Approval No: **e24*97/68SA*2011/88*0102*01**

Extension No: **01.**

Reason for Extension (where appropriate):

- See page 2 of test report number 12-010011-CX-SHA-00 for list of modifications.

SECTION I

- | | | |
|-----|---|--|
| 0. | General | |
| 0.1 | Make (name of undertaking): | <i>Cameo, Ampride</i> |
| 0.2 | Manufacturer's designation of the parent/and (if applicable) of the family engine(s) type(s): | <i>Parent Engine: CP170F
Family Engine: CP168FB, A170F, A170FD, AP170F, AP170FD, A168F, A168FD, AP168F, A168FD.</i> |
| 0.3 | Manufacturer's type coding as marked on the engine(s): | <i>CP170F, CP168FB, A170F, A170FD, AP170F, AP170FD, A168F, A168FD, AP168F, AP168FD.</i> |
| | Location: | <i>Refer to drawing No: CP170F-01</i> |
| | Method of affixing: | <i>Refer to drawing No: CP170F-01</i> |
| 0.4 | Specification of machinery to be propelled by the engine: | <i>Compressor, Pump, Generator set, etc.</i> |
| 0.5 | Name and address of manufacturer: | <i>Chongqing Cameo Gasoline Engine Co., Ltd.,
Zengjiaba, Renmin Village,
Beiwenquan Town, Beibei District,
Chongqing,
P.R. China.</i> |
| 0.6 | Location, coding and method of affixing of the engine identification number: | <i>Refer to drawing No: CP170F-01</i> |
| 0.7 | Location and method of affixing of the EC approval mark: | <i>Refer to drawing No: CP170F-01</i> |
| 0.8 | Address(es) of assembly plant(s): | <i>Chongqing Cameo Gasoline Engine Co., Ltd.,
Zengjiaba, Renmin Village,
Beiwenquan Town, Beibei District,
Chongqing,
P.R. China.</i> |

SECTION II

1. Restriction of use (if any): *N/A*
- 1.1. Particular conditions to be respected in the installation of the engine(s) on the machinery
- 1.1.1. Maximum allowable intake depression: *0.54 kPa.*
- 1.1.2. Maximum allowable back pressure: *13.50 kPa*
2. Technical service responsible for carrying out the tests: *TÜV SÜD Automotive GmbH,
Westendstraße 199,
D-80686 München,
Germany.*
3. Date of test report: *As before and: 16.01.2013*
4. Number of test report: *Former: 351-0024-08-FBFE
New: 12-01011-CX-SHA-00*
5. The undersigned hereby certifies the accuracy of the manufacturer's description in the attached information document of the engine(s) described above and that the attached test results are applicable to the type.

Type-approval is: *Extended.*

Place: *Dublin.*

Date: *6th February 2013*

Signature: 



6. Documentation: *39 Pages*
- Attachments: Information package.
Test results (see appendix 1).
Correlation study relevant to sampling systems used which are different from the reference systems (if applicable).

APPENDIX 1

TEST RESULTS FOR COMPRESSION IGNITION ENGINES

1. Information concerning the conduct of the tests(s).

1.1. Reference fuel used for the test

1.1.1. Cetane number: *N/A*

1.1.2. Sulphur content: *N/A*

1.1.3. Density: *N/A*

1.2. Lubricant

1.2.1. Make(s): *N/A*

1.2.2. Type(s): *N/A*

1.3. Engine driven equipment (if applicable)

1.3.1. Enumeration and identifying details: *N/A*

1.3.2. Power absorbed at indicated engine speeds (as specified by the manufacturer): *N/A*

Equipment	<i>Power P_{AE} (kW) absorbed at various engine Speeds (*), taking into account Appendix 3 of this Annex.</i>	
	<i>Intermediate (if applicable)</i>	<i>Rated</i>
NONE		
Total		
<i>(*) Must not be greater than 10% of the power measured during the test</i>		

1.4. Engine performance

1.4.1. Engine speeds:

Idle: N/A

Intermediate: N/A

Rated: N/A

1.4.2. Engine power: N/A

Condition	<i>Power setting (kW) at various engine speeds.</i>	
	<i>Intermediate (if applicable)</i>	<i>Rated</i>
Maximum power measured on test (P _M) (kW) (a)		
Total power absorbed by engine driven equipment as per section 1.3.2 of this Appendix, or section 2.8 of Annex III (P _{AE}) (kW) (b)		
Net engine power as specified in section 2.4 of Annex I (kW) (c)		
c = a + b		

1.5. Emission levels

1.5.1. Dynamometer setting (kW): N/A

Percent Load	<i>Dynamometer setting (kW) at various engine speeds</i>	
	<i>Intermediate (if applicable)</i>	<i>Rated</i>
10 (if applicable)		
25 (if applicable)		
50		
75		
100		

1.5.2. Emission results on the test cycle:

CO:	<i>N/A</i>
HC:	<i>N/A</i>
NO _x :	<i>N/A</i>
NO _x + HC:	<i>N/A</i>
Particulates:	<i>N/A</i>

1.5.3. Sampling system used for the test:

1.5.3.1. Gaseous emissions:	<i>N/A</i>
1.5.3.2. Particulates:	<i>N/A</i>
1.5.3.2.1. Method:	<i>N/A</i>

APPENDIX 2

TEST RESULTS FOR SPARK IGNITION ENGINES

1. Information concerning the conduct of the test(s)

(In case of several parent engines, to be indicated for each of them)

1.1. Octane number

1.1.1. Octane number: **97.0**

1.1.2. State percentage of oil in mixture when lubricant and petrol are mixed as in the case of two-stroke engines: **N/A**

1.1.3. Density of petrol for four-stroke engines and petrol/oil mixture for two-stroke engines: **750.0 g/l (at 15 °C)**

1.2. Lubricant

1.2.1. Make(s): **Shell.**

1.2.2. Type(s): **SAE 15W-40**

1.3. Engine driven equipment (if applicable)

1.3.1. Enumeration and identifying details: **N/A**

1.3.2. Power absorbed at indicated engine speed (as specified by the manufacturer): **N/A**

Equipment	<i>Power P_{AE} (kW) absorbed at various engine Speeds (*), taking into account Appendix 3 of this Annex.</i>	
	<i>Intermediate (if applicable)</i>	<i>Rated</i>
Total		
<i>(*) Must not be greater than 10% of the power measured during the test</i>		

1.4. Engine performance

1.4.1. Idle (min^{-1}): **1800**

Intermediate (min^{-1}): **N/A**

Rated (min^{-1}): **3000**

1.4.2. Engine power:

(Uncorrected power measured in accordance with the provisions of section 2.4 of Annex I)

Condition	<i>Power setting (kW) at various engine speeds.</i>		
	<i>Intermediate (if applicable)</i>	<i>Rated</i>	
		<i>CP170F</i>	<i>CP168FB</i>
Maximum power measured on test (PM) (kW) (a)		4.05	3.92
Total power absorbed by engine driven equipment as per section 1.3.2 of this Appendix, or section 2.8 of Annex III (PAE) (kW) (b)		-	-
Net engine power as specified in section 2.4 of Annex I (kW) (c)		4.05	4.05
c = a + b		4.05	4.05

1.5. Emission levels

1.5.1. Dynamometer setting (kW):

Percent Load	<i>Dynamometer setting (kW) at various engine speeds</i>			
	<i>Intermediate (if applicable)</i>	<i>Rated</i>		
		<i>CP170F</i>	<i>CP168FB</i>	-
		<i>New</i>	<i>New</i>	-
10 (if applicable)		0.45	0.31	-
25 (if applicable)		1.06	0.92	-
50 (if applicable)		1.95	1.89	-
75 (if applicable)		2.84	2.79	-
100		3.97	3.82	-

1.5.2. Emission results on the test cycle:

	G2 (0h)		G2 (125h)		G2 inc. DF
	CP170F	CP168FB	CP170F	--	CP168FB
CO	343	287	584	--	489
HC	9.0	7.5	12.1	--	10.1
NO_x	3.6	4.8	1.2	--	4.8
HC+NO_x	12.6	12.3	13.3	--	13.0

Appendix 3

EQUIPMENT AND AUXILIARIES TO BE INSTALLED FOR THE TEST TO DETERMINE ENGINE POWER

Number	Equipment and auxiliaries	Fitted for emission test
1	-Inlet system -Inlet manifold -Crankcase emission control system -Control devices for dual induction inlet manifold system -Air flow meter -Air inlet duct work -Air filter -Inlet silencer -Speed-limiting device	Yes, standard production equipment Yes, standard production equipment Yes, standard production equipment Yes, standard production equipment Yes (a) Yes (a) Yes (a) Yes (a)
2	Induction-heating device of inlet manifold	Yes, standard production equipment. If possible to be set in the most favourable condition
3	Exhaust system Exhaust purifier Exhaust manifold Connecting pipes Silencer Tail pipe Exhaust brake Pressure charging device	 Yes, standard production equipment Yes, standard production equipment Yes (b) Yes (b) Yes (b) No (c) Yes, standard production equipment
4	Fuel supply pump	Yes, standard production equipment (d)
5	Carburation equipment Carburettor Electronic control system, air flow meter, etc. Equipment for gas engines Pressure reducer Evaporator Mixer	 Yes, standard production equipment Yes, standard production equipment Yes, standard production equipment Yes, standard production equipment Yes, standard production equipment

Number	Equipment and auxiliaries	Fitted for emission test
6	Fuel injection equipment (petrol and diesel) Prefilter	Yes, standard production or test bed equipment
	Filter	Yes, standard production or test bed equipment
	Pump	Yes, standard production equipment
	High-pressure pipe	Yes, standard production equipment
	Injector	Yes, standard production equipment
	Air inlet valve	Yes, standard production equipment (e)
	Electronic control system, air flow meter, etc.	Yes, standard production equipment
	Governor/control system	Yes, standard production equipment
7	Liquid-cooling equipment Radiator	No
	Fan	No
	Fan cowl	No
	Water pump	Yes, standard production equipment (f)
	Thermostat	Yes, standard production equipment (g)
8	Air cooling Cowl	No (h)
	Fan or Blower	No (h)
	Temperature-regulating device	No
9	Electrical equipment Generator	Yes, standard production equipment (i)
	Spark distribution system	Yes, standard production equipment
	Coil or coils	Yes, standard production equipment
	Wiring	Yes, standard production equipment
	Spark plugs	Yes, standard production equipment
	Electronic control system including knock sensor/spark retard system	Yes, standard production equipment

Number	Equipment and auxiliaries	Fitted for emission test
10	Pressure charging equipment Compressor driven either directly by the engine and/or by the exhaust gases Charge air cooler Coolant pump or fan (engine-driven) Coolant flow control device	 Yes, standard production equipment Yes, standard production or test bed equipment (j) (k) No (h) Yes, standard production equipment
11	Auxiliary test-bed fan	Yes, if necessary
12	Anti-pollution device	Yes, standard production equipment (l)
13	Starting equipment	Test bed equipment
14	Lubricating oil pump	Yes, standard production equipment

- (a) The complete inlet system shall be fitted as provided for the intended application: where there is a risk of an appreciable effect on the engine power; in the case of naturally aspirated spark ignition engines; when the manufacturer requests that this should be done. In other cases, an equivalent system may be used and a check should be made to ascertain that the intake pressure does not differ by more than 100 Pa from the upper limit specified by the manufacturer for a clean filter.
- (b) The complete exhaust system shall be fitted as provided for the intended application: where there is a risk of an appreciable effect on the engine power; in the case of naturally aspirated spark ignition engines; when the manufacturer requests that this should be done. In other cases, an equivalent system may be installed provided the pressure measured does not differ by more than 1000 Pa from the upper limit specified by the manufacturer.
- (c) If an exhaust brake is incorporated in the engine, the throttle valve shall be fixed in the fully open position
- (d) The fuel feed pressure may be adjusted, if necessary, to reproduce the pressure existing in the particular engine application (particularly when a “fuel return” system is used).
- (e) The air intake valve is the control valve for the pneumatic governor of the injection pump. The governor or the fuel injection equipment may contain other devices which may affect the amount of injected fuel.
- (f) The cooling-liquid circulation shall be operated by the engine water pump only. Cooling of the liquid may be produced by an external circuit, such that the pressure loss of this circuit and the pressure at the pump inlet remain substantially the same as those of the engine cooling system.
- (g) The thermostat may be fixed in the fully open position.
- (h) When the cooling fan or blower is fitted for the test, the power absorbed shall be added to the results, except for cooling fans of air cooled engines directly fitted on the crankshaft. The fan blower shall be determined at the speeds used for the test either by calculation from standard characteristics or by practical tests.
- (i) Minimum power of the generator: the electrical power of the generator shall be limited to that necessary for operation of accessories which are indispensable for engine operation. If the connection of a battery is necessary, a fully charged battery in good condition shall be used
- (j) Charge air-cooled engines shall be tested with charge air cooling, whether liquid- or air-cooled, but if the manufacturer prefers, a test bench system may replace the air cooler. In either case, the measurement of power at each speed shall be made with the maximum pressure drop and the minimum temperature drop of the engine air across the charge air cooler on the test bench system as specified by the manufacturer.
- (k) These may include, for example exhaust-gas recirculation (EGR)-system, catalytic converter, thermal reactor, secondary air-supply system and fuel evaporation protecting system.
- (l) The power for electrical or other starting systems shall be provided from the test bed.

Index to the Information Package

Date of issue:	<i>13th March 2008</i>
Date of latest amendment:	<i>6th February 2013</i>
Reason for extension/revision:	<i>See top of page 1 of certificate.</i>
1. Test report(s)	
- numbers(s):	<i>Former: 351-0024-08-FBFE New: 12-01011-CX-SHA-00</i>
- date of issue:	<i>03.03.2008</i>
- date of latest amendment:	<i>16.01.2013</i>
2. Information document	
- number(s):	<i>Former: 70.403.07.482.03-2004/26/EC New: 97/68-CP170F-01</i>
- date of issue:	<i>08.01.2008</i>
- date of latest amendment:	<i>27.12.2012</i>
Documentation:	<i>39 pages</i>



Techn. Report No.: 12-01011-CX-SHA-00
Manufacturer: Chongqing Cameo Gasoline Engine Co., Ltd.
Type: CP170F

TECHNICAL REPORT

**No.: 12-01011-CX-SHA-00
(Previously: 351-0024-08-FBFE)**

**Examination in accordance with the directive of the European Parliament and the Council on
the approximation of the laws of the Member States**

**relating to Emission of gaseous and particulate pollutants from internal combustion
engines to be installed in non-road mobile machinery**

97/68/EC

of 16.12.1997

as last amended by

2011/88/EU

of 16.11.2011



Approvals granted up to now		
EC	Number of approval	Date
	eIRL*97/68SA*2004/26*0102*00	13.03.2008



Techn. Report No.: 12-01011-CX-SHA-00
 Manufacturer: Chongqing Cameo Gasoline Engine Co., Ltd.
 Type: CP170F

TEST DETAILS	
Subject	Non-road mobile machinery
EEC Directive	Directive 97/68/EC - 2011/88/EU
ECE Regulation	-
Location of Test	TICERI, Tianjin University, Tianjin 300072 P.R.China
Date of Test	04.07.2007 - 14.08.2008
TÜV SÜD Automotive GmbH Representative	Chen, Zhisong
Manufacturer's Representative	Peng, Zhibing
Reason for Test	Extension, new make name is added and new engines types are added to family. There is no technical changes, which effect the exhaust emission characteristics. The previous test results remain still valid.

MANUFACTURER DETAILS	
Manufacturer's Name	Chongqing Cameo Gasoline Engine Co., Ltd.
Manufacturer's Address	Zengjiaba, Renmin Village, Beiwenquan Town, Beibei District, Chongqing, P.R.China
Model Type & description	CP170F
Category	SN:3, Stage II

CONCLUSION	
	The above mentioned engine was tested in accordance with the above Directive and was found to comply in all respects.
Signature:	
Name: Zhao, Chongmin Position: Expert Date: 16.01.2013	

LIST OF ANNEXES		
ANNEX	No. of PAGES	SUBJECT
1	1	Emission results
2	-	Worst case notes
3	2	Determination of deterioration factor
4	-	Risk assessment
5	-	Reference fuel specification
6	1	List of engine types within the family
7	9	Information document No. 97/68-CP170F-01
8	6	Photo documentation
9	10	Attachment drawings
10	1	List of modification

Techn. Report No.: 12-01011-CX-SHA-00
Manufacturer: Chongqing Cameo Gasoline Engine Co., Ltd.
Type: CP170F

Page 3 of 9

Ann4, 2.6 Ann4, 3.5.1.2 Ann4, App4 Ann4, App4, 2.1	Worst case rationale: (or attach worst case sheet as annex): to include limited adjustable carburettors to be tested at both extremes of adjustment, which test cycle?: D, G1, G2 or G3 with justification, calculated or fixed deterioration factors (small volume) emissions durability period	tamper-proof carburetor cycle G2 n.a. 125h
	Test Equipment Details	
A4, App2, 1.11	Dynamometer calibration (must be < 3 months):	17.07.2007
A4, App1, 1.3	Calibration details checked for measurement of:	
	Engine speed	yes
	Fuel consumption	yes
	Air consumption	n.a.
	Temperatures < 600 K ± 2 K absolute	yes
	Temperatures > 600 K ± 1 % of reading	yes
	Exhaust gas pressure ± 0,2 kPa absolute	yes
	Inlet manifold depressions ± 0,06 kPa absolute	yes
	Atmospheric pressure ± 0,1 kPa absolute	yes
	Other pressures ± 0,1 kPa absolute	yes
	Relative humidity ± 3 % absolute	yes
	Absolute humidity ± 5 % of reading	yes
	Dilution air flow ± 2 % of reading	yes
	Diluted exhaust gas flow ± 2 % of reading	yes
A4, App2, 1.1	Analyser calibration performed as often as necessary (last time)	05.06.2008
A4, App2, 1.5.5.1	Analyser calibration gas concentration not less than 90% of the full scale value	yes
A4, App2, 1.5.5.1	Calibration curve: < +/-2% of reading or ± 0,3 % of full scale whichever is larger.	yes
A4,3.5.4	Output of analysers recorded on strip chart or equivalent.	yes

Techn. Report No.: 12-01011-CX-SHA-00
 Manufacturer: Chongqing Cameo Gasoline Engine Co., Ltd.
 Type: CP170F

Page 4 of 9

A4,App2,1.8.10	NO _x converter eff. >90%, >95% recommended (prior to each cal.)		yes
A6,	Indicate sampling system number used for test:	Gaseous emissions	2
	Engine checks		
	Engine details correspond to Annex II		
AnnI, 2.4	Correct auxiliaries fitted as required by R85 or 80/1269 (but not fan)		n.a.
AnnIV 2.8	PAE power absorbed details available		n.a.
Ann4, 2.1.2	Cooling medium and charge air temperature recorded		yes
AnnIV 2.7	The fuel shall be the reference fuel specified in Annex V.		yes
	Atmospheric Conditions		
AnnIV, 2.1	Is $0.93 < f_a < 1.07$ before and during the test? ($f_a = (99/ps)^{1.2} \times (T/298)^{0.6}$)		1.02
	Pre-Test Checks		
A4,App2,1.4	Sample line disconnected, plugged and leak check performed		n.a.
A4,App2,1.6	Calibration check with zero and span gas		yes
A4, 3.2	Engine temperatures stabilised		yes
A4, 3.3	Dilution ratio not less than four		yes
	Test Details		
A4, 2.3	Correct exhaust back pressure?		13.50 kPa
A4, 2.2	Correct inlet depression?		0.54 kPa
A4, 2.8	Dynamometer settings correct?		yes
A4, App3,1.1	Emissions data for minimum of the last 120 secs of mode used in calculations		yes
A4,3.5.3	Specified speed within tolerance?		yes
A4,3.5.3	Specified torque within tolerance?		yes

Techn. Report No.: 12-01011-CX-SHA-00
 Manufacturer: Chongqing Cameo Gasoline Engine Co., Ltd.
 Type: CP170F

A4, 3.5.4	Exhaust gas measured at least during last 180s of each mode?	n.a.
A4,App1, 1.4.3.4	Heated HC sample line maintained between 180 and 200 °C	yes
A4,App4, 1.4.3.5	Heated NO _x sample line maintained between 55 and 200 °C	n.a.
A4, 3.5.4	Sample bagged during the last 180s of each mode	yes
	Post-Test Checks	
A4, 3.6	Analyser accuracy (span check) ± 2%	yes
AnnIV, 2.1	Is 0.93 < fa < 1.07 before and during the test?	yes

Engine	Class	DF			Result including DF [g/kWh]			Stage II Limit [g/kWh]		
		CO	HC+NO _x	NO _x	CO	HC+NO _x	NO _x	CO	HC+NO _x	NO _x
CP170F	SN:3	1.703	1.056	1.0*	584	13.3	3.6	610	16.1	10
CP168FB					489	13.0	4.8			

* No DF given in the directive.

Annex VII, Appendix 2 - TEST RESULTS FOR SPARK IGNITION ENGINES

1. Information concerning the conduct of the test:

1.1. Octane number

1.1.1. Octane number: 97.0

1.1.2. State percentage of oil in mixture when lubricant and petrol are mixed as in the case of two-stroke engines: n.a.

1.1.3. Density of petrol for four-stroke engines and petrol/oil mixture for two-stroke engines:
 750.0 g/l (at 15 °C)

1.2. Lubricant

1.2.1. Make(s): Shell

1.2.2. Type(s): SAE 15W-40

1.3. Engine driven equipment (if applicable): Not applicable

1.3.1. Enumeration and identifying details

1.3.2. Power absorbed at indicated engine speed (as specified by the manufacturer)

Equipment	Power P _{AE} (kW) absorbed at various engine speeds (*), taking into account Appendix 3 of this Annex	
	Intermediate (if applicable)	Rated
-	-	-
-	-	-
-	-	-
-	-	-
Total	-	-

1.4. Engine performance

1.4.1. Engine speeds

min ⁻¹						
Idle	1800	-	-	-	-	-
Intermediate	-	-	-	-	-	-
Rated	3000	-	-	-	-	-

Techn. Report No.: 12-01011-CX-SHA-00
 Manufacturer: Chongqing Cameo Gasoline Engine Co., Ltd.
 Type: CP170F

1.4.2. Engine power (*)

Condition	Power setting [kW] at various engine speeds									
	Intermediate (if applicable)					Rated				
						CP170F	CP168FB			
Maximum power measured on test (P_M) (kW) (a)	-	-	-	-	-	4.05	3.92	-	-	-
Total power absorbed by engine driven equipment as per section 1.3.2 of this Appendix. or section 2.8 of Annex III (P_{AE})(kW) (b)	-	-	-	-	-	-	-	-	-	-
Net engine power as specified in section 2.4 of Annex I (kW) (c)	-	-	-	-	-	4.05	3.92	-	-	-
$c = a + b$										

(*) Uncorrected power measured in accordance with the provisions of section 2.4 of Annex I.



Techn. Report No.: 12-01011-CX-SHA-00
 Manufacturer: Chongqing Cameo Gasoline Engine Co., Ltd.
 Type: CP170F

1.5. Emission levels

1.5.1. Dynamometer setting [kW]

Percent Load	Dynamometer setting [kW] at various engine speeds									
	Intermediate (if applicable)					Rated				
						CP170F	CP168FB			
						new	new			
0	-	-	-	-	-	0.00	0.00	-	-	-
10 (if applicable)	-	-	-	-	-	0.45	0.31	-	-	-
25 (if applicable)	-	-	-	-	-	1.06	0.92	-	-	-
50 (if applicable)	-	-	-	-	-	1.95	1.89	-	-	-
75 (if applicable)	-	-	-	-	-	2.84	2.79	-	-	-
100	-	-	-	-	-	3.97	3.82	-	-	-

1.5.2. Emission results on the test cycle

g/kWh	G2 (0h)		G2 (125h)		G2 incl. DF			
	CP170F	CP168FB	CP170F		CP168FB			
CO	343	287	584	-	489	-	-	-
HC	9.0	7.5	12.1	-	10.1	-	-	-
NO _x	3.6	4.8	1.2	-	4.8	-	-	-
HC+NO _x	12.6	12.3	13.3	-	13.0	-	-	-



Techn. Report No.: 12-01011-CX-SHA-00
Manufacturer: Chongqing Cameo Gasoline Engine Co., Ltd.
Type: CP170F

Page 9 of 9

V. Certification

The above named information document No. 97/68-CP170F-01 and the herewith described engine family complies with the mentioned test basis with the limits of stage II in the engine category SN:3.

The report includes pages 1 to 9 and the attachments.

A handwritten signature in black ink, consisting of several overlapping loops and lines, is written over the stamp.

A circular blue ink stamp. The outer ring contains the text 'Sachverständiger Prüflabor' at the top and 'TÜV SÜD Automotive GmbH' at the bottom. The inner circle contains 'DIN EN ISO/IEC 17025' and a smaller version of the TÜV SÜD logo.

München, 16.01.2013

Zhao, Chongmin



Techn. Report No.:	12-01011-CX-SHA-00	Annex 1
Manufacturer:	Chongqing Cameo Gasoline Engine Co., Ltd.	
Type:	CP170F	Page 1 of 1

Emission results

CP170F parent engine

	Results including DF	Limits class SN:3, stage II
CO (g/kWh)	584	610
HC (g/kWh)	12.1	-
NO _x (g/kWh)	3.6	10
HC + NO _x (g/kWh)	13.3	16.1

cycle G2, 2002/88/EC or 2004/26EC annex IV, 3.5.1.1

CP170F parent engine

Percent load	Dynamometer setting [kW] at various engine speeds	
	Intermediate	Rated
0	-	0.00
10	-	0.45
25	-	1.06
50	-	1.95
75	-	2.84
100	-	3.97

	Engine speed [rpm] during test	
	(Intermediate)	Rated
	1800 Idle	3000

Determination of deterioration factor

CP170F parent engine (engine No: 070601109)

	New stabilized engine	engine after 125h aging cycle	DF
CO	343 g/kWh	584 g/kWh	1.703
HC	9.0 g/kWh	12.1 g/kWh	1.344
NO _x	3.6 g/kWh	1.2 g/kWh	1.000
HC + NO _x	12.6 g/kWh	13.3 g/kWh	1.056

cycle G2, 2004/26/EC, annex IV, 3.5.1.1
* No DF given in the directive.

Aging cycle (started at 10.07.2007)
For example hour 1, 2, 65, 66 and hour 125

Emission durability test record

Project no: 70.403.07.482.03

Engine No: 070601109

Emission durability test record

Test Record No: 0707100			Durability Test Equipment No: CW-5.5kw				Run By: Shen Lei Record By: Shen Lei							
Durability Date	Durability Hours h	Load Percent %	Durability Time min	Parameters										Durability Time Record
				Engine speed rpm	Torque N · m	Power kW	Fuel flow kg/h	Fuel flow rate g/kWh · h	Temperature of spark plug washer °C	Air Pressure kPa	Ambient temperature °C	Relative humidity %		
070710	1	100	5.5	3084	12.53	4.04	1.35	335	194	99.7	33	45	00: 38 - 01: 44	
		75	12	3072	9.13	2.94	1.01	344	193	99.7	32	48	00: 44 - 01: 56	
		50	17.5	3073	6.24	2.01	0.82	408	180	99.7	32	48	01: 56 - 01: 13	
		25	18	3063	3.07	0.97	0.62	609	152	99.7	32	47	01: 13 - 01: 31	
		10	4	3042	1.22	0.39	0.52	1352	140	99.7	33	45	01: 31 - 01: 35	
		0	3	1860	0.19	0.04	0.19	5113	139	99.7	32	47	01: 35 - 01: 38	

Test Record No: 0707100			Durability Test Equipment No: CW-5.5kw				Run By: Shen Lei Record By: Shen Lei							
Durability Date	Durability Hours h	Load Percent %	Durability Time min	Parameters										Durability Time Record
				Engine speed rpm	Torque N · m	Power kW	Fuel flow kg/h	Fuel flow rate g/kWh · h	Temperature of spark plug washer °C	Air Pressure kPa	Ambient temperature °C	Relative humidity %		
070710	2	100	5.5	3114	12.23	3.99	1.31	328	181	99.7	32	48	01: 38 - 01: 44	
		75	12	3052	9.17	2.93	1.04	354	198	99.7	32	47	01: 44 - 01: 56	
		50	17.5	3114	6.10	1.99	0.82	415	174	99.7	32	46	01: 56 - 02: 13	
		25	18	3049	3.07	0.98	0.63	646	157	99.7	32	46	02: 13 - 02: 31	
		10	4	3037	1.20	0.38	0.50	1310	138	99.7	33	45	02: 31 - 02: 35	
		0	3	1803	0.23	0.04	0.19	4437	122	99.7	33	46	02: 35 - 02: 38	

Emission durability test record

Project no: 70.403.07.482.03

Engine No: 070601109

Emission durability test record

Test Record No.: 0707200			Durability Test Equipment No: CW-5.5kw				Run By:Wang Yajing Record By:Wang Yajing							
Durability Date	Durability Hours h	Load Percent %	Durability Time min	Parameters										Durability Time Record
				Engine Speed rpm	Torque N · m	Power kW	Fuel Flow kg/h	Fuel Flow Rate g/kWh · h	Temperature of spark plug washer °C	Air Pressure kPa	Ambient temperature °C	Relative humidity %		
070720	66	100	5.5	2097	12.56	3.94	0.98	250	195	100.6	31	27	04: 40-04: 46	
		75	12	3109	9.34	3.04	0.87	286	204	100.6	31	27	04: 46-04: 58	
		50	17.5	3090	6.29	2.04	0.71	347	192	100.6	31	27	04: 58-05: 15	
		25	18	3075	3.15	1.01	0.50	498	176	100.6	32	27	05: 15-05: 33	
		10	4	3079	1.27	0.41	0.40	977	152	100.6	32	27	05: 33-05: 37	
		0	3	1918	0.21	0.04	0.19	4640	132	100.6	32	27	05: 37-05: 40	

Test Record No.: 0707200			Durability Test Equipment No: CW-5.5kw				Run By:Wang Yajing Record By:Wang Yajing							
Durability Date	Durability Hours h	Load Percent %	Durability Time min	Parameters										Durability Time Record
				Engine Speed rpm	Torque N · m	Power kW	Fuel Flow kg/h	Fuel Flow Rate g/kWh · h	Temperature of spark plug washer °C	Air Pressure kPa	Ambient temperature °C	Relative humidity %		
070720	66	100	5.5	2083	12.48	3.90	0.96	246	180	100.6	32	26	05: 40-05: 46	
		75	12	3092	9.43	3.05	0.88	289	205	100.7	32	26	05: 46-05: 58	
		50	17.5	3080	6.12	1.95	0.71	359	192	100.6	32	26	05: 58-06: 15	
		25	18	3046	3.14	1.00	0.52	517	171	100.6	32	26	06: 15-06: 33	
		10	4	3084	1.24	0.40	0.41	1012	151	100.6	32	26	06: 33-06: 37	
		0	3	1933	0.22	0.04	0.18	4098	134	100.6	32	26	06: 37-06: 40	

Emission durability test record

Project no: 70.403.07.482.03

Engine No: 070601109

Emission durability test record

Test Record No.: 0708073			Durability Test Equipment No: CW-5.5kw				Run By:Yang Lijun Record By:Yang Lijun							
Durability Date	Durability Hours h	Load Percent %	Durability Time min	Parameters										Durability Time Record
				Engine Speed rpm	Torque N · m	Power kW	Fuel Flow kg/h	Fuel Flow Rate g/kWh · h	Temperature of spark plug washer °C	Air Pressure kPa	Ambient temperature °C	Relative humidity %		
070807	125	100	5.5	3195	11.49	3.74	1.65	441	187	100.1	35	46	14: 40-14: 46	
		75	12	3131	9.41	3.09	1.46	474	196	100.1	35	46	14: 46-14: 58	
		50	17.5	3106	6.30	2.05	1.13	540	181	100.1	36	45	14: 58-15: 15	
		25	18	3064	3.13	1.00	0.72	714	157	100.1	37	42	15: 15-15: 33	
		10	4	3113	1.25	0.41	0.54	1318	143	100.1	37	40	15: 33-15: 37	
		0	3	1773	0.15	0.03	0.20	6798	117	100.1	37	40	15: 37-15: 40	



Techn. Report No.:	12-01011-CX-SHA-00	Annex 6
Manufacturer:	Chongqing Cameo Gasoline Engine Co., Ltd.	
Type:	CP170F	Page 1 of 1

List of engine types within the family

	Parent engine	Engine within the family
Engine type	CP170F / A170F / A170FD / AP170F / AP170FD	CP168FB / A168F / A168FD / AP168F / AP168FD
Kind of engine	Gasoline four stroke engine	
No. of cylinder	1	1
Rated speed [min ⁻¹]	3000	3000
Max. fuel flow[g/h]	1950	1900
Rated net power [kW] ^{*)}	4.0	3.6
Speed at max. torque [min ⁻¹]	2500	2500
Max. torque [Nm]	12	11
Idle speed [min ⁻¹]	1800	1800
Engine displacement [cm ³]	208	196
-Displacement [in % of parent engine]	100	94.2
Exhaust after treatment	n.a.	

*) corrected net power

**□ Relating to type-approval and referring to measures against the emission of gaseous and particulate pollutants from internal combustion engine to be installed in non-road mobile machinery
(Directive 97/68/EC as last amended by Directive 2011/88/EU)**

Parent engine/engine type ⁽¹⁾	:	CP170F
0 General		
0.1 Make(name of undertaking)	:	Cameo, <u>Ampride</u>
0.2 Type and commercial description of the parent- and (if applicable) of the family engine(s) ⁽¹⁾	:	Parent engine : CP170F Family engine : CP168FB, <u>A170F</u> , <u>A170FD</u> , <u>AP170F</u> , <u>AP170FD</u> , <u>A168F</u> , <u>A168FD</u> , <u>AP168F</u> , <u>AP168FD</u>
0.3 Manufacturer's type coding as marked on the engine(s) ⁽¹⁾	:	CP170F, CP168FB, <u>A170F</u> , <u>A170FD</u> , <u>AP170F</u> , <u>AP170FD</u> , <u>A168F</u> , <u>A168FD</u> , <u>AP168F</u> , <u>AP168FD</u>
0.4 Specification of Mechanical to be propelled by the engine ⁽²⁾	:	Compressor, Pump, Generator set, etc.
0.5 Name and address of manufacturer	:	Chongqing Cameo Gasoline Engine Co., Ltd. Zengjiaba, Renmin Village, Beiwenquan Town, Beibei District, Chongqing, P.R.China
Name and address of manufacturer's authorized representative (if any)	:	n.a.
0.6 Location, coding and method of affixing of the engine identification number	:	Refer to drawing No. CP170F-01
0.7 Location and method of affixing of the EC approval mark	:	Refer to drawing No. CP170F-01
0.8 Address(es) of assembly plant(s)	:	See 0.5

Attachments

- Essential characteristics of the parent engine(s)
- Essential characteristics of the engine family
- Essential characteristics of engine types within the family
- Photographs of the parent engine
- Content of drawings
- List of modification

Photograph no.	Photograph subject
CP170F-P01	Front view
CP170F-P02	Right view
CP170F-P03	Back view
CP170F-P04	Left view
CP170F-P05	Top view
CP170F-P06	Bottom view

Content of drawings

Drawing no.	Drawing subject
CP170F-01	Position of engine No. and EC approval No.
CP170F-02	Header
CP170F-03	Piston
CP170F-04	Carburetor
CP170F-05	Valve timing
CP170F-06	Ignition advance curve
CP170F-07	Exhaust tube and muffler
CP170F-08	Engine structure
CP170F-09	Blower
CP168FB-01	Piston
-----	-----

- (1) Delete as appropriate
- (2) Annex1, section1 As defined in Annex1, section1

Essential characteristics of the parent engine(s)

1.	Description engine	
1.1	Manufacturer	: Chongqing Cameo Gasoline Engine Co., Ltd.
1.2	Manufacturer's engine code	: CP170F, <u>A170F</u> , <u>A170FD</u> , <u>AP170F</u> , <u>AP170FD</u>
1.3	Cycle	: 4-stroke
1.4	Bore [mm]	: 70
1.5	Stroke [mm]	: 54
1.6	Number and layout of cylinders	: 1
1.7	Engine capacity[cm ³]	: 208
1.8	Rated speed [rpm]	: 3000
1.9	Maximum torque speed [rpm]	: 2500
1.10	Volumetric compression ratio ⁽³⁾	: 8.5±0.2:1
1.11	Combustion system description	: n.a
1.12	Drawing(s) of combustion chamber and piston crown	: Refer to drawing no. CP170F-02 Refer to drawing no. CP170F-03
1.13	Minimum cross sectional area of inlet and outlet ports	: Inlet 335.6 mm ² , Outlet 270.4 mm ²
1.14	Cooling system	
1.14.1	Liquid	
1.14.1.1	Nature of liquid	: n.a.
1.14.1.2	Circulating pump(s)	: yes /no ⁽²⁾
1.14.1.3	Characteristics or make(s) and type(s) (if applicable)	: n.a.
1.14.1.4	Drive ratio(s) (if applicable)	: n.a.
1.14.2	Air	
1.14.2.1	Blower	: yes /no ⁽²⁾
1.14.2.2	Characteristics or make(s) and type(s) (if applicable)	: Refer to drawing no. CP170F-09
1.14.2.3	Drive ratio(s) (if applicable)	: 1:1
1.15	Temperature permitted by the manufacturer	
1.15.1	Liquid cooling: maximum temperature at outlet [K]	: n.a.
1.15.2	Air cooling	
	Reference point	: Spark plug gasket
	Maximum temperature at reference point [K]	: 540
1.15.3	Maximum charge air outlet temperature of the inlet intercooler (if applicable) [K]	: n.a.
1.15.4	Maximum exhaust temperature at the point in the exhaust pipe(s) adjacent to the outlet flange(s) of the exhaust manifold(s)[K]	: 900
1.15.5	Lubricant temperature	
	Minimum [K]	: 268

Chongqing Cameo Gasoline Engine Co., Ltd.

Zengjiaba, Renmin Village, Beiwenquan Town, Beibei District,
Chongqing, P.R.China

Information document: 97/68-CP170F-01

Extension

Issue Date: Dec. 27, 2012

	Maximum [K]	:	428
1.16	Pressure charger	:	yes/no
1.16.1	Make	:	n.a.
1.16.2	Type	:	n.a.
1.16.3	Description of the system(e.g. max charge pressure, waste-gate, if applicable)	:	n.a.
1.16.4	Intercooler	:	yes/no
1.17	Intake system: maximum allowable intake depression at rated engine speed and at 100%load [kPa]	:	0.54
1.18	Exhaust system: maximum allowable exhaust backpressure at rated engine speed and at 100%load[kPa]	:	13.50
2.	Measures take against air pollution		
2.1	Device for recycling crankcase gases:	:	yes/no
2.2	Additional anti-pollution devices(if any, and if not covered by another heading)	:	n.a.
3.	Fuel feed for petrol engines		
3.1	Carburetor	:	Refer to drawing no. CP170F-04
3.1.1	Make	:	Huayi
3.1.2	Type(s)	:	P19
3.2	Port fuel injection	:	n.a.
3.2.1	Make(s)	:	n.a.
3.2.2	Type(s)	:	n.a.
3.3	Direct injection		
3.3.1	Make(s)	:	n.a.
3.3.2	Type(s)	:	n.a.
3.4	Fuel flow and air/fuel ratio at rated speed and wide open throttle		
	Fuel flow [g/h]	:	1950
	air/fuel ratio	:	13.7
4.	Valve timing		
4.1	Maximum lift and angles of opening and closing in relation to dead centers of equivalent data	:	Refer to drawing no. CP170F-05
	In[mm]	:	5.7
	Out [mm]	:	5.0
4.2	Reference and/or setting ranges	:	Inlet: 0.05-0.10mm Outlet: 0.10-0.15mm
4.3	Variable valve timing system(if applicable and where intake and/or exhaust)	:	n.a.
4.3.1	Type	:	n.a.

Chongqing Cameo Gasoline Engine Co., Ltd.

Zengjiaba, Renmin Village, Beiwenquan Town, Beibei District,
Chongqing, P.R.China

Information document: 97/68-CP170F-01

Extension

Issue Date: Dec. 27, 2012

4.3.2	Cam phase shift angle	:	n.a.
5.	Porting configuration		n.a.
5.1	Position, size and number	:	n.a.
6.	Ignition system		
6.1	Ignition coil		
6.1.1	Make(s)	:	LH
6.1.2	Type(s)	:	TD04
6.1.3	Number	:	1
6.2	Spark plug(s)		
6.2.1	Make(s)	:	ND, <u>LG</u>
6.2.2	Type(s)	:	F7RTC
6.3	Magneto		
6.3.1	Make(s)	:	JY, <u>SC</u> , <u>JH</u>
6.3.2	Type(s)	:	168F
6.4	Ignition timing		
6.4.1	Static advance with respect to top dead center[crank angle degrees	:	25°
6.4.2	Advance curve, if applicable	:	Refer to drawing no. CP170F-06

- (1) For the case of several parent engines to be submitted for each of them.
- (2) Strike out what does not apply
- (3) Specify the tolerance

Essential characteristics of the engine family

1. Common parameters⁽¹⁾

1.1	Combustion cycle	4-stroke
1.2	Cooling medium	Air
1.3	Method of air aspiration	Naturally aspirated
1.4	Combustion chamber type/design	Refer to drawing no. CP170F-02 Refer to drawing no. CP170F-03
1.5	Valve and porting-configuration, size and number	Refer to drawing no. CP170F-02
1.6	Fuel system	Flow by gravity Refer to drawing no. CP170F-04
1.7	Engine management systems	
	Proof of identity pursuant to drawing number(s)	n.a.
	— Charge cooling system	n.a.
	— Exhaust gas recirculation ⁽²⁾	n.a.
	— Water injection/emulsion ⁽²⁾	n.a.
	— Air injection ⁽²⁾	n.a.
1.8	Exhaust after-treatment system ⁽²⁾	n.a.
	Proof of identical(or lowest for the parent engine) ratio: system capacity/fuel delivery per stroke, pursuant to diagram number(s)	

2. Engine family listing

		Parent engine ⁽¹⁾
Engine type	CP168FB / A168F / A168FD / AP168F / AP168FD	CP170F / A170F / A170FD / AP170F / AP170FD
No of cylinders	1	1
Rated speed[rpm]	3000	3000
Fuel flow for petrol engines [g/h]	1900	1950
Rated net power [kW]	3.6	4.0
Maximum torque speed[rpm]	2500	2500
Maximum torque[nm]	11	12
Low idle speed [rpm]	1800±150	1800±150
Cylinder displacement (in 100%of parent engine) [cm ³]	196 (94.2%)	208 (100%)
(1) For full details see Essential characteristics of the parent engine		

(1) Annex1 section6, 7

(2) If not applicable mark n.a

Essential characteristics of engine types within the family⁽¹⁾

1.	Description engine	
1.1	Manufacturer	: Chongqing Cameo Gasoline Engine Co., Ltd.
1.2	Manufacturer's engine code	: CP168FB, <u>A168E</u> , <u>A168FD</u> , <u>AP168E</u> , <u>AP168FD</u>
1.3	Cycle	: 4-stroke
1.4	Bore [mm]	: 68
1.5	Stroke [mm]	: 54
1.6	Number and layout of cylinders	: 1
1.7	Engine capacity[cm ³]	: 196
1.8	Rated speed [rpm]	: 3000
1.9	Maximum torque speed [rpm]	: 2500
1.10	Volumetric compression ratio ⁽³⁾	: 8.5±0.2:1
1.11	Combustion system description	: n.a.
1.12	Drawing(s) of combustion chamber and piston crown	: Refer to drawing no. CP170F-02 Refer to drawing no. CP168FB-01
1.13	Minimum cross sectional area of inlet and outlet ports	: Inlet 335.6 mm ² , Outlet 270.4 mm ²
1.14	Cooling system	
1.14.1	Liquid	
1.14.1.1	Nature of liquid	: n.a.
1.14.1.2	Circulating pump(s)	: yes /no ⁽²⁾
1.14.1.3	Characteristics or make(s) and type(s) (if applicable)	: n.a.
1.14.1.4	Drive ratio(s) (if applicable)	: n.a.
1.14.2	Air	
1.14.2.1	Blower	: yes /no ⁽²⁾
1.14.2.2	Characteristics or make(s) and type(s) (if applicable)	: Refer to drawing no. CP170F-09
1.14.2.3	Drive ratio(s) (if applicable)	: 1:1
1.15	Temperature permitted by the manufacturer	
1.15.1	Liquid cooling: maximum temperature at outlet [K]	: n.a.
1.15.2	Air cooling	
	Reference point	: Spark plug gasket
	Maximum temperature at reference point [K]	: 523
1.15.3	Maximum charge air outlet temperature of the inlet intercooler (if applicable) [K]	: n.a.
1.15.4	Maximum exhaust temperature at the point in the exhaust pipe(s) adjacent to the outlet flange(s) of the exhaust manifold(s) [K]	: 900
1.15.5	Lubricant temperature	
	Minimum[K]	: 268

Chongqing Cameo Gasoline Engine Co., Ltd.

Zengjiaba, Renmin Village, Beiwenquan Town, Beibei District,
Chongqing, P.R.China

Information document: 97/68-CP170F-01

Extension

Issue Date: Dec. 27, 2012

	Maximum [K]	:	428
1.16	Pressure charger	:	yes/no
1.16.1	Make	:	n.a.
1.16.2	Type	:	n.a.
1.16.3	Description of the system(e.g. max charge pressure, waste-gate, if applicable)	:	n.a.
1.16.4	Intercooler	:	yes/no
1.17	Intake system: maximum allowable intake depression at rated engine speed and at 100%load (KPa)	:	0.54
1.18	Exhaust system: maximum allowable exhaust backpressure at rated engine speed and at 100%load(kPa)	:	13.50
2.	Measures take against air pollution		
2.1	Description and/or diagram(s)	:	yes/no
2.2	Additional anti-pollution devices(if any, and if not covered by another heading)	:	n.a.
3.	Fuel feed for petrol engines		
3.1	Carburetor	:	Refer to drawing no. CP170F-04
3.1.1	Make	:	Huayi
3.1.2	Type(s)	:	P19
3.2	Port fuel injection	:	n.a.
3.2.1	Make(s)	:	n.a.
3.2.2	Type(s)	:	n.a.
3.3	Direct injection		
3.3.1	Make(s)	:	n.a.
3.3.2	Type(s)	:	n.a.
3.4	Fuel flow and air/fuel ratio at rated speed and wide open throttle		
	Fuel flow [g/h]	:	1900
	air/fuel ratio	:	13.7
4.	Valve timing		
4.1	Maximum lift and angles of opening and closing in relation to dead centers of equivalent data		Refer to drawing no. CP170F-05
	In[mm]	:	5.7
	Out [mm]	:	5.0
4.2	Reference and/or setting ranges	:	Inlet: 0.05-0.10mm Outlet: 0.10-0.15mm
4.3	Variable valve timing system(if applicable and where intake and/or exhaust)	:	n.a.

Chongqing Cameo Gasoline Engine Co., Ltd.

Zengjiaba, Renmin Village, Beiwenquan Town, Beibei District,
Chongqing, P.R.China

Information document: 97/68-CP170F-01

Extension

Issue Date: Dec. 27, 2012

4.3.1	Type	:	n.a.
4.3.2	Cam phase shift angle	:	n.a.
5. Porting configuration			
5.1	Position, size and number	:	n.a.
6. Ignition system			
6.1	Ignition coil		
6.1.1	Make(s)	:	LH
6.1.2	Type(s)	:	170f
6.1.3	Number	:	1
6.2	Spark plug(s)		
6.2.1	Make(s)	:	ND, <u>LG</u>
6.2.2	Type(s)	:	F7RTC
6.3	Magneto		
6.3.1	Make(s)	:	JY, <u>SC</u> , <u>JH</u>
6.3.2	Type(s)	:	168F
6.4	Ignition timing		
6.4.1	Static advance with respect to top dead center[crank angle degrees	:	25°
6.4.2	Advance curve, if applicable	:	Refer to drawing no. CP170F-06

(1) To be submitted for each engine of the family

(2) Strike out what does not apply

(3) Specify the tolerance

CP170F / A170F / AP170F / A168F / AP168F

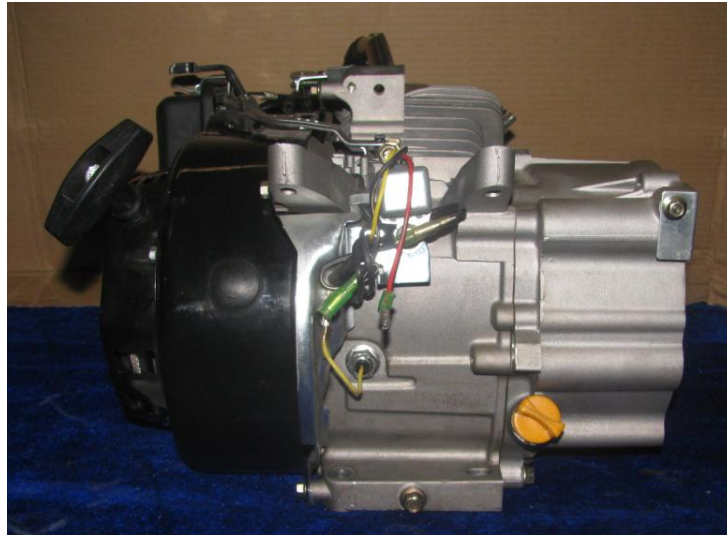


A170FD / AP170FD / A168FBD / AP168FBD



Engine Type	CP170F
Front view	
Photograph No.	CP170F-P01

CP170F / A170F / AP170F / A168F / AP168F

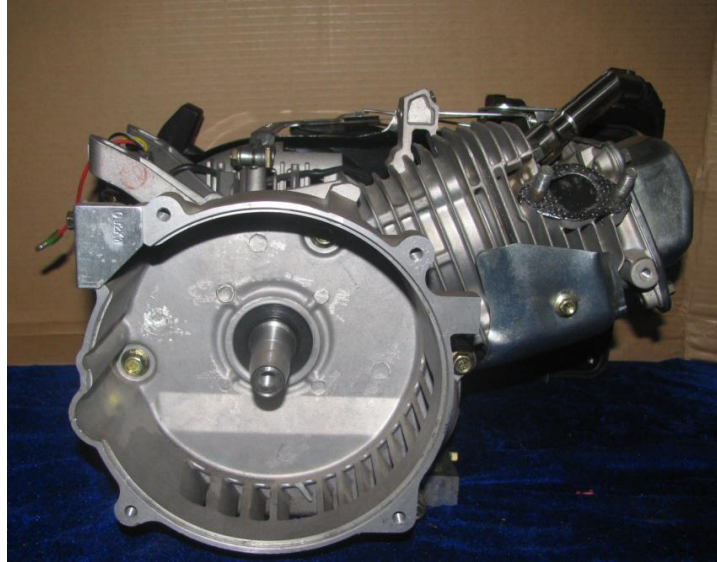


A170FD / AP170FD / A168FBD / AP168FBD



Engine Type	CP170F
Right view	
Photograph No.	CP170F-P02

CP170F / A170F / AP170F / A168F / AP168F



A170FD / AP170FD / A168FBD / AP168FBD



Engine Type	CP170F
Back view	
Photograph No.	CP170F-P03

CP170F / A170F / AP170F / A168F / AP168F



A170FD / AP170FD / A168FBD / AP168FBD



Engine Type	CP170F
Left view	
Photograph No.	CP170F-P04

CP170F / A170F / AP170F / A168F / AP168F



A170FD / AP170FD / A168FBD / AP168FBD



Engine Type	CP170F
Top view	
Photograph No.	CP170F-P05

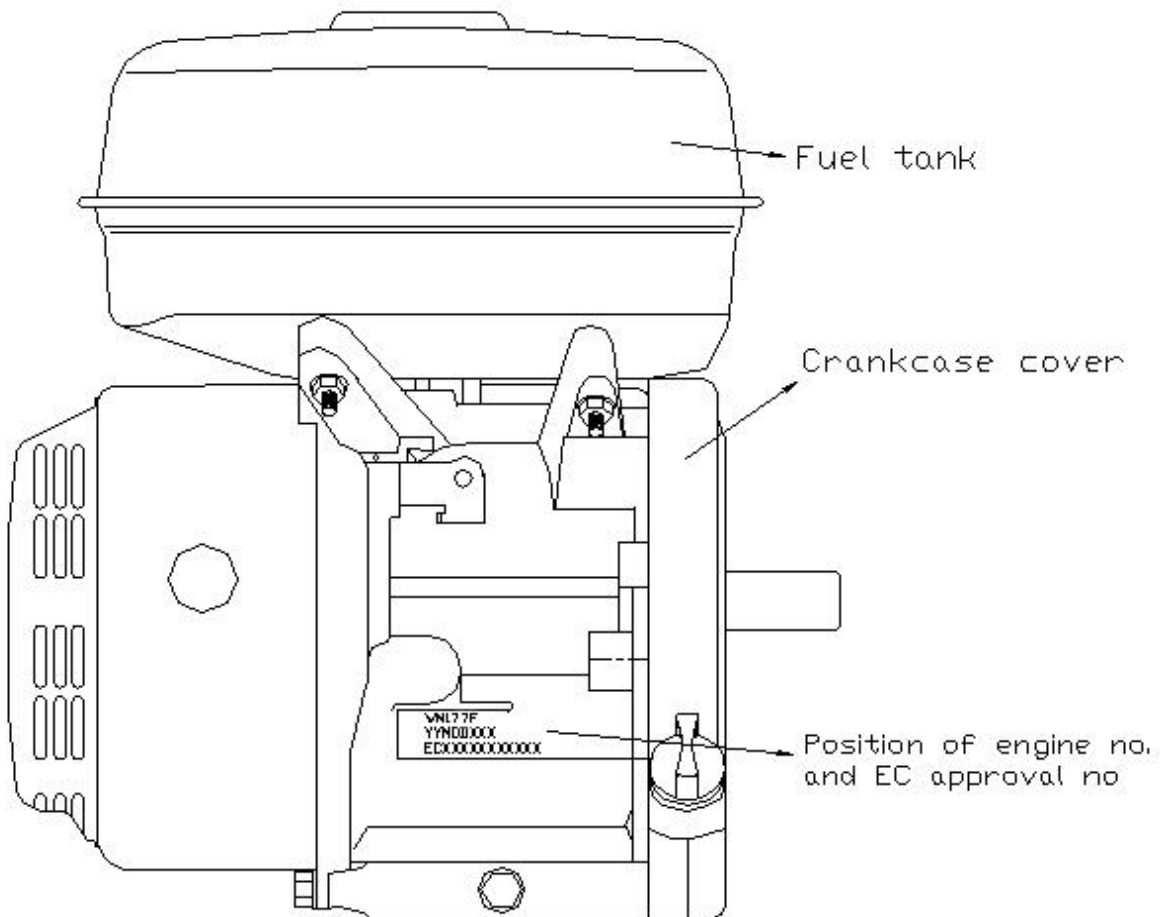
CP170F / A170F / AP170F / A168F / AP168F



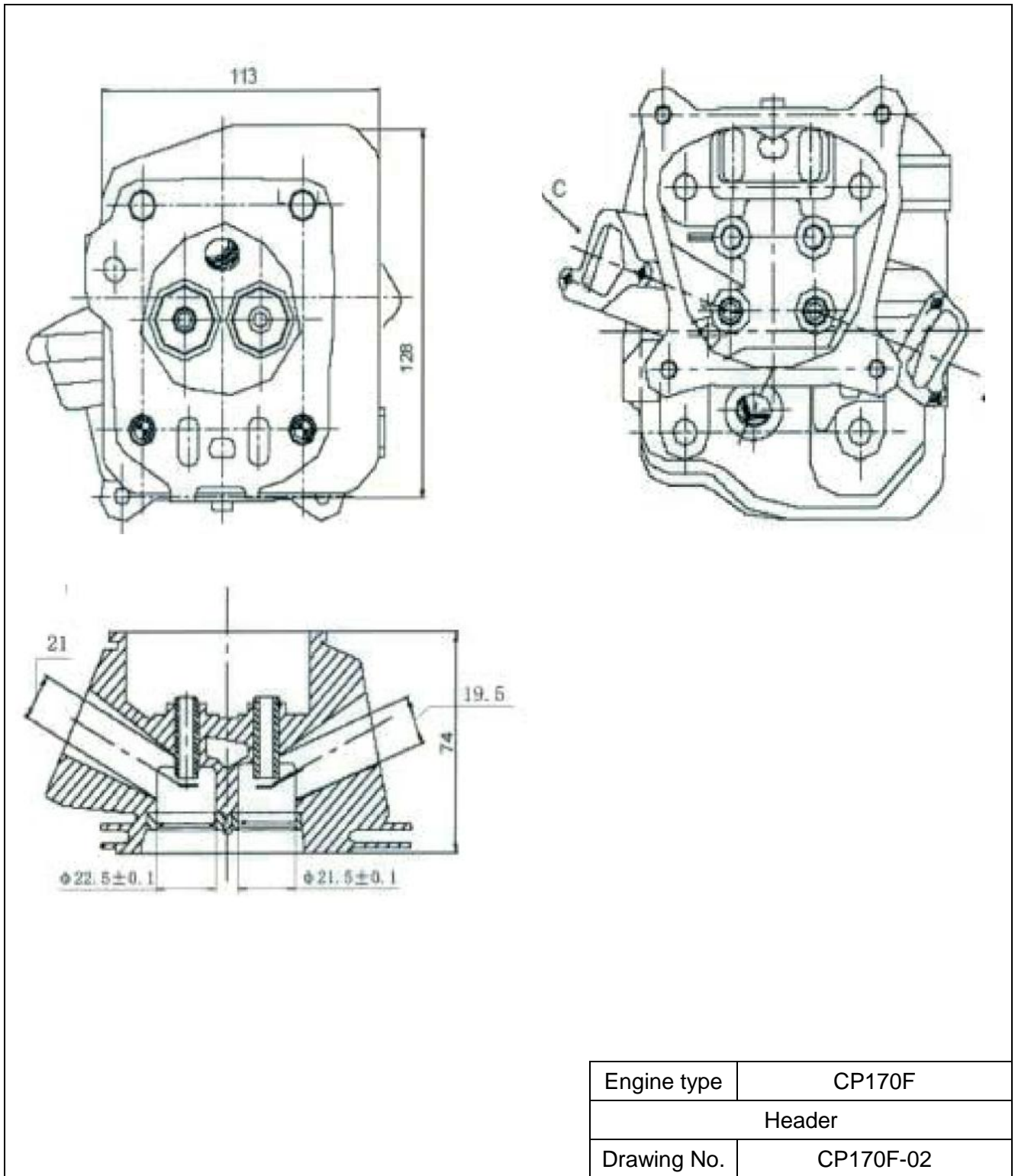
A170FD / AP170FD / A168FBD / AP168FBD

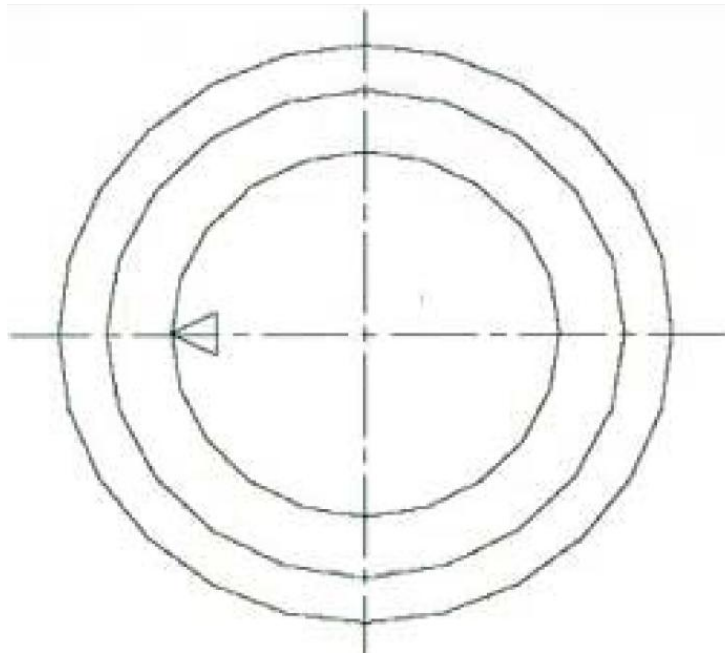
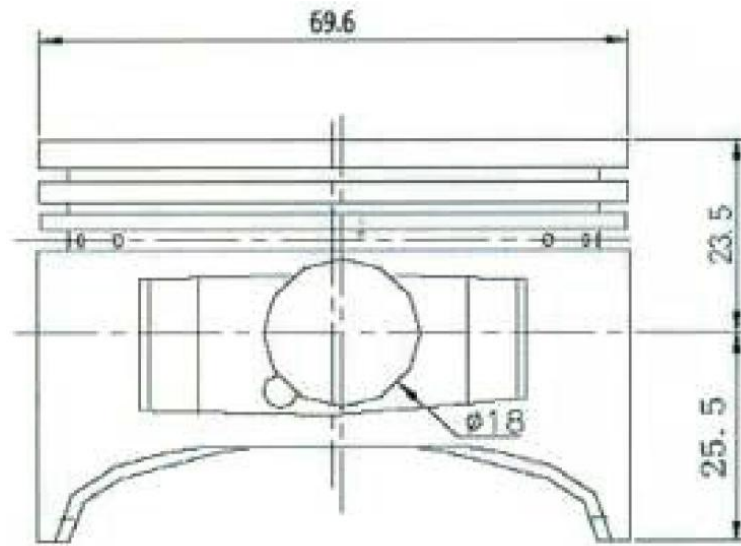


Engine Type	CP170F
Bottom view	
Photograph No.	CP170F-P06

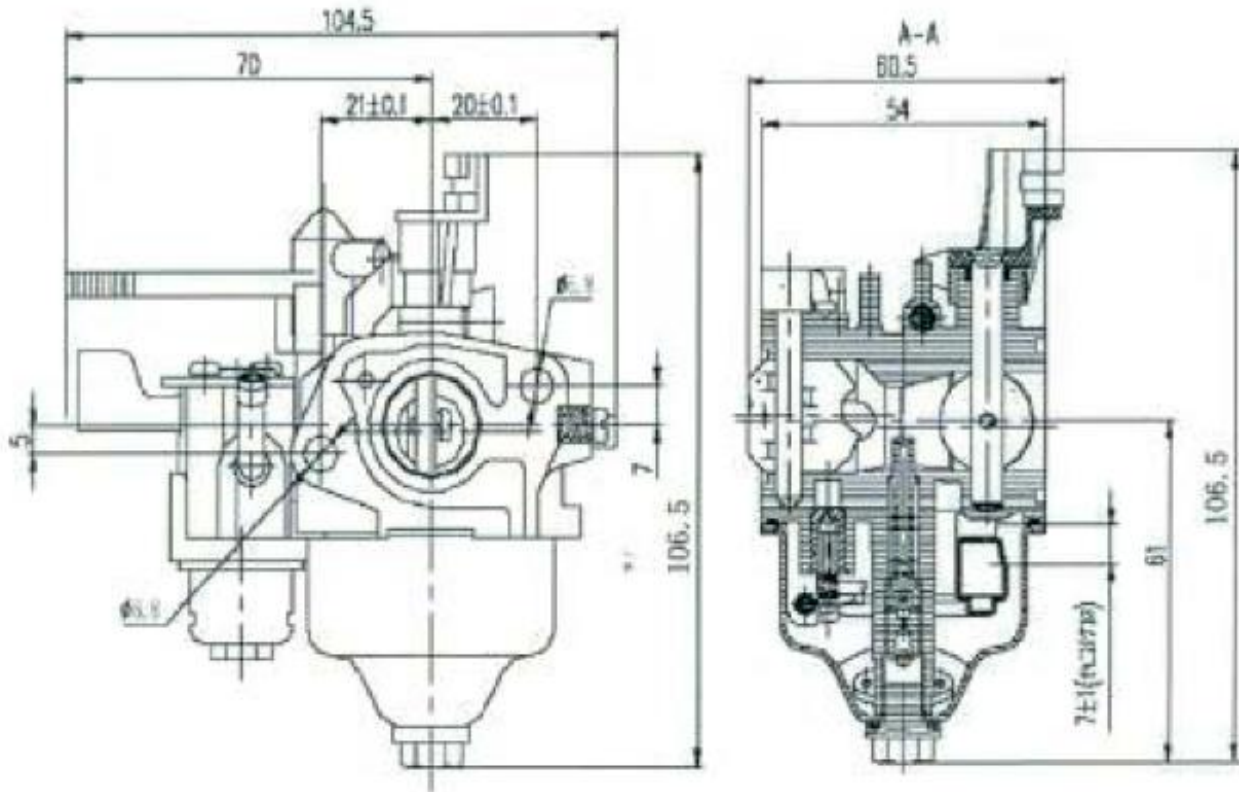


Engine type	CP170F
Position of engine No. and EC approval No.	
Drawing No.	CP170F-01

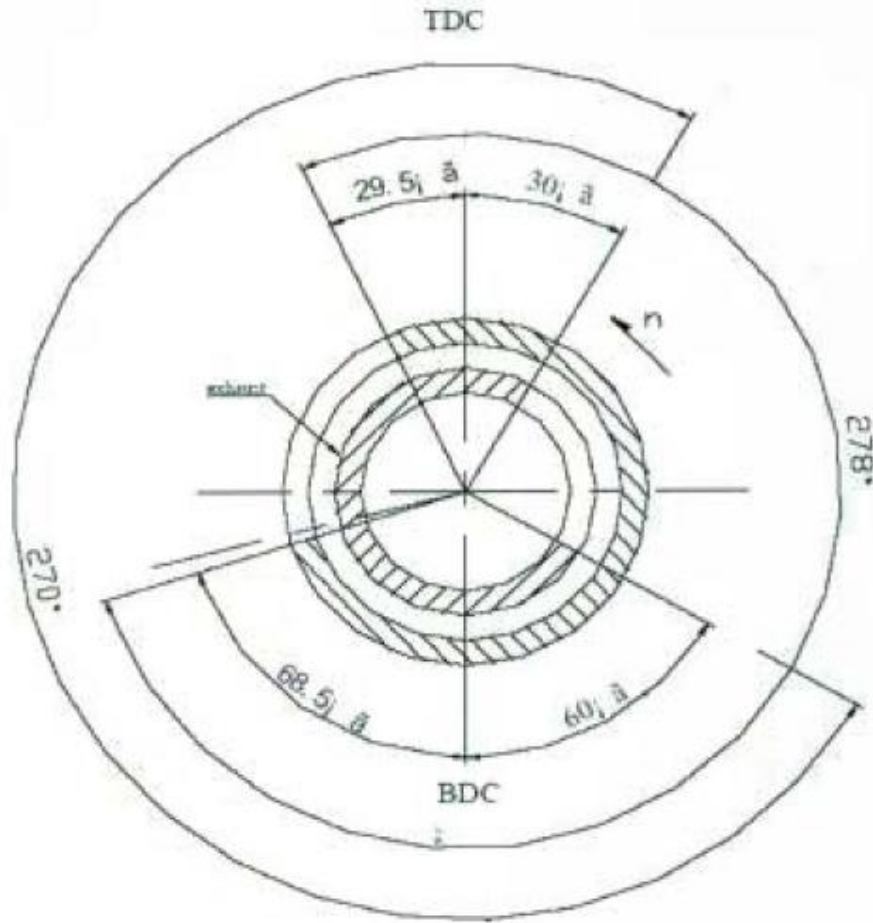




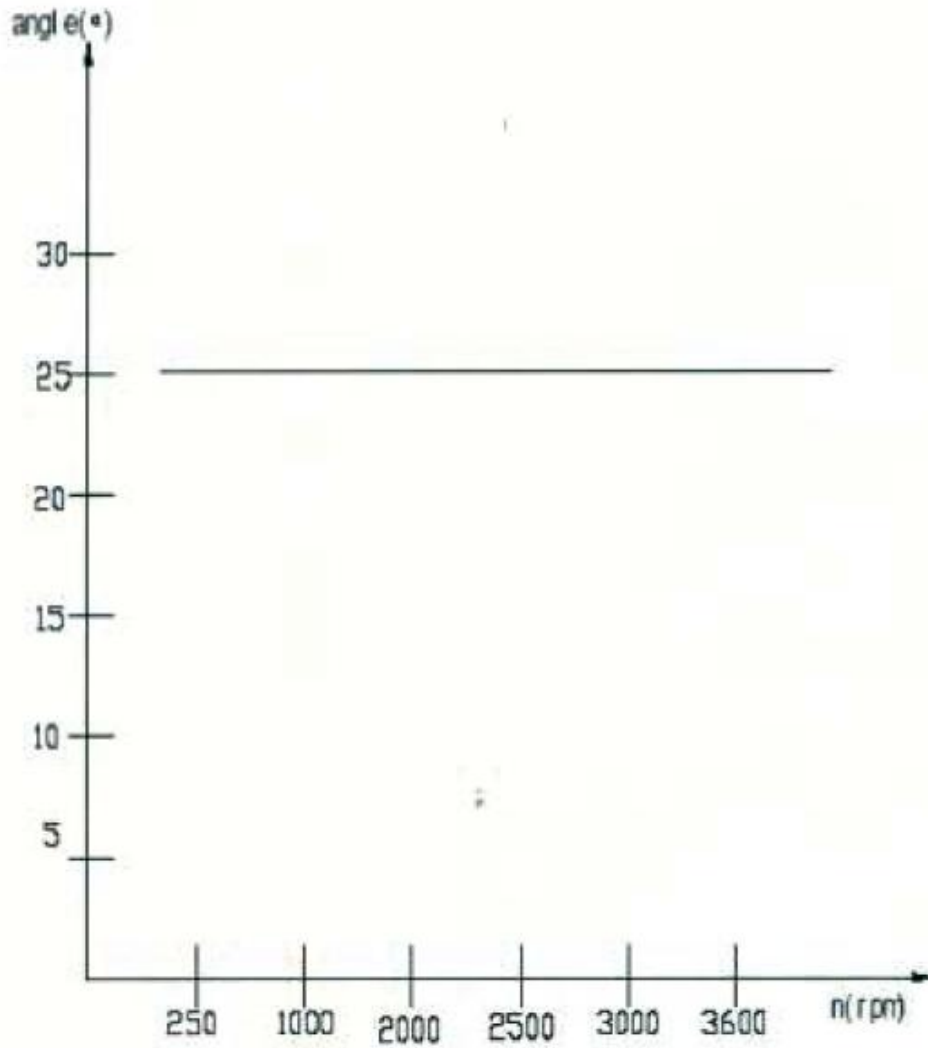
Engine type	CP170F
Piston	
Drawing No.	CP170F-03



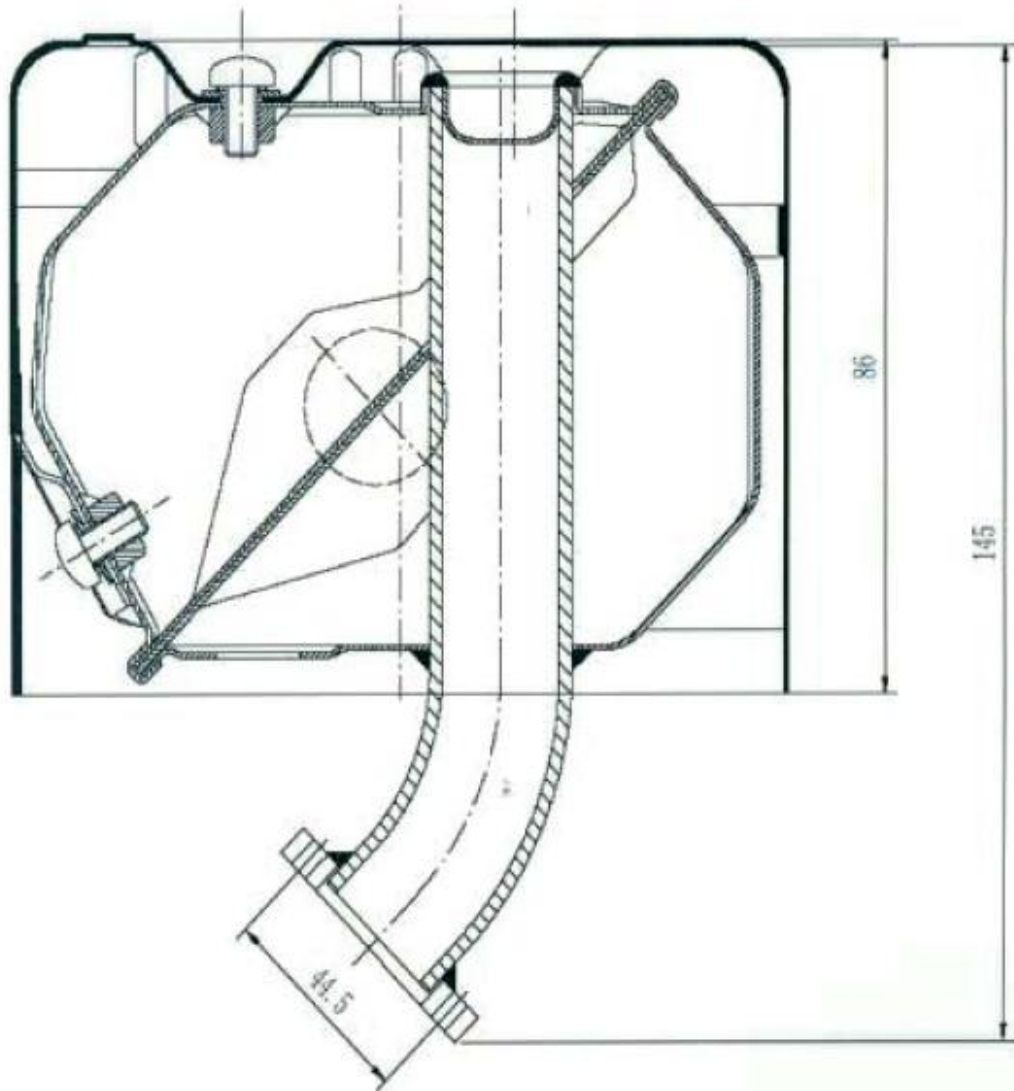
Engine type	CP170F
Carburetor	
Drawing No.	CP170F-04



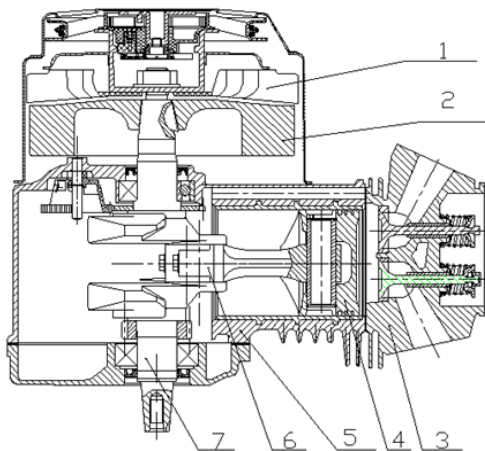
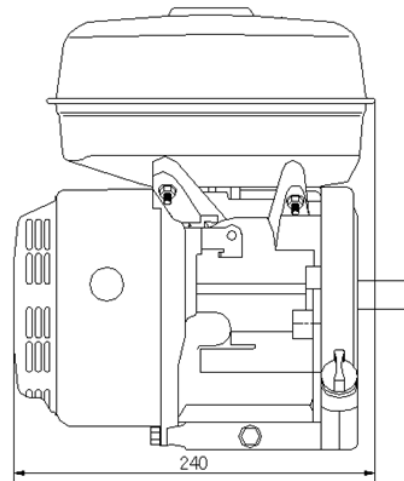
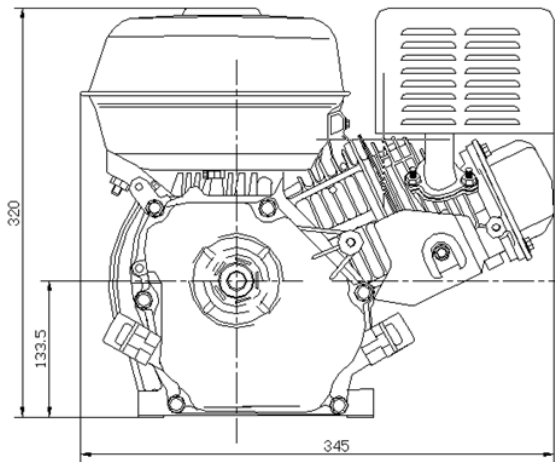
Engine type	CP170F
Valve timing	
Drawing No.	CP170F-05



Engine type	CP170F
Ignition advance curve	
Drawing No.	CP170F-06

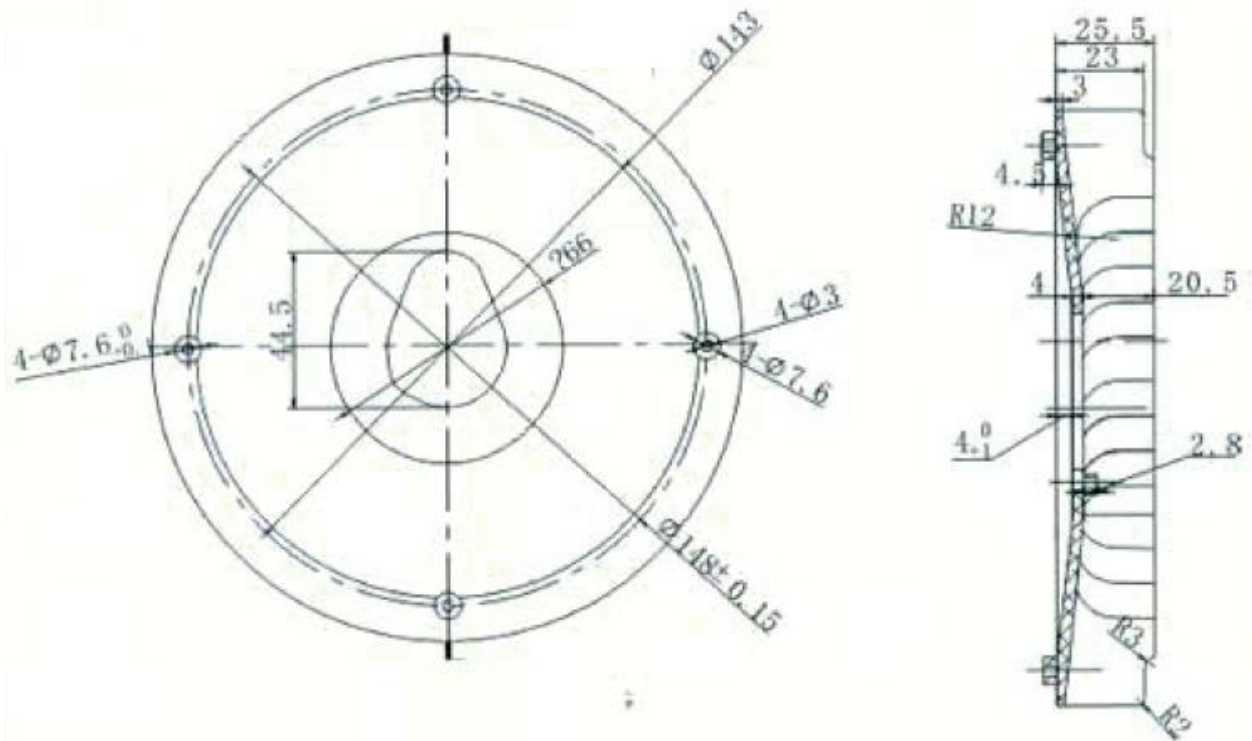


Engine type	CP170F
Exhaust tube and muffler	
Drawing No.	CP170F-07

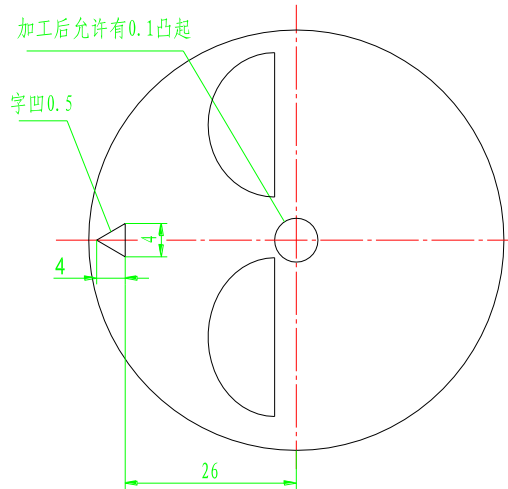
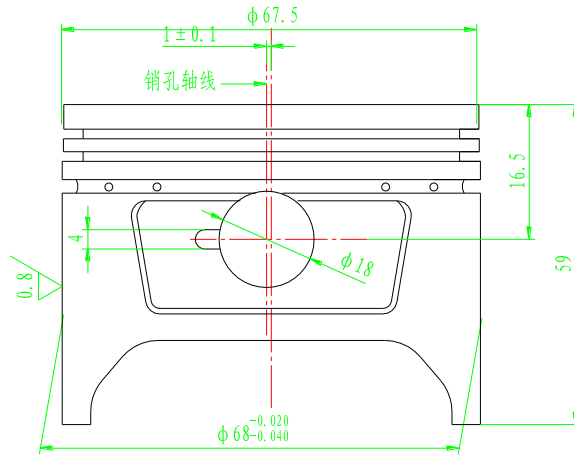


- 1. Blower 2. Fly wheel
- 3. Cylinder head 4. Piston
- 5. Crankcase 6. Connecting rod
- 7. Crankshaft

Engine type	CP170F
Engine structure	
Drawing No.	CP170F-08



Engine type	CP170F
Blower	
Drawing No.	CP170F-09



Engine type	CP168FB
Piston	
Drawing No.	CP168FB-01

List of modification

It is corrected: No correction

It is changed: No correction

It is added:

- 1 Add new make name: Ampride**
- 2 Add 4 new family engine type names: A170F / AP170F (Same as CP170F)
A168F / AP168F (Same as CP168F)**
- 3 Add 4 new family engine types: A170FD / AP170FD / A168FD / AP168FD (with electrical startup devices)**
- 4 Add new spark plug make: LG**
- 5 Add new magneto makes: SC and JH**

It is cancelled: No cancellation
