

TRANSMITTAL OF MITSUBISHI HIGH SPEED DIESEL ENGINE DOCUMENT

ORDERED BY _____ CUSTOMER _____ GENERATOR OEM _____

	PART NAME	PART No.	FOR APPR.		FOR APPR.		FOR APPR.		ENGINE TYPE			
			N	D	N	D	N	D	N	D	N	D
1	SPEC OF S3L2-65SAG	SPC-S3L-436	P	A	P	B	P	C	S3L2-65SAG			
2	S3L2-65SAG ENG ASSY	31B00-02750	P	A	P	B			A: First offer B: Engine assy (1/2-Chg1,2/2-Chg1) With Fan St-by (10.7 ← 10.4) C: Addition of regulations ·CHINA STAGE3 EXEMPTION (EXPORT ONLY) ·Change of engine assy 31B00-02751 ← 31B00-02750			
3	S3L2-65SAG ENG ASSY	31B00-02751					P	C				
4	ACCESSORIES (WITH ENGINE)		P	A	P	B	P	C				
5												
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25									C	<i>J. Nakai</i>	<i>H. Goshima</i> A. Izaka May. 09. 2016	refer spec
26												
27												
28									B		R. Touge	ref. spec
29											Aug. 25. 09	
30												
31									A		A. Izaka	ref. spec
32											Jun. 30. 09	
33									DATE	APPROVED	CHECKED BY	CC
34									ORDER			
35												

N:NUMBER, D:DATE
P:PDF

SPECIFICATIONS

Used for 10kVA generator

MITSUBISHI HIGH SPEED DIESEL ENGINE
MODEL

△ S3L2-65SAG

△ (NON EMISSION REGULATION CERTIFIED)

△ For GENERATOR, 1500rpm

△ National standard of People's Republic of China GB20891-2014 export only

APPLICATION
FOR APPROVAL



PLEASE RETURN AFTER APPROVAL

APPROVED		REMARKS		
DATE · SIGNATURE				
DATE Jun. 30. 2009				
MITSUBISHI HEAVY INDUSTRIES, LTD.				
CHG	DATE	APPROVED	CHECKED	DRAWN
	△ May. 09. 2016	<i>J. Nakai</i>		A. Izaka
	△ Aug. 25. 2009		<i>M. Ogasawara</i>	

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P:PDF配布

Revised record

No.	Date	Items	New	Old	Remarks	
0	Jun. 30. 2009	First offer.				
△	Aug. 25. 2009	Engine assy(31B00-02750)	1/2-Chg1,2/2-Chg1	1/2-Chg0,2/2-Chg0	Correction	
		With Fan St-by	10.7	10.4	Correction	
△	May. 09. 2016	Customer name change	For GENERATOR,1500rpm	For MHIES-A GENERATOR,1500rpm		
		Engine assy drawing	31B00-02751	31B00-02750		
		Change thermo switch,crankpulley				Spec change and review
		Addition CHINA stage 3 exemption label (export only)				
		Regulations				Spec Addition
		National standard of People's Republic of China GB20891-2014 export only				
		Engine family;G3MVXLL0132SLZ (Engine type; SLZ-S3L2-1)				
		Lubricating oil	API classification service CF or CH-4 class	API classification service CF,CH-4 or CH-4 class		Change
		Output(Without fan)	Rating at delivery Breaking in around 0.25 hrs	—————		Addition
			St-by;10.5±0.5kW/1500rpm (Rating at delivery)	—————		Spec addition
		Rack set point	—————	11.0kW/1500rpm		Deletion
		Rating tolerance	±5% of nominal (Rating at delivery)	±5% of nominal (Spec.Rating)		Spec change
		Fuel consumption(Spec.Rating)	Approx. 267g/kW·h at St-by output	Approx. 280g/kW·h at Prime output and standard air conditions		Spec change
		Fuel consumption(Rating at delivery)	281g/kW·h at St-by output	—————		Spec addition
		Fuel tolerance	±8% (Rating at delivery)	±8% (Spec.Rating)		Spec change
		Rating conditions(Without fan)	ISO 15550	JIS B 8002		Spec. updated
		Oil consumption	Approx.0.1~0.3% of fuel consumption <Reference value> @ Full load, Rated speed	Within 2.7g/kW-h {2.0g/PS-h}		Change of notation to latest
		Fuel pump	Electric 12V plunger type (Loose supply parts)	Yes (Loose supply parts)		Change of notation to latest
		Oil pressure	0.29MPa~0.39MPa	0.2MPa~0.4MPa		Correction
		Oil pressure unit	No	Yes		Change
		Flywheel	7-1/2 inch	SAE #7-1/2		Correction
		Engine attached item & reference drawings parts change				
		Switch,thermo	30N46-00500	MM432-104		Interchangeable
		Unit,presure gage	—————	05202-50100		Deletion
		Unit,thermometer	MD366-869	05204-50300		Interchangeable
		Solenoid Assy	30A87-10044	30A87-10043		
Plug,glow	32A66-03102	32A66-03101				
Oil filter	31A40-02101	30A40-00105				

1. Principal Particulars of Diesel Engine

General Specification

Standard	All items, unless otherwise specified, are in accordance with JIS and maker's standards	
Model	Mitsubishi S3L2 △ S3L2-65SAG	
Regulations	△ MHI No. 31B00-02751 (1/2-CHG 0 , 2/2-CHG 0) Non emission regulation certified △ National standard of People's Republic of China GB20891-2014 export only Engine family;G3MVXLL0132SLZ (Engine type; SLZ-S3L2-1) 『Rated output of application is St-by output without fan』	
Use	GENERATOR	
Type	4 cycle water-cooled, vertical overhead valve, cylinder in line, swirl chamber type	
Number of cylinders	3	
Bore × Stroke	78mm × 92mm	
Piston displacement	1.318 liters	
Compression ratio	22 : 1	
Rotation	Anti-Clockwise rotation as viewed from flywheel side	
Firing order	1-3-4-2	
Engine weight(Dry)	Approx. 140kg	
Dimensions(Length)	Approx. 589mm	
(Width)	Approx. 442mm	
(Height)	Approx. 572mm	
Inclination(Continuous)	15°	
(Temporary)	30°(Max. 30 min.)	
Fuel	ASTM diesel fuel oil No.2-D(JIS K2204 gas oil specification No.2 or 3)	
△ Lubricating oil	API classification service CF or CH-4 class	
Output(Without fan)	Spec.Rating	△ Rating at delivery
	Breaking in around 50hrs	△ Breaking in around 0.25hrs
	St-by;11.0kW/1500rpm	△ St-by;10.5 ± 0.5kW/1500rpm
	Prime;9.9kW/1500rpm	
△		
△	(With Fan St-by;10.7kW/1500rpm)	
	(With Fan Prime,9.3kW/1500rpm)	
△	Rating tolerance	±5% of nominal
△	Fuel consumption(Without fan)	Approx. 267g/kW·h at St-by output 281g/kW·h at St-by output
△	Fuel tolerance	±8%
	Low Idle	-
	High Idle	1605(0,-50)rpm (Governor lever is fixed)
△	Rating conditions (Without fan)	ISO 15550
	Total barometric pressure	: 100kPa
	Air temperature	: 298K
	Relative humidity	: 30%
△	Oil consumption	Approx.0.1~0.3% of fuel consumption<Reference value>@ Full load, Rated speed
	Fuel injection timing	17°BTDC

Mean effective pressure	0.60MPa{6.1kgf/cm ² } at Prime(Without fan)
Piston speed	4.6m/s at 1500rpm

Fuel system

Fuel injection pump	In-Line type(ND-PFR M type)
Fuel injection nozzle	Throttle type
Governor	Mechanical centrifugal type
Fuel filter	Filtering paper type
△ Fuel pump	Electric 12V plunger type (Loose supply parts)
Min. required fuel feeding head	100mm
Max.static head of leak pipe (return)	200mmHg

Lubricating system

Lubricating system	Forced circulation by trochoid gear pump
Lubricating oil filter	Filtering paper type, full flow
△ Oil pressure	0.29MPa~0.39MPa{3~4kgf/cm ² } at duty run 0.098MPa{1.0kgf/cm ² } min. at low idling
Oil capacity	Approx. 4.2 liters (Oil pan high level 3.7 liters,Oil filter etc. Approx. 0.5 liters,High ~ Low Approx. 1.4 liters)
Oil dipstick	Standard dipstick
Oil pressure switch	Yes
△ Oil pressure unit	No

Cooling system

Cooling system	Forced circulation of fresh water by centrifugal pump with thermostat
Engine water capacity	Approx. 1.8 liters
Cooling fan	380mm diameter, 6 blades, pusher
Water pump pulley	PCD 87mm
Pulley ratio	1.33 (Crankpulley : Water pump pulley = 116:87)
Fan spacer	10mm thickness
Water temp. switch	Yes
Thermo. Unit	Yes
Thermostat	Open at 76.5deg.C - full open at 90deg.C


Electrical system

Alternator	12V-50A
Voltage regulator	IC type (Built in alternator)
Regulator set voltage	14.7±0.3V
Alternator pulley	PCD 65mm
Starting system	Electric starting
Starter motor	12V-1.7kW
Glow plug	10.5V,9.7A x3
Engine shut off system	Electric solenoid (ETR)

Intake and Exhaust system

Intake manifold(cover)	Upper side way
Exhaust manifold	Upper side way
Induction Resistance	Max 1.96kPa{200mmH ₂ O}(Initial stage)
Exhaust Back Pressure	Max 6.57kPa{670mmH ₂ O}

<Remarks>

Engine color	Black(MHI standard color)
 Flywheel	7-1/2 inch
Flywheel housing	SAE #5

2. Engine attached items&Reference drawings

	Parts Name	Drawing No.	Q'ty	Remarks(Drawing number)	
	WIRING DIAGRAM	31A90-09201	—	Reference(only for)	A4
1	SWITCH,OIL PRESSURE	31A90-10300	1		A4
△	2 SWITCH, THERMO	30N46-00500	1		A4
△	3				A4
△	4 UNIT,THERMOMETER	MD366-869	1		A4
△	5 SOLENOID ASSY	30A87-10044	1		A4
	6 STARTER (12V-1.7kW)	31B66-00101	1		A4x2
△	7 PLUG,GLOW	32A66-03102	3		A4
	8 ALTERNATOR (12V-50A)	31A68-00402	1		A4
	9 FILTER ASSY,FUEL	MM435-190	1		A4
△	10 OIL FILTER	31A40-02101	1		A4
	11 COOLING FAN(6PF-φ380)	30A48-00401	1		A4
	12 L-JOINT	31A27-00010	1		A4

3. Accessories(Loose supply parts)

	Parts Name	Parts No.	Q'ty	Remarks(Drawing number)	
1	PUMP ASSY,FUEL	31A60-00600	1		A4
2	CONNECTOR,2P	MB084-014	1		A4

Note: Drawing No. subject to alteration without notice.

EXHAUST OUTLET-D

*LABEL, ENGINE NO.

(*各種ラベルは吸気側から読める方向で貼付のこと)

GLOW PLUG

3-M4X0.7
(TIGHTENING TORQUE 1~1.5N·m)

OIL FILLER CAP

THERMO SWITCH-E

(JIS D 5403 PA)

4-M10X1.25
DEPTH 17
167.3

69

22.3

(61)

69

83

2.3

158

7.5

221

179

173

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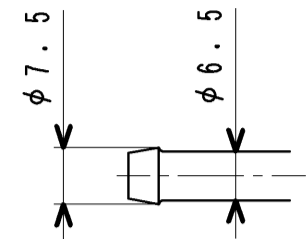
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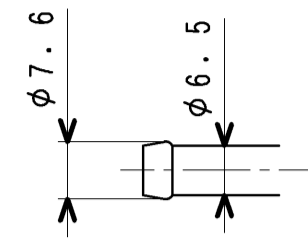
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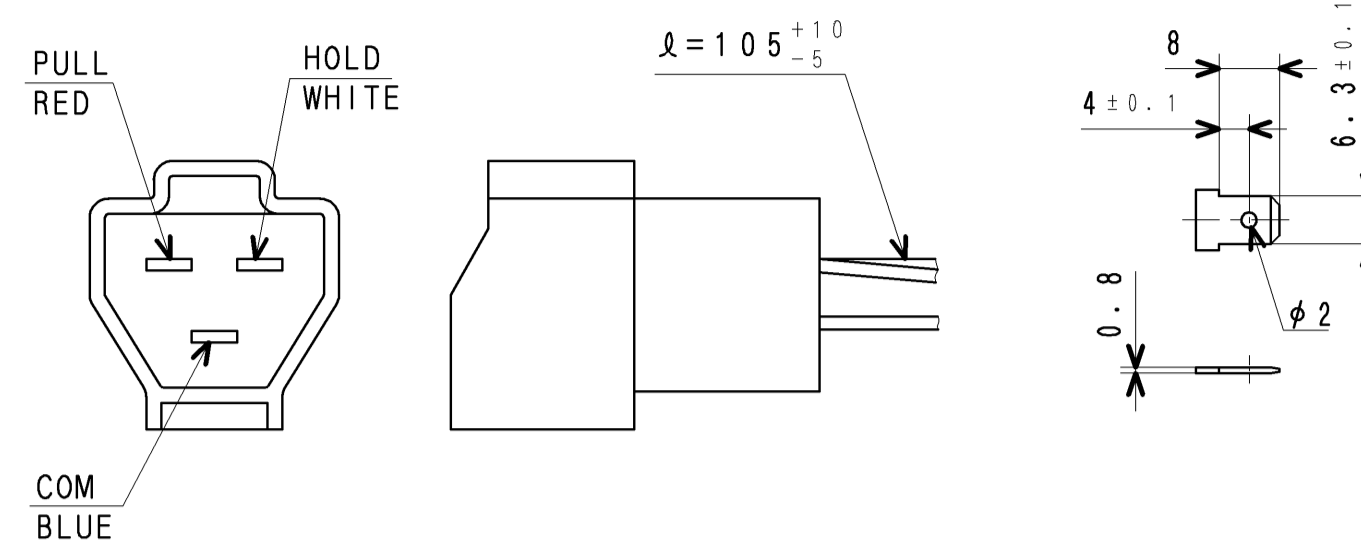
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H-DETAIL

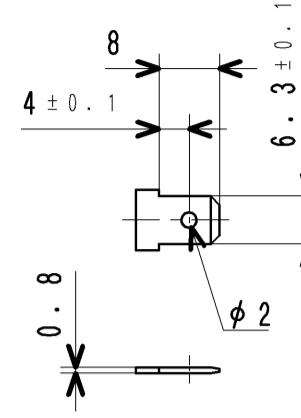


G-DETAIL

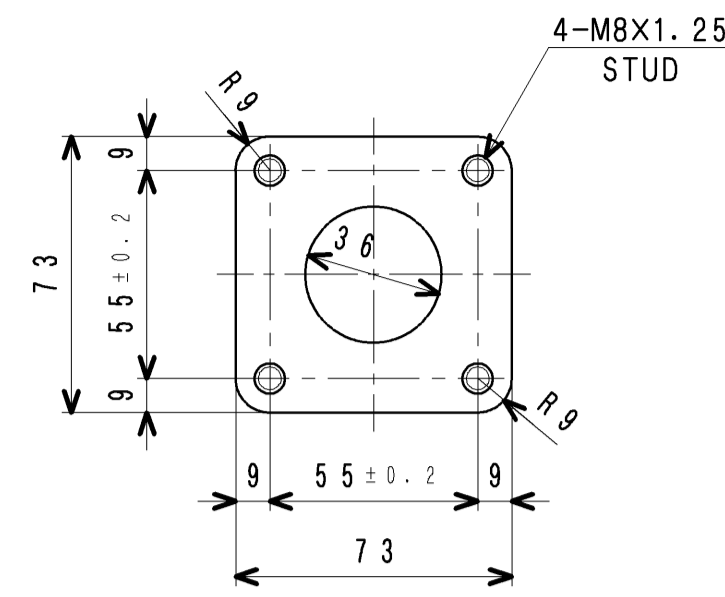


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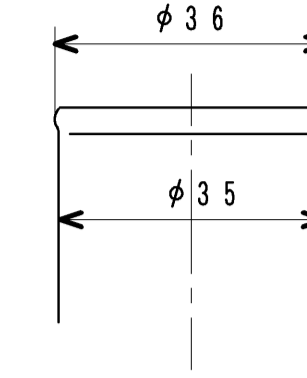
CONNECTOR EQUIVALENT TO
7222-6234-40 (YAZAKI)
TO MATE WITH
30A87-00600 (MHI)
7123-6234-40 (YAZAKI)



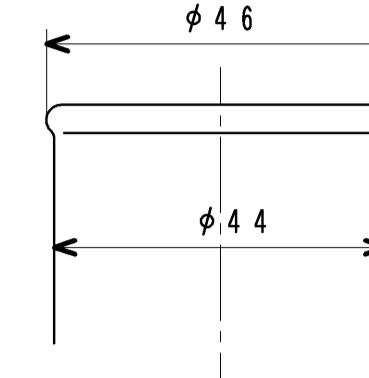
E-DETAIL
(JIS D 5403 PA)



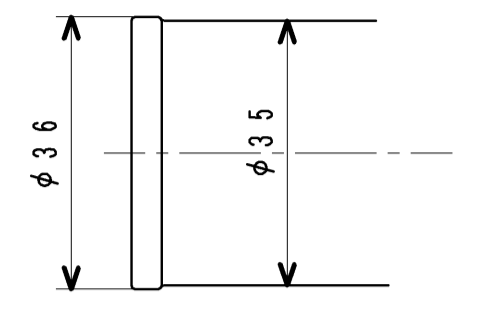
D-DETAIL (1:2)



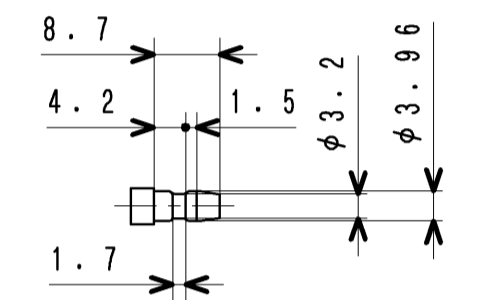
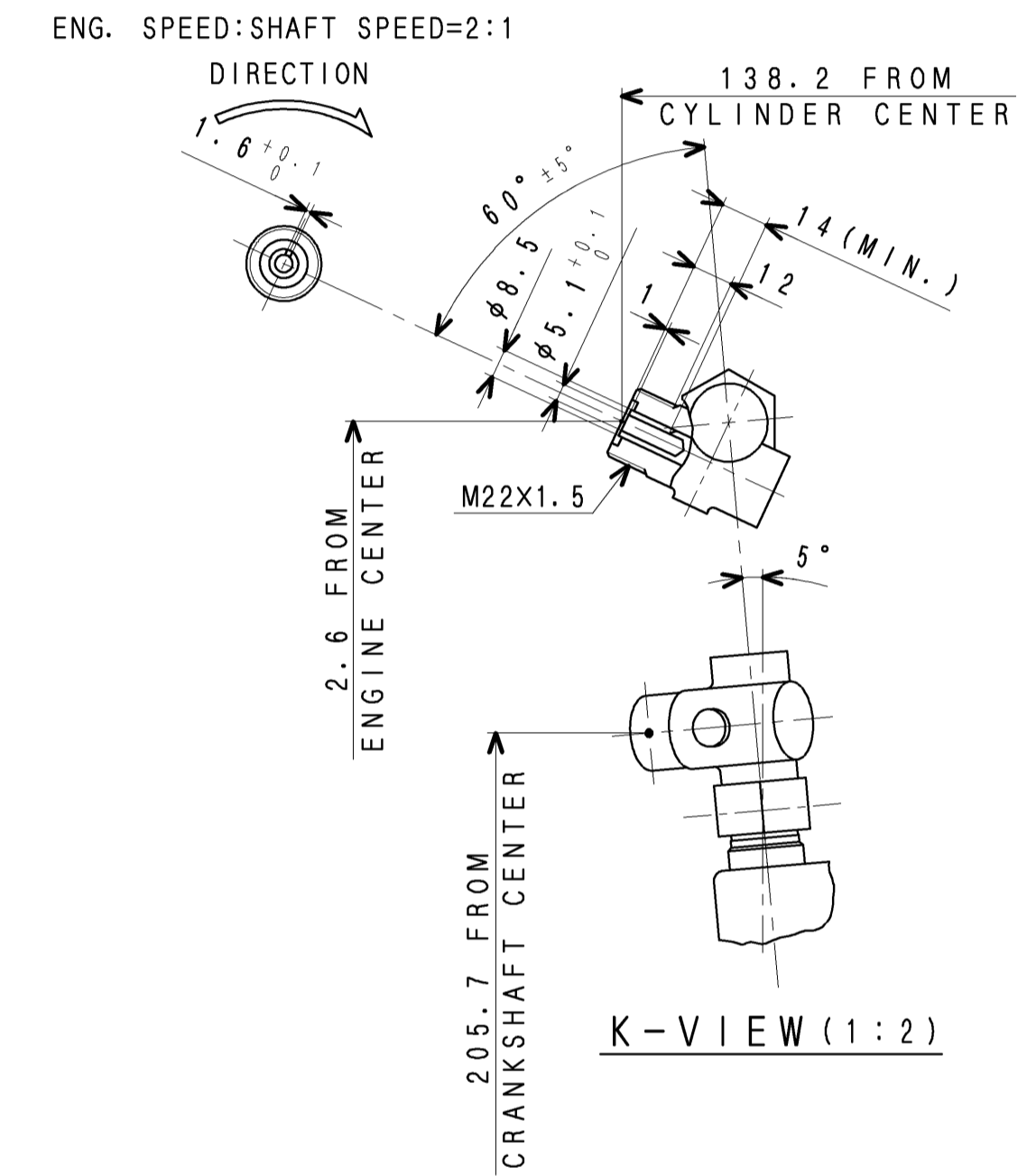
C-DETAIL



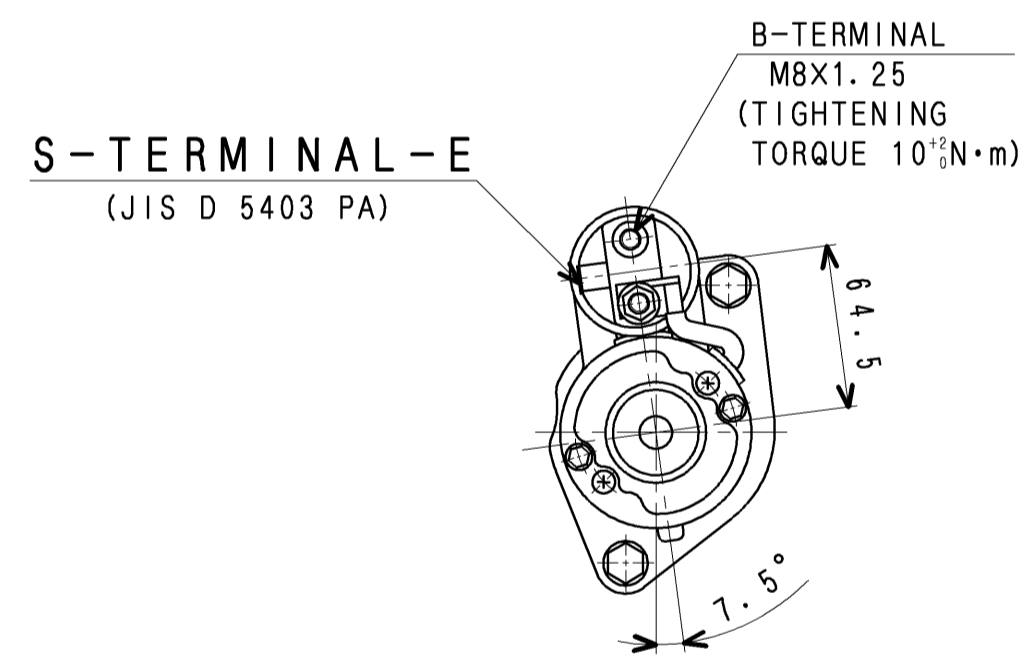
B-DETAIL



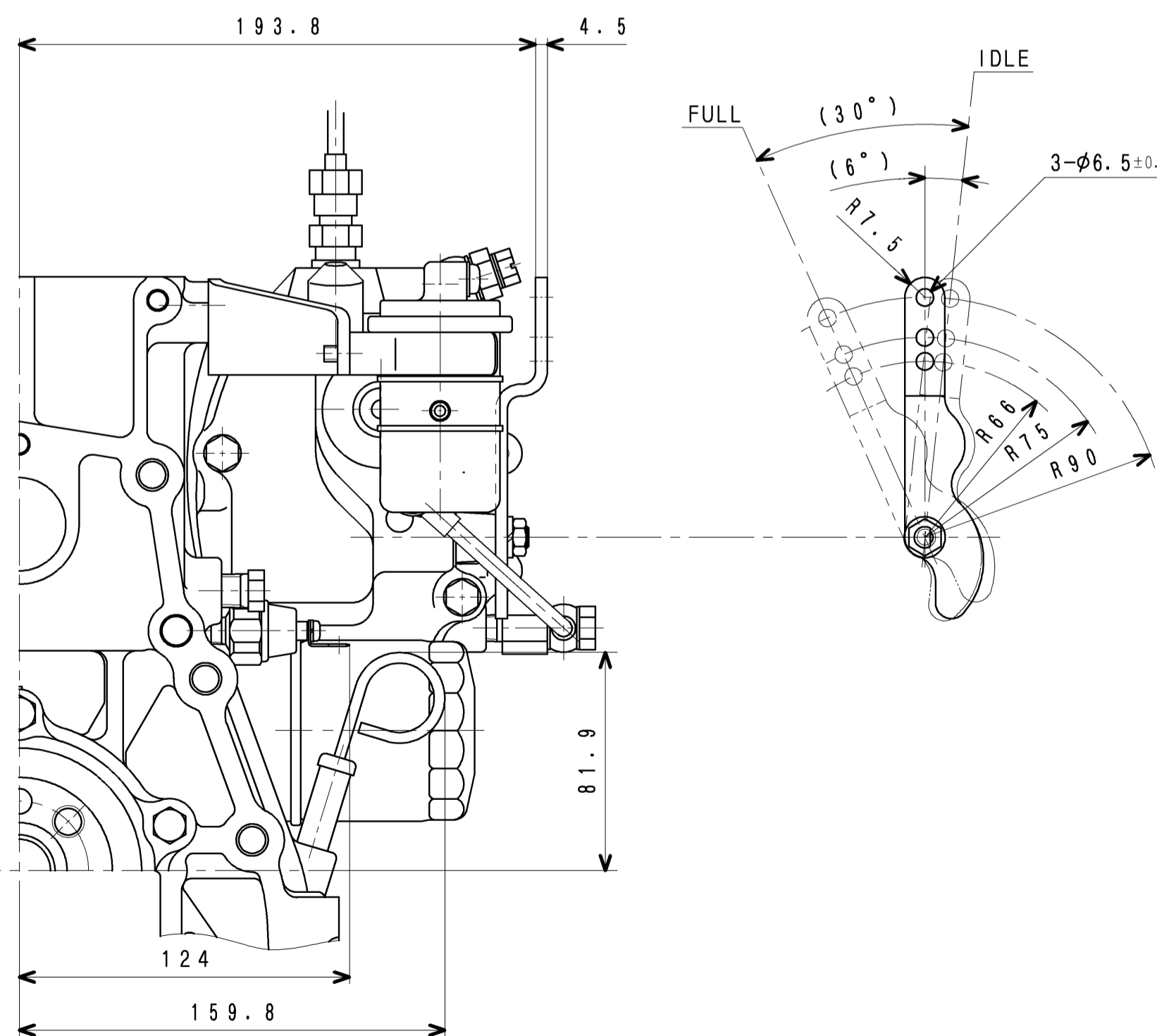
A-DETAIL



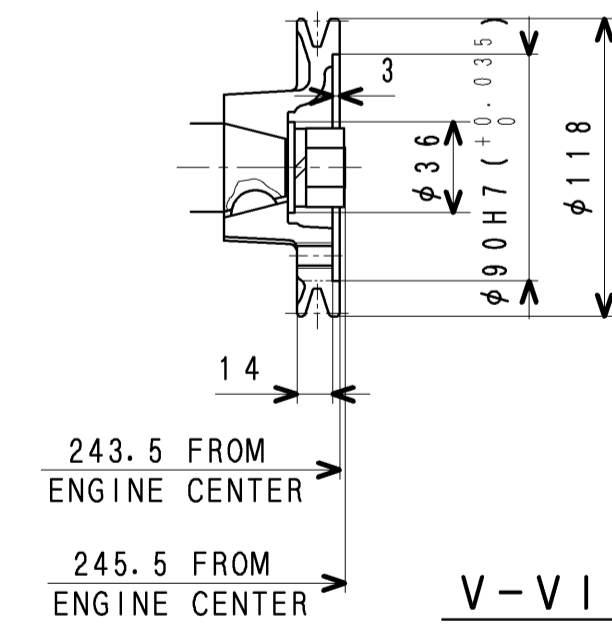
J-DETAIL
(JIS D 5403 CA 104)



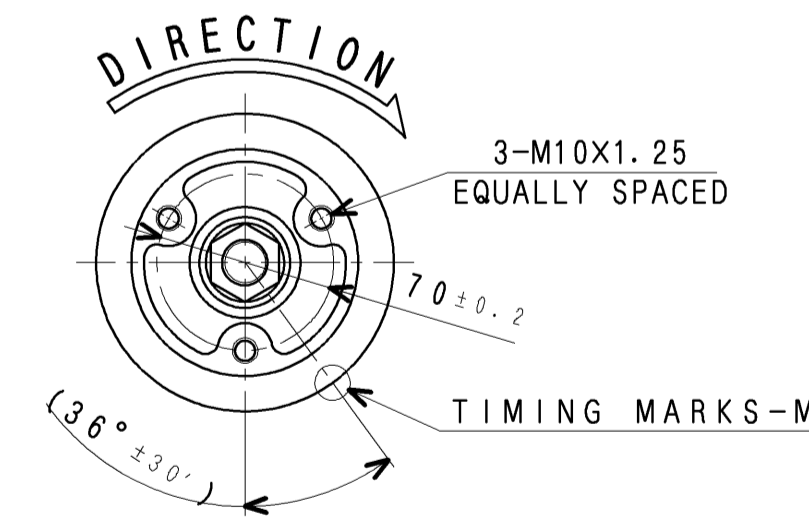
Y-VIEW (1:3)



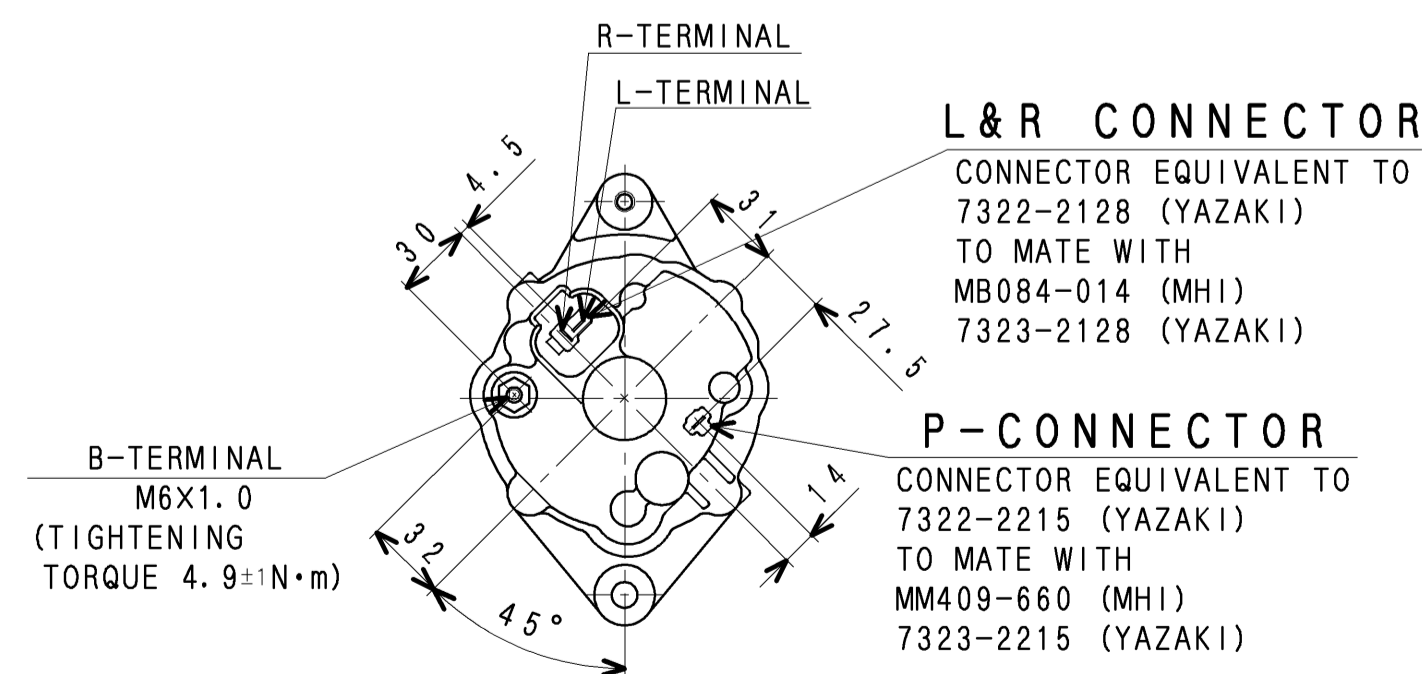
W-VIEW (1:2)



V-VIEW (1:3)



M-DETAIL (2:1)



X-VIEW (1:3)

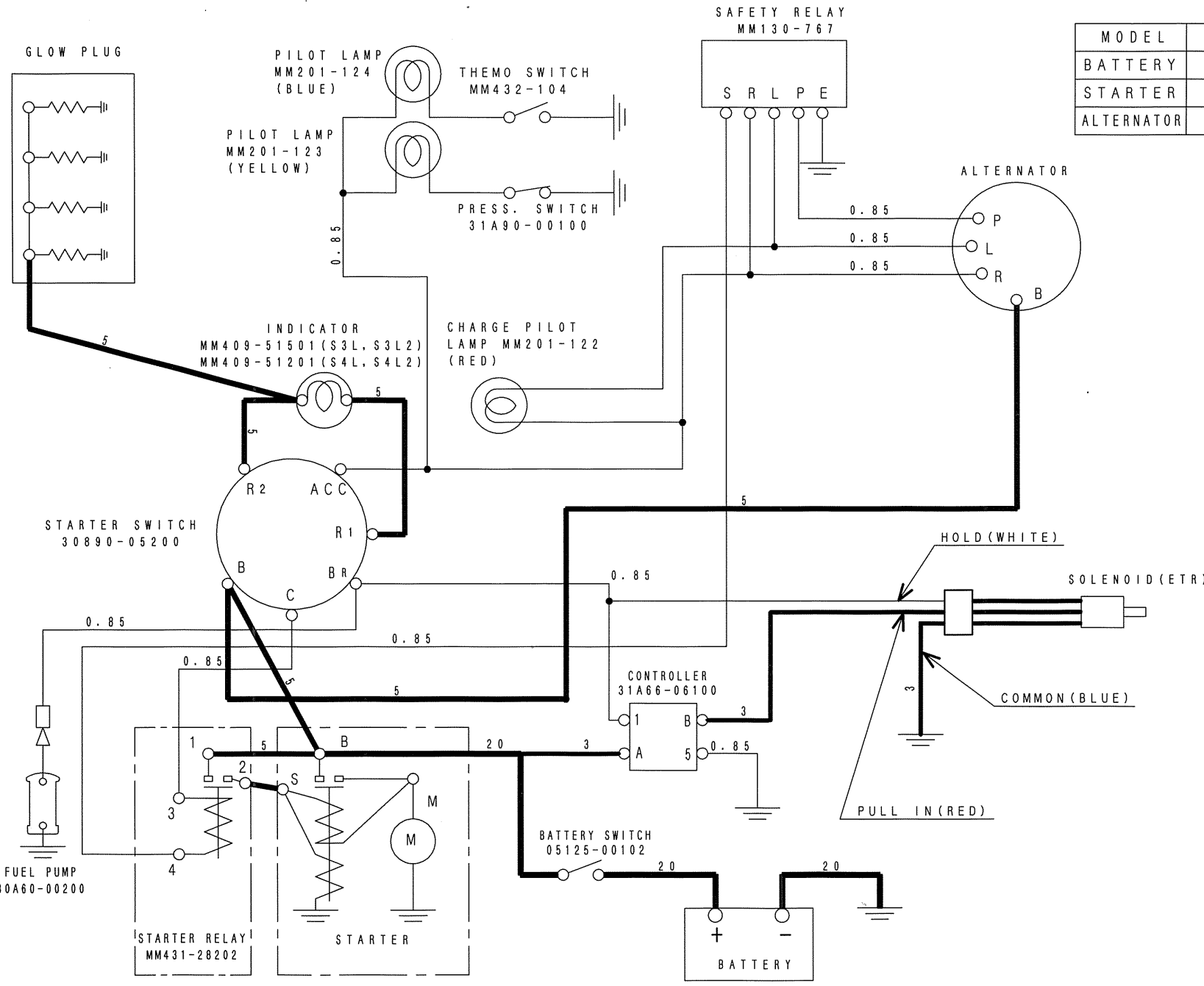
FOR GENERATOR OEM
(NON EMISSION REGULATION CERTIFIED)

CHG				DATE				CHE			
APPD				M. OGAWAHARA				2016. 4. 13			
DRN				A. IZAKA				2016. 4. 13			
MHI CONFIDENTIAL				31B00-02751				2/2			

MHI CONFIDENTIAL

出図
MHI
相模原
2016
4.20

W/C



MODEL	S3L, S3L2	S4L, S4L2
BATTERY	12V-65AH	12V-80AH
STARTER	12V-1.7kW	12V-2.0kW
ALTERNATOR	12V-50A	

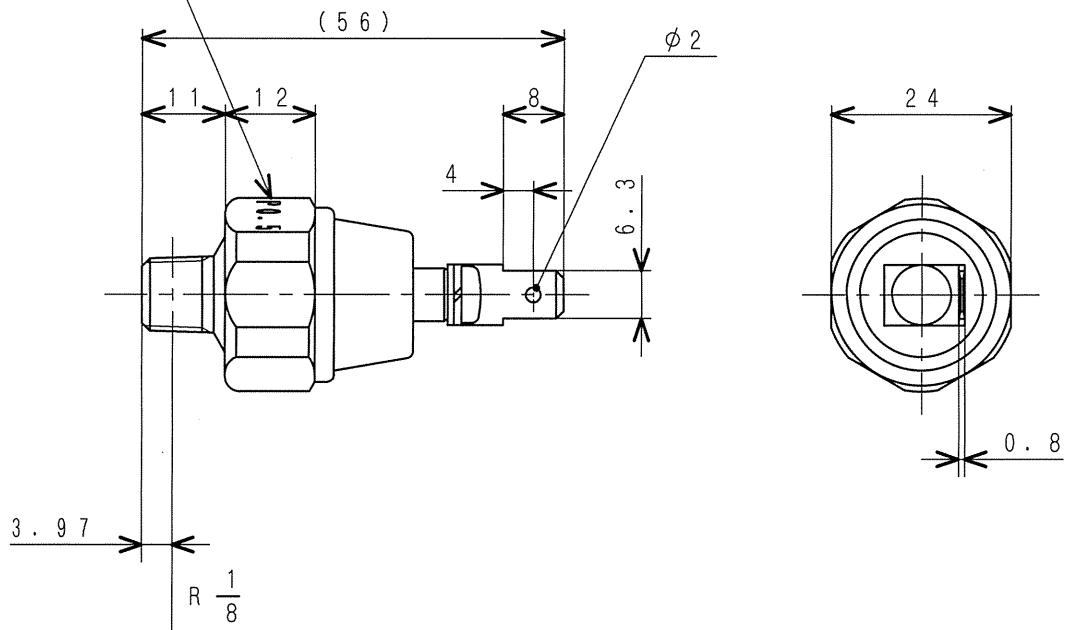
CONNECTION OF STARTER SWITCH

TERMINAL POSITION	B	R1	ACC	R2	C	BR
R1	○	○				○
OFF	○					
ACC	○		○			○
St	○		○	○	○	○

0.85	0.85	mm ² 以上
2	2	OR MORE
5	5	mm ² 以上
20	20	OR MORE

電気配線図S3L, S3L2, S4L, S4L2
 ENGINE ELECTRIC WIRING
 31A90-09201

" P O . 5 " を打刻
MARK : P O . 5



仕 様
SPECIFICATIONS

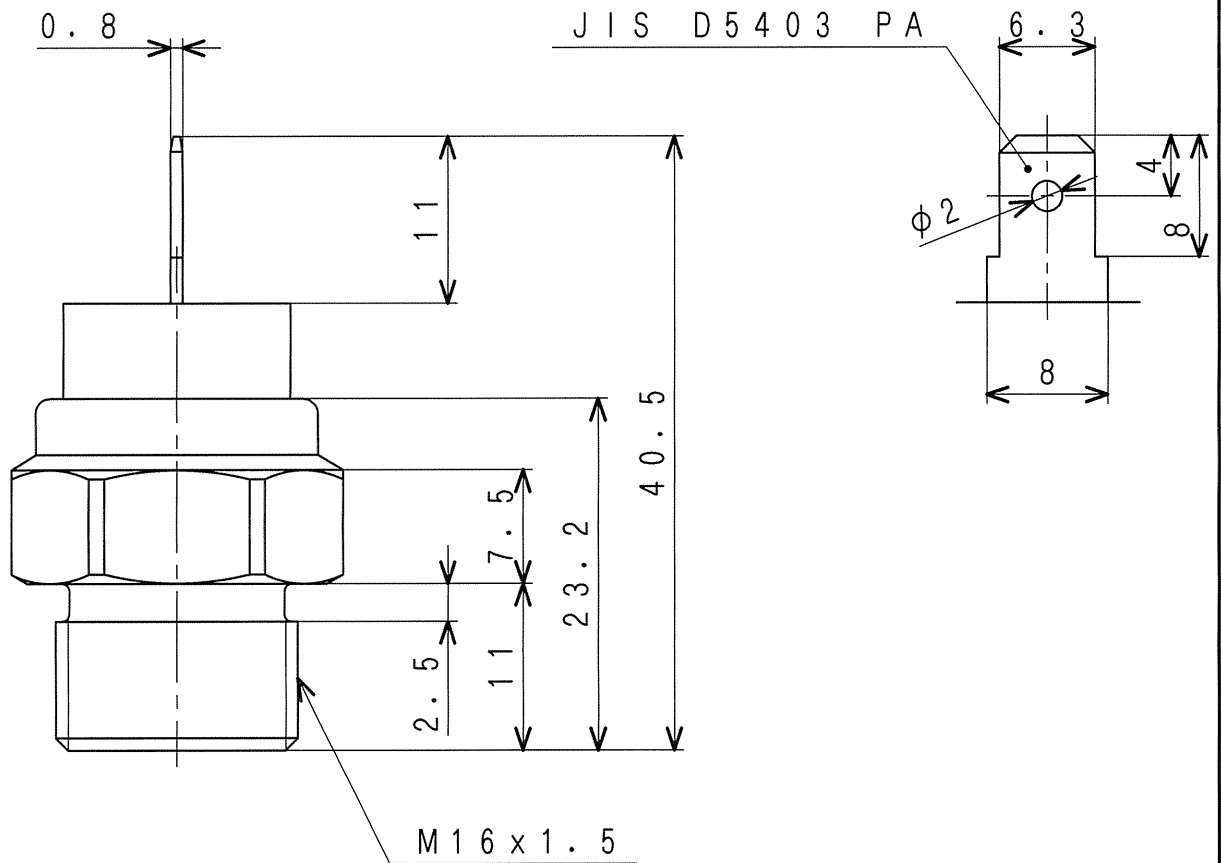
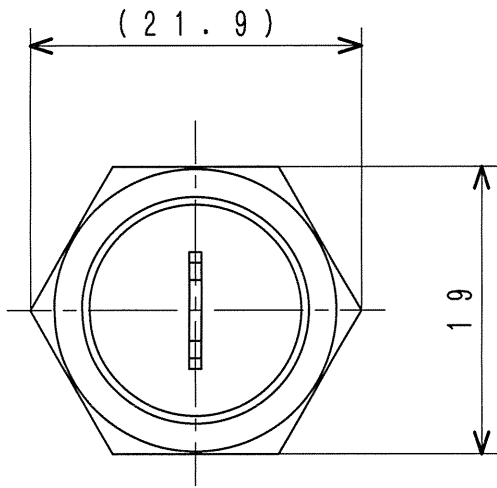
作 動 圧 力 OPERATING PRESS.	49 kPa { 0.5 kgf / cm ² }
接 点 容 量 CURRENT CAPACITY	12 V - 5 W 24 V - 10 W
結 線 様 式 CONNECTION	b (— ○ —)

油圧スイッチ

SWITCH, OIL PRESSURE

31A90-10300

MHI CONFIDENTIAL



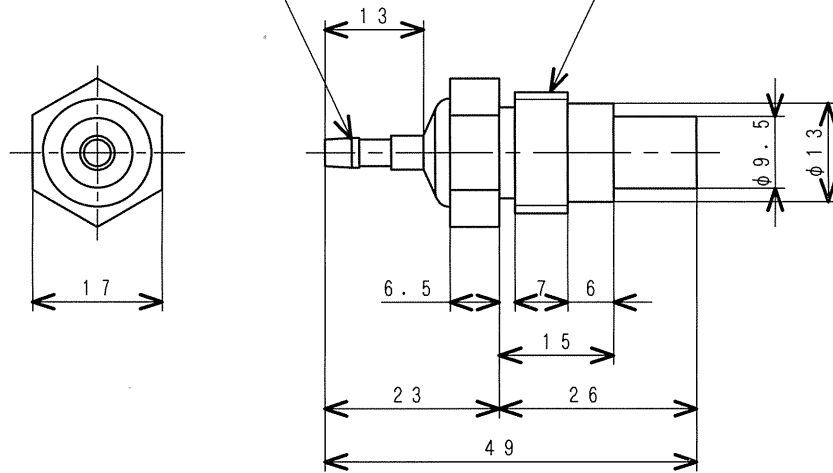
仕 様
SPECIFICATIONS

作 動 温 度 OPERATING TEMP	111 ± 3.5 °C
接 点 容 量 CURRENT CAPACITY	0.25 A, MAX.
結 線 様 式 CONNECTION	a (— ○ —)
	ON-OFF 差 8 ± 3.5 °C ON-OFF DIFFERENCE 8 ± 3.5 °C

サーモスイッチ
SWITCH, THERMO

30N46-00500

JIS D 5403 CA104

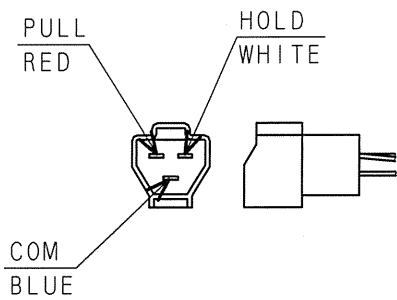
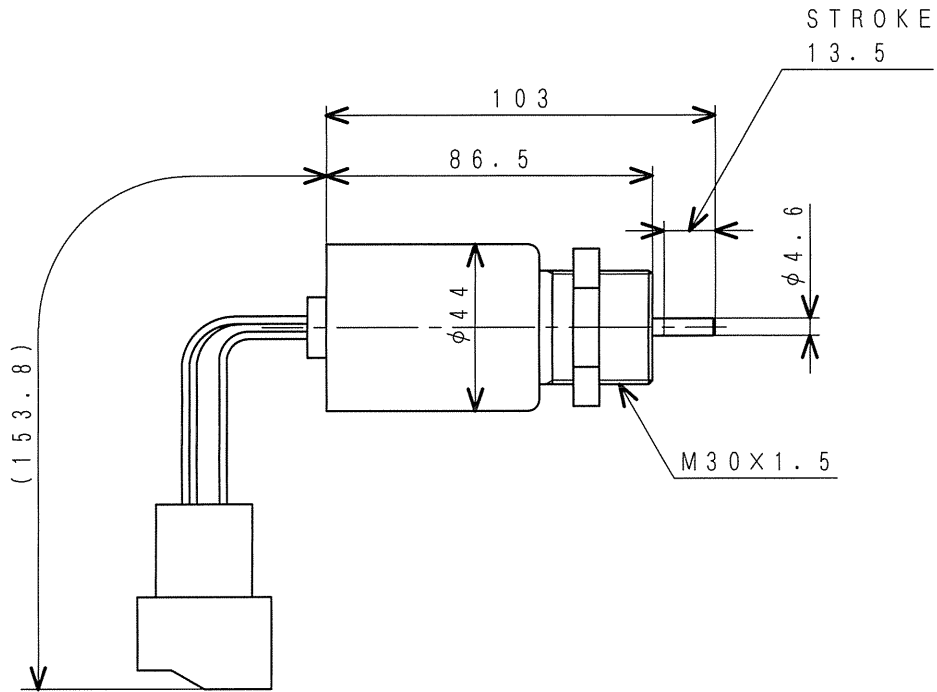


温度 (°C) TEMPERATURE	50	67	70	100	102	110	135
抵抗 (Ω) RESISTANCE	80	44.6	40.9	17.6	16.5	12.8	7

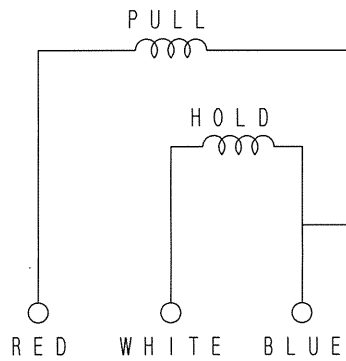
サーモメータユニット
UNIT, THERMOMETER

MD366-869

MHI CONFIDENTIAL



DETAIL OF CONNECTOR
 CONNECTOR EQUIVALENT TO
 7222-6234-40 (YAZAKI)
 TO MATE WITH
 30A87-00600 (MHI)
 7123-6234-40 (YAZAKI)



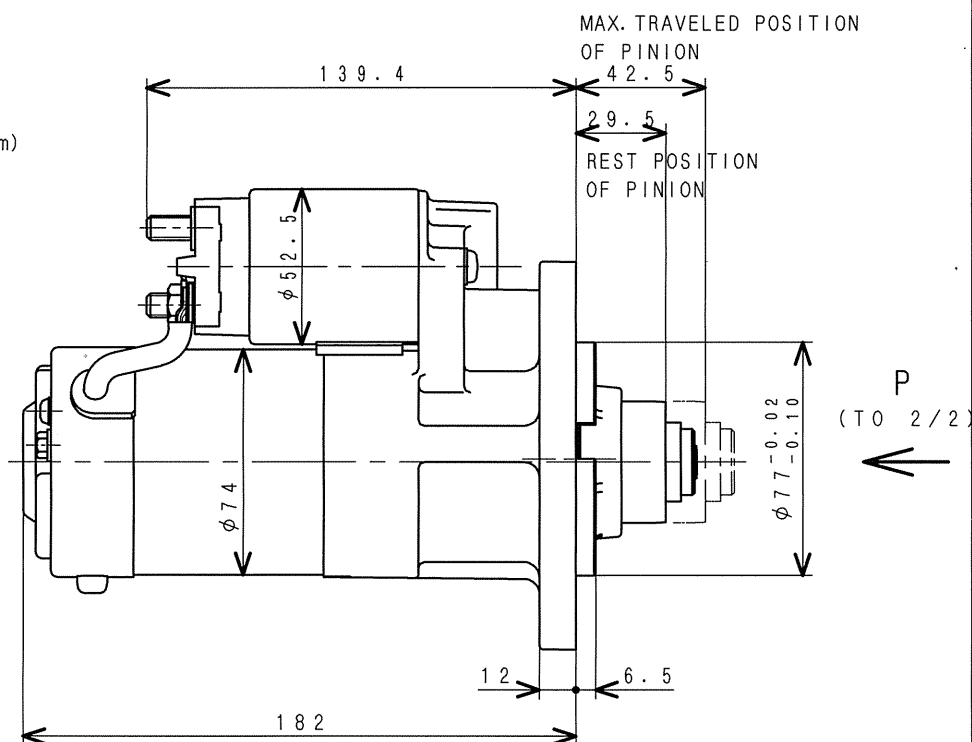
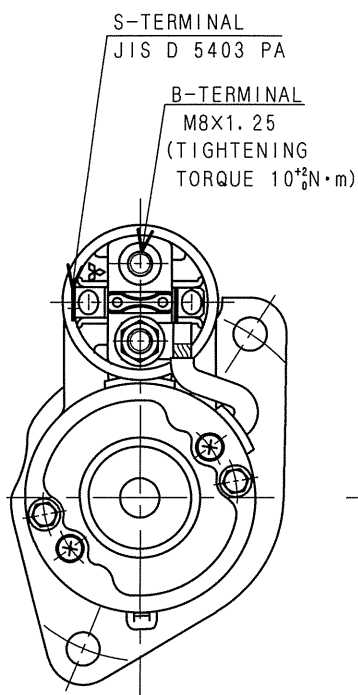
配線図
 WIRING DIAGRAM

仕様
 SPECIFICATIONS

定格電圧 RATED VOLTAGE	DC 12V
ストローク EFFECTIVE STROKE	13.5 ± 0.5 mm
定格電流 RATED CURRENT	PULL : 50A HOLD : 1A
使用雰囲気温度 ALLOWABLE AMBIENT TEMP	-40°C ~ +120°C

ソレノイドアッシ
 SOLENOID ASSY

30A87-10044



SPECIFICATION 仕様 (20°C)		VOLTAGE 電圧	CURRENT 電流
	NO LOAD 無負荷特性	11V	110A MAX.
	LOAD 負荷特性	7.7V	400A
LOCKED 拘束特性		3.5V	940A MAX.
OPERATION OF ENGAGE SWITCH 電磁スイッチ動作電圧	PULL IN VOLTAGE 8V MAX. PINION TRAVEL RESTRICTED AT 2mm ピニオン静止位置より2mmの位置にピニオン先端を拘束して8V以下のこと		
WIRING RESISTANCE (RECOMMEND VALUE) 配線抵抗 (推奨値)	MAIN CIRCUIT 主回路	2mΩ MAX.	
	S-CIRCUIT S回路	50~70mΩ	
RATED CURRENT (S-TERMINAL) 定格電流 (S端子)	PULL IN	54A	
	HOLD	12.3A	

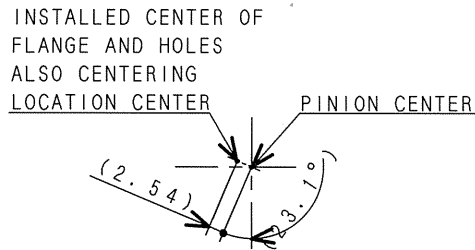
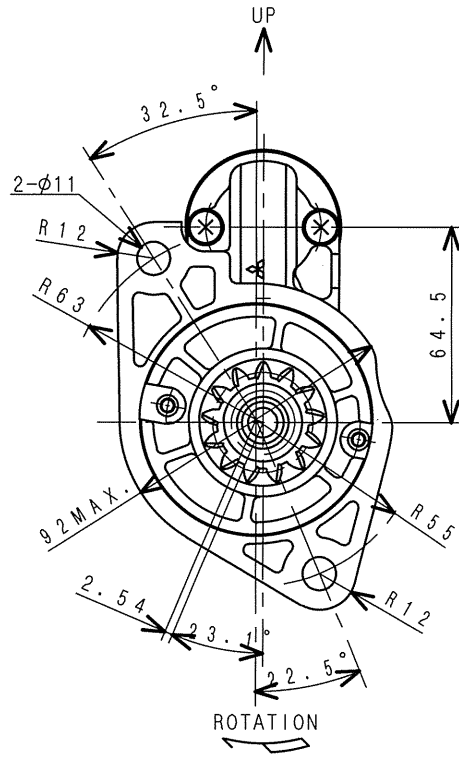
MAX. BATTERY : 95D31

スタータ
STARTER (12V-1.7kW)

31B66-00101 $\frac{1}{2}$

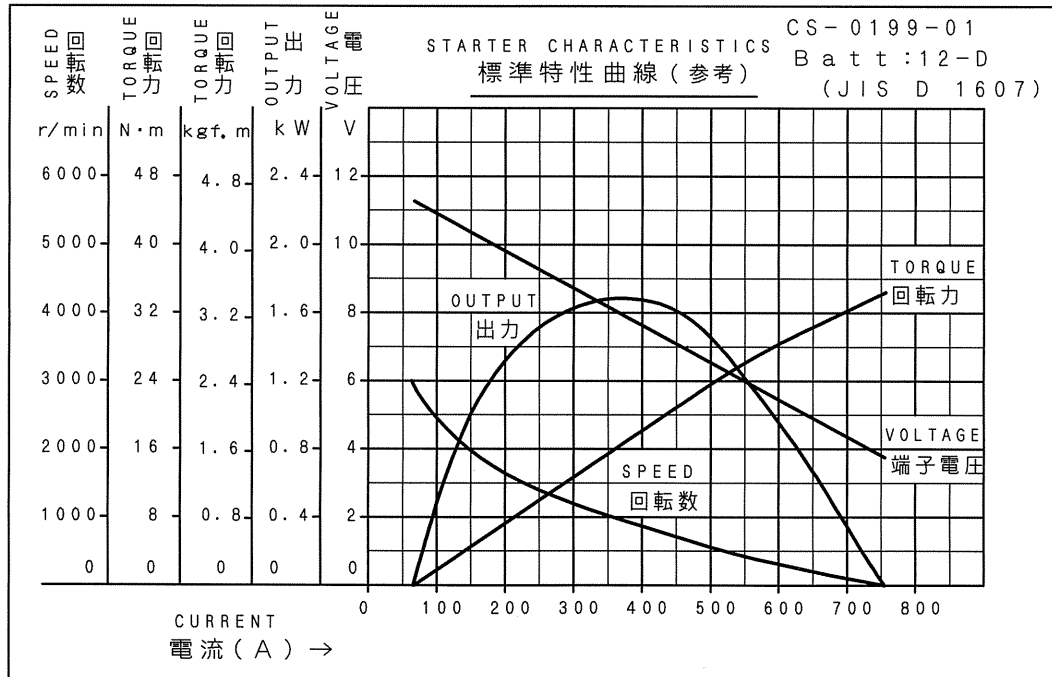
MHI CONFIDENTIAL

ピニオン仕様 PINION GEAR	
ダイヤメトラルピッチ DIAMETRAL PITCH	10
歯数 NUMBER OF TEETH	13
圧力角 PRESSURE ANGLE	20°
ピッチ円直径 PITCH CIRCLE DIA.	33.02
外径 OUTSIDE DIA.	40.16
歯底径 ROOT DIA.	30.18
転位量 MODIFICATION	1.27



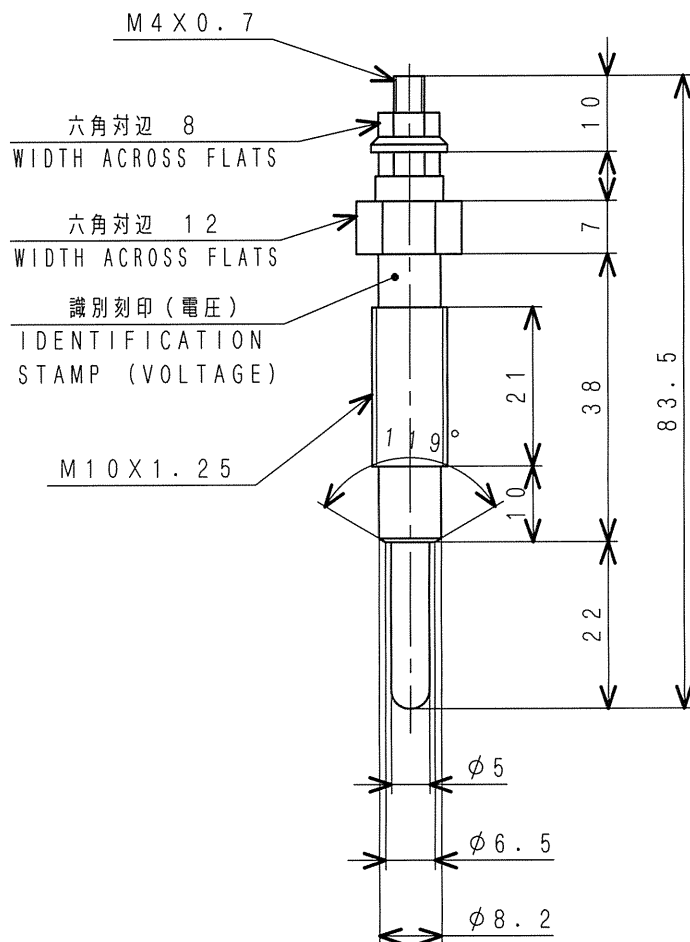
DETAIL OF ECCENTRICITY

VIEW P



スタータ
STARTER (12V-1.7kW)

31B66-00101 $\frac{2}{2}$



定格電圧 RATED VOLT	DC10.5V
電流値 CURRENT	定格電圧印加30秒時 AT RATED VOLTAGE FOR 30 sec
	9.7±1.0A
温度上昇 TEMPERATURE	定格電圧印加800℃到達時間 (先端から5mmの位置で) TIME TO REACH 800℃ (AT RATED VOLTAGE AND 5mm POINT FROM TIP)
	9±2 sec
締付トルク TIGHTENING TORQUE	BODY (M10X1.25) : 14.7~19.6 N·m
	TERMINAL (M4X0.7) : 1.0~1.5 N·m

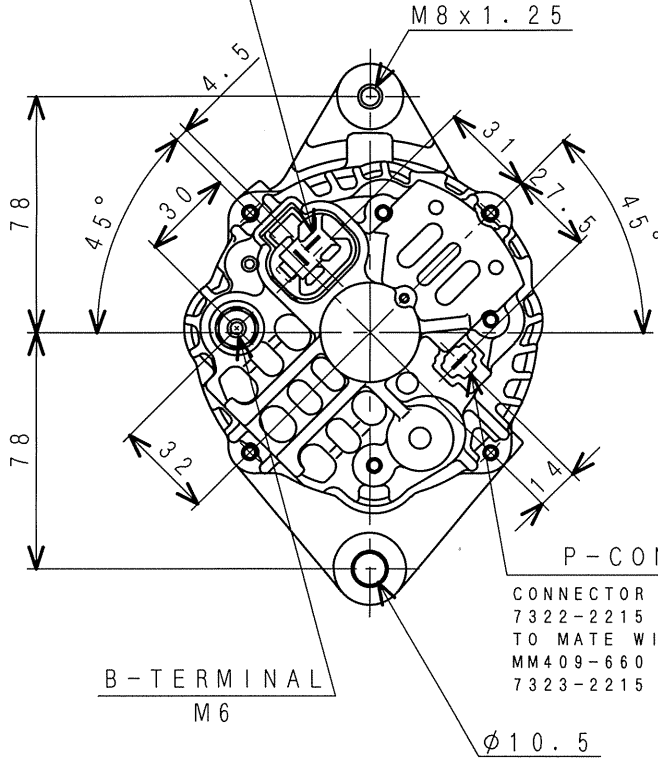
グロープラグ
PLUG, GLOW

32A66-03102

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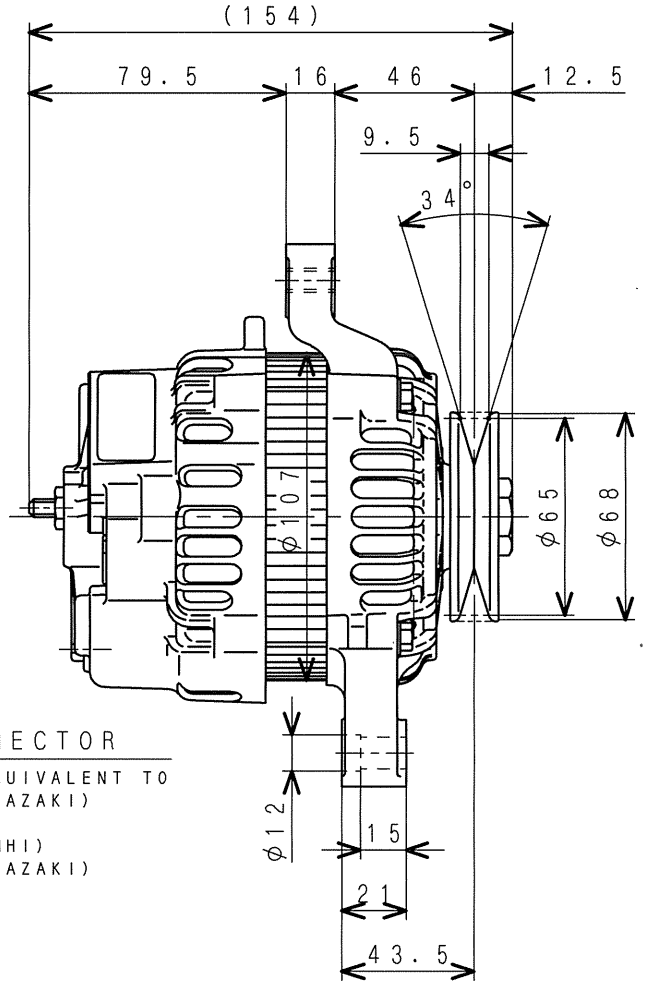
L & R - CONNECTOR

CONNECTOR EQUIVALENT TO
7322-2128 (YAZAKI)
TO MATE WITH
MB084-014 (MHI)
7323-2128 (YAZAKI)



P - CONNECTOR

CONNECTOR EQUIVALENT TO
7322-2215 (YAZAKI)
TO MATE WITH
MM409-660 (MHI)
7323-2215 (YAZAKI)



仕様 SPECIFICATIONS

定 格 RATING	連 続 CONTINUOUS
電池 電 圧 BATT. VOLT.	12V
運転時の周囲温度 AMB. TEMP. IN USE	100°C MAX.
レギュレータ性能 REG. PERFORMANCE	調整電圧 SET VOLT 14.7±0.3V
使用回転速度 SPEED IN USE	1,000~18,000rpm

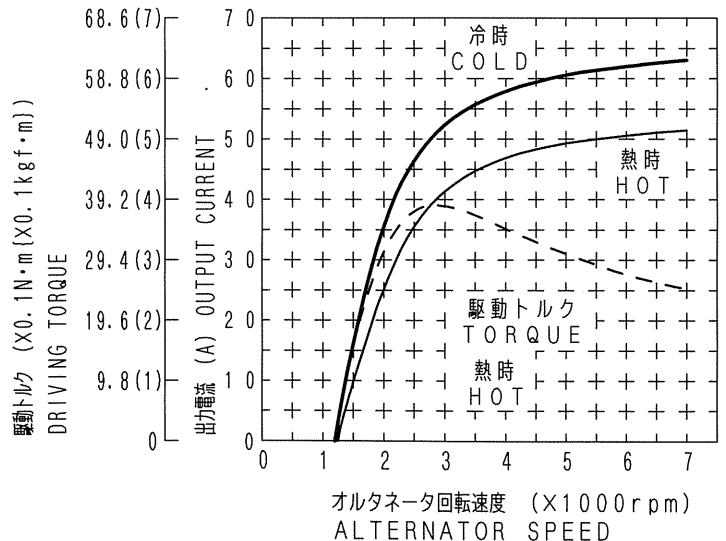
出力性能 OUTPUT PERFORMANCE
1. 保証出力性能 GUARANTEE 20°C

電 圧 (V) VOLTAGE	TYPE 回転速度 SPED (rpm)	CA0014-1 出力電圧 OUTPUT CURRENT (A)	
		冷 時 COLD	熱 時 HOT
13.5	1300	-	-
	2500	-	32
	5000	-	47
ヒートラン速度 TEMP. STAB. SPEED 5000rpm			

2. 実力平均特性曲線 ACTUAL; AVERAGE CHARACTERISTIC CURVE

注記：キーOFF時外部ユニットを介してL端子にまわり込み電流がないこと。

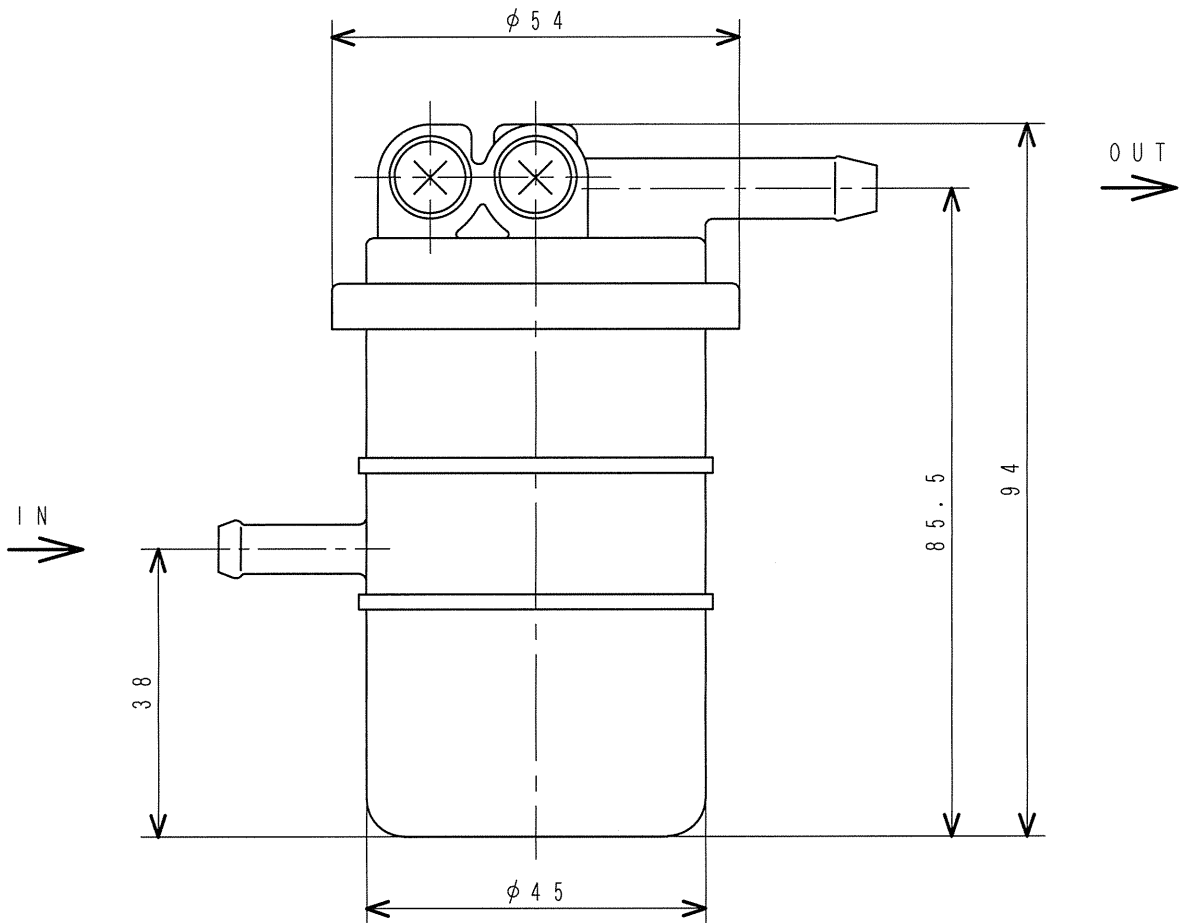
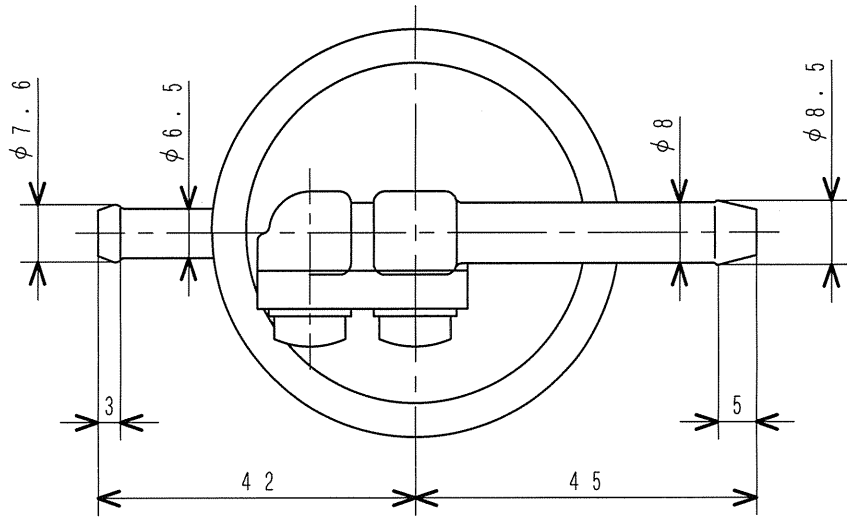
NOTE: WHEN THE KEY SWITCH IS OFF, NO CURRENT FLOWS FROM OTHER UNITS TO L AND R TERMINAL PERMITTED.



オルタネータ

ALTERNATOR (12V-50A)

31A68-00402



仕様
SPECIFICATIONS

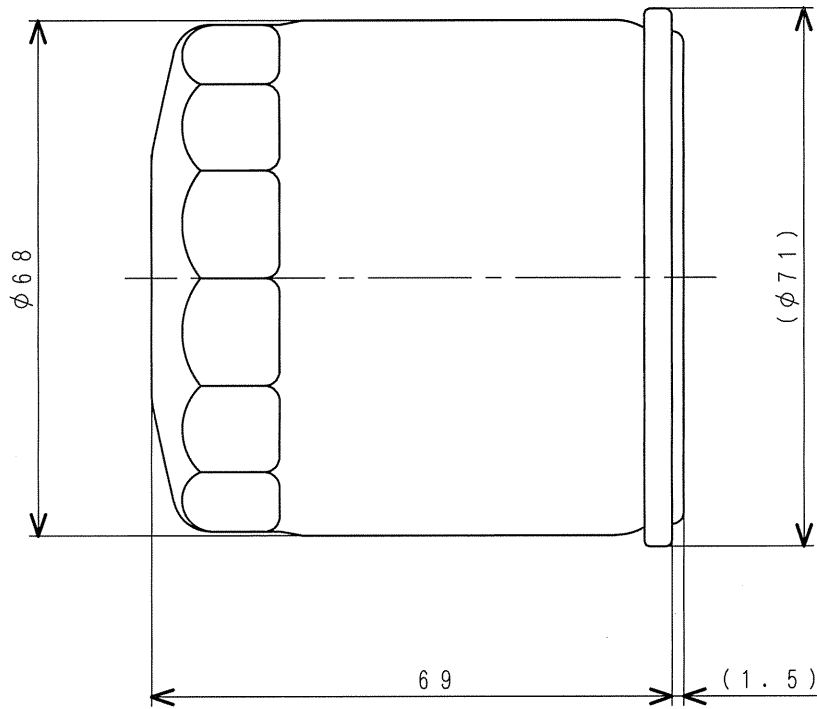
ろ過面積 FILTRATION AREA	280 cm ²
ろ過精度 FILTER MESH SIZE	15 μ Max.
圧力損失 PRESS. LOSS	16 mmHg以下(流量0.5 l/min) MAX CAPACITY
試験圧力 TEST PRESS.	1 kg/cm ²
水滴容積 CUP CAPACITY	25 cc

ヒュエル フィルタ

FUEL FILTER

MM435-190

MHI CONFIDENTIAL



仕様
SPECIFICATIONS

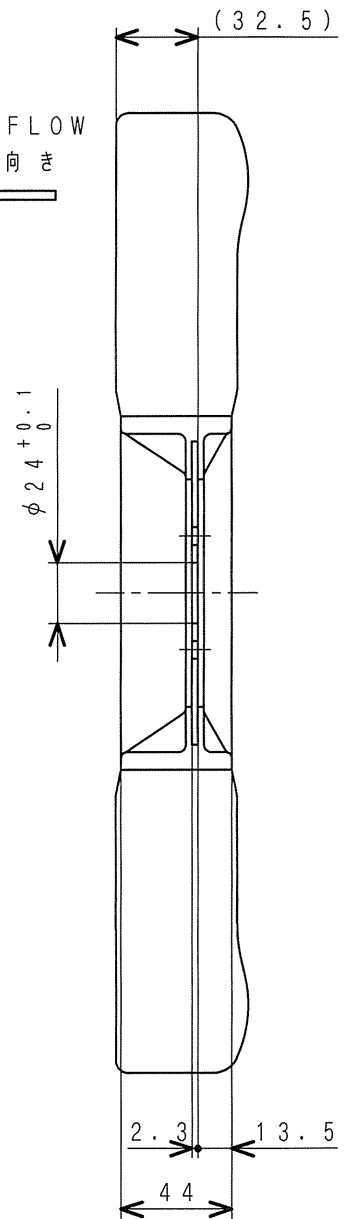
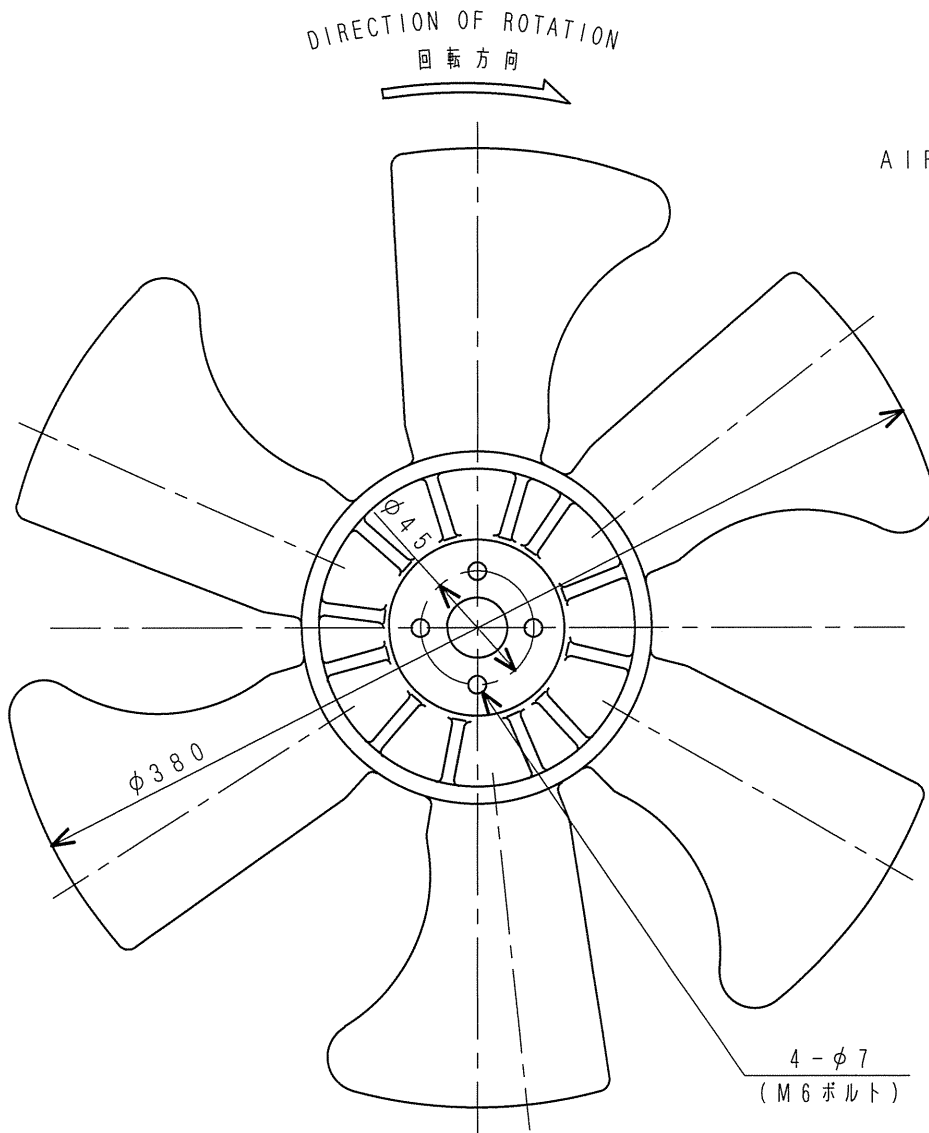
濾過面積 FILTRATION AREA	0.08 m ²
定格流量 RATED FLOW	30 l/min
圧力損失(定格流量時) PRESSURE LOSS	49.0 kPa {0.5 kgf/cm ² } MAX. 以下
逃し弁調整圧力 RELIEF VALVE PRESSURE	98.1 ± 19.6 kPa {1.0 ± 0.2 kgf/cm ² }

オイルフィルタエレメント

ELEMENT, OIL FILTER

31A40-02101

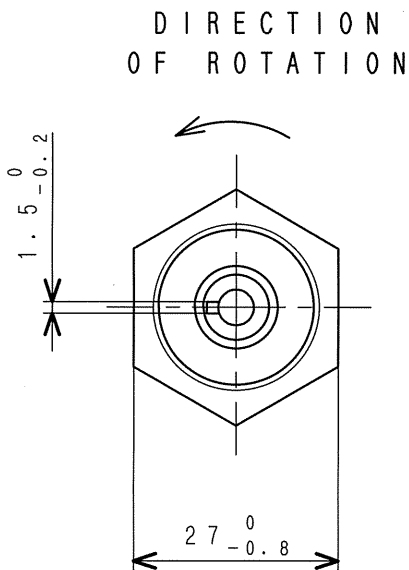
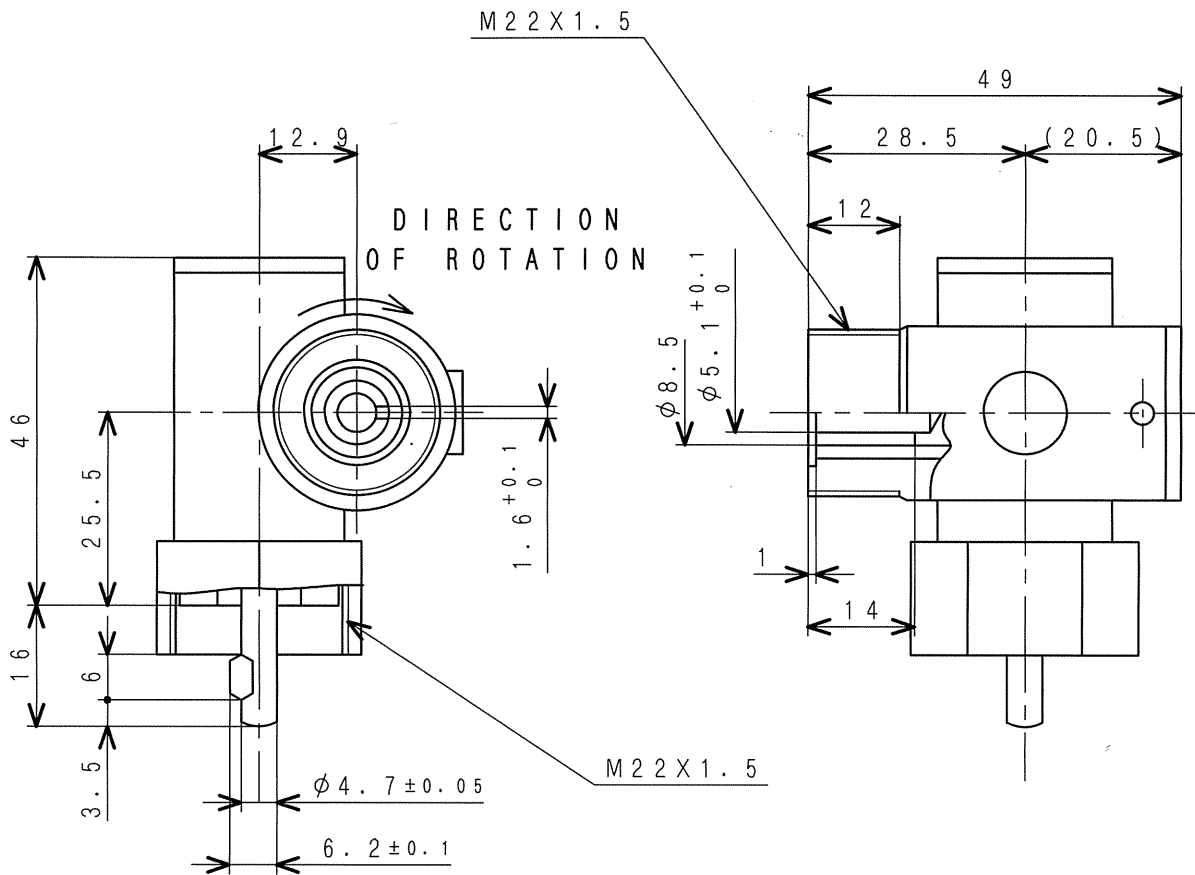
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クーリングファン (ブッシャ)
FAN COOLING (6PF-380)

30A48-00401

MHI CONFIDENTIAL



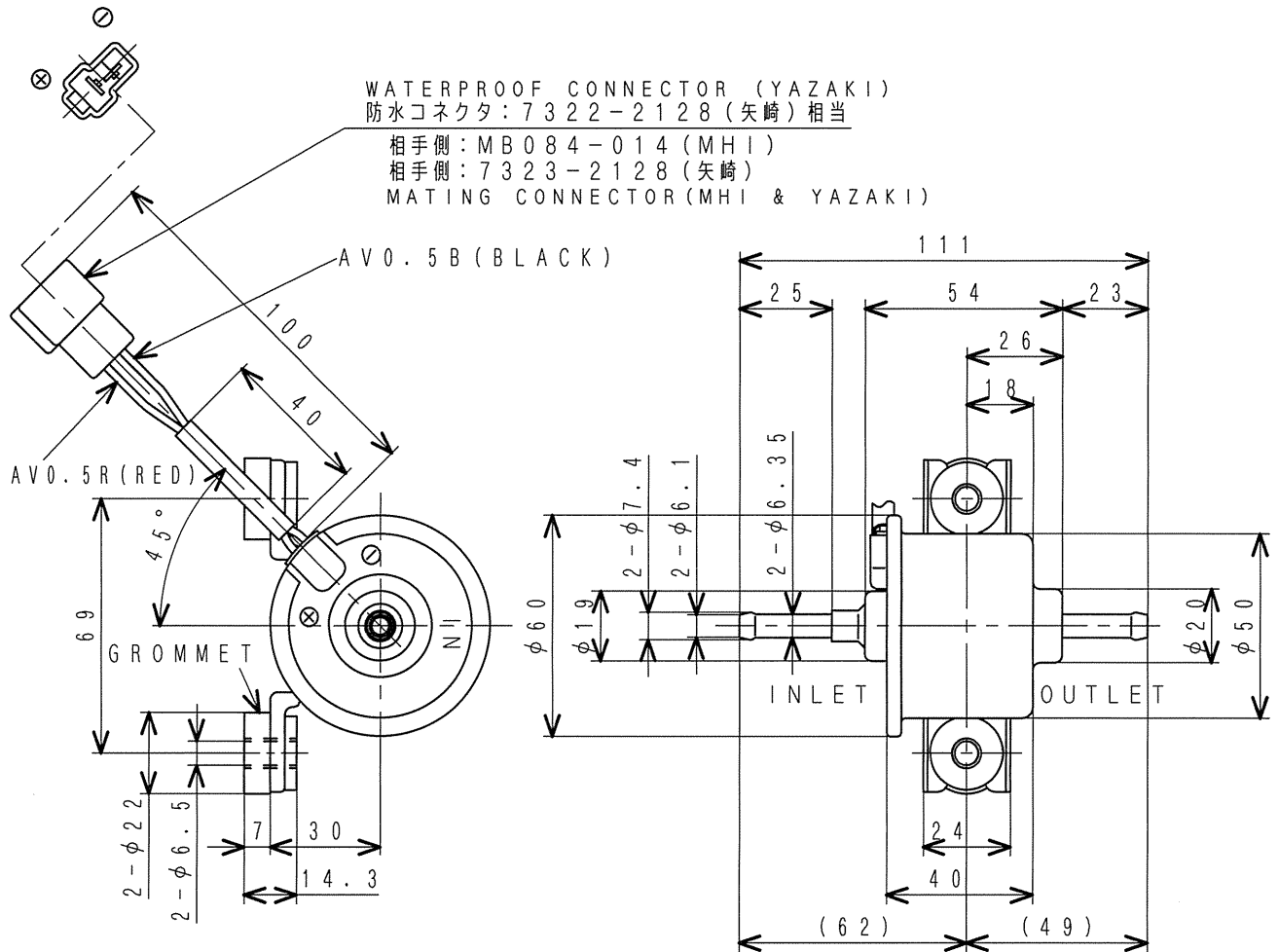
駆動軸と被駆動軸の回転比 1:1

ROTATION RATIO OF DRIVE & DRIVEN SHAFT IS 1:1

レジョイント
L-JOINT

31A27-00010

MHI CONFIDENTIAL



- NOTE 1. FIX DIRECTION FOR TEST: INLET & OUTLET PIPES HORIZONTALLY.
 2. USE MAX. 25μMESH FILTER (PAPER TYPE) BETWEEN THIS PUMP AND FUEL TANK.

- 注記 1. 下記仕様はポンプ取付方向IN-OUTパイプを水平とする。
 2. 吸込側に25μm以下のフィルタを使用のこと。

SPECIFICATIONS
 仕様

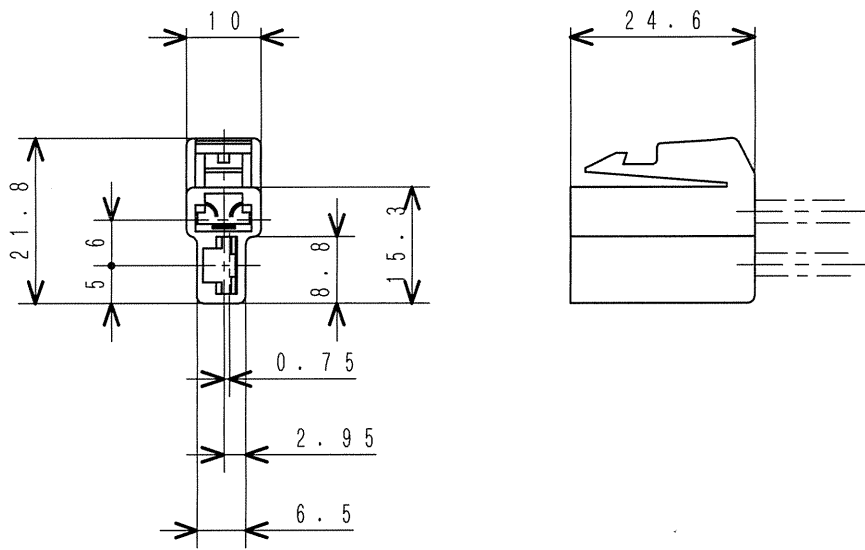
RATED VOLTAGE 定格電圧	DC 12V
MAX. CURRENT 最大作動電流	MAX. 1.5A以下
PUMP DELIVERY 吐出量	FREE FLOW MIN. 開放にて400cc/min以上
SUCTION PRESSURE (DRY) 乾き吸入圧力	MAX. -4.0kPa (-30mmHg) 以下のこと。
WEIGHT 重量	300g
WORKING TEMPERATURE RANGE 使用温度範囲	-30~70°c
TOTAL PRESSURE (DELIVERY+SUCTION) 締切圧 (吐出圧+吸込圧)	ZERO DELIVERY MAX. 平均値全圧34.3kPa (0.35kgf/cm ²) 以下

ヒュエルポンプアッシ

PUMP ASSY, FUEL

31A60-00600

MHI CONFIDENTIAL



	MHI No.	YAZAKI No.
CONNECTOR ASSY (2P-F)	MB084-014	7323-2128
TERMINAL	—	7116-2090
HOUSING	—	—

適用電線サイズ 0.5~2.0mm²
 APPLICABLE CABLE 0.5~2.0mm²

注 記 オルタネータL・R用, グローリレー用, ダイオード用
 NOTE FOR L AND R TERMINALS OF ALTERNATOR, FOE GLOW RELAY, AND FOR DIODE

コネクタ
 CONNECTOR (2POLES)

MB084-014