SPECIFICATION
OF
MITSUBISHI DIESEL ENGINE
MODEL : S16R2-PTA
（WITHOUT FAN）
FOR DIESEL GENERATOR SET
EMERGENCY APPLICATION
MGS-CN

MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

G378B-234

								APPROVED BY	CHECKED BY	DRAWN BY
				△				M.NAKAMURA	T.NISHIOKA	T.N
				△						
				△						
				DATE	2020.03.10					

1. DRAWINGS (Standard)

NO.	DWG. NO.	DWG. NAME	REMARK
1	37896-00580	ENGINE OUTLINE	
2	37896-01086	JOINT DETAIL	
3	37796-04047	WIRING DIAGRAM	
4	37896-14081	MOUNTING DETAIL	
5	37896-21001	FLYWHEEL & HOUSING DETAIL	
6	37896-25081	FRONT ACCESSORY DRIVE	
7	37896-30382	AIR CLEANER	
8	37896-43082	BREATHER	
9	37896-61312	FUEL RETURN PIPING	
10	37896-62112	FUEL INLET PIPING	
11	37896-63082	GOVERNOR	for reference
12	37896-66001	STARTING MOTOR	for reference(without Safety and Connector)
13	37896-71001	TURNING GEAR	
14	37896-87506	STOP SOLENOID	
15	37896-90122	METER & SENSOR	for boost sensor
16	37896-90123	METER & SENSOR	with pressure gage unit & pressure switch
17	37896-90147	METER & SENSOR	for reference
18	37896-90281	ALARM SWITCH	
19	S10-0550	CONNECTOR	for alternator
20	S10-0761	ALTERNATOR	
21	S11-0920	INDICATOR	for air filter
22	S11-1372	FILTER ALARM SWITCH	for oil filter
23	S13-0270	SOLENOID	
24	S13-2013	MAGNETIC PICK UP	
25	S13-2021	CABLE, PICK UP	for governor
26	S13-2122	ACTUATOR, PROACT2	
27	S13-2870	CONTROLLER, PROACT+	
28	S14-0330	CONNECTOR	for pressure sensor
29	S19-0610	BOOST SENSOR	
30	S37-1090	PIPE, FLEXIBLE	

2.TECHNICAL INFORMATION

NO.	ITEM. NO.	DWG. NAME	REMARK
1	T0102-0001E	RATING DEFINITIONS	SB～SR series
2	T0221-0010E	SPECIFICATION SHEETS	S16R2-PTA

3. GENERAL

Object and use	:	Diesel generator
Applicable conditions		
Ambient temperature	:	5℃ ~ 40℃
Altitude above sea level	:	Max. 1000m
Relative humidity	:	Max. 85%
Place of installation	:	In door
Color of painting	:	RAL5023

Applicable standard

All items, unless otherwise specified, are in accordance with JIS and manufacturer's standards.

4. RATING DEFINITIONS

Refer to T0102-0001E

5. PRINCIPAL PARTICULARS

Model	:	S16R2-PTA
Type	:	4cycle stroke, water cooled diesel engine
Combustion chamber	:	Direct injection type
Aspiration	:	Turbocharged with after cooler
Number of cylinders	:	16-V
Bore × stroke	:	170mm × 220mm
Total displacement	:	79.9liter
Compression ratio	:	14.0 : 1
Firing order	:	1 - 9 - 6 - 14 - 2 - 10 - 4 - 12 - 8 - 16 - 3 - 11 - 7 - 15 - 5 - 13
Direction of rotation	:	Counter clockwise as viewed from flywheel side
Engine dimensions,std. (Approx.)	:	Length 3117.5mm (without accessories) (From Front pulley to Exhaust pipe)
	:	width 1505.2mm (without accessories) (From Actuator bracket to Fuel pipe)
	:	Height 2029.5mm (without accessories) (From Oil pan to Exhaust pipe)
Dry weight (Approx.)	:	7750kg (without accessories)
Fuel oil	:	ASTM D975 No.1-D,No.2-D or BS 2869 class A1,class A2 See Operation & Maintenance manual
Lubricating oil	:	API service CF class or CH-4 class SAE 15W-40 See Operation & Maintenance manual
Coolant	:	See Operation & Maintenance manual

Output at ISO 3046 standard air conditions (25℃, 100kPa, 30% Humid)

Stand-by rating	:	2167kWm/1500min^{-1} (without fan)
Prime rating	:	1960kWm/1500min^{-1} (without fan)
DCP rating	:	1960kWm/1500min^{-1} (without fan)
Fuel consumption ratio at stand-by rating	:	219g/kWm-hr at 2167kWm/1500min^{-1}
(allowance +5%)	:	215g/kWm-hr at 1960kWm/1500min^{-1}
Lub, oil consumption ratio at stand-by rating	:	within 0.8g/kW-hr
Emission compliance	:	Not certified

6. STANDARD EQUIPMENTS

(1) Power line system

Flywheel	:	SAE J620 21in, except screw size
Flywheel housing	:	SAE J617 No.00, except screw size
Torsional vibration damper	:	Viscous type × 3pcs

(2) Air intake system

Air cleaner	:	Paper element type loose supply
Air filter alarm indicator	:	Mechanical type : 6.2kPa switch on loose supply
Air pipe	:	Loose supply Between Turbocharger and air cleaner is painted, color black (MUNSELL N1)
Turbocharger	:	MITSUBISHI TD13M1 Type
Air cooler	:	Jacket water cooled type Plated element type
Air heater	:	Not supply

(3) Exhaust system

Exhaust manifold	:	Air cooled type with heat insulator
Muffler	:	Not supply
Flexible pipe	:	Loose supply JIS 350A, L=335mm, Weight 32kg
Companion flange	:	Not supply
Breather	:	Down side direction type For blow - off to outside of engine room Hose length 1000 mm

(4) Lubricating system

Oil pump	:	Gear pump type
Capacity of oil pump	:	1500min^{-1} : 480 liter/min.
Lub. oil pressure	:	0.49~0.64 MPa
Quantity of oil (Approx.)	:	Oil pan full level : 260 liter low level : 200 liter Others (filter etc.) : 30 liter Total : 290 liter
Lub. oil filter (Full flow)	:	Paper element cartrige type × 4pcs
Lub. oil filter (By - pass flow)	:	Paper element cartrige type × 1pc
Lub. oil cooler	:	Water cooled corrugated type with by - pass valve External oil cooler,mounted on radiator（※） when the external oil cooler is mounted. ※External oil cooler should be set up in the radiator when the radiator is designed by D/G SET manufacturer.

(5) Cooling system

Jacket water system

Water pump	:	Gear drive centrifugal type
Capacity of water pump	:	1650 liter/min. at rated speed (1500min^{-1})
Thermostat	:	Wax pellet type × 4pcs
		Open at 71℃ ～ 85℃
Capacity of coolant (Approx.)	:	188 liter
Fan	:	Not supply
Radiator piping	:	Not supply
Radiator	:	Not supply

(6) Fuel system

Fuel inlet pipings	:	Flexible hose (Rc 3/4 joint) loose supply
Fuel return pipings	:	Flexible hose (Rc 3/4 joint) loose supply

Fuel overflow of Inj. Pump and fuel leak - off of Nozzle must return to fuel tank

Injection pump	:	Bosch type "PS8" without timer
Feed pump	:	Trochoid type
Injection Nozzle	:	Hole type
Fuel filter	:	Paper element cartrige type ×4pcs

(7) Control system

Governor	:	Electronic speed governor
		WOODWARD ProAct
		Speed droop ： 0%
		Supply voltage ： DC24V（18V～32V）
Actuator	:	Current consumption
		At starting : 12A
		Normal operation : 6A
Controller	:	Loose supply
		Fuel limit at engine starting and boost pressure
Boost sensor	:	Supply voltage ： DC24V
		Output：0 MPa - 4 mA, 0.5 MPa - 20 mA
		Cable length 4000mm
Cable	:	Loose supply
		4300mm length from magnetic pick up to controller
Cable	:	Not supply
		From actuator to controller

(8) Starting system

Starter switch	:	Not supply
Starting motor	:	DC24V, 7.5KW × 2pcs Reduction type with safety relay
Safety relay	:	Not supply For Parallel running of starting motor The follwing starter protection functions shall be provided. 1) Function for concurrent engagement of the two Starter. 2) Function for engagement operation again when engagement of pinion gear fails.
Current of starter	:	Rush 1250A Cranking 400A (Ambient temp : 5℃, Lub. oil : SAE No. 30)
Connector for starting motor	:	Not supply
Alternator	:	DC24V, 35A, with voltage regulator
Connector for alternator	:	2 poles loose supply (DWG.NO. S10-0550)
Recommended battery capacity	:	DC24V, 400AH Not supply
Battery switch	:	Not supply

(9) Stopping system

Automatic stop		Automatically shut - down by stop solenoid power off and open to RUN/STOP contact electronic governor simultaneously
Stop solenoid	:	Energized to run type
Manual stop	:	By stop lever

(10) Safety device

Alarm swtitches	:	Supply
Alarm and trip		
Low oil press. switch	:	Supply Diaphram type：0.15MPa switch on
High water temp. switch	:	Supply Wax type：98℃ switch on
Alarm		
Oil filter alarm switch	:	Piston type : 0.15MPa switch on
Oil filter alarm lamp	:	Not supply
Air filter alarm indicator	:	Supply Included in air cleaner assy Mechanical type : 6.2kPa swich on

(11) Instrument

Meter and sensor

Tachometer	:	Not supply	
Magnetic pick up	:	2pcs	
		For tachometer and governor, pin-joint type	
Cable	:	Not supply	
		For magnetic pick up	
Thermo meter	:	Not supply	For jacket water and lub. Oil temp
Thermo sensor	:	2pcs	
Pressure gage	:	Electrical type	For lub. oil pressure
		Not supply	
Connector	:	2 poles loose supply	
		(DWG.NO. S14-0330)	
Thermometer	:	Not supply	
		For exhaust gas temp.	

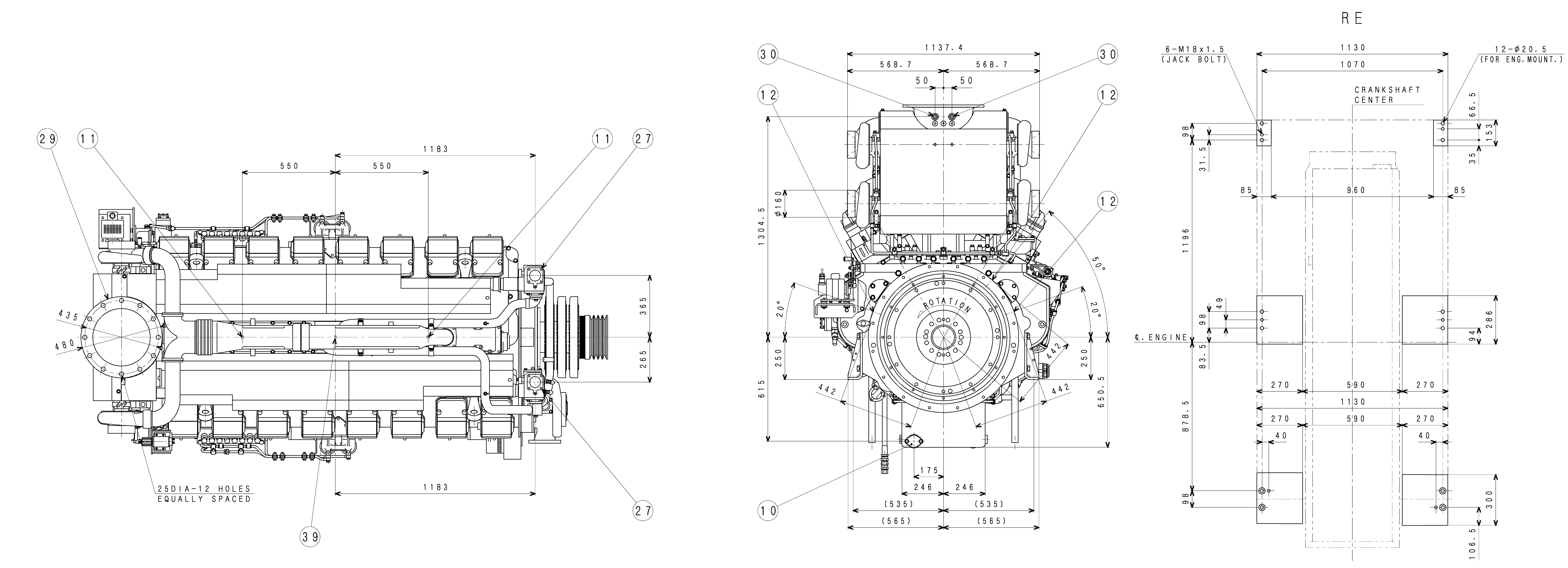
(12) Others

Turning device	:	Gear type, for maintenance
Tools	:	Not supply
Spare parts	:	Not supply

7. ACCESSORIES (Loose supply parts for standard)

NO.	PARTS NO.	PARTS NAME	Q' TY	DWG. NO. / REMARK
1	47220-47703	CLEANER, AIR	4	37896-30382
2	47220-34401	INDICATOR	4	
3	47220-47600	HOSE, ELBOW	4	
4	37731-04300	PIPE, AIR A (L.H)	1	
5	37731-04400	PIPE, AIR A (R.H)	1	
6	37731-04500	PIPE, AIR B (L.H)	1	
7	37731-04600	PIPE, AIR B (R.H)	1	
8	47220-47300	HOSE AIR	4	
9	37731-04100	STAY, AIR PIPE (L.H)	1	
10	37731-04200	STAY, AIR PIPE (R.H)	1	
11	05317-52001	CLAMP	8	
12	05317-52801	CLAMP	8	
13	F1035-10020	BOLT	8	
14	F2500-10000	WASHER, PLAIN	8	
15	F2515-10000	WASHER, SPRING	8	
16	47920-12400	PIPE, FLEXIBLE	1	S37-1090
17	45950-51700	PIPE, FLEXIBLE	1	37896-61312
18	45950-11300	CONNECTOR	1	
19	45950-51700	PIPE, FLEXIBLE	1	37896-62112
20	45950-11300	CONNECTOR	1	
21	04410-43501	CABLE, PICK UP	1	S13-2021
22	37563-20400	CONTROLLER, PROACT+	1	S13-2870
23	32B90-00300	CONNECTOR	1	S10-0550
24	MH052-231	CONNECTOR, 2-POLES, SE	1	S14-0330
25	04826-28090	PACKING	1	for J/W inlet pipe (90A)
26	47510-61602	PIPE, WATER	2	for J/W outlet pipe
27	F3153-07500	O-RING	2	
28	F1035-10030	BOLT	8	
29	F2515-10000	WASHER, SPRING	8	

The parts number is subject to change without notice.



NO.	PARTS NAME	SIZE	REFERENCE
1	FLYWHEEL & HOUSING		37896-21001
2	OIL PRESS. GAGE UNIT JOINT	Rc1/8	37896-01086
3	OIL PRESS. SWITCH JOINT	Rc1/8	
4	OIL PRESS. SWITCH JOINT	Rc3/8	
5	THERMOMETER UNIT JOINT	Rc1/2	
6	THERMOSWITCH JOINT	Rc1/2	
7	OIL PAN (A) JOINT	M16x1.5	
8	OIL PAN (B) JOINT	M20x1.5	
9	OIL PAN (C) JOINT	M36x1.5	
10	OIL PAN (D) JOINT		
11	AIR PRESS. GAGE JOINT	Rc1/8	
12	PICKUP JOINT	UNF5/8-18	37896-01086
13	GOVERNOR		
14	FUEL INLET PIPE JOINT	Rc3/4	37896-01086
15	FUEL RETURN PIPE JOINT	Rc3/4	37896-01086
16	FUEL FILTER		
17	FUEL PRESS.SWITCH JOINT	M14x1.5	37896-01086
18	FUEL PRESS.SWITCH JOINT	Rc3/8	37896-01086
19	FUEL INJECTION PUMP		
20	OIL FILLER		
21	OIL LEVEL GAGE		
22	OIL FULL-FLOW FILTER		
23	OIL BY-PASS FILTER		
24	OIL FILTER ALARM SWITCH		37896-01086
25	BREATHER		37896-43082
26	WATER INLET PIPE JOINT(J/W)	90A	37896-01086
27	WATER OUTLET PIPE JOINT(J/W)		37896-01086
28	WATER DRAIN COCK		
29	EXHAUST FLANGE	350A	
30	THERMOMETER,EX,JOINT	G3/4	37896-01086
31	STOP SOLENOID		
32	WATER HEATER INLET JOINT	Rc1	37896-01086
33	WATER HEATER OUTLET JOINT	Rc1	37896-01086
34	FRONT ACCESORY DRIVE		37896-25081
35	OIL PAN (E) JOINT	Rc1	37896-01086
36	OIL INLET JOINT(FROM OIL PRIMING PUMP)	Rc3/4	37896-01086
37	STARTER		
38	ALTERNATOR		
39	BOOST SENSOR JOINT	Rc1/8	

NOTES
(1)THIS IS S16R2-PTA WITHOUT FAN ENGINE DRAWING.
(2)GOVERNOR IS W/W PROACTⅡ.
(3)TURBOCHARGER IS MHIET TD13.
(4)MOUNTING IS C=250.

注 記
(1)本図は、S16R2-PTA(ファン無)の単体外観図である。
(2)W/W PROACTⅡ アクチュエータ装備。
(3)三菱TD13ターボ装備。
(4)本図は、マウンチングC=250仕様である。

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M/C

出図 相模原 2020 03.06

CHG	EO-NO	DATE	CHK
認可 APPD 中村	検図 CHK 西岡 谷戸	製図 DRN 浅沼 2020. 3. 5	

3rd ANGLE PROJECTION
尺度 SCALE 1:10

S16R2-PTA DIESEL ENGINE

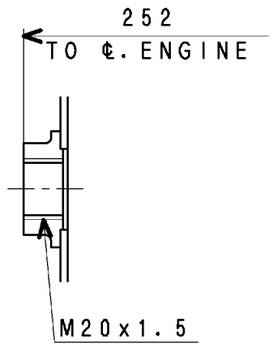
三菱重エエンジン&ターボチャージャ株式会社
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER,LTD.

図面番号 DRAWING NO. 37896-00580

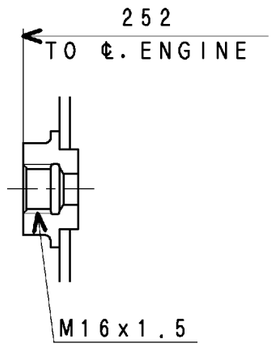
③新図 4 旧引図 | サイズ A0 | ①組立図 | 2 鋳鍛備車品 3 板金溶接品 4 組立品 5 切削品 6 その他(購入品)

MGS-CN G378B-234

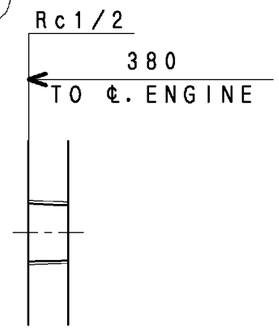
⑧ OIL PAN (B) JOINT



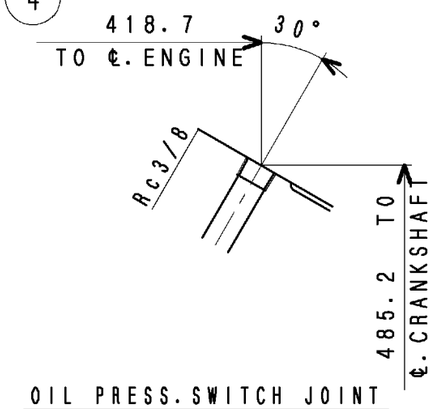
⑦ THERMOMETER UNIT JOINT (OIL PAN (A) JOINT)



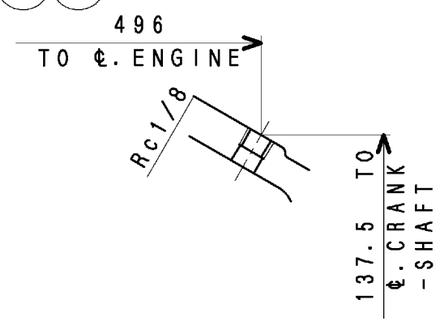
⑤⑥ THERMOSWITCH JOINT THERMOMETER UNIT JOINT



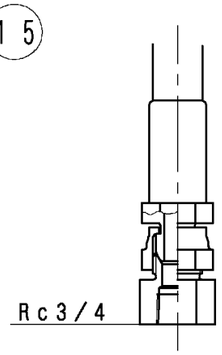
④ OIL PRESS. SWITCH JOINT



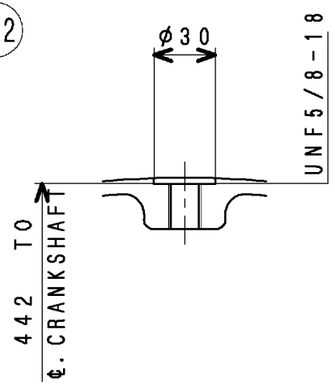
②③ OIL PRESS. SWITCH JOINT OIL PRESS. GAGE UNIT JOINT



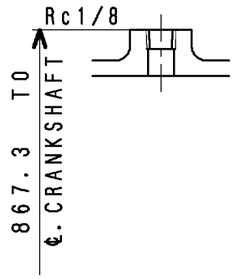
①④⑤ FUEL INLET PIPE JOINT FUEL RETURN PIPE JOINT



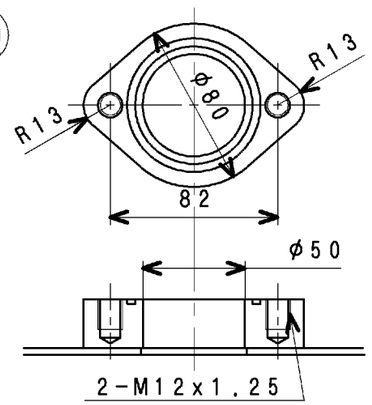
①② PICKUP JOINT



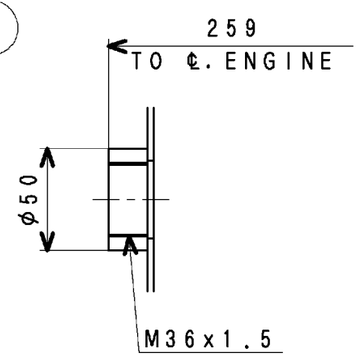
⑪ AIR PRESS. GAGE JOINT



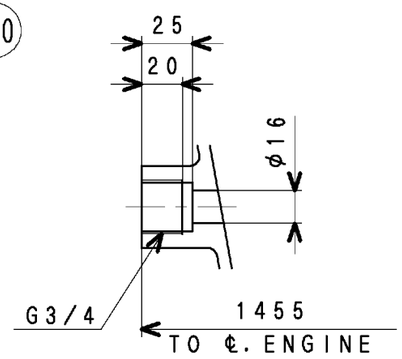
⑩ OIL PAN (D) JOINT



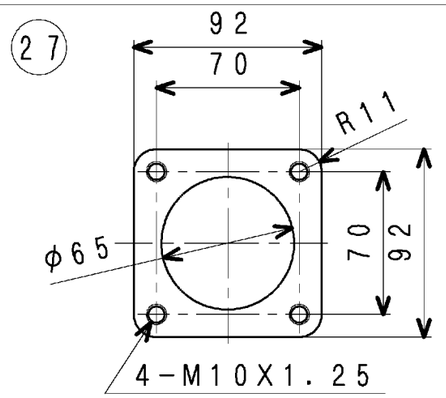
⑨ OIL PAN (C) JOINT



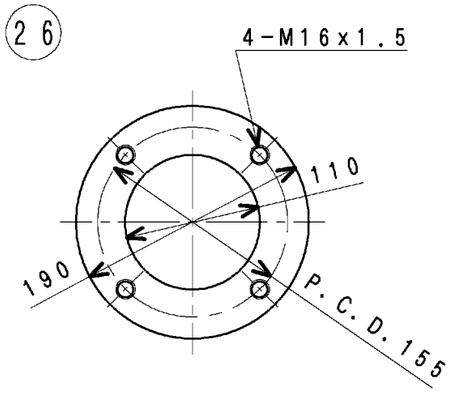
③⑩ THERMOMETER, EX. JOINT



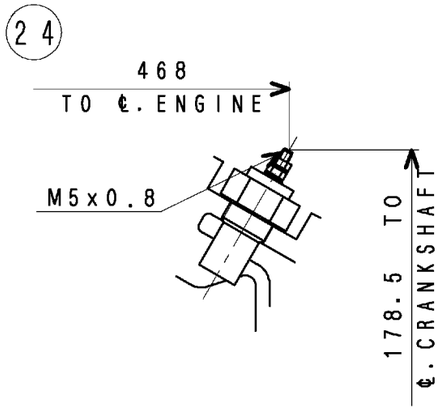
②⑦ WATER OUTLET PIPE JOINT(J/W)



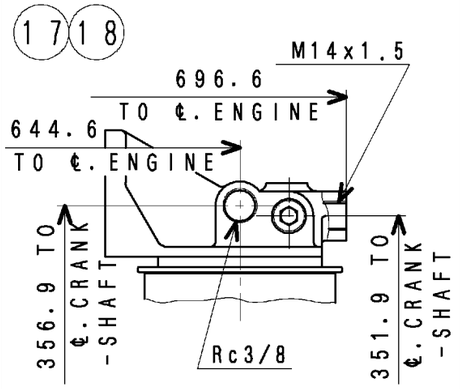
②⑥ WATER INLET PIPE JOINT(J/W)



②④ OIL FILTER ALARM SWITCH



①⑦⑧ FUEL PRESS. SWITCH JOINT



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CHG	EO-NO	DATE	CHK

3rd ANGLE PROJECTION

尺度 SCALE

認可 APPD	検図 CHK	製図 DRN
中村	西谷 岡戸	浅沼 2020. 3. 3

S16R2 JOINT DETAIL

三菱重工エンジン＆ターボチャージャ株式会社
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

図面番号 DRAWING No. 37896-01086 △

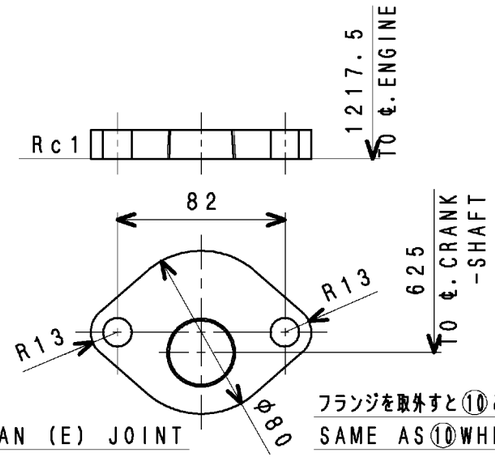
1/2

③新図 4旧引図	サイズ A3	①組立図	2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他（購入品）

出図 相模原 2020 03.05

M/C

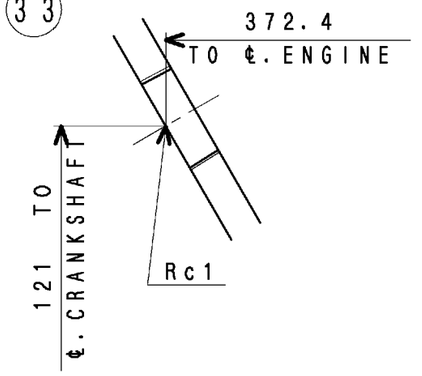
35



OIL PAN (E) JOINT

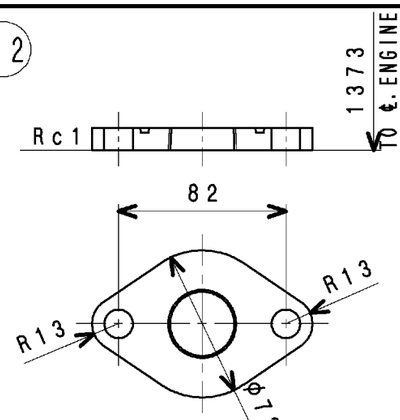
フランジを取外すと⑩と同形状
SAME AS⑩WHEN FLANGE IS REMOVED

33



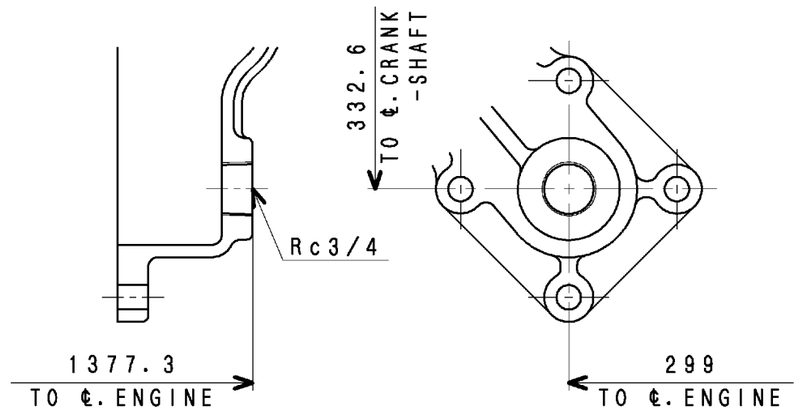
WATER HEATER OUTLET JOINT

32



WATER HEATER INLET JOINT

36



OIL INLET JOINT(FROM OIL PRIMING PUMP)

MHIET CONFIDENTIAL

CHG	EO-NO	DATE	CHK	3rd ANGLE PROJECTION
				尺度 SCALE

認可 APPD	検図 CHK	製図 DRN
中村	西谷 岡戸	浅沼
		2020. 3. 3

S16R2 JOINT DETAIL

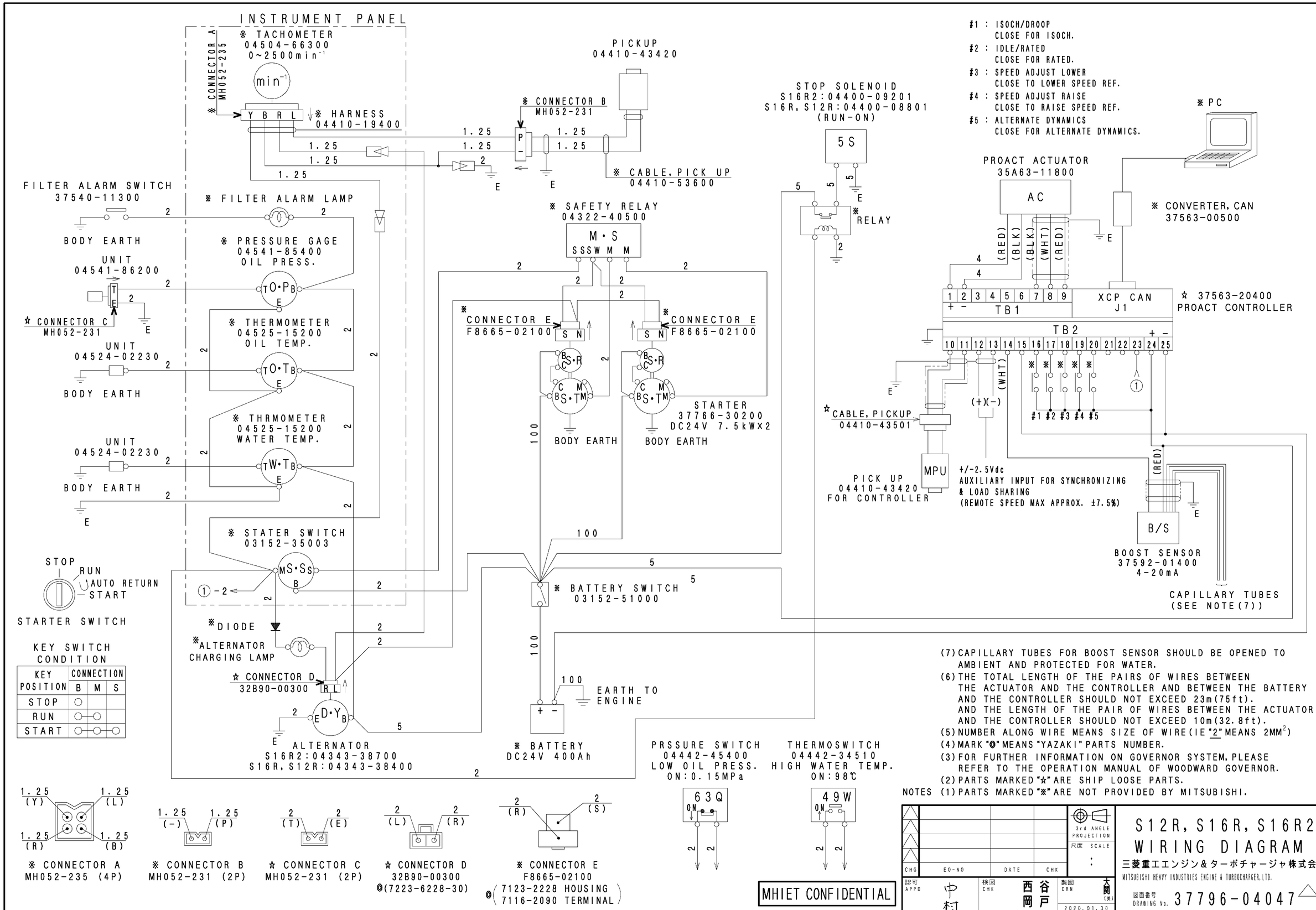
三菱重工エンジン＆ターボチャージャ株式会社
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER,LTD.

図面番号 DRAWING No. 37896-01086 △ 2/2

③新 図 ④旧引図	サイズ A3	①組立図	2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他（購入品）

出図
相模原
2020
03.05

M/C



(7) CAPILLARY TUBES FOR BOOST SENSOR SHOULD BE OPENED TO AMBIENT AND PROTECTED FOR WATER.
(6) THE TOTAL LENGTH OF THE PAIRS OF WIRES BETWEEN THE ACTUATOR AND THE CONTROLLER AND BETWEEN THE BATTERY AND THE CONTROLLER SHOULD NOT EXCEED 23m(75ft). AND THE LENGTH OF THE PAIR OF WIRES BETWEEN THE ACTUATOR AND THE CONTROLLER SHOULD NOT EXCEED 10m(32.8ft).
(5) NUMBER ALONG WIRE MEANS SIZE OF WIRE(IE "2" MEANS 2MM²)
(4) MARK "◎" MEANS "YAZAKI" PARTS NUMBER.
(3) FOR FURTHER INFORMATION ON GOVERNOR SYSTEM, PLEASE REFER TO THE OPERATION MANUAL OF WOODWARD GOVERNOR.
(2) PARTS MARKED "☆" ARE SHIP LOOSE PARTS.
NOTES (1) PARTS MARKED "※" ARE NOT PROVIDED BY MITSUBISHI.

MHIET CONFIDENTIAL

3rd ANGLE PROJECTION
尺度 SCALE :
CHG | EO-NO | DATE | CHK
認可 APPD 中村
検図 CHK 西谷 岡戸
製図 DRN 大関(美) 2020.01.30

S12R, S16R, S16R2 WIRING DIAGRAM

三菱重工エンジン&ターボチャージャ株式会社
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

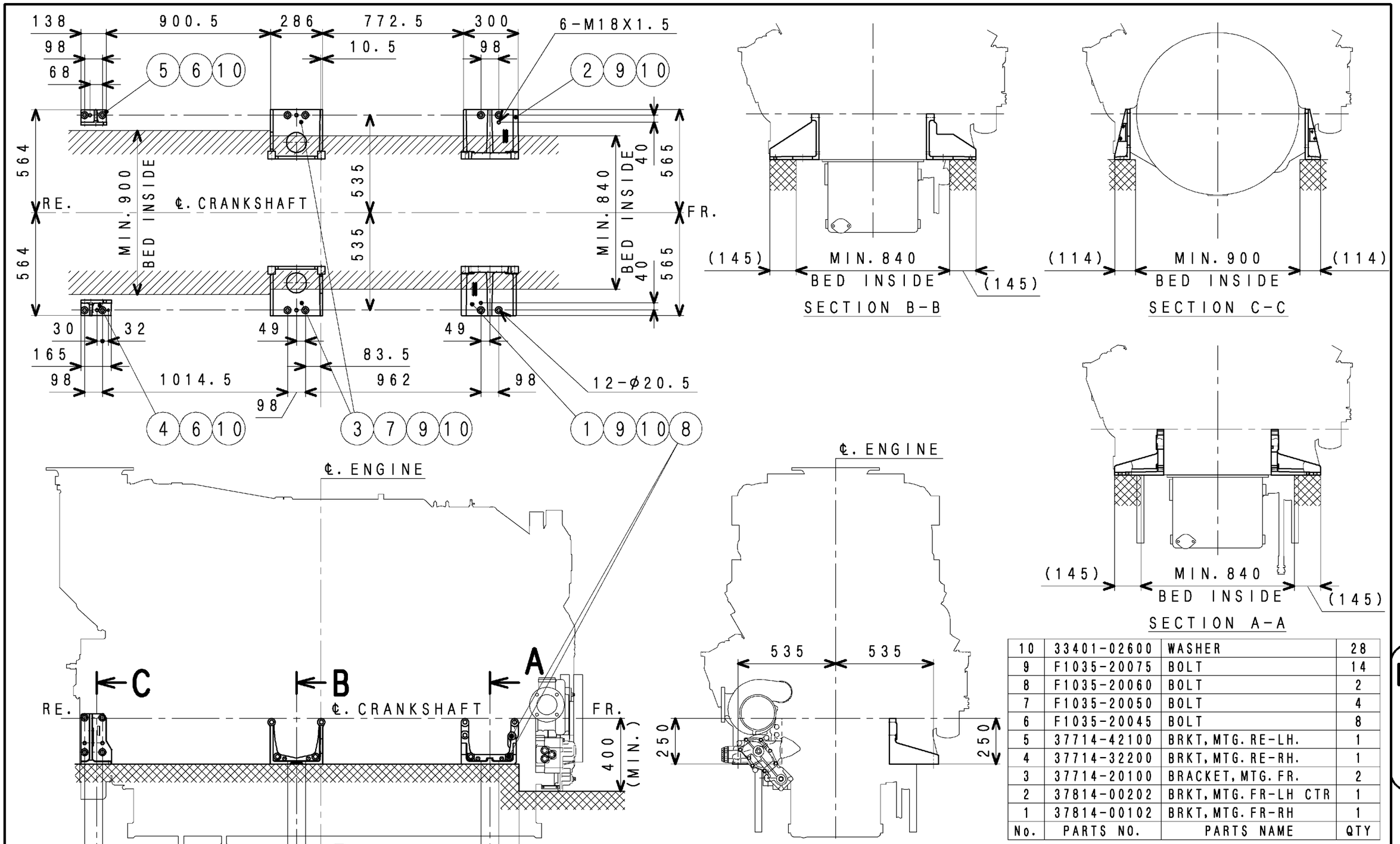
図面番号 DRAWING No. 37796-04047 △

③新図 ④旧引図 | サイズ A 2 | ①組立図 | 2 鋳鍛造単品 3 板金溶接品 4 組立品 5 切削品 6 その他(購入品)

出図 相模原 2020 02.03

M/C

MGS-CN



No.	PARTS NO.	PARTS NAME	QTY
10	33401-02600	WASHER	28
9	F1035-20075	BOLT	14
8	F1035-20060	BOLT	2
7	F1035-20050	BOLT	4
6	F1035-20045	BOLT	8
5	37714-42100	BRKT, MTG. RE-LH.	1
4	37714-32200	BRKT, MTG. RE-RH.	1
3	37714-20100	BRACKET, MTG. FR.	2
2	37814-00202	BRKT, MTG. FR-LH CTR	1
1	37814-00102	BRKT, MTG. FR-RH	1

NOTE (1) DRAWING SHOWS MOUNTING (HEIGHT OF CENTER: C=250).

注記 (1) 本図は、マウンチングセンターハイトC=250用である。

CHG	EO-NO	DATE	CHK
1	4590-J632	'16. 3. 2	市川
	(3780-C555)	'10.11.22	佐藤

3rd ANGLE PROJECTION
尺度 SCALE

認可 APPD 中村
検図 CHK 川嶋 小倉 坂本
製図 DRN 山崎 佐藤(貴) 2010.11.22

S16R2 MOUNTING

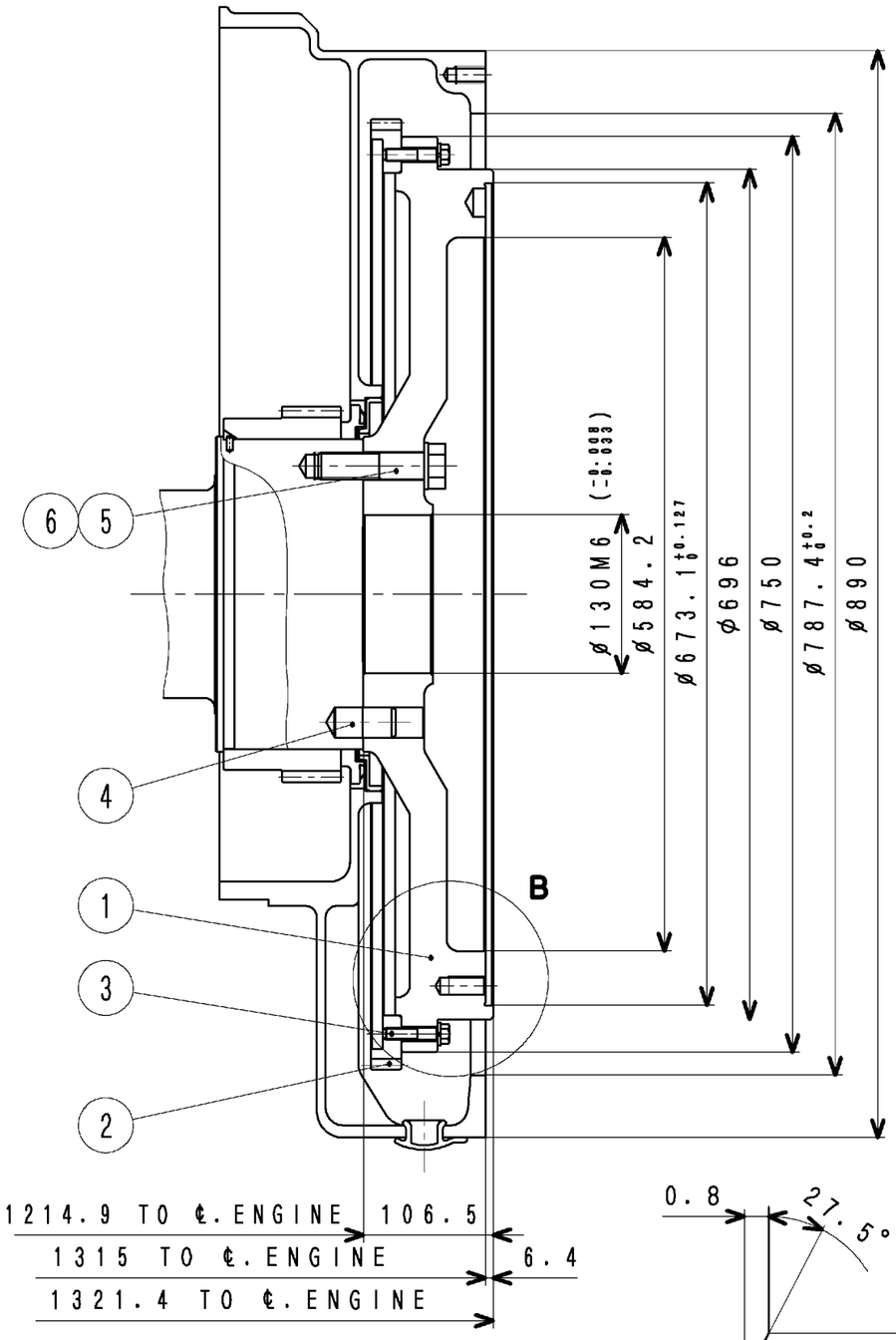
三菱重工業株式会社
MITSUBISHI HEAVY INDUSTRIES, LTD.

図面番号 DRAWING No. 37896-14081 ①

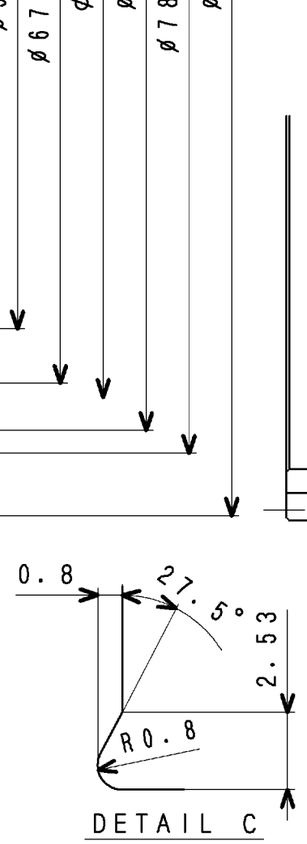
③ 新図 ④ 旧引図 | サイズ A3 | ① 組立図 | 2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他(購入品)

旧引 MHI 相模原 2016 3.7

M/C

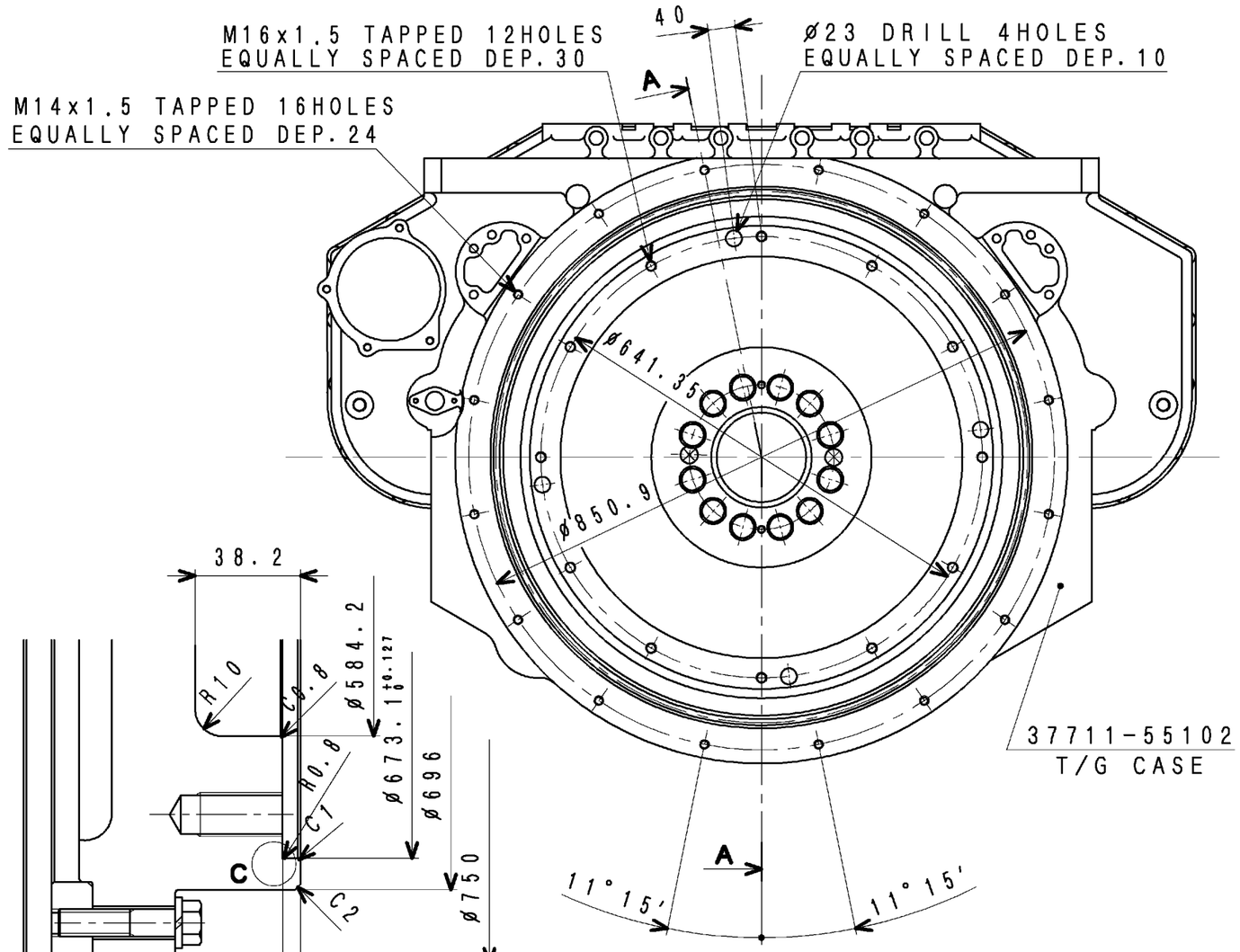


SECTION A-A



DETAIL C

DETAIL B



37711-55102
T/G CASE

No.	PARTS NO.	PARTS NAME		Q'TY
6	33707-11701	WASHER		12
5	F1035-22090	BOLT		12
4	37820-04600	PIN, DOWEL		2
3	F1805-10045	BOLT	37721-00061 F/W ASSY.	12
2	37721-20201	GEAR, RING		1
1	37721-00601	FLYWHEEL		1

MHI CONFIDENTIAL

CHG	EO-NO	DATE	CHK
3	4590-G654	'11. 3.28	斉藤
2	4590-D678	'07.10. 4	斉藤
1	4591-0261	'03. 9.12	福田

3rd ANGLE PROJECTION
尺度 SCALE :

認可 APPD 橋口
検図 CHK 竹谷 福田
製図 DRN 谷戸 斎藤
1997. 8. 7

注記
（2）本図のフライホイールは、部番37721-00061 F/W ASSY.に含まれる。
（1）本図は、標準フライホイール&ハウジングであり、SAEJ620c21inフライホイール及びSAE617b NO.00フライホイールハウジングに準拠する。

S16R
FLYWHEEL & HOUSING

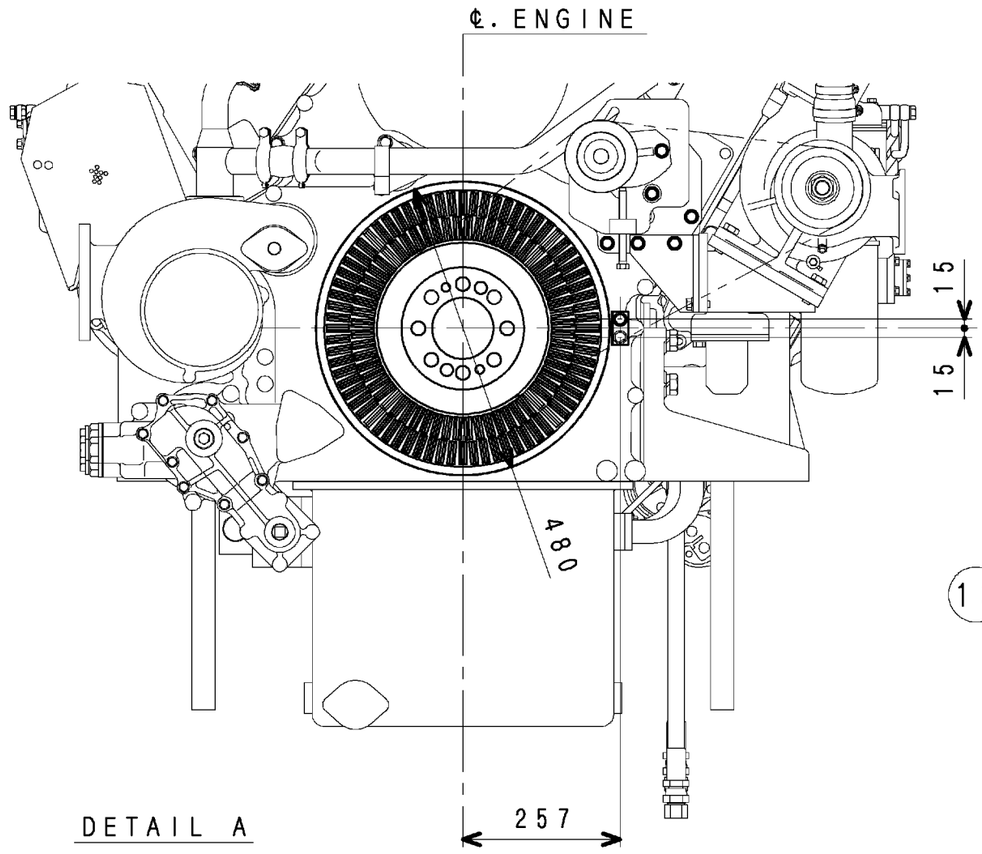
三菱重工業株式会社 汎用機・特車事業本部
MITSUBISHI HEAVY INDUSTRIES,LTD. GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS.

図面番号 DRAWING No. 37896-21001 3

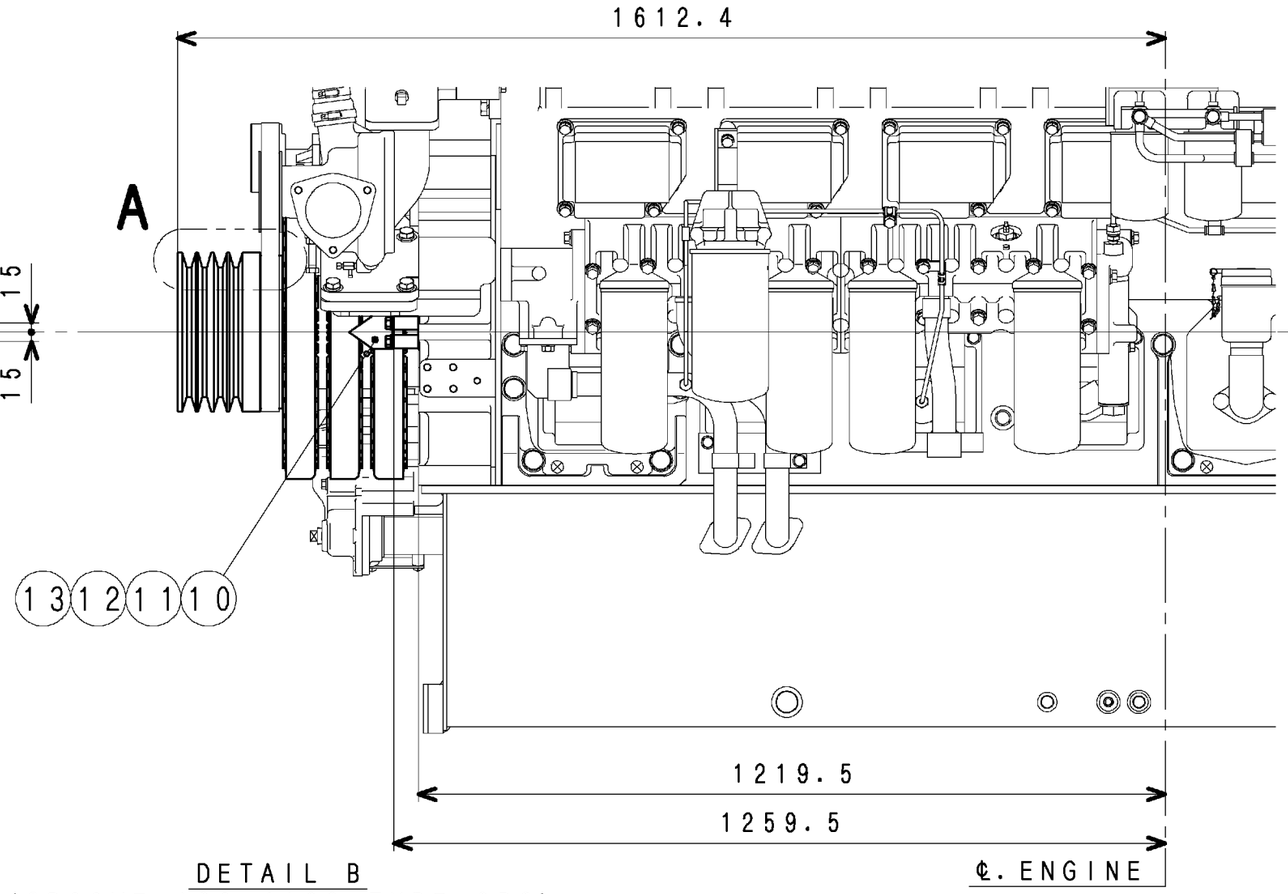
3 新図 4 旧引図 | サイズ A3 | 1 組立図 | 2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他（購入品）

旧引 汎特 2011 12.12

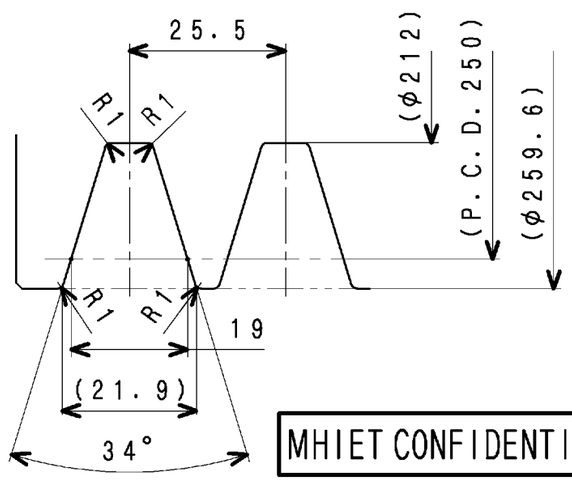
FULL-CAD

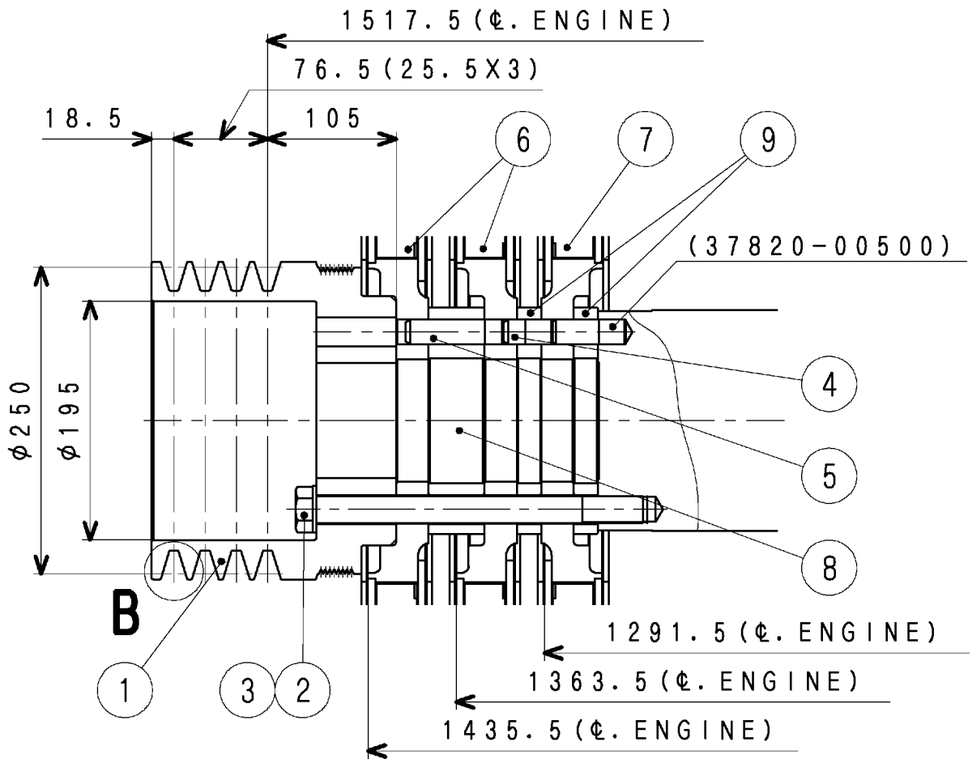


DETAIL A



DETAIL B
(GROOVE: ISO 4183 TYPE SPC)





NO.	PARTS NO.	PARTS NAME	Q'TY
13	45713-62200	BOSS	2
12	F2515-12000	WASHER, SPRING	2
11	F1035-12060	BOLT	2
10	37722-10800	POINTER	1
9	37722-10502	SPACER, DAMPER 20MM	2
8	37822-01200	SPACER, DAMPER	1
7	37822-15500	DAMPER, RE. W/FIN	1
6	37822-15400	DAMPER, FR. W/FIN	2
5	37822-11400	PIN, DOWEL, D20, L84	2
4	F2846-20000	PIN, DOWEL	2
3	33707-11701	WASHER	8
2	05978-22270	BOLT	8
1	37820-25600	PULLEY, CRANKSHAFT	1

MHIET CONFIDENTIAL

CHG	EO-NO	DATE	CHK
2	4590-J908	'16.11.5	谷戸
1	3780-C912	'11.12.14	笹生

3rd ANGLE PROJECTION
尺度 SCALE

認可 APPD	検図 CHK	製図 DRN
橋口	川小坂嶋倉本	山佐藤崎(貴)
		2010.11.22

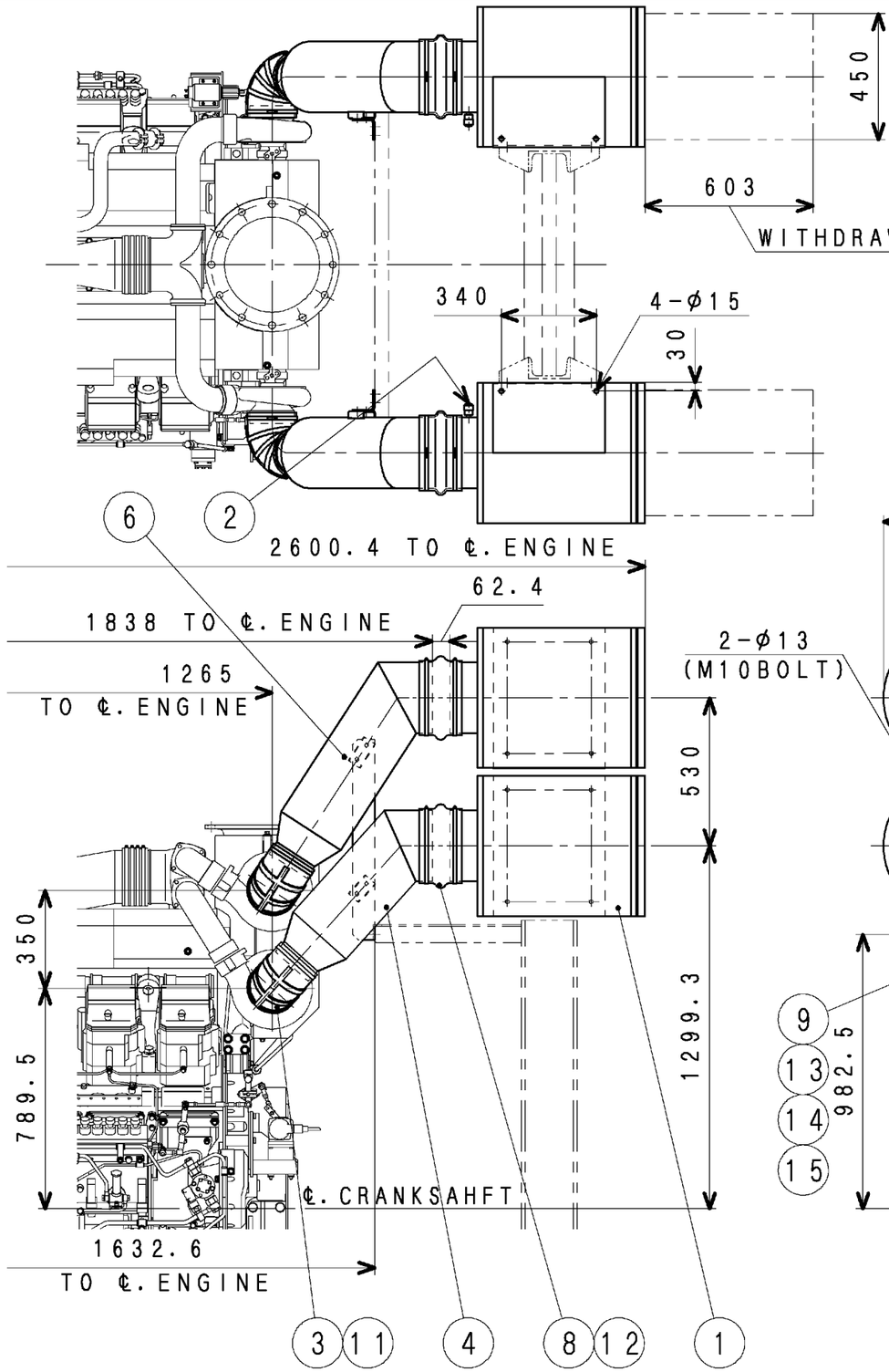
S16R2
FRONT ACCESSORY DRIVE
三菱重工エンジン＆ターボチャージャ株式会社
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

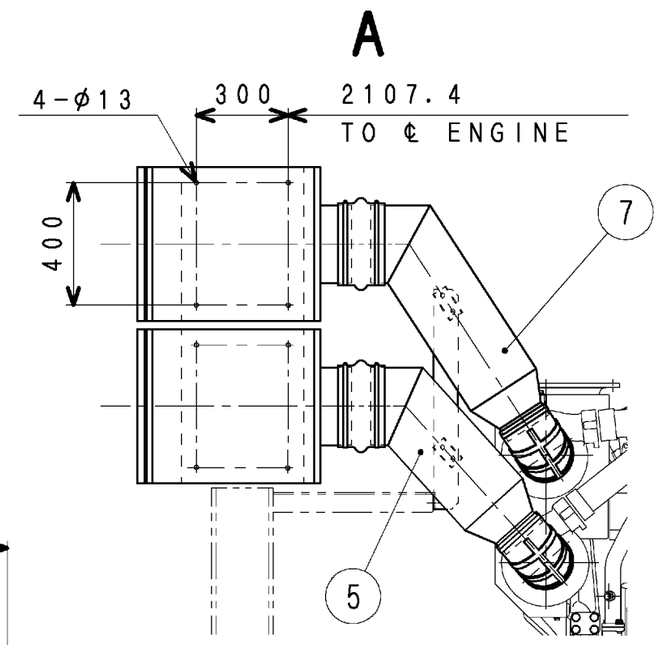
図面番号 DRAWING No. 37896-25081 2

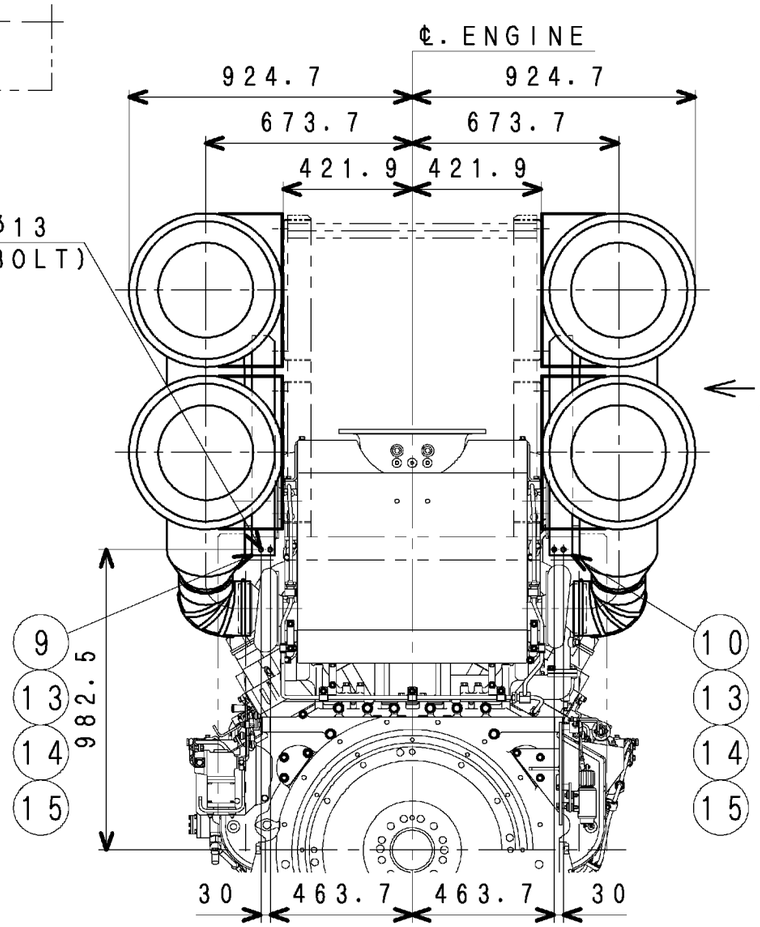
3 新図 ④ 旧引図 | サイズ A3 | ① 組立図 | 2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他（購入品）

旧引
相模原
2016
11.14

M/C







NOTE (1)THE ☆ MARKED PARTS ARE LOOSE SUPPLY.

	No.	PARTS NO.	PARTS NAME	Q'TY
☆	15	F2515-10000	WASHER, SPRING	8
☆	14	F2500-10000	WASHER, PLANE	8
☆	13	F1035-10020	BOLT	8
☆	12	05317-52801	CLAMP	8
☆	11	05317-52001	CLAMP	8
☆	10	37731-04200	STAY, AIR PIPE(R.H)	1
☆	9	37731-04100	STAY, AIR PIPE(L.H)	1
☆	8	47220-47300	HOSE, RUBBER	4
☆	7	37731-04600	PIPE, AIR B(R.H)	1
☆	6	37731-04500	PIPE, AIR B(L.H)	1
☆	5	37731-04400	PIPE, AIR A(R.H)	1
☆	4	37731-04300	PIPE, AIR A(L.H)	1
☆	3	47220-47600	HOSE, ELBOW	4
☆	2	47220-34401	INDICATOR 6.2kPa	4
☆	1	47220-47703	CLEANER, AIR	4

（２）本図は、３７８９６－３０３８１に対し、符号④～⑦，⑨及び⑩の板金部品に完成塗装を実施したものである。

注記 （１）本図のエアクリーナは、ドナルドソン製ＥＧＢ－２０型である。

MHIET CONFIDENTIAL

CHG	EO-NO	DATE	CHK

3rd ANGLE PROJECTION

尺度 SCALE ：

認可 APPD	検図 CHK	製図 DRN
中村	西岡	谷長戸沼
		2017. 6. 21

S16R2

AIR CLEANER

三菱重工エンジン＆ターボチャージャ株式会社

MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

図面番号 DRAWING No. 37896-30382 △

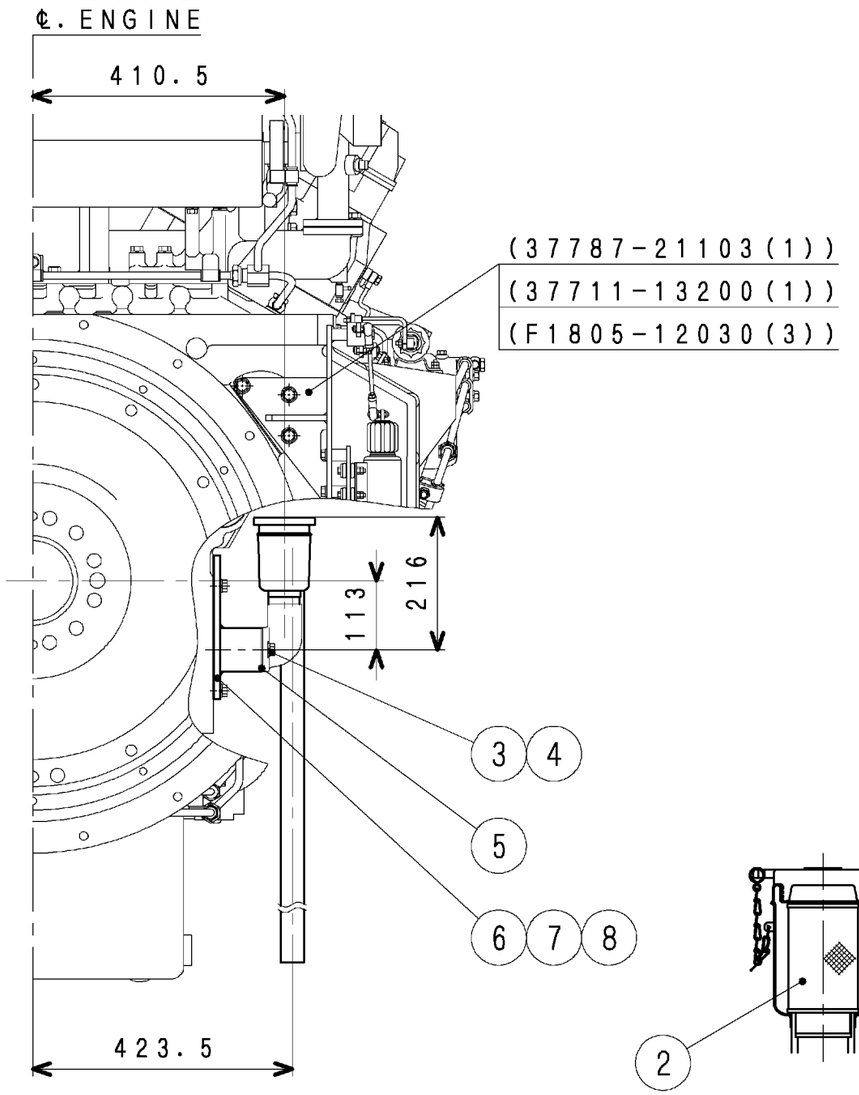
③新 図 4 旧引図 | サイズ A 3 | ① 組立図 | 2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他（購入品）

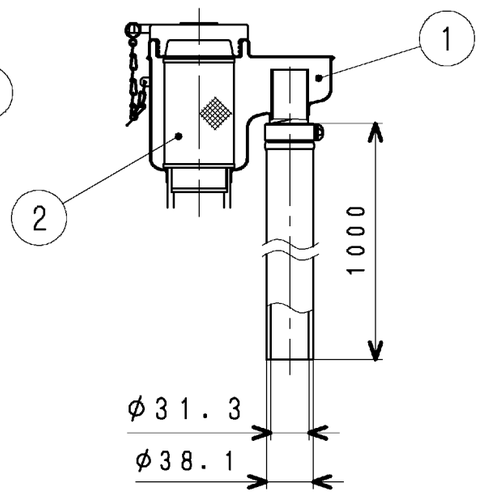
出図

相模原

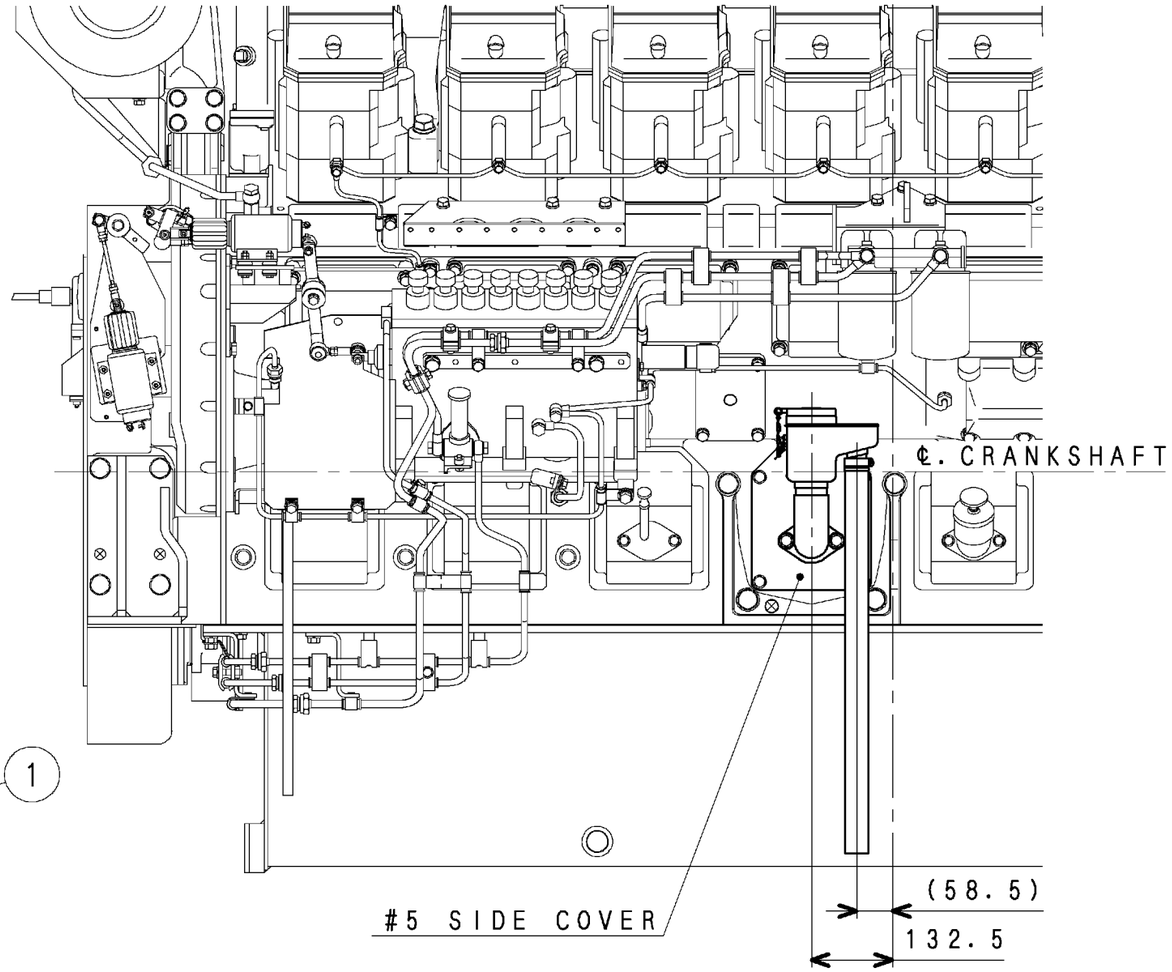
2017 6.23

M/C





DETAIL OF BREATHER



右側面図

RIGHT SIDE VIEW

No.	PARTS NO.	PARTS NAME	QTY
8	F1805-12030	BOLT WASHER ASSY	4
7	37707-17200	PACKING, SIDE COVER	1
6	37807-07301	COVER, SIDE BREATHER	1
5	35B36-02900	GASKET, OIL	1
4	F2515-12000	WASHER, SPRING	2
3	F1035-12030	BOLT	2
2	32542-11300	ELEMENT, BREATHER	1
1	37843-00020	BREATHER ASSY.	1

出図
相模原
2018
06.18

M/C

MHIET CONFIDENTIAL

NOTE (2) THIS DRAWING IS THE SAME AS THAT OF 37896-43081 EXCEPT NO.1, 9 BREATHER ASSY(HOSE LENGTH L=1000).
(1) DRAWING SHOWS 2 BREATHERS SPECIFICATION.
(#5, #13 SIDE COVER:2PC)

注記 (2) 本図は、37896-43081に対して符号①⑨BREATHER ASSY(ホース長さL=1000)のみ異なる。
(1) 本図は、ブリーザ2個仕様である。(#5, #13サイドカバー:2個)

CHG	EO-NO	DATE	CHK

3rd ANGLE PROJECTION
尺度 SCALE

認可 APPD	検図 CHK	製図 DRN
中村	西岡	谷戸
		2018. 6.13

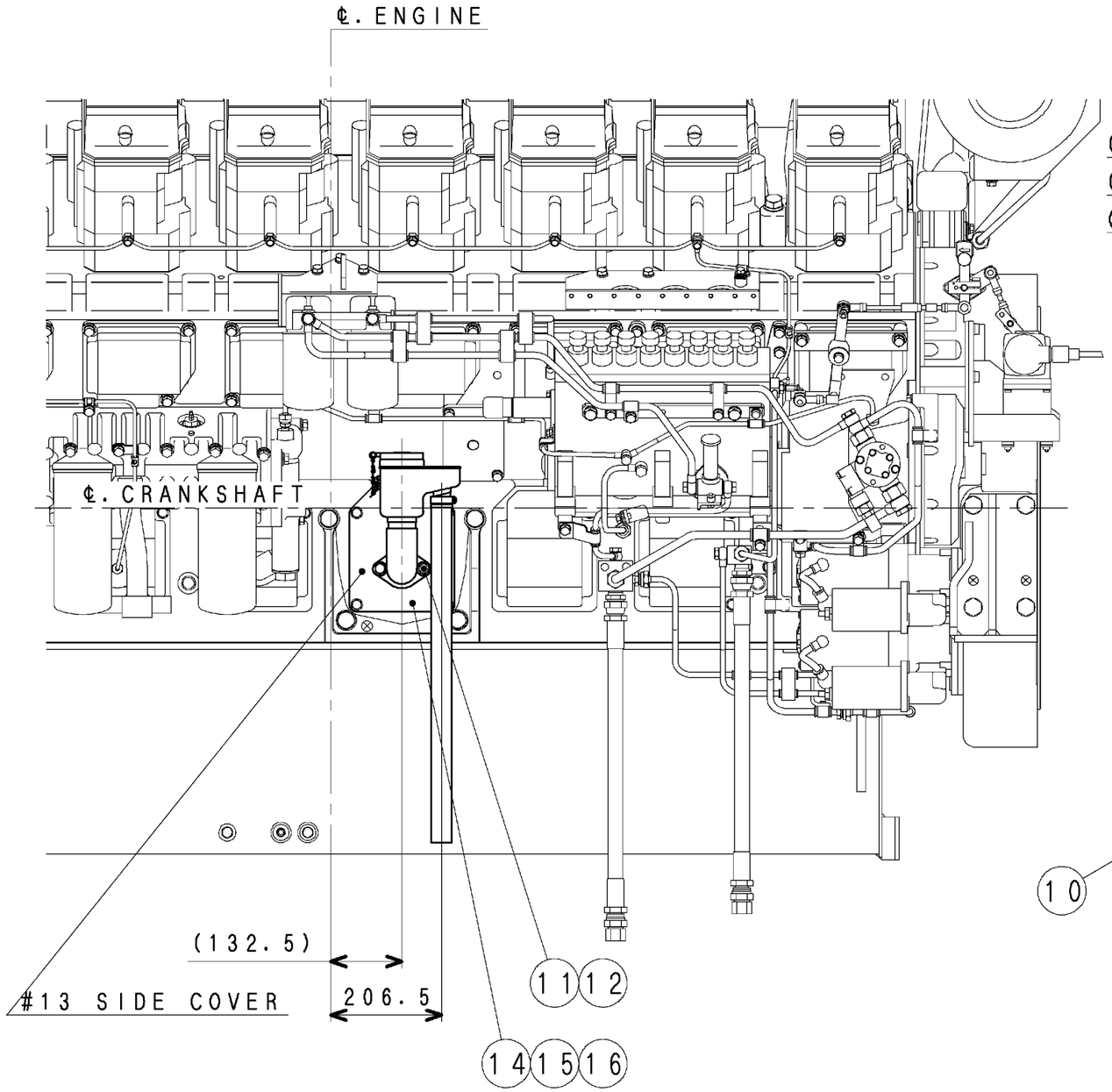
S16R2
BREATHER

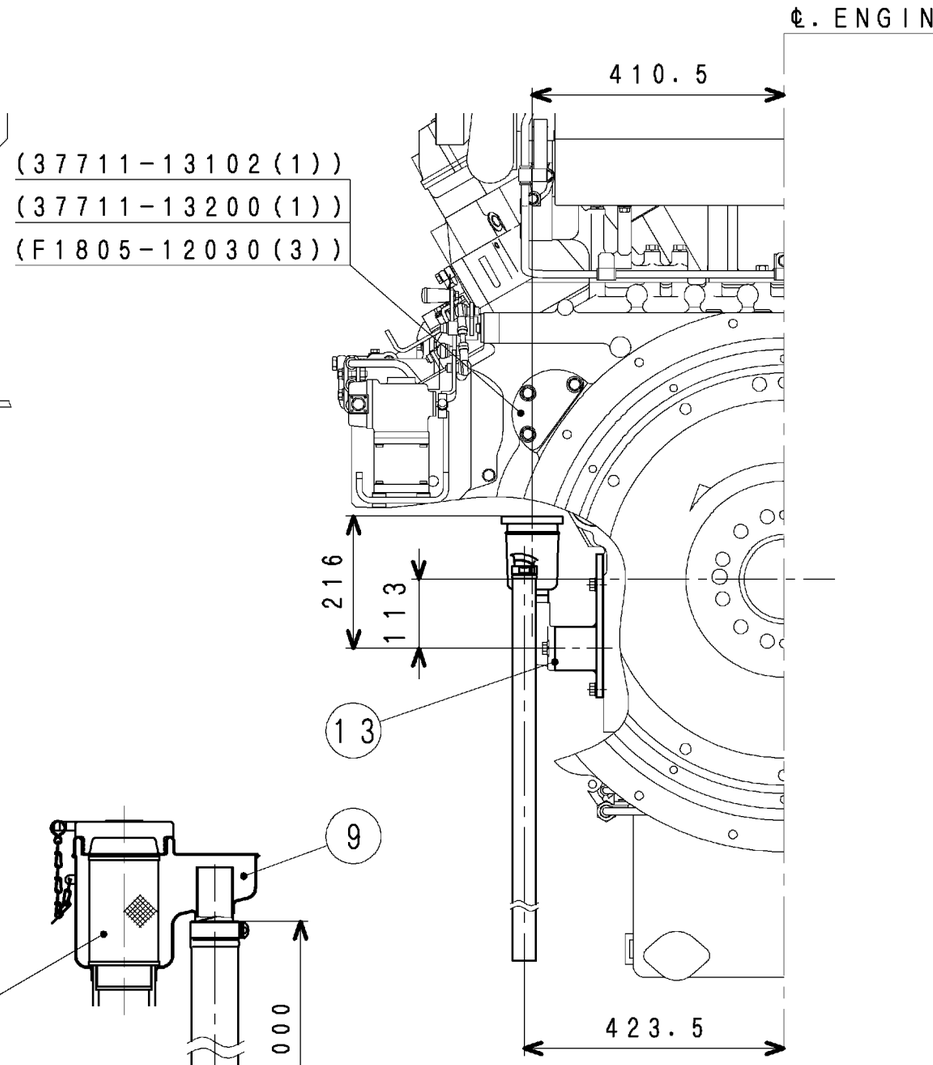
三菱重工エンジン&ターボチャージャ株式会社
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

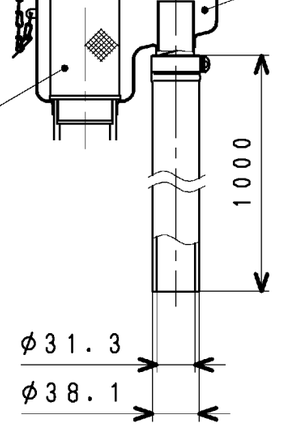
図面番号 DRAWING No. 37896-43082

1/2

③新 図 4 旧引図	サイズ A3	① 組立図	2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他(購入品)







DETAIL OF BREATHER

No.	PARTS NO.	PARTS NAME	QTY
16	F1805-12030	BOLT WASHER ASSY	4
15	37707-17200	PACKING, SIDE COVER	1
14	37807-07301	COVER, SIDE BREATHER	1
13	35B36-02900	GASKET, OIL	1
12	F2515-12000	WASHER, SPRING	2
11	F1035-12030	BOLT	2
10	32542-11300	ELEMENT, BREATHER	1
9	37843-00020	BREATHER ASSY.	1

左側面図

LEFT SIDE VIEW

MHIET CONFIDENTIAL

CHG	EO-NO	DATE	CHK

3rd ANGLE PROJECTION

尺度 SCALE

認可 APPD	検図 CHK	製図 DRN
中村	西岡	谷戸
		2018. 6.13

S16R2
BREATHER

三菱重工エンジン＆ターボチャージャ株式会社
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

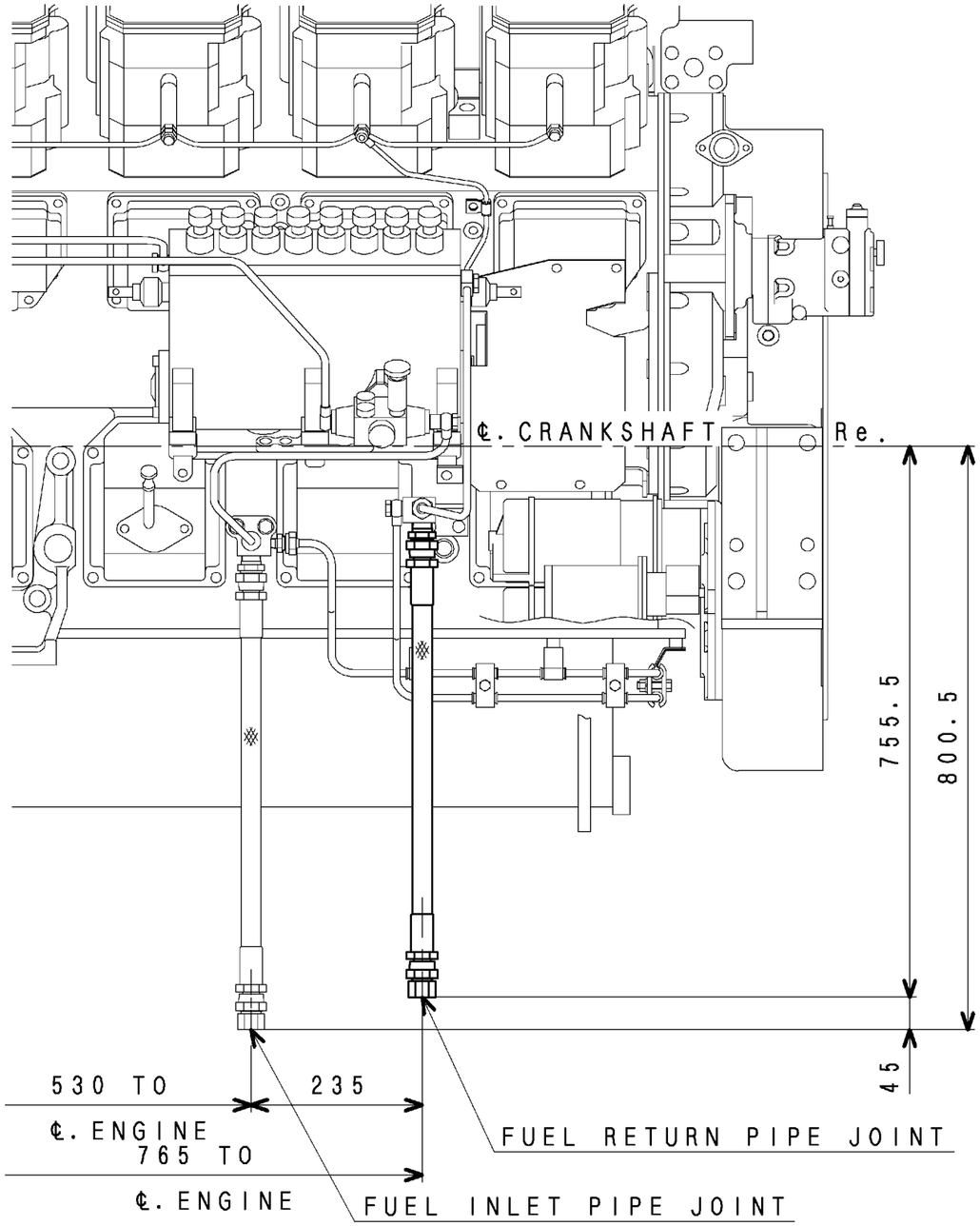
図面番号 DRAWING No. 37896-43082 △

2/2

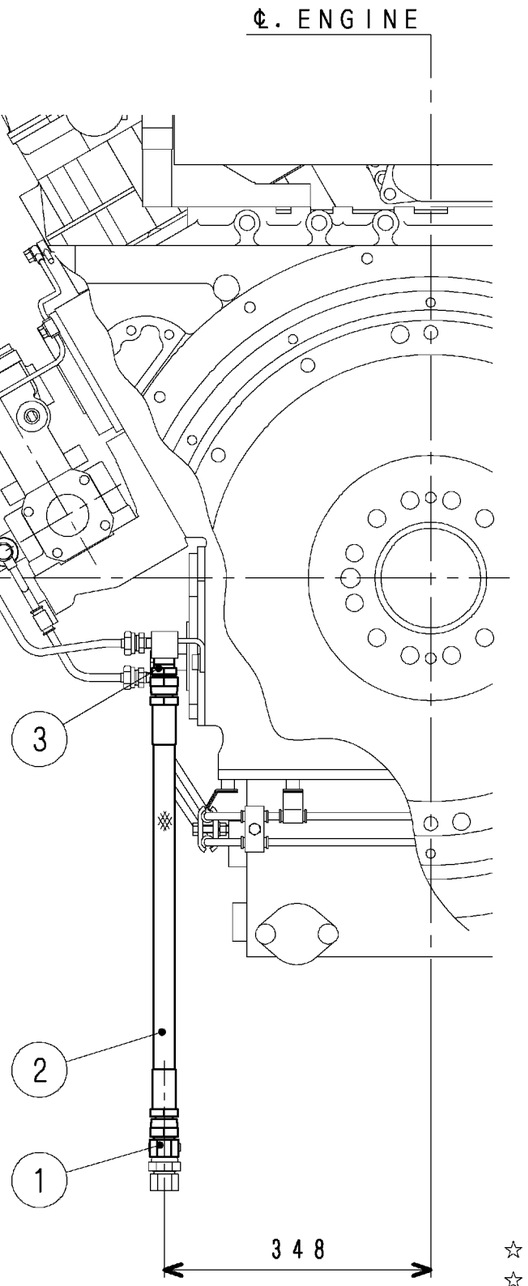
③新 図 ④旧引図 | サイズ A3 | ①組立図 | 2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他（購入品）

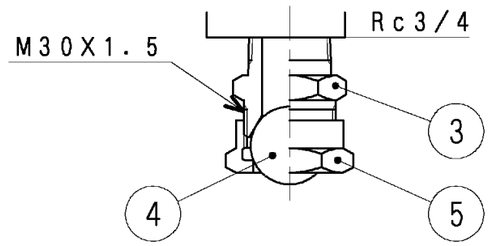
出図
相模原
2018
06.18

M/C

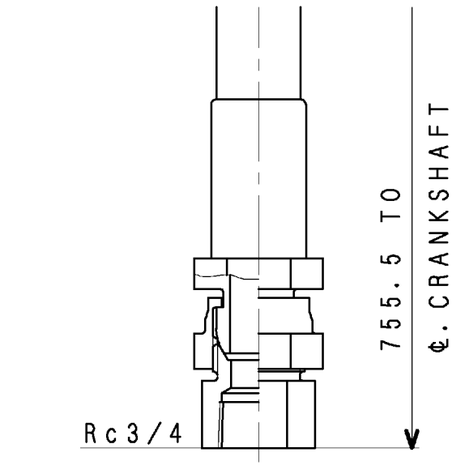


L. H.





FUEL RETURN PIPE JOINT



FUEL RETURN PIPE JOINT

NOTE (1) THE ☆ MARKED PARTS ARE LOOSE SUPPLY.

	NO.	PARTS NO.	PARTS NAME	Q'TY
	5	F4521-20000	NUT, UNION	1
	4	F8000-32000	STEEL BALL, BEARING	1
	3	F4540-20000	CONNECTOR	1
☆	2	45950-51700	PIPE, FLEXIBLE	1
☆	1	45950-11300	CONNECTOR	1

注記 (1) 本図は、図番37896-61305に対しフレキホース及び先端コネクタを別送品としたものである。
(2) 本図の符号 ④⑤ は、燃料戻り口盲栓である。(エンジン出荷状態)

CHG	EO-NO	DATE	CHK

3rd ANGLE PROJECTION
尺度 SCALE :

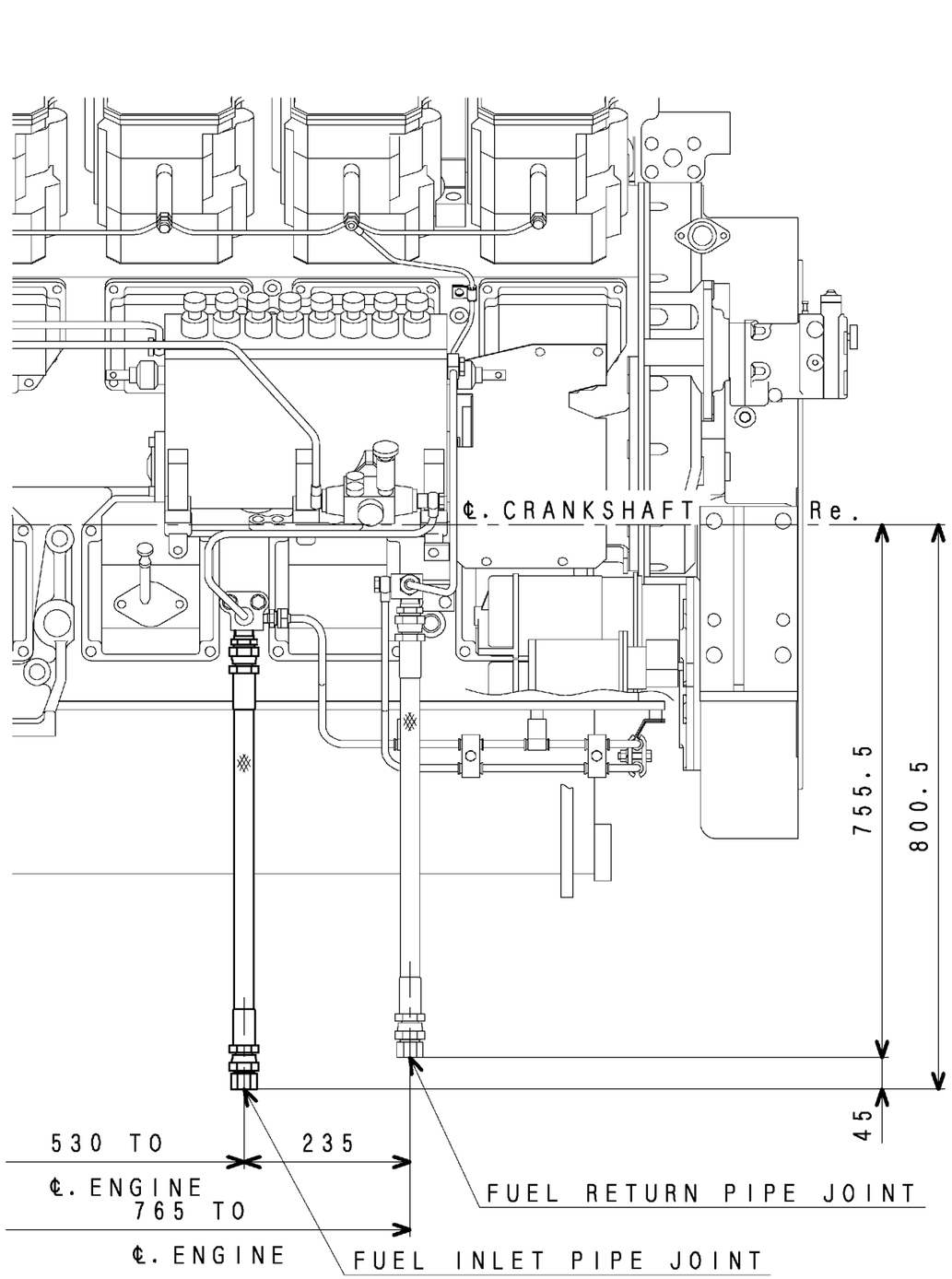
認可 APPD	検図 CHK	製図 DRN
橋口	三谷 上戸	浅沼 2008.12.10

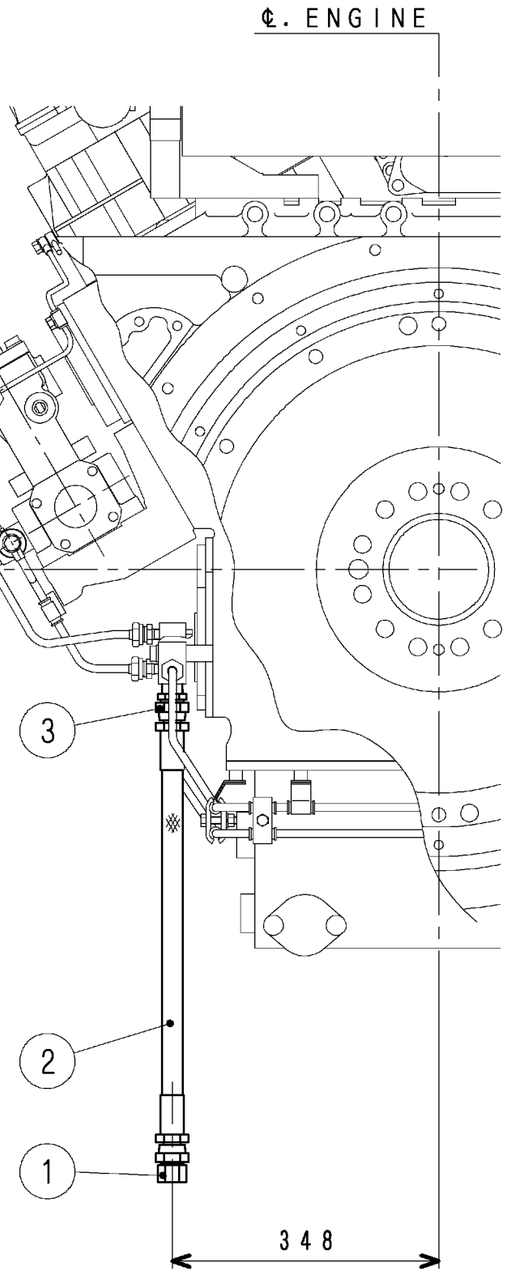
S16R
FUEL RETURN PIPING
三菱重工業株式会社 汎用機・特車事業本部
MITSUBISHI HEAVY INDUSTRIES, LTD. GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS.
図面番号 DRAWING No. 37896-61312 △

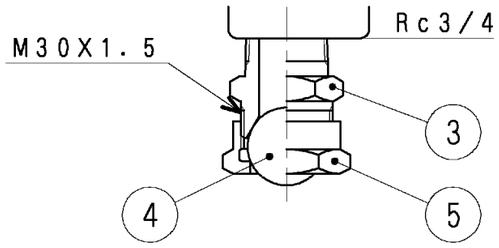
③新 図 4 旧引図 | サイズ A3 | ① 組立図 | 2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他(購入品)

出図 三菱 汎特 2008 12.12

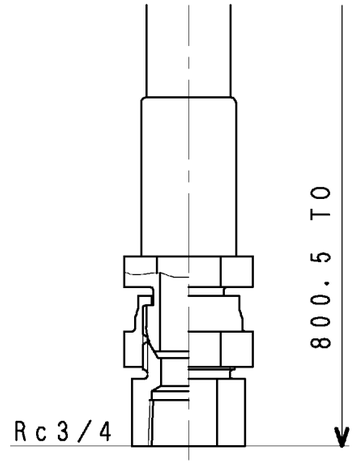
FULL-CAD







DETAIL OF INLET PIPE JOINT



DETAIL OF INLET PIPE JOINT

NOTE (1) THE ☆ MARKED PARTS ARE LOOSE SUPPLY.

	NO.	PARTS NO.	PARTS NAME	Q'TY
	5	F4521-20000	NUT, UNION	1
	4	F8000-32000	STEEL BALL, BEARING	1
	3	F4540-20000	CONNECTOR	1
☆	2	45950-51700	PIPE, FLEXIBLE	1
☆	1	45950-11300	CONNECTOR	1

注記 (1) 本図は、図番37896-62101に対しフレキホース及び先端コネクタを別送品としたものである。
(2) 本図の符号 ④⑤ は、燃料入口盲栓である。(エンジン出荷状態)

CHG	EO-NO	DATE	CHK

3rd ANGLE PROJECTION
尺度 SCALE :

認可 APPD	検図 CHK	製図 DRN
橋口	三谷 上戸	浅沼 2008.12.10

S16R
FUEL INLET PIPING

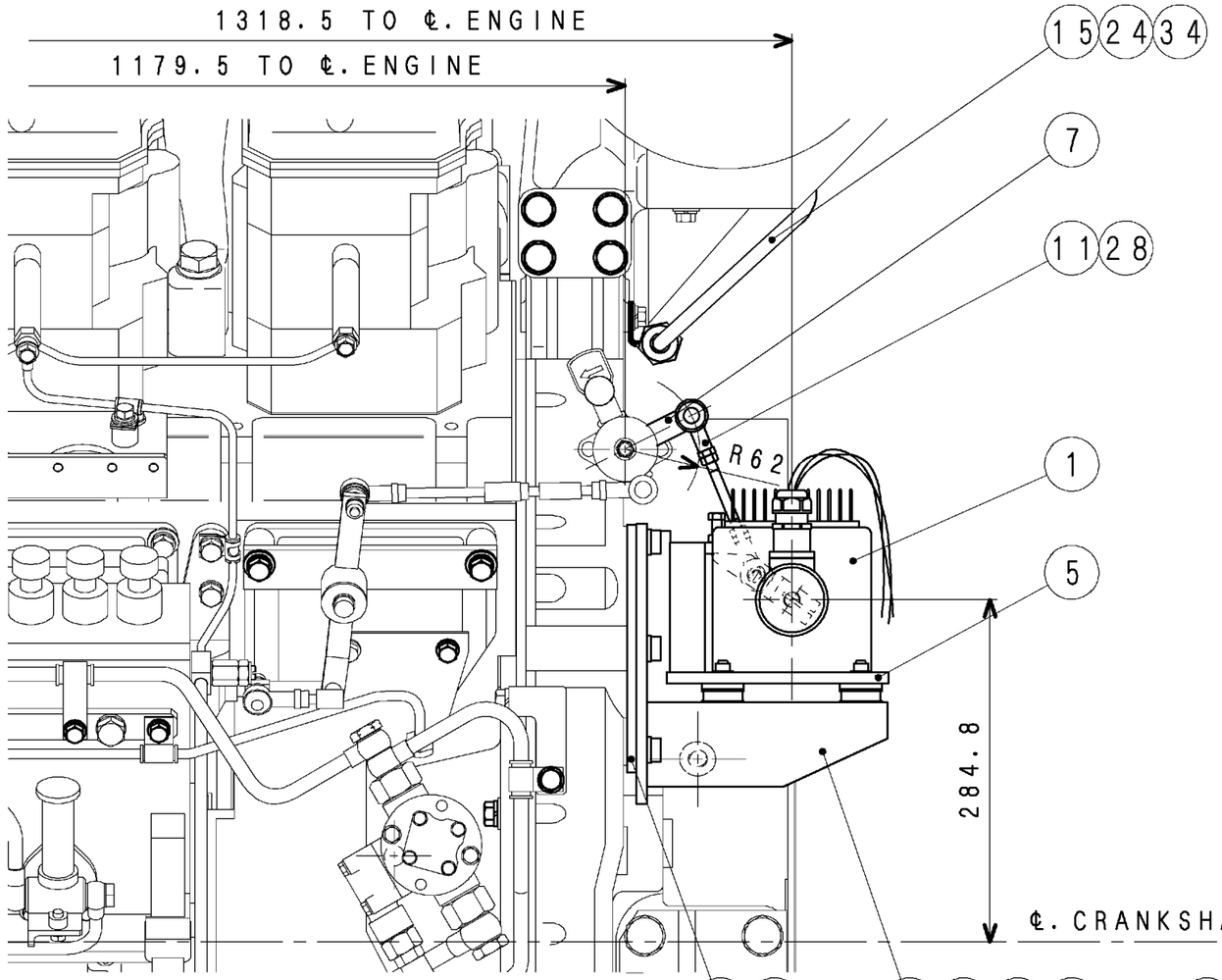
三菱重工業株式会社 汎用機・特車事業本部
MITSUBISHI HEAVY INDUSTRIES, LTD. GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS.

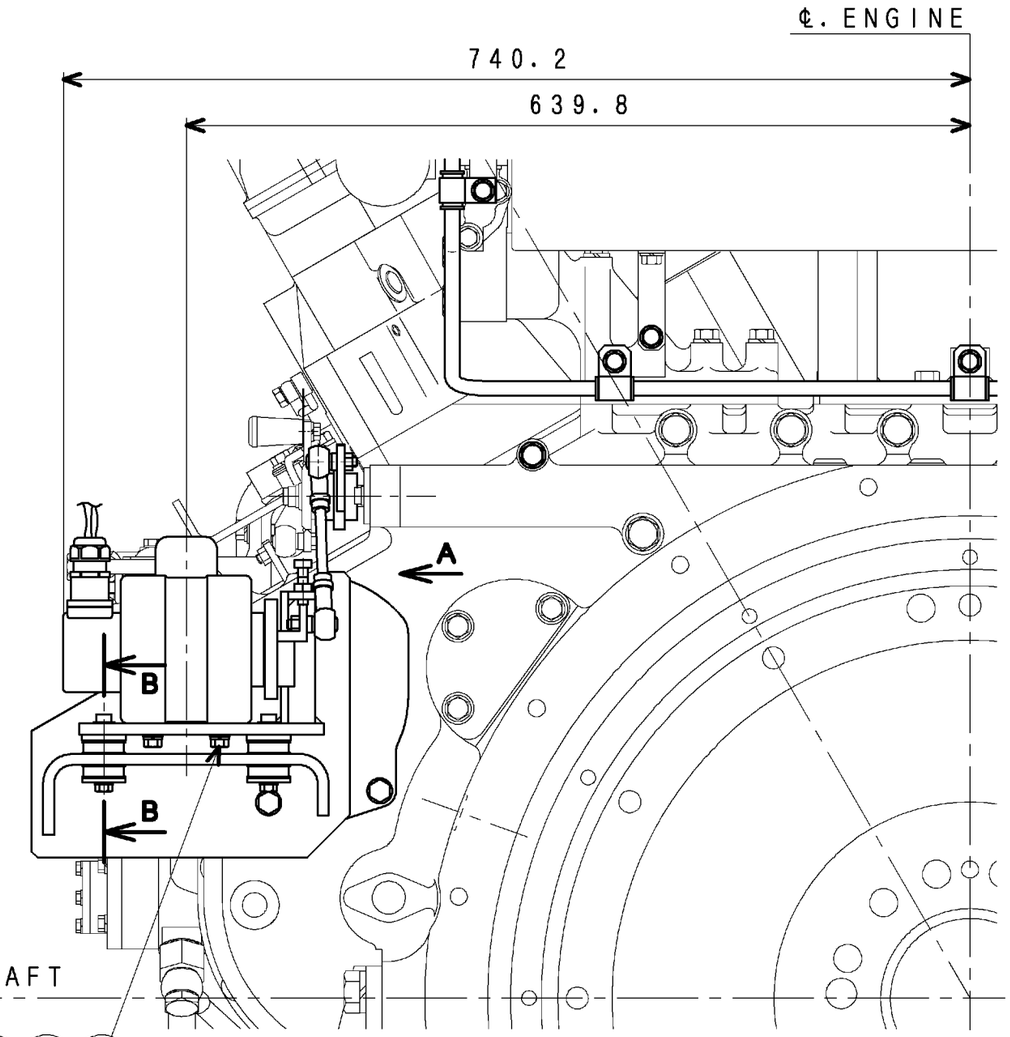
図面番号 DRAWING No. 37896-62112

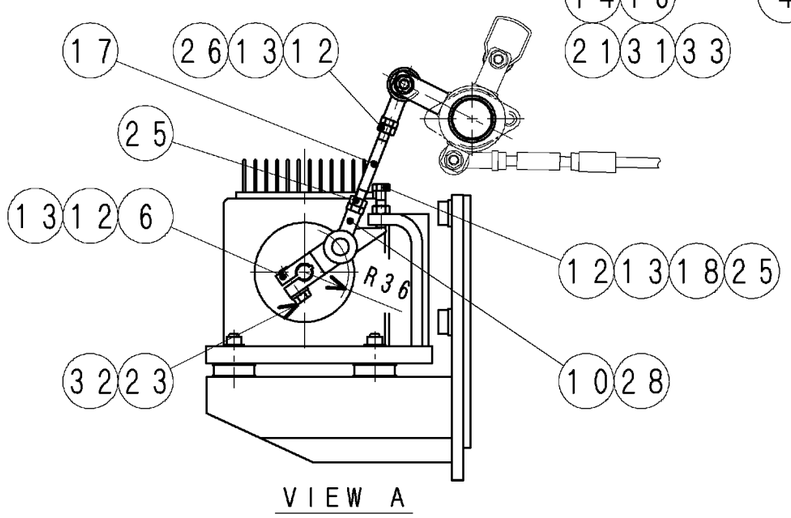
③新 図 ④旧引図 | サイズ A3 | ①組立図 | 2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他(購入品)

出図 三菱 汎特 2008 12.12

FULL-CAD







注記　（1）本図は、W／W製ＰＲＯＡＣＴⅡ　アクチュエータ装着図である。

MHIET CONFIDENTIAL

1	4590-J910	'16.11. 5	谷戸	
CHG	EO-NO	DATE	CHK	

3rd ANGLE PROJECTION

尺度 SCALE ：

認可 APPD	検図 CHK	製図 DRN
橋口	小倉 中村	谷戸
		2013. 6.13

S16R2

GOVERNOR

三菱重工エンジン＆ターボチャージャ株式会社

MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

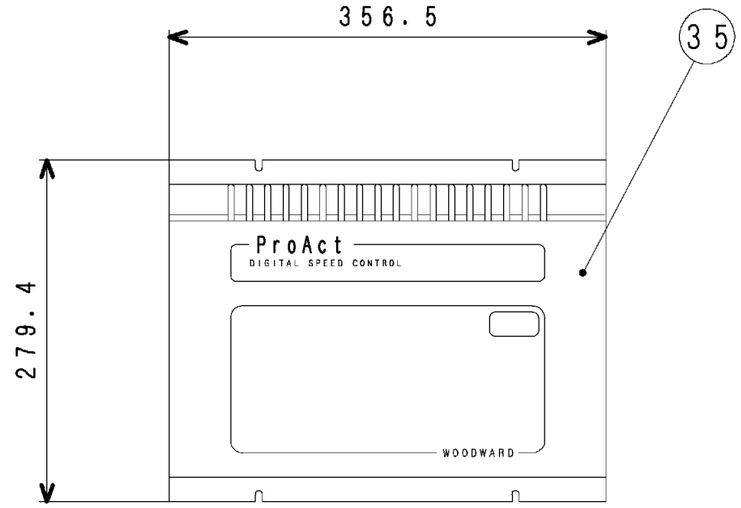
図面番号 DRAWING No. 37896-63082 ①

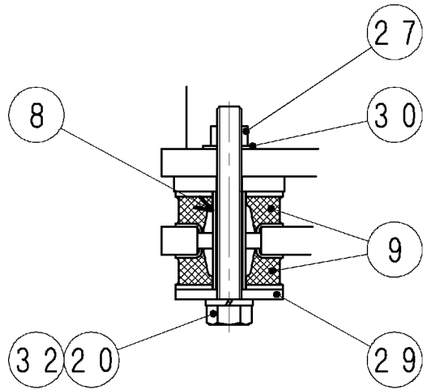
1/2

3 新図 ④旧引図	サイズ A 3	①組立図	2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他（購入品）

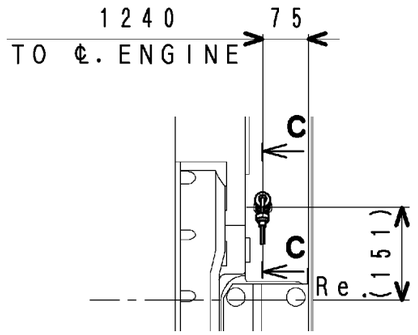
旧引
相模原
2016
11.14

M/C

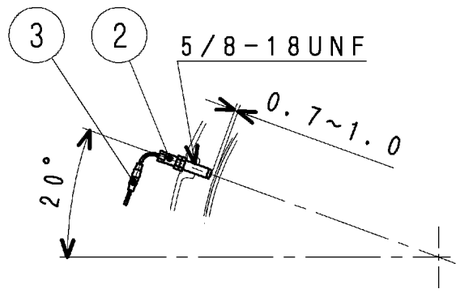




SECTION B-B



DETAIL OF PICK UP



SECTION C-C

NOTE (1) THE ☆ MARKED PARTS ARE LOOSE SUPPLY.

	NO.	PARTS NO.	PARTS NAME	Q'TY
☆	35	37563-10400	CONTROLLER, PROACT	1
	34	58034-04400	WASHER(T2)	2
	33	F2515-12000	WASHER, SPRING	4
	32	F2515-08000	WASHER, SPRING	9
	31	F2500-12000	WASHER, PLAIN	1
	30	F2500-08000	WASHER, PLAIN	8
	29	91262-07700	WASHER	4
	28	F2445-08000	NUT, SELF LOCKING	2
	27	37763-06400	NUT, LOCK M8	4
	26	37560-04900	NUT, LOCK L	1
	25	37560-04800	NUT, LOCK R	2
	24	F1825-10065	BOLT	1
	23	F1115-08025	BOLT	1
	22	F1035-12035	BOLT	3
	21	F1035-12030	BOLT	1
	20	F1035-08055	BOLT	4
	19	37763-05500	BOLT	4
	18	37561-18501	BOLT	1
	17	05902-08080	ROD	1
	16	05507-21450	O-RING	1
	15	37837-10200	PIPE, OIL L.H.T/C	1
	14	47500-39901	COVER	1
	13	48000-96600	SEAL	3
	12	35A61-19900	WIRE, SEAL	3
	11	35A61-38702	JOINT, BALL (M8-L)	1
	10	35A61-38602	JOINT, BALL (M8-R)	1
	9	08051-00200	RUBBER, CUSHION	8
	8	34A63-04500	SPACER	4
	7	37763-35900	LEVER, L.H., B	1
	6	37763-06601	LEVER, THROTTLE	1
	5	37763-35800	PLATE, PROACT	1
	4	37763-25700	BRACKET, PROACT	1
☆	3	04410-43500	CABLE, PICKUP	1
	2	04410-43411	PICKUP	1
	1	35A63-01800	ACTUATOR, PROACT	1

旧 51
相模原
2016
11.14

M/C

MHIET CONFIDENTIAL

1	4590-J910	'16.11.5	谷戸	
CHG	EO-NO	DATE	CHK	

3rd ANGLE PROJECTION
尺度 SCALE :

認可 APPD	検図 CHK	製図 DRN
橋口	小倉 中村	谷戸
		2013. 6.13

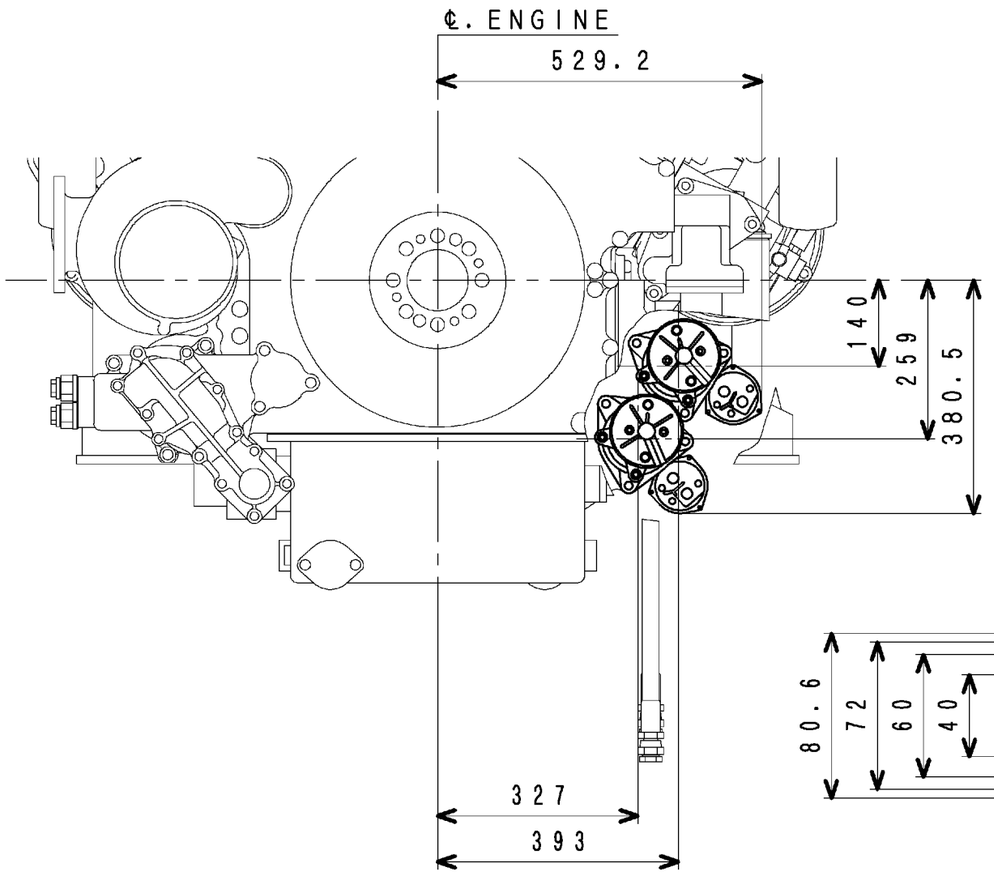
S16R2

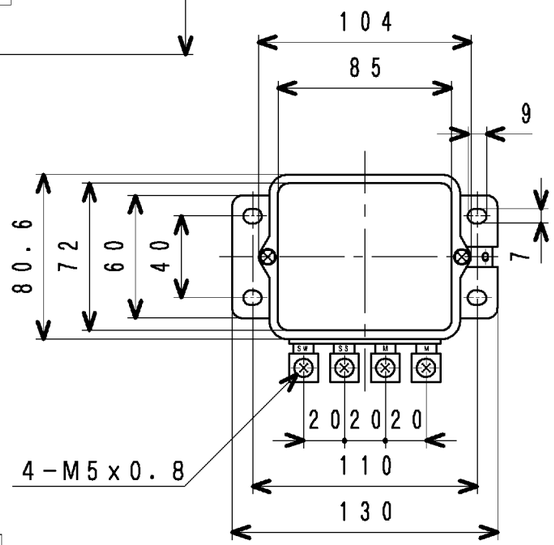
GOVERNOR

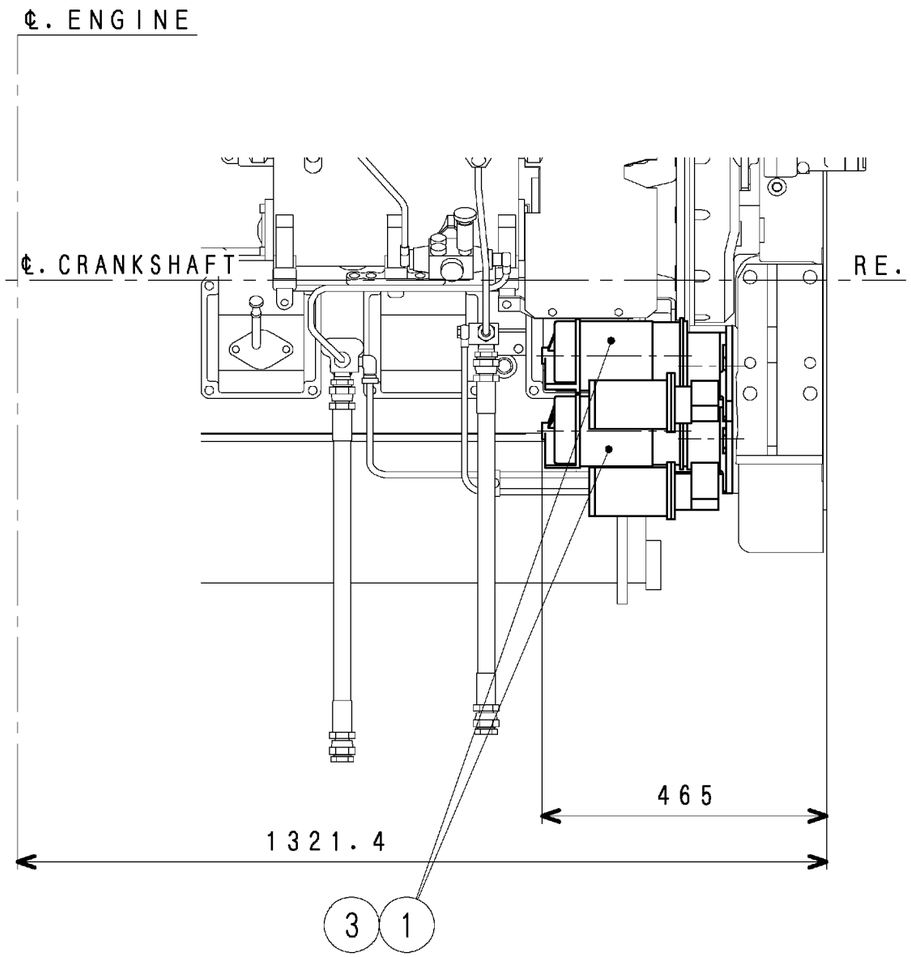
三菱重工エンジン&ターボチャージャ株式会社
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

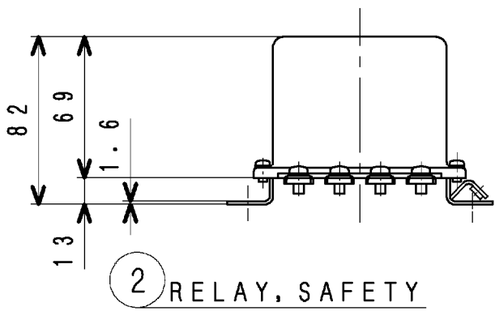
図面番号 DRAWING No. 37896-63082 1 2/2

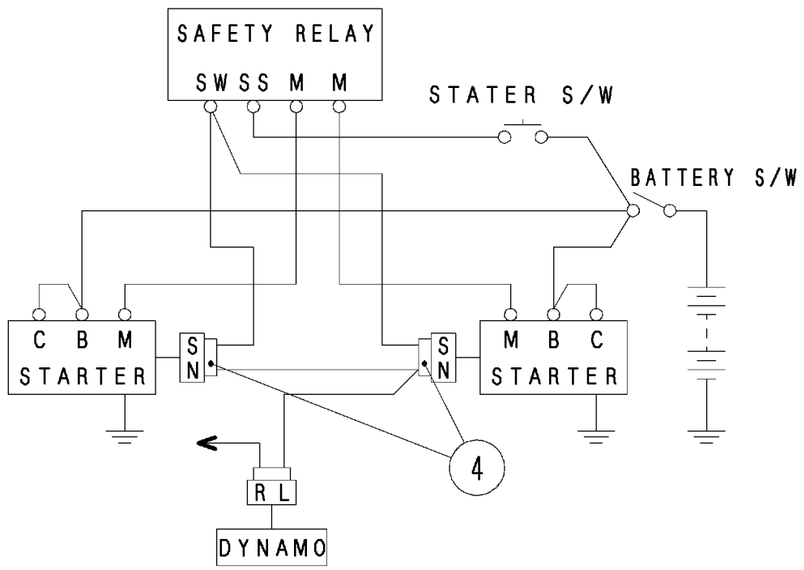
3 新図 ④旧引図 | サイズ A3 | ①組立図 | 2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他(購入品)











NOTE (1) THE ☆ MARKED PARTS ARE LOOSE SUPPLY.

	No.	PARTS NO.	PARTS NAME		Q'TY
☆	4	F8665-02100	CONNECTOR		2
	3	F1805-12035	BOLT		6
☆	2	04322-40500	SAFETY MAGNETIC		1
	1	37766-30200	STARTER	7.5kW	2

CHG	EO-NO	DATE	CHK
3	4590-L696	'19. 6.19	横田
2	4590-G660	'11. 3.29	斉藤
1	4590-6941	'00. 8.28	福田

3rd ANGLE PROJECTION
尺度 SCALE :

認可 APPD 中村
検図 CHK 西谷 岡戸
製図 DRN 横田
1997. 8. 8

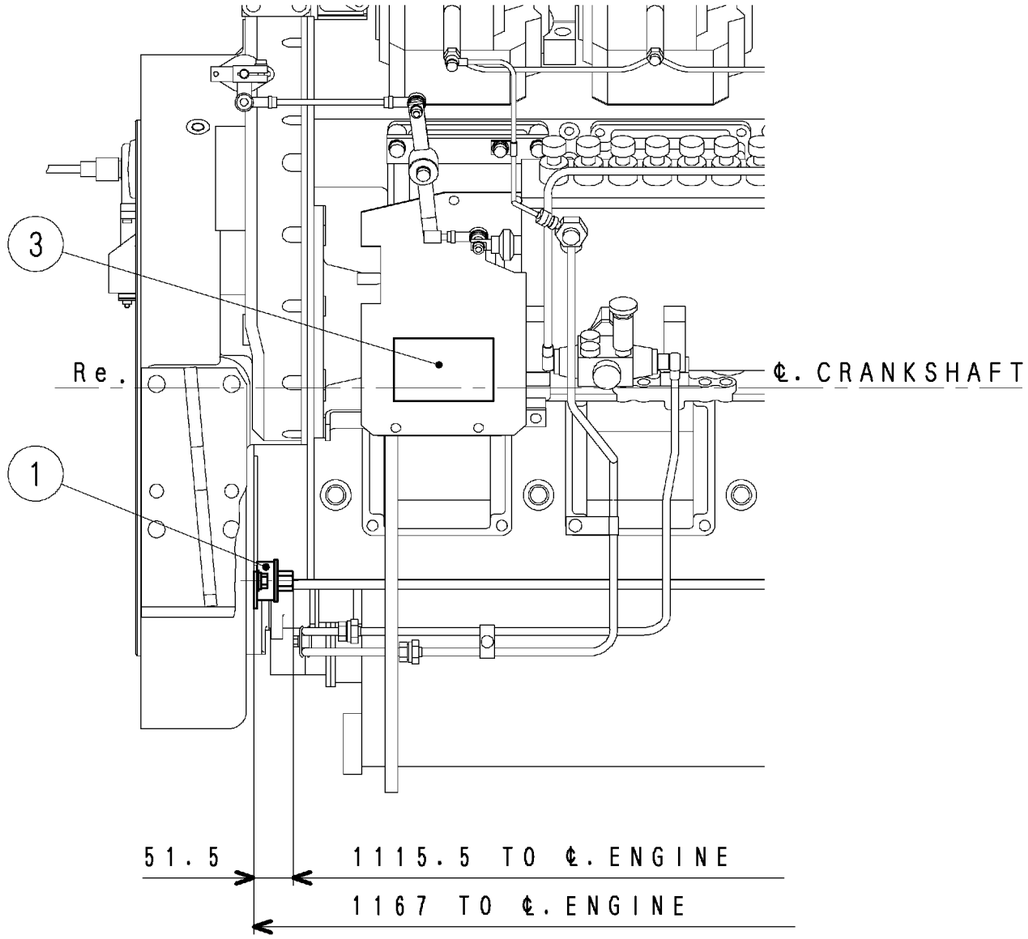
MHIET CONFIDENTIAL

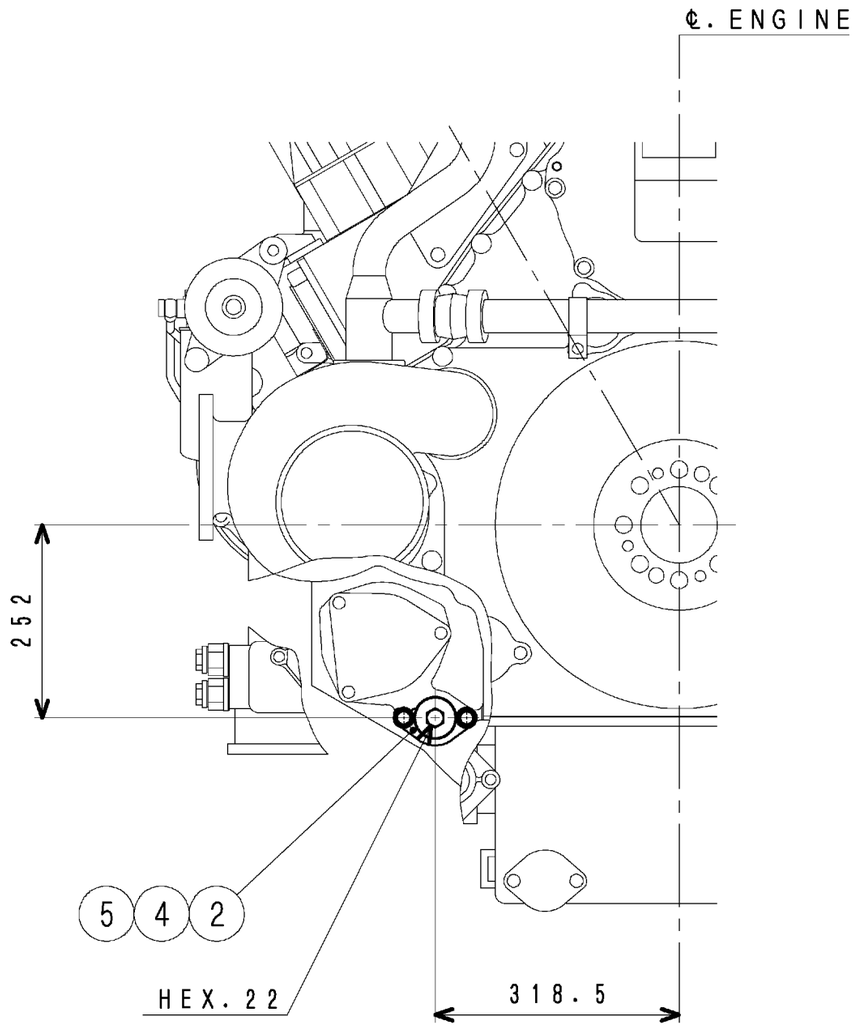
S16R
STARTING MOTOR
三菱重工エンジン＆ターボチャージャ株式会社
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.
図面番号 DRAWING No. 37896-66001 3

3 新図 ④旧引図 | サイズ A3 | ①組立図 | 2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他（購入品）

旧51
相模原
2019
08.01

M/C





NOTE (1) THE ☆ MARKED PARTS ARE LOOSE SUPPLY.

No.	PARTS NO.	PARTS NAME	Q'TY
5	F2500-12000	WASHER, PLAIN	2
4	F1805-12020	BOLT	2
3	37571-01500	PLATE, CAUTION	1
2	37571-20300	FLANGE	1
1	37771-00102	GEAR, TURNING	1

1851
相模原
2019
10.25

M/C

MHIET CONFIDENTIAL

CHG	EO-NO	DATE	CHK
2	4590-L832	'19.9.24	浅沼
1	4590-G661	'11. 3.29	斉藤

3rd ANGLE PROJECTION
尺度 SCALE :

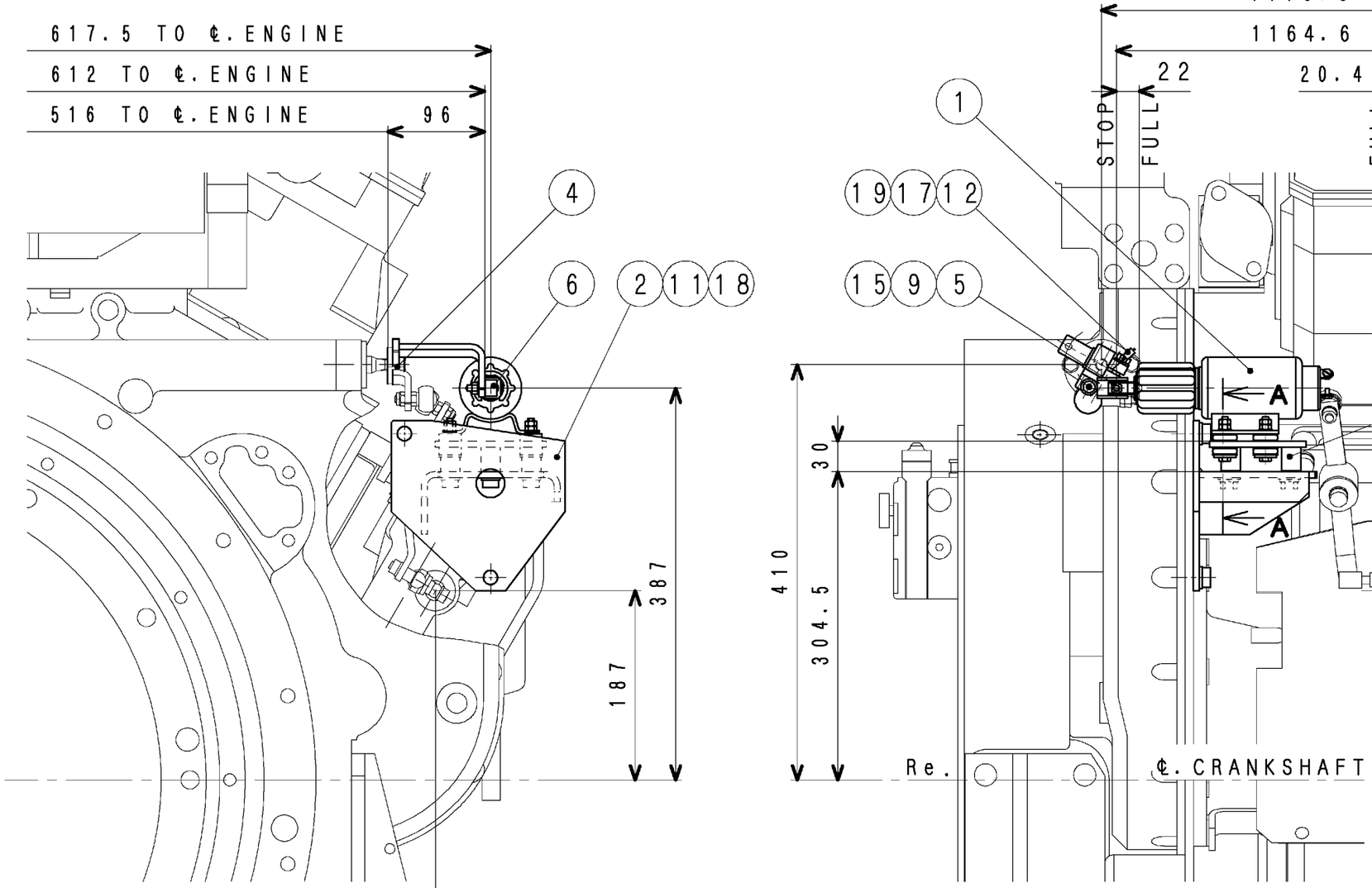
認可 APPD	検図 CHK	製図 DRN
中村	西谷 岡戸	浅沼
		1997. 8. 8

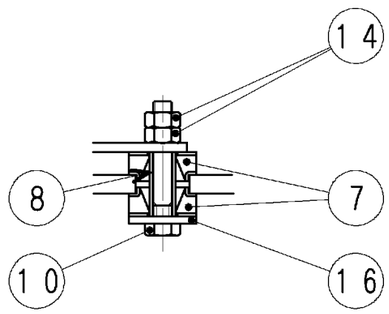
S16R
TURNING DEVICE

三菱重工エンジン＆ターボチャージャ株式会社
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

図面番号 DRAWING No. 37896-71001 △2

3 新図 ④旧引図 | サイズ A3 | ①組立図 | 2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他（購入品）





SECTION A-A

No.	PARTS NO.	PARTS NAME	Q'TY
19	35A61-19900	WIRE, SEAL D1.0-SUS	1
18	F2515-12000	WASHER, SPRING	2
17	F2515-08000	WASHER, SPRING	1
16	08302-06000	WASHER	4
15	05634-00610	NUT, SELF LOCKING	1
14	F2300-06000	NUT	8
13	F1825-10025	BOLT	3
12	F1115-08025	BOLT	1
11	F1035-12030	BOLT	2
10	F1035-06040	BOLT	4
9	F1035-06020	BOLT	1
8	47500-36700	SPACER	4
7	47500-34100	RUBBER, CUSHION	8
6	37587-00900	FOLLOWER	1
5	45740-36500	ADAPTER	1
4	37761-18401	LEVER, R.H., RACK CONT.	1
3	47520-25800	PLATE, SOLENOID	1
2	37787-03300	BRACKET, SOLENOID	1
1	04400-09201	SOLENOID	1

出図
三菱 汎特
2013
6.17

M/C

MHI CONFIDENTIAL

CHG	EO-NO	DATE	CHK

3rd ANGLE PROJECTION

尺度 SCALE :

認可 APPD	検図 CHK	製図 DRN
橋口	小倉 中村	谷戸
		2013. 6.11

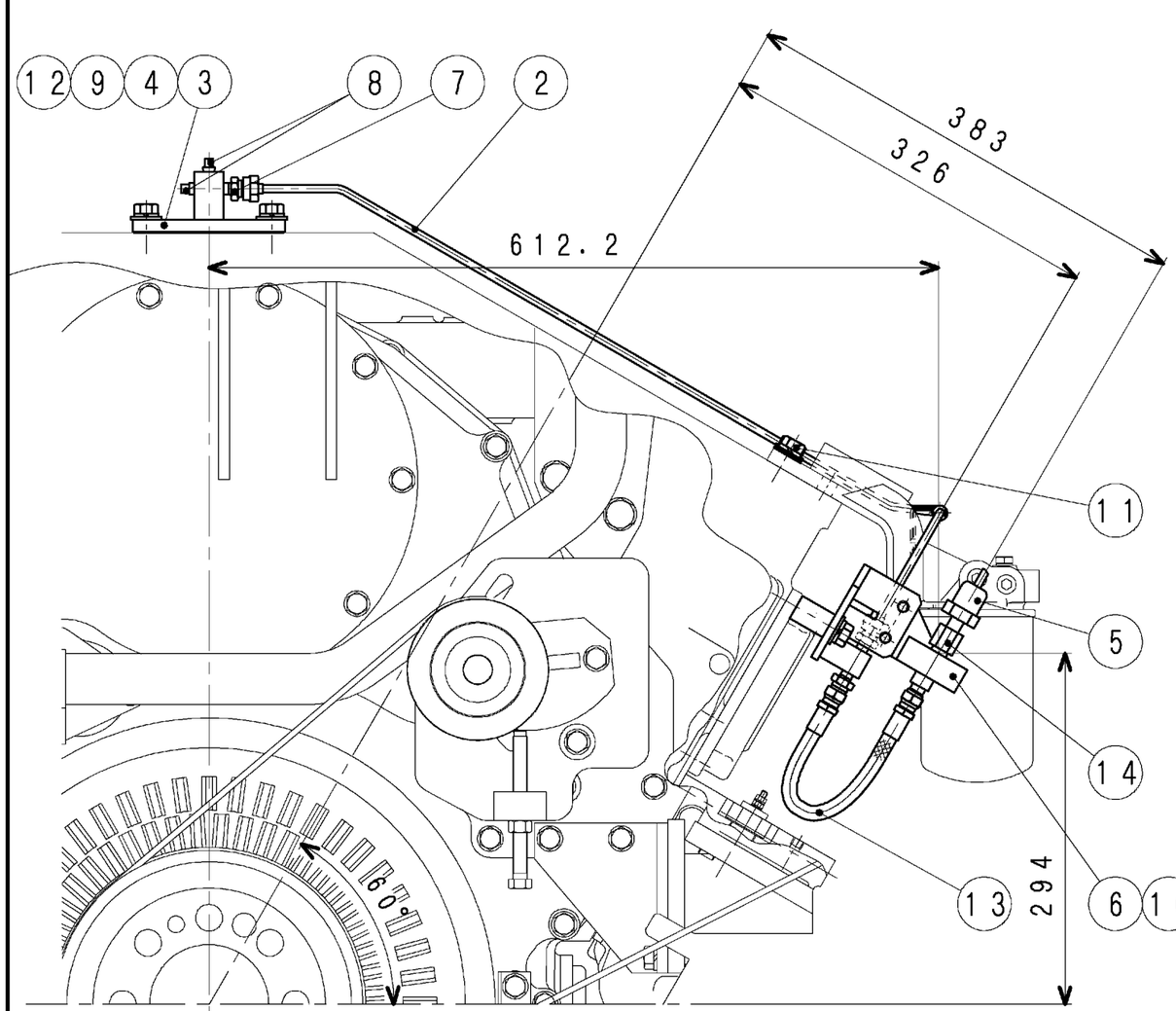
S16R, S16R2
STOP SOLENOID

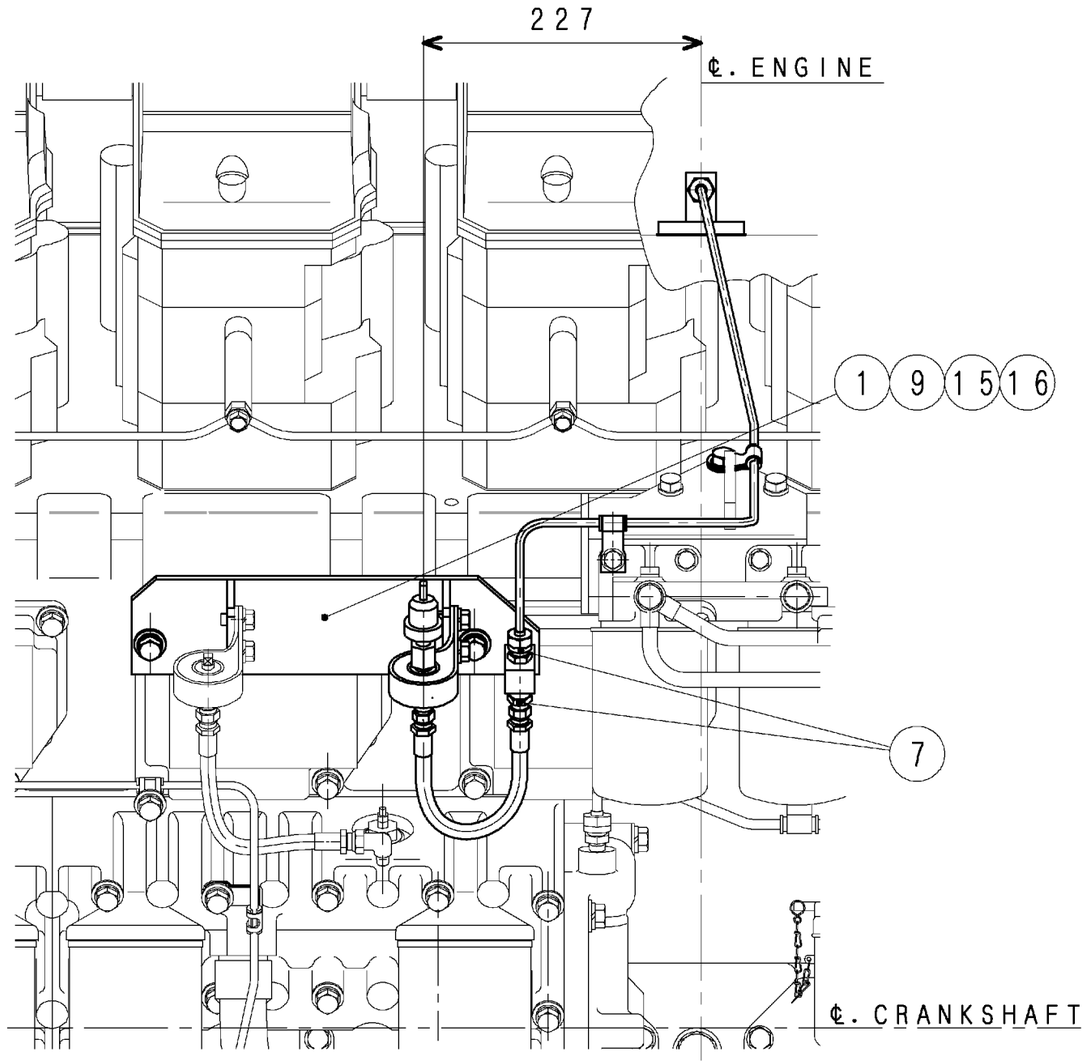
三菱重工業株式会社 汎用機・特車事業本部
MITSUBISHI HEAVY INDUSTRIES, LTD. GENERAL MACHINERY & SPECIAL VEHICLES.

図面番号 DRAWING No. 37896-87506

③新 図 ④旧引図	サイズ A3	①組立図	2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他（購入品）

注記 （1）本図のソレノイドは、ロングストローク（22mm）仕様である。





No.	PARTS NO.	PARTS NAME	Q'TY
16	F2515-12000	WASHER, SPRING	2
15	F1035-12070	BOLT	2
14	66F57-05600	CONNECTOR	1
13	45951-04022	PIPE, FLEXIBLE	1
12	F1805-12030	BOLT, WASHER ASSEMBLE	2
11	F1805-12025	BOLT, WASHER ASSEMBLE	1
10	F1805-10020	BOLT, WASHER ASSEMBLE	2
9	F2500-12000	WASHER, PLAIN	4

No.	PARTS NO.	PARTS NAME	Q'TY
8	F5006-10000	PLUG, TAPER	2
7	F4540-06300	CONNECTOR M14-R1/8	3
6	45644-47900	MOUNT, OIL PRESS UNIT	1
5	37592-01400	SENSOR, BOOST I OUT	1
4	37892-01601	COVER	1
3	37555-10600	GASKET, AIR	1
2	37892-02600	PIPE, BOOST	1
1	37892-02500	BRACKET, BOOST SENSOR	1

出図
相模原
2017
12.27

M/C

MHIET CONFIDENTIAL

注記 （1）本図は、S16R2-PTAW2-S（E）のブーストセンサ取付図を示す。
（2）油圧センサ装備時は図番37896-90123との組合せで使用する。

CHG	EO-NO	DATE	CHK

3rd ANGLE PROJECTION
尺度 SCALE :

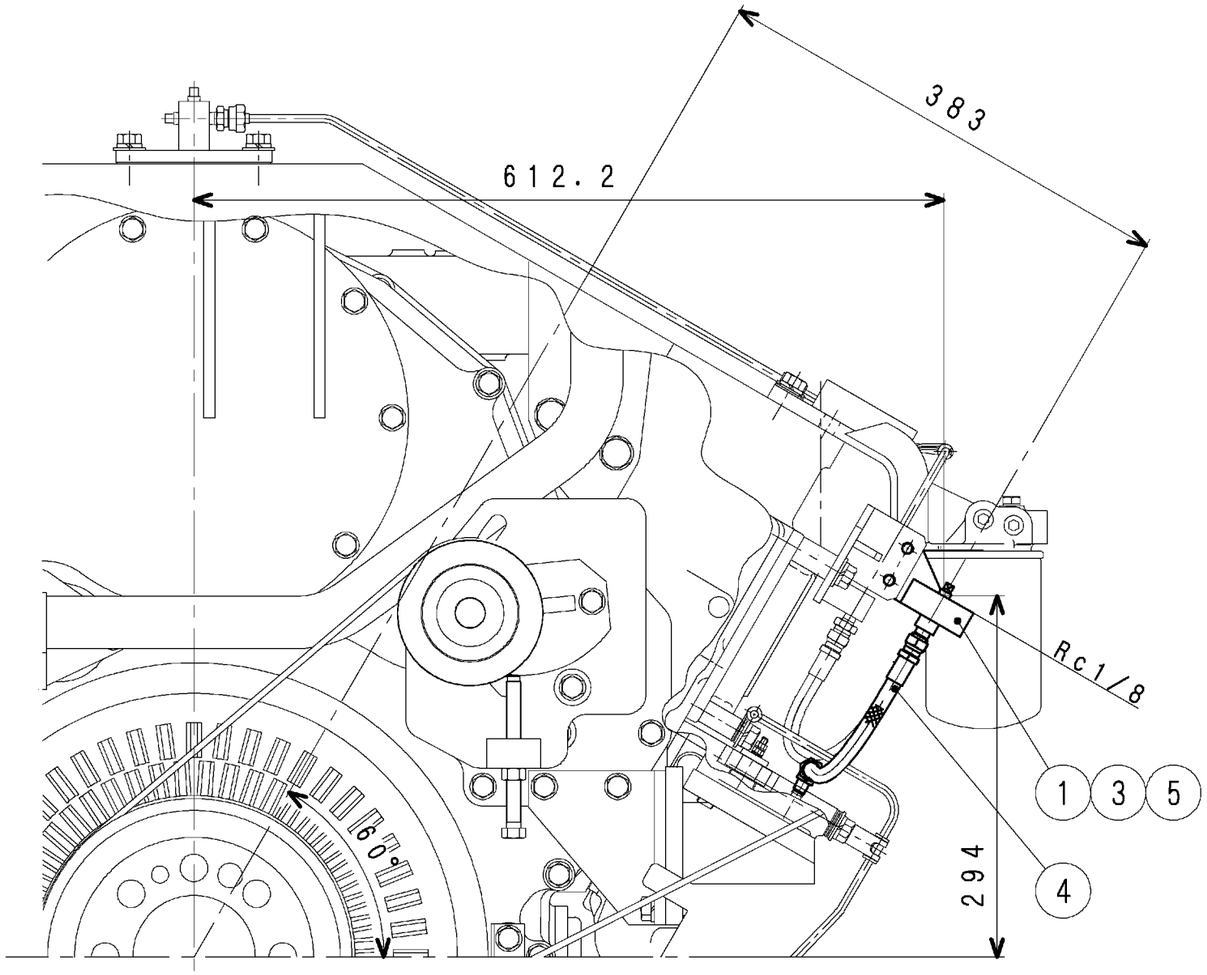
認可 APPD	検図 CHK	製図 DRN
中村	西岡	谷長川 戸沼村
		2017.10.19

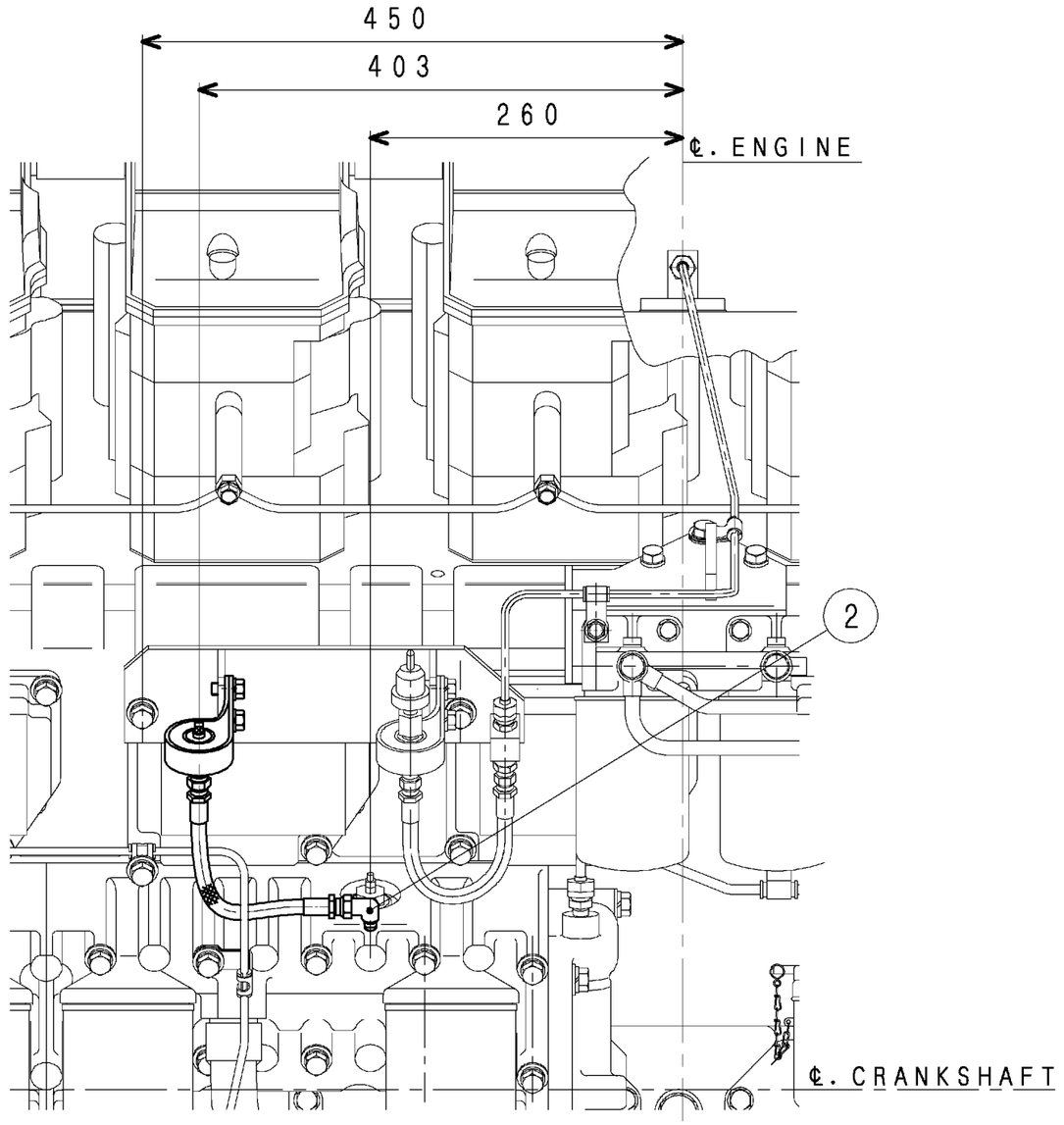
S16R2 METER & SENSOR

三菱重工エンジン＆ターボチャージャ株式会社
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

図面番号 DRAWING No. 37896-90122

③新図 4旧引図	サイズ A3	①組立図	2鋳鍛歯車品 3板金溶接品 4組立品 5切削品 6その他（購入品）





No.	PARTS NO.	PARTS NAME	Q'TY
5	F5006-10000	PLUG, TAPER	1
4	45951-04022	PIPE, FLEXIBLE	1
3	F1805-10020	BOLT, WASHER ASSEMBLE	2
2	F4560-06300	ELBOW	1
1	45644-47900	MOUNT, OIL PRESS UNIT	1

出図
相模原
2017
12.27

M/C

MHIET CONFIDENTIAL

注記 (1)本図は、S16R2-PTAW2-Sの潤滑油圧力センサ取付図を示す。
(2)ブーストセンサ装備時は図番37896-90122との組合せで使用する。

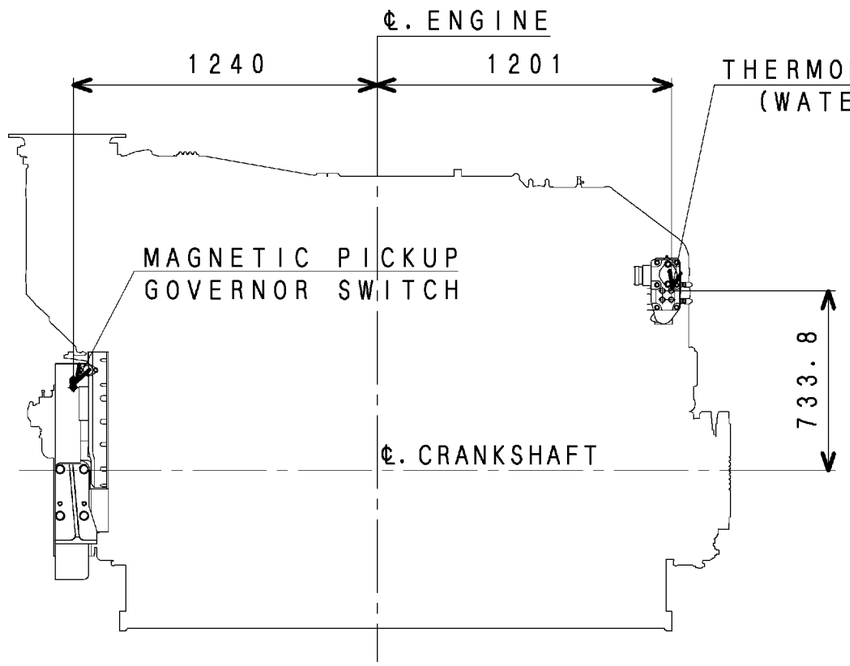
CHG	EO-NO	DATE	CHK

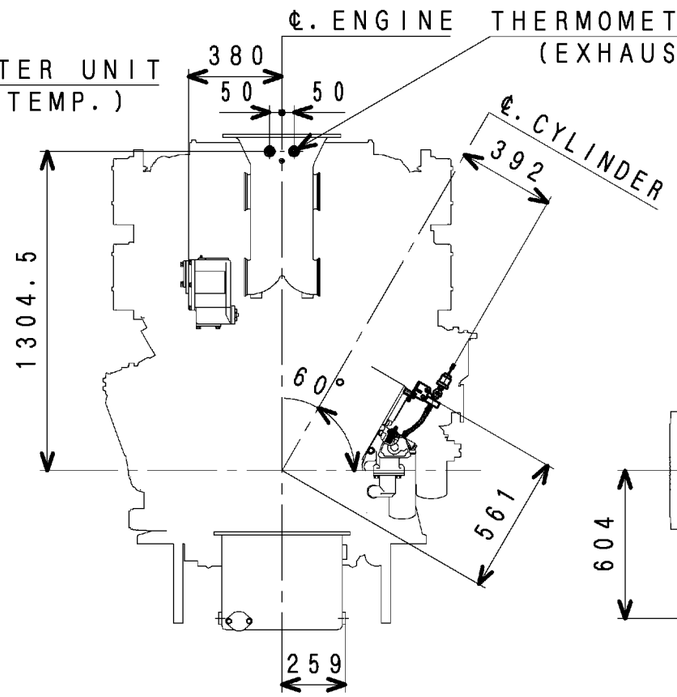
3rd ANGLE PROJECTION
尺度 SCALE :

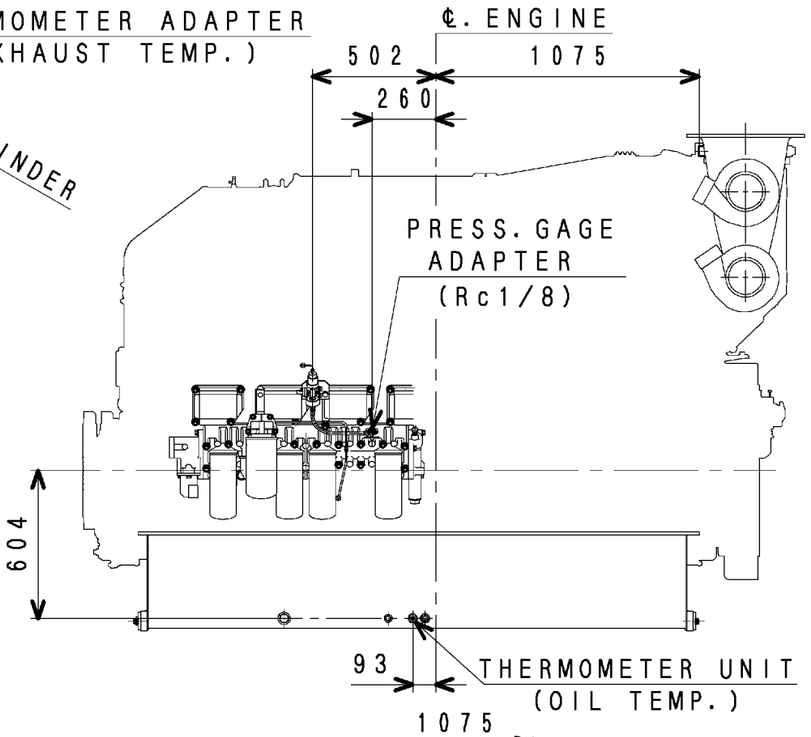
認可 APPD	検図 CHK	製図 DRN
中村	西岡	谷長川 戸沼村
		2017.11.27

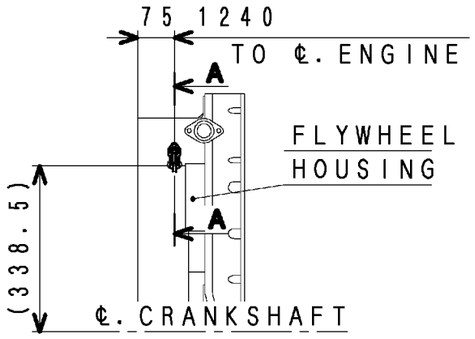
S16R2
METER & SENSOR
三菱重工エンジン&ターボチャージャ株式会社
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.
図面番号 DRAWING No. 37896-90123

③新図 4旧引図	サイズ A3	①組立図	2鋳鍛歯車品 3板金溶接品 4組立品 5切削品 6その他(購入品)

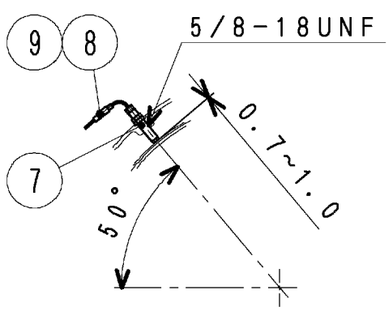




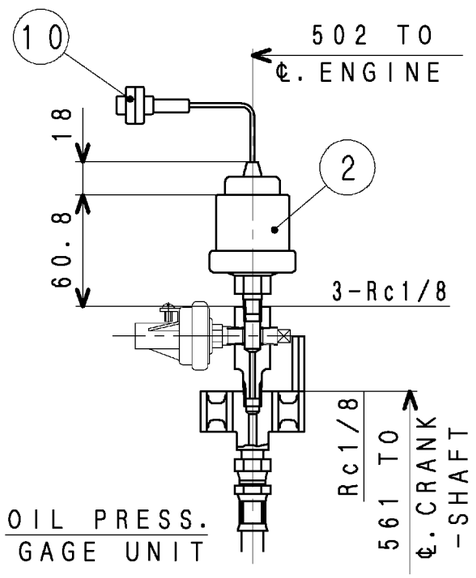




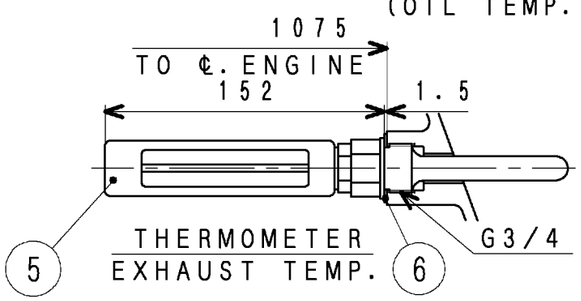
TACHOMETER PICKUP

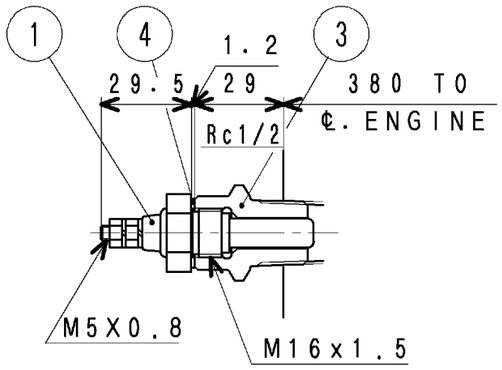


SECTION A-A

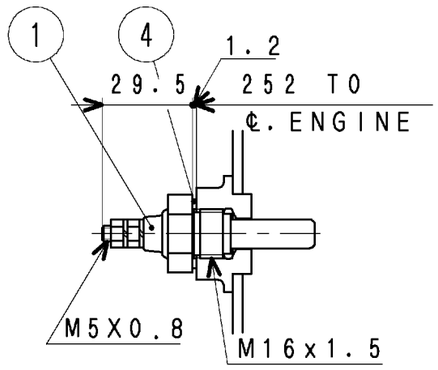


OIL PRESS.
GAGE UNIT





THERMOMETER UNIT
WATER TEMP.



THERMOMETER UNIT
OIL TEMP.

NOTE (1) THE ☆ MARKED PARTS ARE LOOSE SUPPLY.

	No.	PARTS NO.	PARTS NAME	Q'TY
☆	10	MH052-231	CONNECTOR	1
☆	9	04410-19400	HARNESS	1
☆	8	04410-43600	CONNECTOR	1
	7	04410-43411	PICKUP, MAGNETIC	1
☆	6	41232-03900	GASKET	1
☆	5	04522-14101	THERMOMETER	1
	4	05946-01601	WASHER SEALING	2
	3	45600-42902	CONNECTOR	1
	2	04541-86200	UNIT, GAGE	1
	1	04524-02230	UNIT, THERMO	2

NOTE (1) FOR RUBBER MOUNT PIPING DETAILS OF MARK ② OIL PRESSURE SENSOR, REFER DWG. NO. 37896-90146.

注記 (1) 本図の符号 ② 油圧センサー用ラバーマウントパイピング詳細は、図番37896-90146を参照のこと。

MHIET CONFIDENTIAL

CHG	EO-NO	DATE	CHK

3rd ANGLE PROJECTION
尺度 SCALE :

認可 APPD	検図 CHK	製図 DRN
中村	マダーン	谷戸
		2016.12.16

S16R2
METER & SENSOR

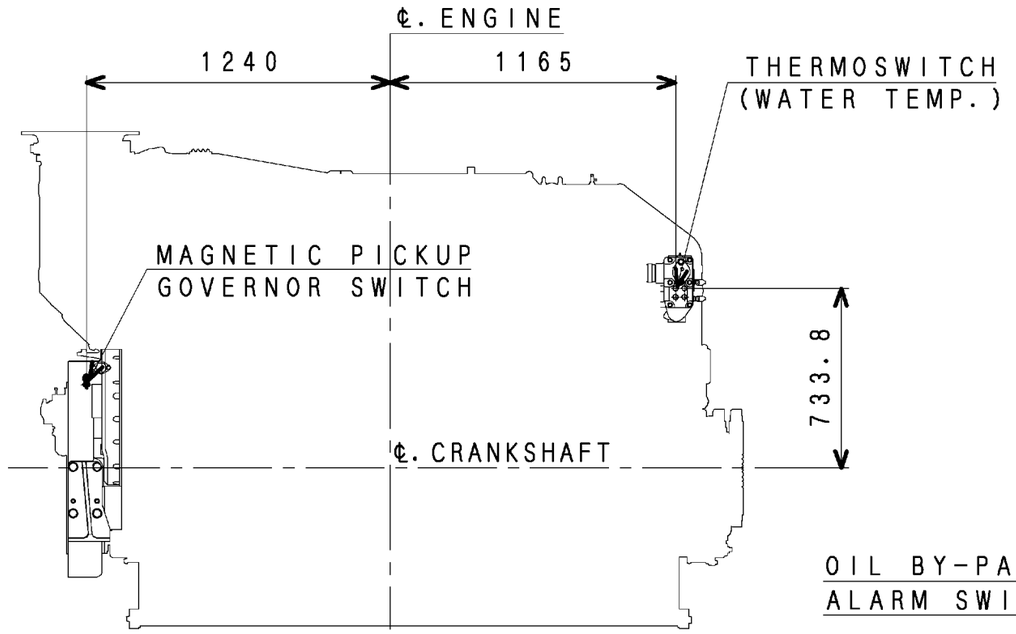
三菱重エエンジン＆ターボチャージャ株式会社
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

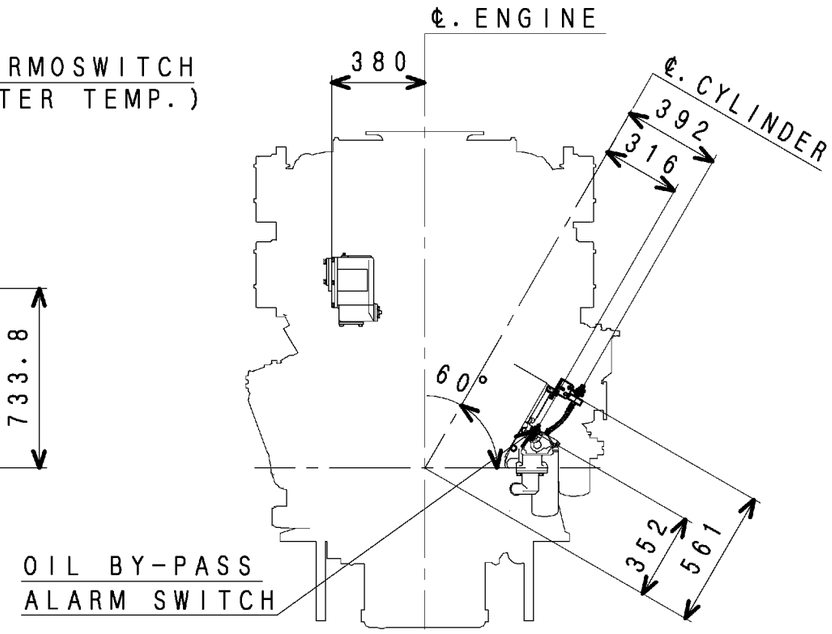
図面番号 DRAWING No. 37896-90147 1/2

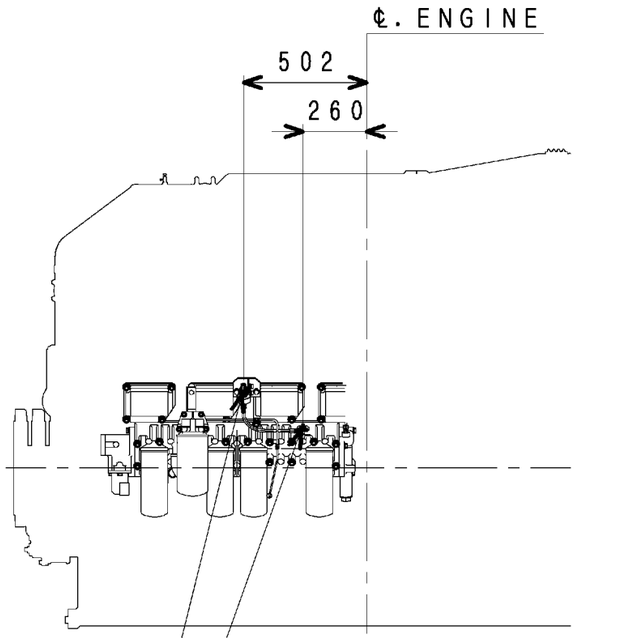
③ 新 図 4 旧引図 | サイズ A 3 | ① 組立図 | 2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他（購入品）

出図
相模原
2016
12.28

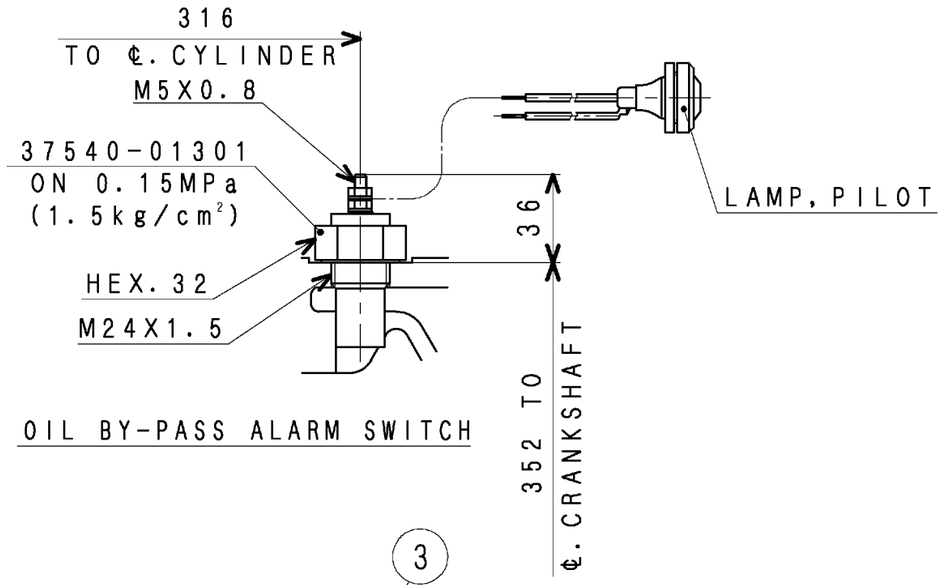
M/C



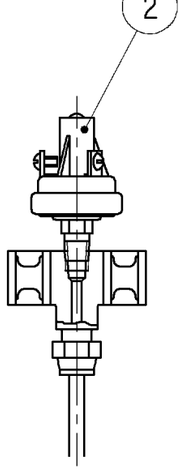




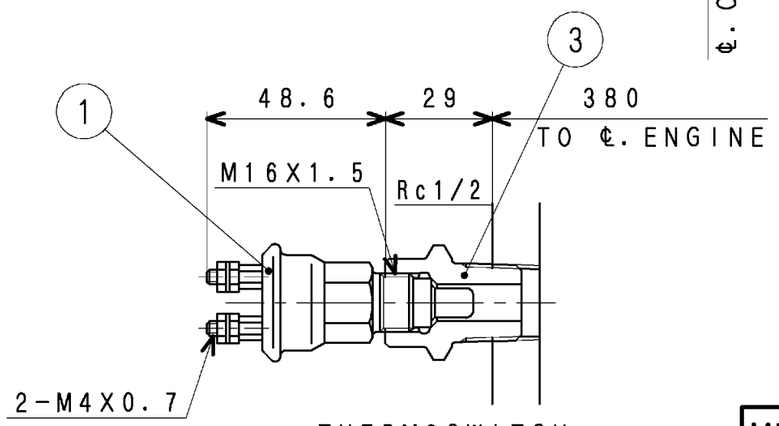
PRESS. SWITCH
LOW OIL PRESS.
ON : 0.15MPa (1.5kg/cm²)
LOW SPEED



OIL BY-PASS ALARM SWITCH



PRESS. SWITCH
OIL PRESS.



THERMOSWITCH

NOTE (1) FOR RUBBER MOUNT PIPING DETAILS OF MARK (2) OIL PRESSURE SWITCH, REFER DWG. NO. 37896-90146.

注記 (1) 本図の符号 (2) 油圧スイッチ用ラバーマウントパイピング詳細は、図番37896-90146を参照のこと。

No.	PARTS NO.	PARTS NAME		Q'TY
3	45600-42902	CONNECTOR		1
2	04442-45400	PRESS. SWITCH	0.15MPa ON (1.5kg/cm²)	1
1	04442-34500	THERMO SWITCH	98℃ ON	1

CHG	EO-NO	DATE	CHK
1	4590-J964	'16.12.15	谷戸

3rd ANGLE PROJECTION
尺度 SCALE

認可 APPD	検図 CHK	製図 DRN
中村	市小内 原林倉	山笹 崎生
		2011.11.25

MHIET CONFIDENTIAL

S16R2 ALARM SWITCH

三菱重工エンジン＆ターボチャージャ株式会社
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

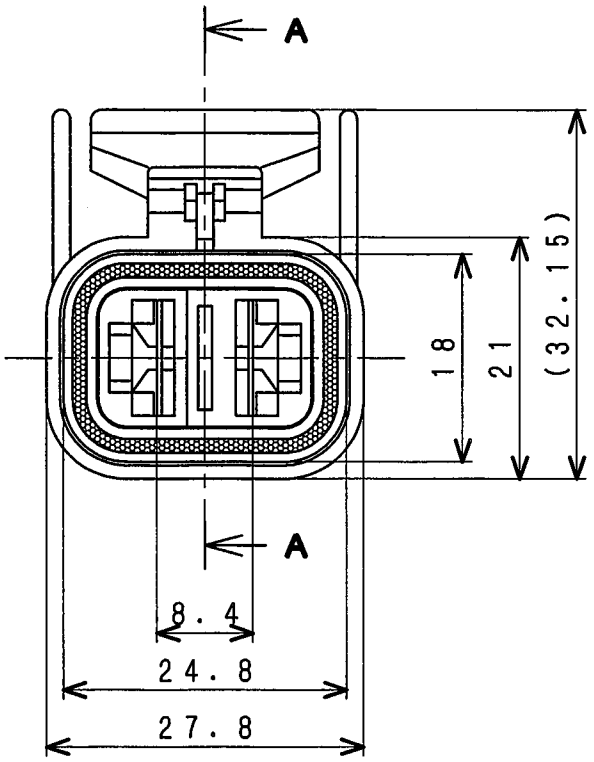
図面番号 DRAWING No. 37896-90281 1

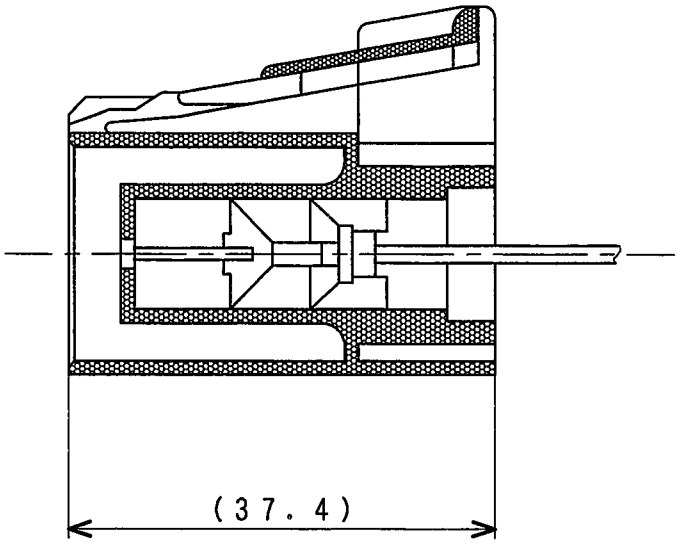
3 新図 (4) 旧引図 | サイズ A3 | (1) 組立図 | 2 鋳鍛歯車品 3 板金溶接品 4 組立品 5 切削品 6 その他（購入品）

旧引
相模原
2016
12.28

M/C

CHECKED BY
K. YATO





SECTION A-A

THIS IS YAZAKI PART 7323-6228-30.

MHI CONFIDENTIAL

REV.	DATE

CONNECTOR

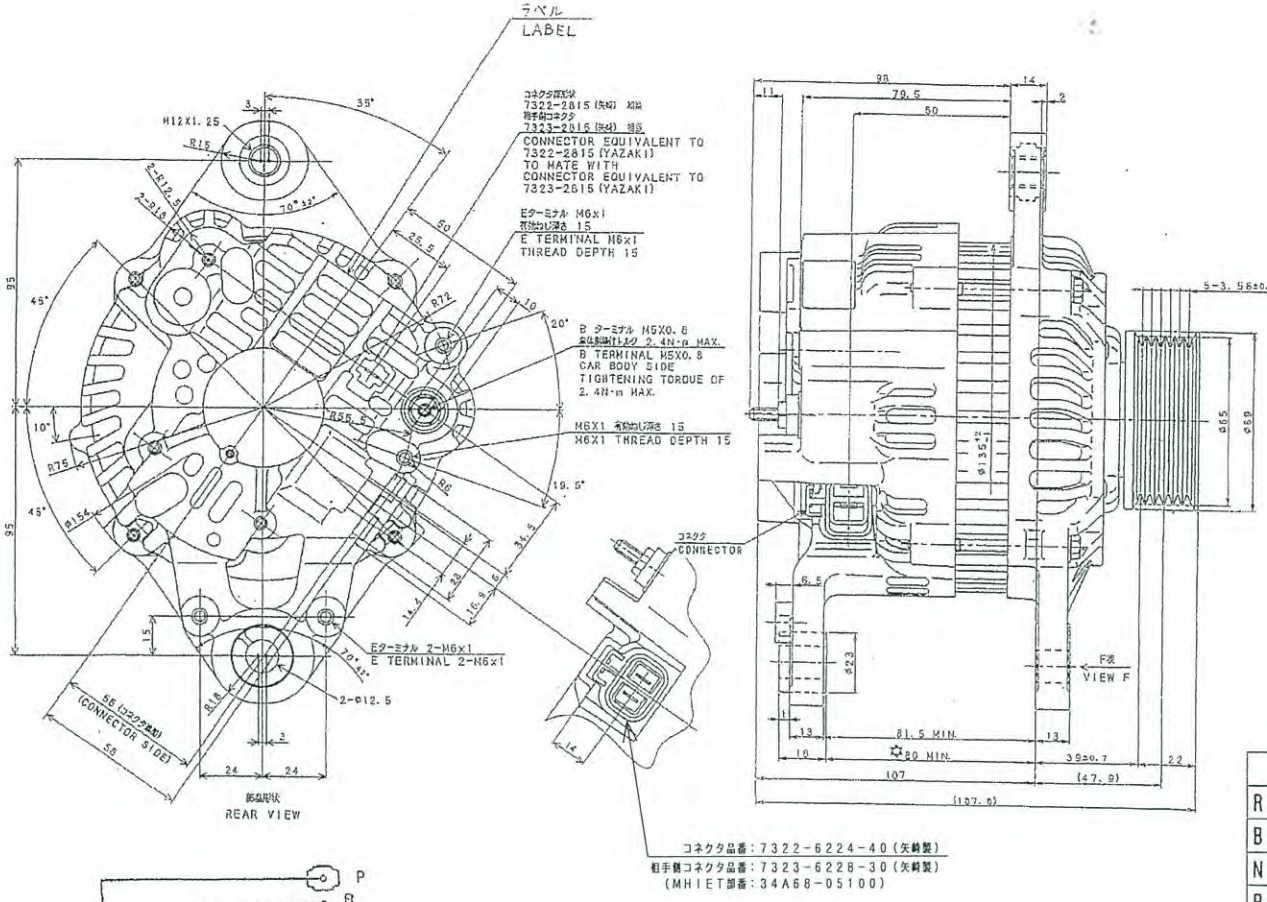
PART NO. 32B90-00300

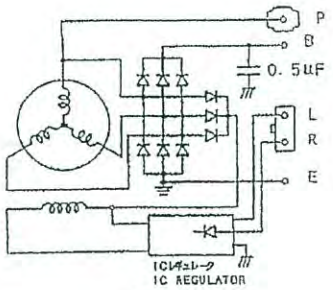
DWG. NO. S10-0550

MITSUBISHI HEAVY INDUSTRIES, LTD.

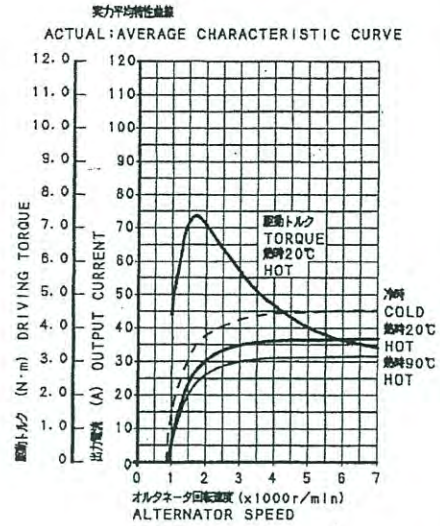
GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS

CHECKED BY
M. NAKAMURA





接続図
CIRCUIT DIAGRAM



SPECIFICATION	
RATING	CONTINUOUS
BATT. VOLT.	24V
NO. OF POLES	12
POLARITY	NEGATIVE GROUND
REG. SYSTEM	IC-REG. BUILT-IN
REG. SET VOLT.	28.5±0.5V(AT 5000r/min WITH LESS THAN 5A BATT LOAD MEASURED ON L-E)

MHIET CONFIDENTIAL

注記　（1）本部品は、04343-38300に対し、物質規制に対応したものである。

REV.	DATE
	'20.2.20

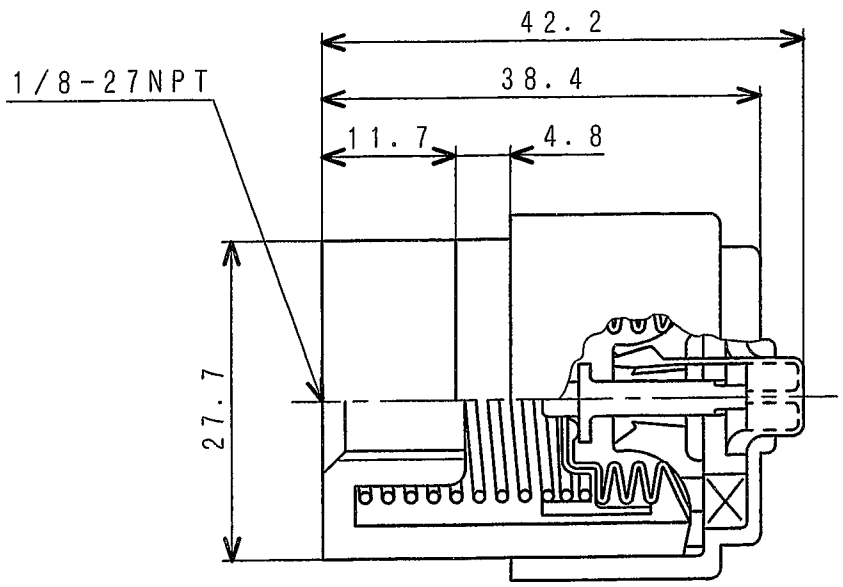
ALTERNATOR, 24V-35A

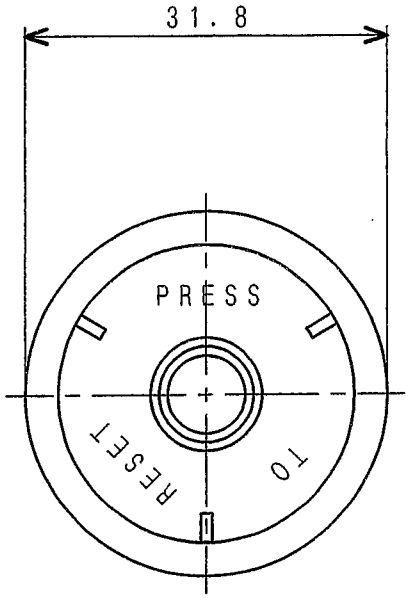
PART NO. 04343-38700

DWG. NO. S10-0761

MITSUBISHI HEAVY INDUSTRIES
ENGINE & TURBOCHARGER, LTD.

CHECKED BY
Y. FUKUDA





PARTS NO.	RESTRICTION(mmH2O)
47220-30701	762±58
47220-34301	508±48
47220-34401	635±58

MHI CONFIDENTIAL

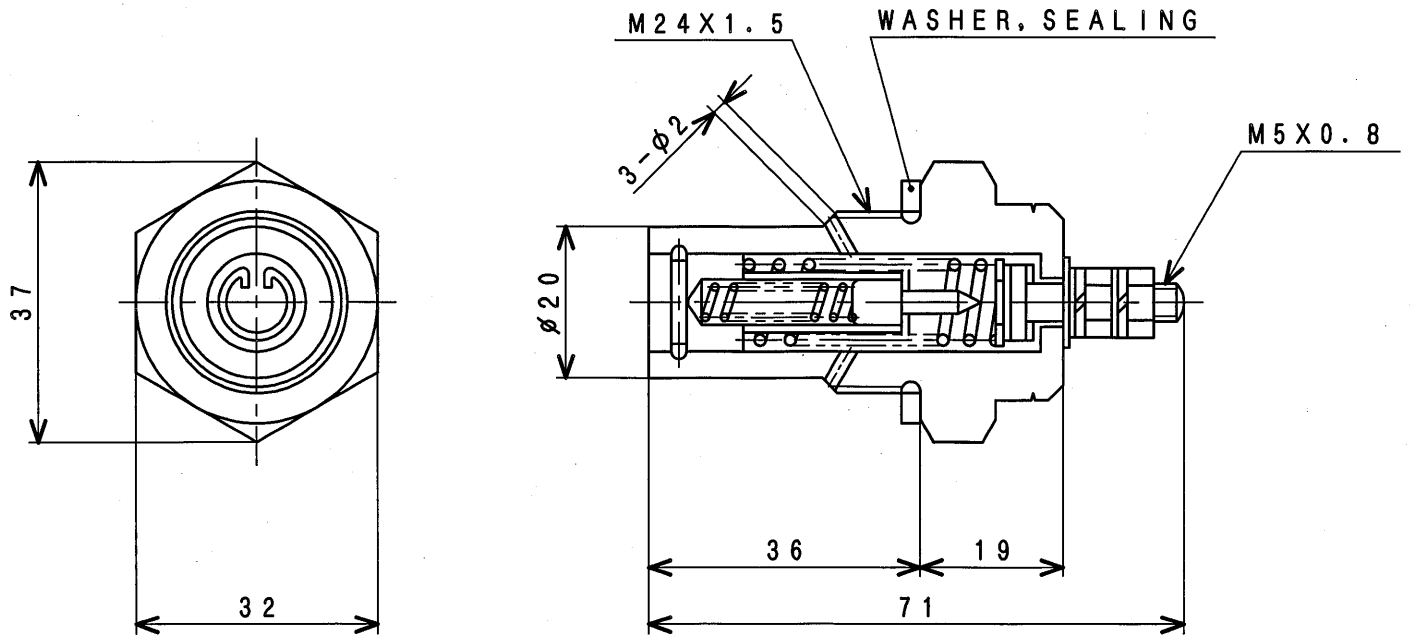
REV.	DATE
1	'93 2/18

INDICATOR

DWG. NO. S11-0920

MITSUBISHI HEAVY INDUSTRIES, LTD.
GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS

CHECKED BY
中村



注記　(1)本図は、部番37540-01301をRoHS2対応品としたもの。

SET PRESS. 0.15MPa

MHIET CONFIDENTIAL

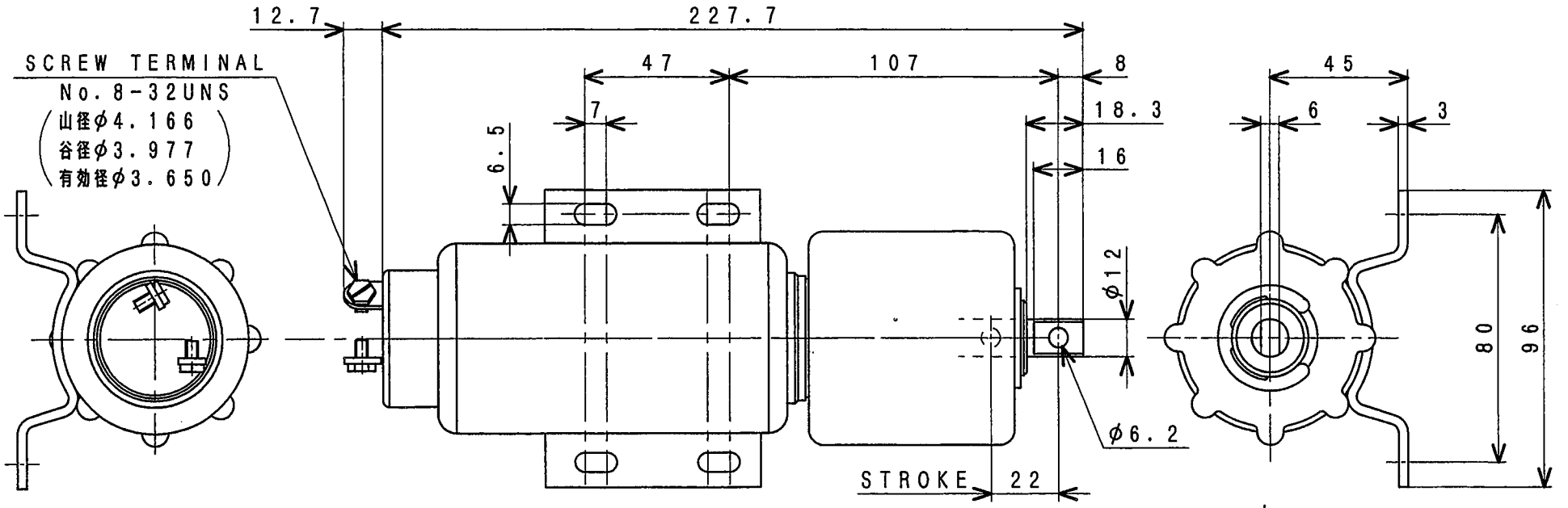
REV.	DATE
	'18.8.28

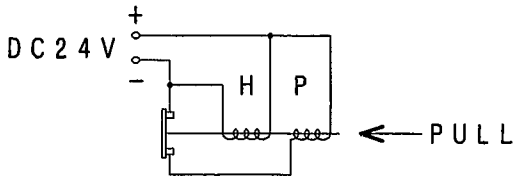
ALARM, OIL FILTER
PART NO. 37540-11300

DWG. NO. S11-1372

MITSUBISHI HEAVY INDUSTRIES
ENGINE & TURBOCHARGER, LTD.

CHECKED BY
K. YATO





WIRING

SPECIFICATION	
VOLTAGE	DC24V
CURRENT	PULL 30.7A, HOLD 0.58A
RATED TIME	CONTINUOUS

04400-09201	1.05 MPa
PARTS NO.	RETURN SPRING PRESS.

MHI CONFIDENTIAL

REV.	DATE

SOLENOID

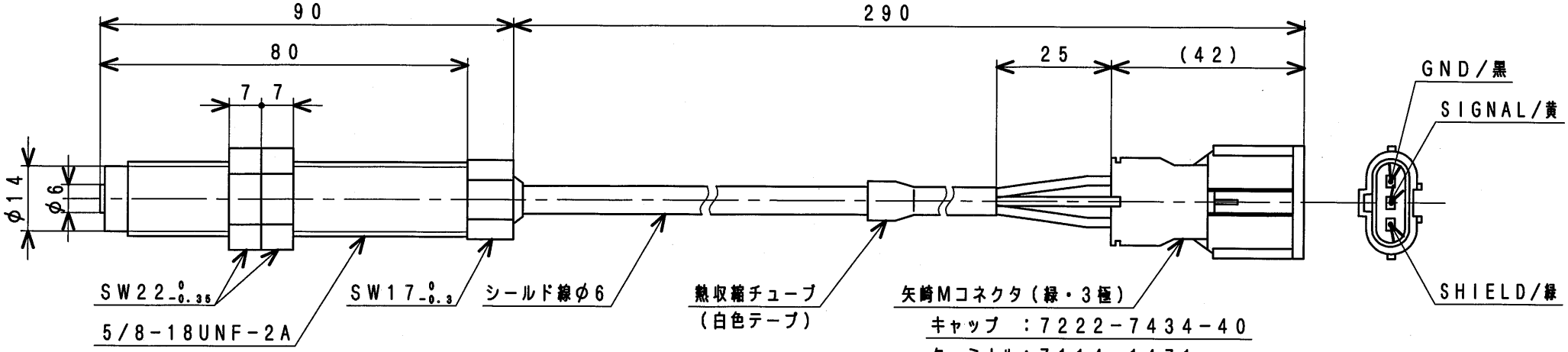
PART NO. 04400-09201

DWG. NO. S13-0270

MITSUBISHI HEAVY INDUSTRIES, LTD.

GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS

CHECKED BY
M. NAKAMURA



キャップ　：7222-7434-40
ターミナル：7114-1471
ゴム栓　　：7157-7812
リヤホルダ：7157-7814-80

仕　様

1．電機的特性

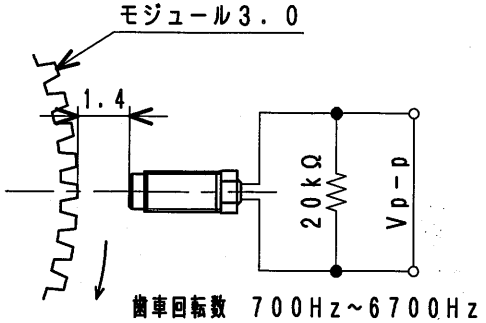
出力電圧　：図1．測定条件にて4．0Vp－p以上（at700Hz）
　　7．0Vp－p以上（at6700Hz）
直流抵抗　：1．3kΩ～1．6kΩ（at＋25℃）
絶縁抵抗　：1MΩ以上　atDC500V　（コネクタ端子－ハウジング間）
耐電圧　　：50／60Hz　AC500V　1分間（コネクタ端子－ハウジング間）

2．機械的特性

コネクタ引き抜け力：49N以上
締付け破壊トルク　：49N・m以上

3．使用温度範囲

－40℃～＋120℃



歯車回転数　700Hz～6700Hz

図1．出力条件

注　記

1．本部品はニシダ電子工業（株）製である。
2．本部品は04410－43410に対し、製造メーカが異なる。
3．本部品は04410－43411に対し、RoHS2指令に適合したものである。

MHIET CONFIDENTIAL

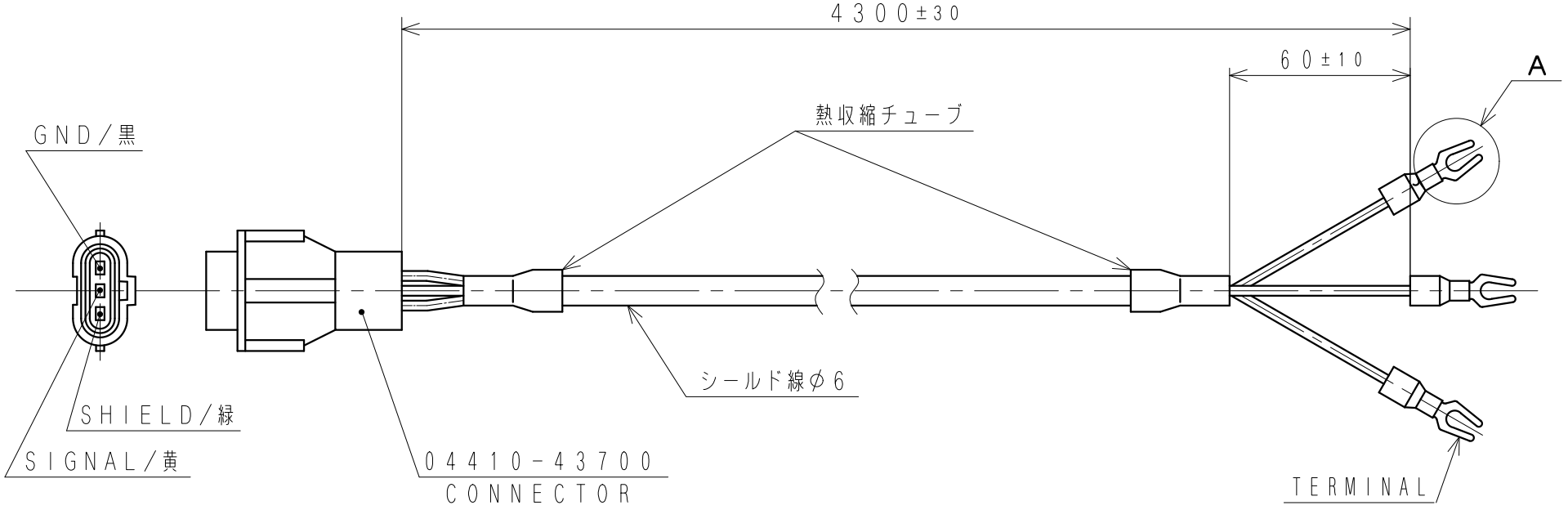
REV.	DATE
	'19.1.13

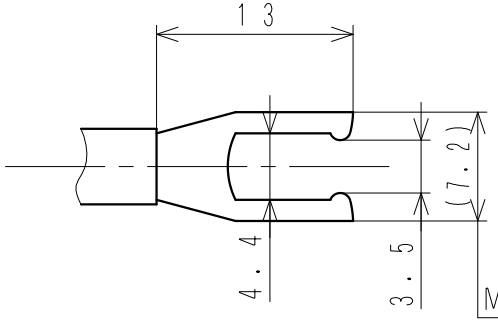
PICKUP, MAGNETIC
PART NO. 04410-43420

DWG. NO. S13-2013

MITSUBISHI HEAVY INDUSTRIES
ENGINE & TURBOCHARGER, LTD.

CHECKED BY
M. NAKAMURA





DETAIL A

注記
（１）リード線は，シールド線（φ６）を使用。
（２）配線色は，黒Ｘ１，黄Ｘ１（各々メスピンに接続），緑Ｘ１（シールドに接続）である。
（３）ターミナル形状は、Ａ図と同等（Ｍ３ネジ用）である。
（４）本部品は０４４１０－４３５００に対し、物質規制対応としたものである。

MHIET CONFIDENTIAL

REV.	DATE
	'19. 8. 7

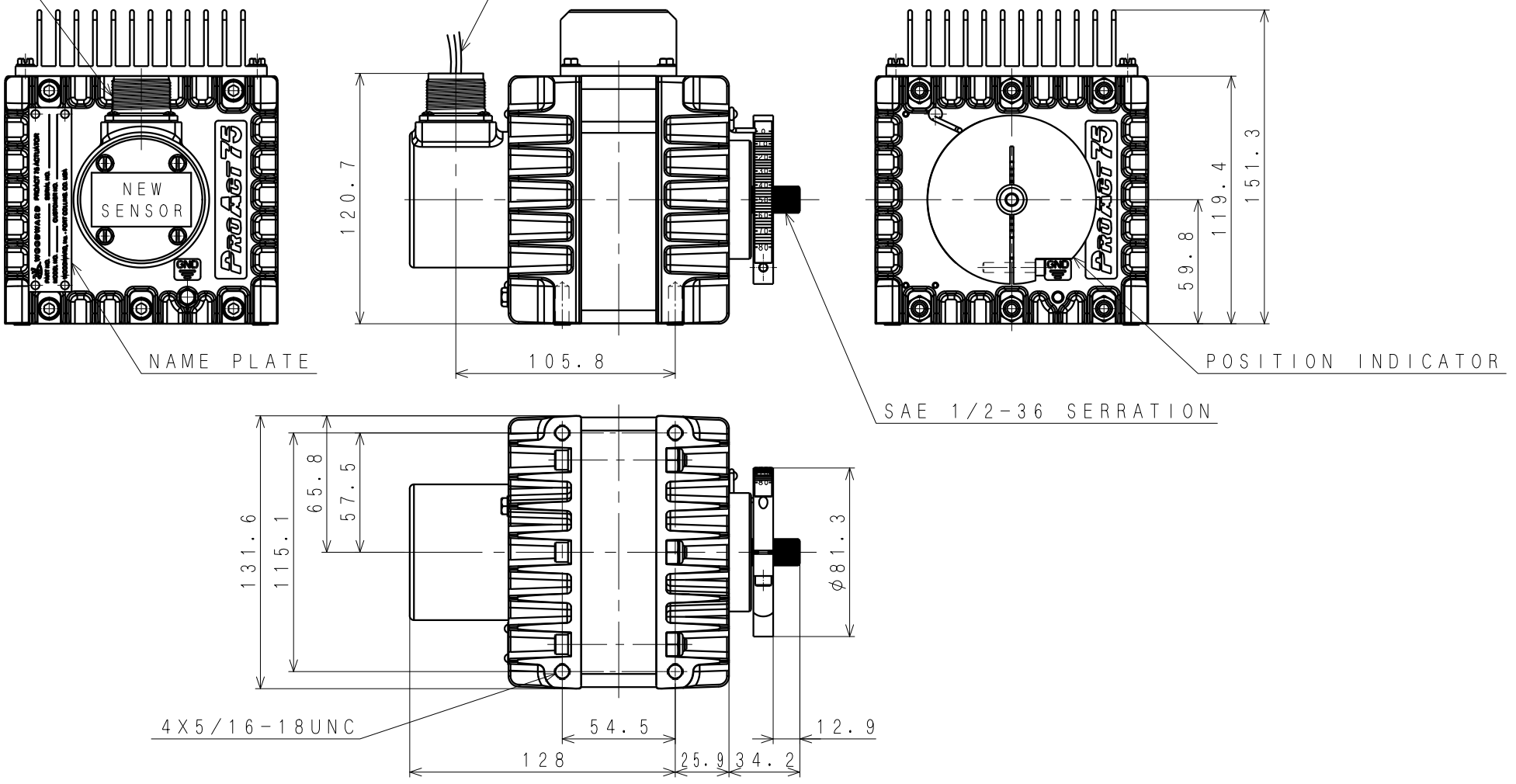
CABLE, PICKUP

PART NO. 04410-43501

DWG. NO. S13-2021

MITSUBISHI HEAVY INDUSTRIES
ENGINE & TURBOCHARGER, LTD.

CHECKED BY
M. NAKAMURA



(4) THE WATERPROOF PERFORMANCE IS IP54.

(3) THIS PARTS ARE USED TOGETHER WITH THE CONTROLLER.
(PARTS NO. 37563-20400, 37563-10400, 35A63-26300, 35A63-16300)

(2) THIS PARTS IS WITH A WATERPROOF CAP OF CONDUIT TYPE.

NOTES (1) THIS PARTS ARE MADE IN WOODWARD JAPAN LTD.
GOVERNOR MODEL (8405-094)

RoHS

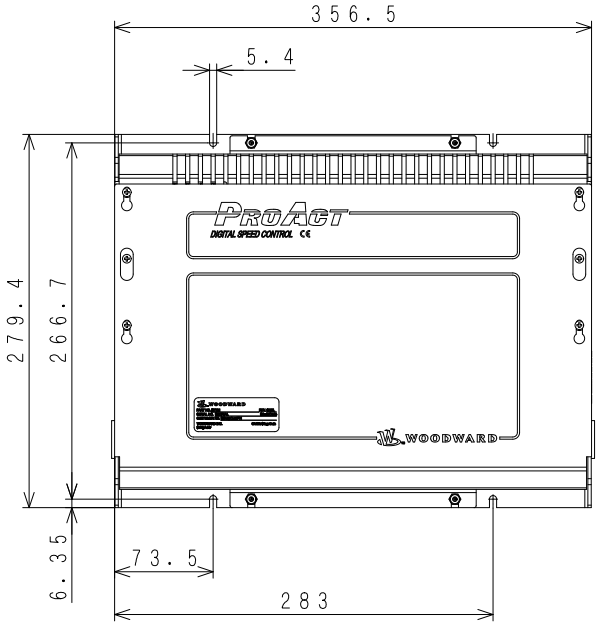
MHIET CONFIDENTIAL

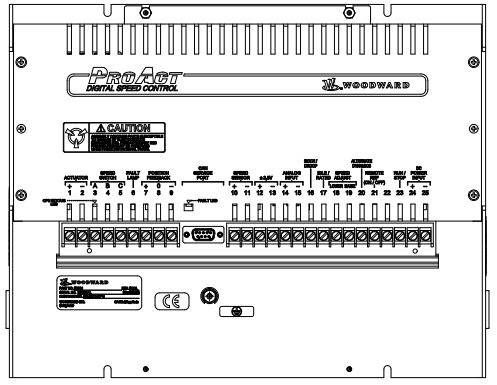
REV.	DATE
	'19.10.1

ACTUATOR PROACT2
PART NO. 35A63-11800

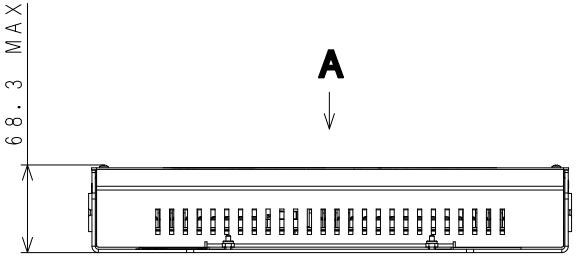
DWG. NO. S13-2122E

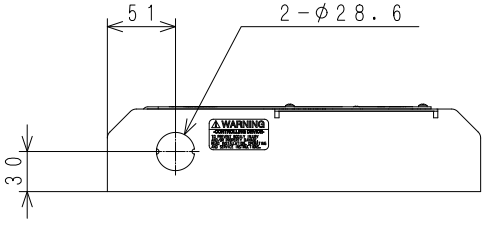
MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

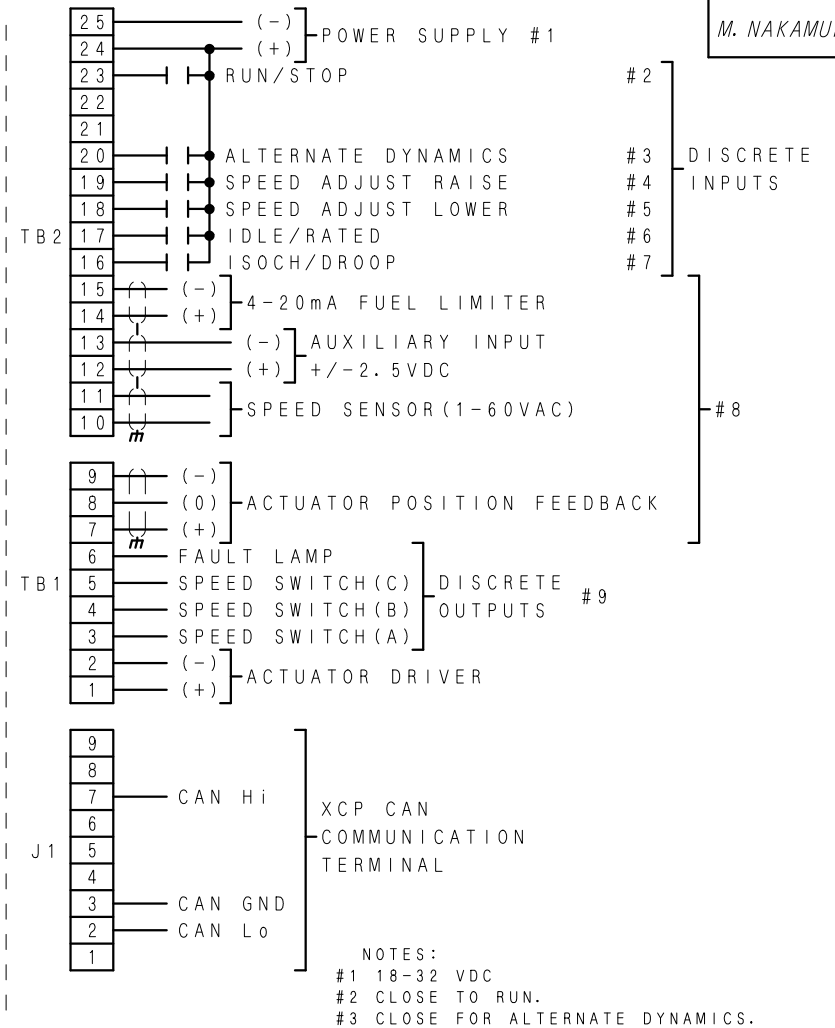




VIEW A
VIEW SHOWS OUTER COVER REMOVED.







NOTES:
#1 18-32 VDC
#2 CLOSE TO RUN.
#3 CLOSE FOR ALTERNATE DYNAMICS.
#4 CLOSE TO RAISE SPEED REF.
#5 CLOSE TO LOWER SPEED REF.
#6 CLOSE FOR RATED.
#7 CLOSE FOR ISOCH.
#8 SHIELDED WIRES TO BE TWISTED. WITH SHIELD GROUNDED AT ONE END ONLY. WHEN MOUNING CONTROL TO BULKHEAD. USE EXTERNAL TOOTH LOCK WASHER UNDER ONE SCREWHEAD TO ENSURE PROPER GROUNDING.
#9 OUTPUT WILL SINK UP TO 0.5 AMPIRE AT POWER SUPPLY VOLTAGE. THE OUTPUT IS A LOW SIDE SWITCH TO THE NEGATIVE OR THE POWER SUPPLY.

NOTES
(1) THIS PARTS IS A PRODUCT MADE BY WOODWARD JAPAN LTD.
THE SPECIFICATIONS ARE THE FOLLOWING.
・PROACTⅡ PLUS TYPE DIGITAL SPEED CONTROLLER.
・WITH 4-20mA FUEL LIMIT FUNCTION.
・GOVERNOR MODEL (8400-063).
(2) THIS CONTROLLER IS USED TOGETHER WITH PROACTⅡ ACTUATOR(PARTS NO. 35A63-11800 OR 35A63-01800).
(3) THIS PARTS APPLY TO RoHS COMPLIANCE.

MHIET CONFIDENTIAL

RoHS

REV.	DATE
	'19.10.1

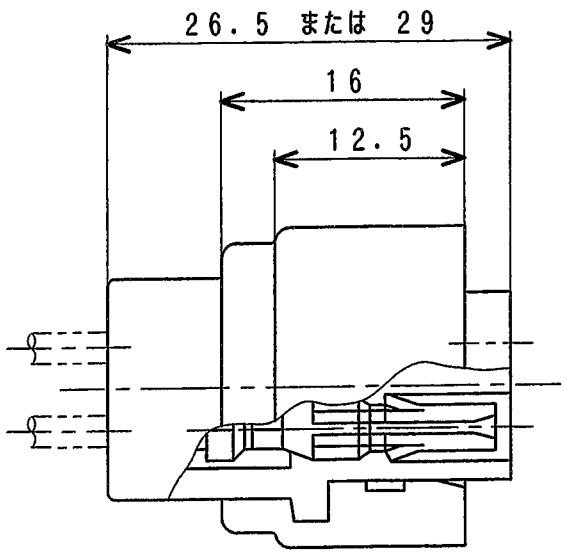
CONTROLLER, PROACT+
PART NO. 37563-20400

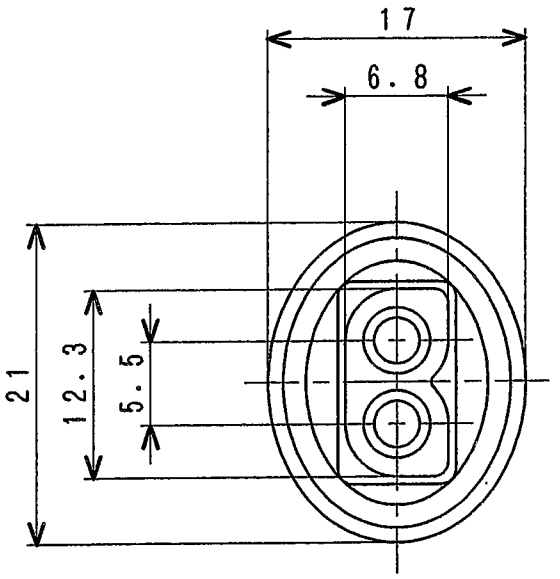
DWG. NO. S13-2870E

MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

CHECKED BY
M. NAKAMURA

CHECKED BY
Y. FUKUDA





MHI CONFIDENTIAL

REV.	DATE
2	'04.3.12
1	'93.8.4

CONNECTOR

PART NO. MH052231

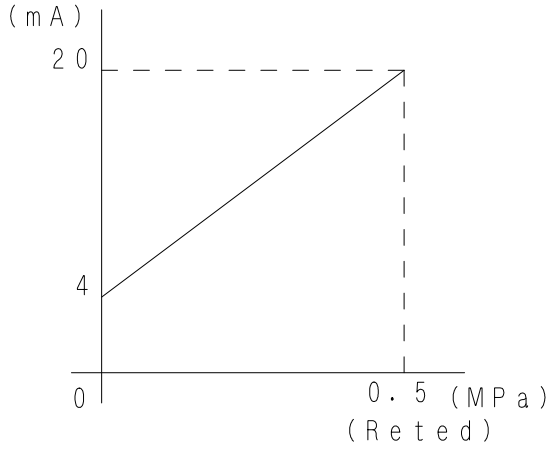
DWG. NO. S14-0330

MITSUBISHI HEAVY INDUSTRIES, LTD.

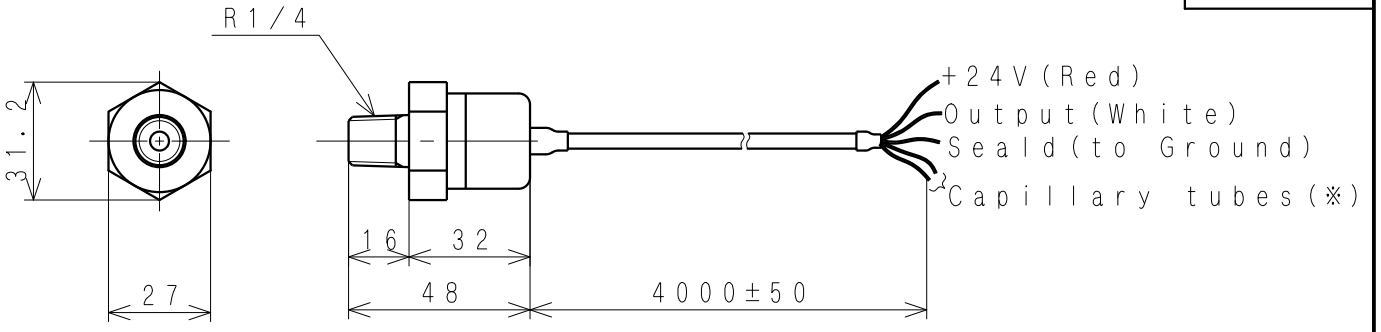
GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS

CHECKED BY
M. NAKAMURA

Figure : Output Performance



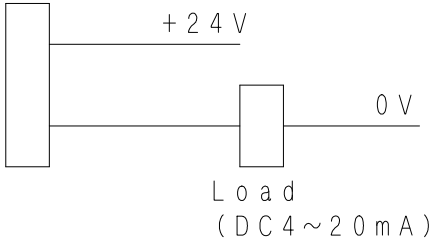
External dimension



Specification

Items	Spec.
Output	Refer to Figure
Maximum pressure	150% of rated output
Power supply	24VDC
Output	4～20mA
Load resistance	Max. 600Ω
Responsiveness	Max. 10msec
Overall accuracy	Max. ±1%FS (0～60℃)
(Linearity)	Max. ±0.3%FS
(Hysteresis)	Max. ±0.2%FS
Operating temp. range	−10～80℃
Guaranty temp. range	0～60℃
Connecting port	PT1/4 (R1/4)
Case	Rust proof design
Cable	4m shield and reference tubes
Weight	Approx. 110g

Transmitter



(※) THE CAPILLARY TUBES SHOULD BE OPENED TO AMBIENT AND PROTECTED FOR WATER.

MHIET CONFIDENTIAL

REV.	DATE
	'19.10.28

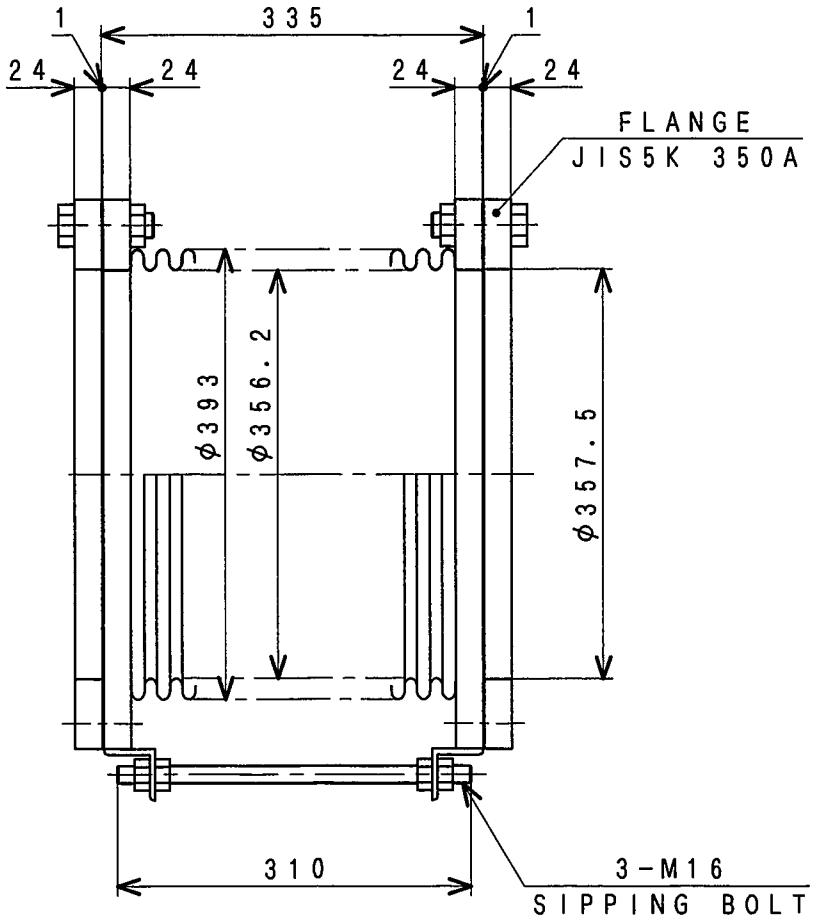
SENSOR, BOOST

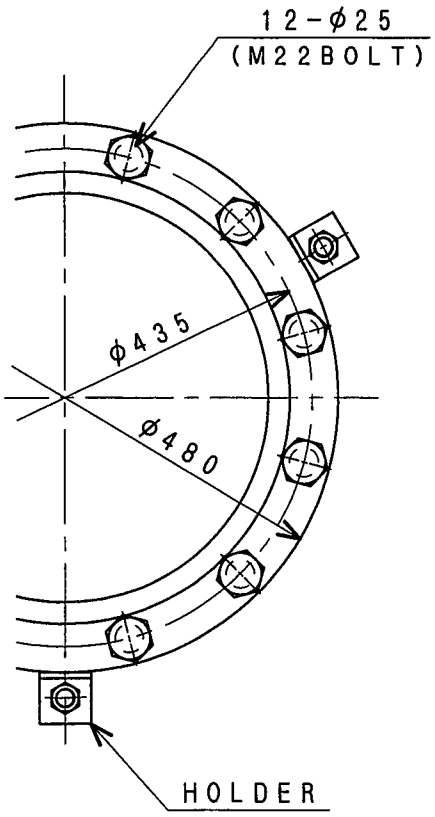
PART NO. 37592-01400

DWG. NO. S19-0610E

MITSUBISHI HEAVY INDUSTRIES ENGINE & TURBOCHARGER, LTD.

CHECKED BY
Y. FUKUDA





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REV.	DATE

PIPE, FLEXIBLE

PART NO. 47920-12400

DWG. NO. S37-1090

MITSUBISHI HEAVY INDUSTRIES, LTD.

GENERAL MACHINERY & SPECIAL VEHICLE HEADQUARTERS

MITSUBISHI DIESEL ENGINE TECHNICAL INFORMATION	ITEM No.	T0102-0001E Rev.11 (1/2)
	DATE	April, 2019

Rating Definitions for Power Generation (SB~SR* series)

Following Contents are enclosed herein.
・Rating Definitions for Power Generation

*Please follow T0102-0009E for S16R2-PTAW-E & S16R2-PTAW2-E.

THE SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Revision				
	First Edition:May, 2006	Engine Engineering Department		
	Rev.1:July, 2007(Refer to Sep.,2006 Rating) , Rev.2:June, 2013	High Speed Engine Designing Section		
	Rev.3:July, 2013 , Rev.4:Mar., 2014 , Rev.5:Apr., 2014	Approved by	Checked by	Drawn by
	Rev.6:January, 2016 , Rev.7:January, 2016	M.NAKAMURA	T.NISHIOKA	K.YATO
	Rev.8:September, 2016 , Rev.9:December, 2018			
	Rev.10:February, 2019			
	Rev.11:April, 2019			

MHIET's Diesel Engine Rating Definition for Power Generation (SB~SR(*8) series)

Symbol	Name of rating (ISO 8528-1:2018 description)	Overload operation (Rack set)	Definition	Required conditions for warranty(*1)					Application
				Load/operating hour(*2)			Overhaul interval after delivery ＜Maximum＞(*3)		
				Ave. load factor /24Hr	Ave. load factor /yr	Operating Hr/yr(*4)	Top	Major	
E	Critical Power Operation (no ISO equivalent)	n.a. (E)(*5)	Stand-by usage with the maximum 300hr continuous operation. Typically example : For Data center.	---	Maximum 100%	Unlimited	4yr (Only the case exceed 500Hr by 4yr)	600Hr or 8yr whichever comes earlier	Emergency, stand-by
E	Emergency standby power (ESP)	n.a (E)	Rated power of an emergency generator as Stand-by that supplies power in case of a failure of main power source or commercial power.	Maximum 80% (100% in emergency)	Maximum 70% (*7)	Maximum 500Hr (*7)	1000Hr or 4yr whichever comes earlier	2000Hr or 8yr whichever comes earlier	
					Maximum 60%		4yr	3000Hr or 8yr whichever comes earlier	
P	Limited-time running power (LTP)	10% (E)	Regular power source of which the operating hour is limited to the short period as specified in the required conditions for warranty in this document. This rating shall be used for applications that require overload operation with Stand-by.	Overload operation (≦ 110%) is limited to a max. of 1Hr per 12Hr.	Maximum 100% (*7)	Maximum 500Hr (*7)	4yr	1000Hr or 8yr whichever comes earlier	Seasonal peak cut
	Prime power (PRP)		For generators with variable load and unlimited operating hour.	Maximum 80% Overload operation (≦ 110%) is limited to a max. of 1Hr per 12Hr. Over 90% load operation is limited to a max. of 3Hr per 24Hr.	Maximum 70% (*7)	Unlimited (*7)	3500Hr or 4yr whichever comes earlier	7000Hr or 8yr whichever comes earlier	Daily peak cut, portable generator
					Maximum 60%		4000Hr or 4yr whichever comes earlier	8000Hr or 8yr whichever comes earlier	
DCP (*6)	Data centre power (DCP)	10% (E)	For generator in Data center application (where reliable grid is available)	100% load is allowed in case of grid failure. Overload operation (≦ 110%) is limited to a max. of 1Hr per 12Hr.	Maximum 100% (*7)	Unlimited (*7)	500Hr or 4yr whichever comes earlier	1000Hr or 8yr whichever comes earlier	Data center
C	Continuous power (COP)	n.a (C)	Rating that can continuously generate power without limitation for operating hour per year under the required conditions for warranty in this document.	Maximum 100%	Maximum 100% (*7)	Unlimited (*7)	6000Hr or 4yr whichever comes earlier (Recommended :4000Hr)	12000Hr or 8yr whichever comes earlier (Recommended :8000Hr)	Base load, cogeneration system
				Maximum 90%	Maximum 90%	Unlimited	8000Hr or 4yr whichever comes earlier (Recommended :6000Hr)	16000Hr or 8yr whichever comes earlier (Recommended :12000Hr)	
D		n.a. (D)	In addition to the for symbol C above, this rating shall be used 90% or higher average load factor or longer maintenance interval are required.	Maximum 100%	Maximum 100% (*7)	Unlimited (*7)	8000Hr or 4yr whichever comes earlier (Recommended :6000Hr)	16000Hr or 8yr whichever comes earlier (Recommended :12000Hr)	

(*1)This condition constitutes a part of required conditions for warranty that Mitsubishi Heavy Industries Engine & Turbocharger,Ltd.(hereinafter "MHIET") agrees with the other party under Diesel Engine Sales Contract with the party(hereinafter "Individual Contract"), however details of the warranty descriptions and the conditions shall be referred to the Individual Contract. Atmospheric condition as per ISO 15550:2002(JIS B 8003:2005) (Barometic pressure :100kPa, ambient temperature :298K, relative humidity :30%).

(*2)Average load factor(per day or year) shall be calculated as per the formula in ISO 8528-1:2018 'average power output(Ppp)'.

(*3)Refer to Operation Manual for more information regarding inspection and maintenance including items and descriptions.

(*4)Warranty coverage shall be expired after Major Overhaul.

(*5)For backup or emergency purpose engine, it is needed to have output margin of 5% or more for the customer demand output to avoid engine stall by output tolerance(ISO 15550) and frequency variation etc.

(*6)The rating is consistent with the requirement of a Tier Ⅲ and Tier Ⅳ under the Uptime Institute.

(*7)Conditions are consistent with the requirements under ISO 8528-1:2018.

(*8)Please follow T0102-0009E for S16R2-PTAW-E & S16R2-PTAW2-E.

MITSUBISHI DIESEL ENGINE TECHNICAL INFORMATION	ITEM No.	T0221-0010E Rev.2 (1/5)
	DATE	May, 2019

Specification Sheets of S16R2-PTA Engine

Specification Sheets of S16R2-PTA Engine are enclosed herein.

The specifications are subject to change without notice.

Revision				
	First Edition : October, 2015	Engine Engineering Department		
	Rev.1 : Mar, 2016	High Speed Engine Designing Section		
	Rev.2 : May, 2019	Approved by	Checked by	Drawn by
		M.NAKAMURA	T.NISHIOKA	T.N

GENERAL ENGINE DATA

Type	4-Cycle, Water Cooled	
Aspiration	Turbo-Charged, After cooler (Jacket Water to Cooler)	
Cylinder Arragement	60°V	
No.of Cylinders	16	
Bore mm(in.)	170	(6.69)
Stroke mm(in.)	220	(8.66)
Displacement liter(in^3)	79.90	(4876)
Compression Ratio	14.0:1	
Dry Weight - Engine only - kg(lb)	7750	(17089)
Wet Weight - Engine only - kg(lb)	8200	(18081)

PERFORMANCE DATA

Steady State Speed Stability Band at any Constant Load			
Electric Governor - %	±0.25 or better		
Maximum Overspeed Capacity - rpm	1750		
Moment of inertia of Rotating Components	(S.I.)kg・m^2($lb・ft^2$)	32.92	(781)
(Includes Std.Flywheel)	(GD^2)kgf・m^2($lbf・ft^2$)	131.7	(3125)
Cyclic Speed Variation with Flywheel at	1500rpm	1/204	
	1200rpm	1/129	

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Flywheel Housing - kgf・m(lbf・ft)	450	(3256)

AIR INLET SYSTEM

Maximum Intake Air Restriction (Includes piping)		
With Clean Filter Element - mm H_2O (in.H_2O)	400	(15.7)
With Dirty Filter Element - mm H_2O (in.H_2O)	635	(25.0)

EXHAUST SYSTEM

Maximum Allowable Back Pressure - mm H_2O (in.H_2O)	600	(23.6)

LUBRICATION SYSTEM

Oil Pressure at ldle - kgf/cm^2(psi)	2～3	(29～43)
at Rate Speed - kgf/cm^2(psi)	4～6	(57～86)
Maximum Oil Temperature - °C(°F)	105	(221)
Oil Capacity of Standard Pan High - liter (U.S.gal)	260	(68.7)
Low - liter (U.S.gal)	200	(52.8)
Total System Capacity (lncludes Oil Filter) - liter (U.S.gal)	290	(76.6)
Maximum Angle of lnstallation (Std. Pan) Front Down	6°	
(Engine Only) Front Up	6°	
Side to Side	25°	

COOLING SYSTEM

Coolant Capactiy (Engine Only) - liter (U.S.gal)	188	(49.7)
Maximum External Friction Head at Engine Outlet - kgf/cm^2(psi)	0.35	(5.0)
Maximum Static Head of Coolant above Crankshaft Center - m(ft)	10	(32.8)
Standard Thermostat (modulating)Range of Jacket- °C(°F)	71～85	(160～185)
Maximum Coolant Temperature at Engine Outlet- °C(°F)	98	(208)
Minimum Coolant Expansion Space - % of System Capacity	10	
Maximum Air Restriction on Discharge Side of Radiator and Fan - mmH_2O(in.H_2O)	10	(0.4)

The specifications are subject to change without notice.

APPLICATION : GENERATOR

May, '19 Printed in Japan

FUEL SYSTEM

Fuel Injector	Mitsubishi PS8 Type × 2	
Maximum Suction Head of Feed Pump - mm Hg (in. Hg)	75	(3.0)
Maximum Static Head of Return & Leak Pipe - mm Hg (in.Hg)	150	(5.9)

STARTING SYSTEM

Battery Charging Alternator - V-Ah	24-35
Starting Motor Capacity - V -kW	24-7.5×2
Maximum Allowable Resistance of Cranking Circuit - m Ω	1.5
Recommended Minimum Battery Capacity	
At 5°C(41°F) and above - Ah	400
Below 5°C(41°F) through - 5°C(23°F)	600

ENGINE RATING

All data represent net performance with standard accessories such as air cleaner, inlet /exhaust manifolds, fuel oil system, L.O. pump, etc. under the condition of 100kPa(29.6inHg) barometric pressure, 77°F(25°C) ambient temperature and 30% relative humidity.

ITEM	UNIT	STAND-BY POWER	PRIME POWER	CONTINUOUS C		CONTINUOUS D
		50Hz	50Hz	50Hz	60Hz	50Hz
Engine Speed	rpm	1500	1500	1500	1200	1500
No. of Cylinders		16				
Bore	mm	170				
	(in.)	(6.69)				
Stroke	mm	220				
	(in.)	(8.66)				
Displacement	liter	79.9				
	($in.^3$)	(4876)				
Brake Horse power without Fan	HP	2905	2627	2252	1823	2001
	(kW)	(2167)	(1960)	(1680)	(1360)	(1493)
Brake Mean Effective Pressure	kgf/cm^2	22.1	20.0	17.1	17.4	15.2
	(MPa)	(2.17)	(1.96)	(1.68)	(1.71)	(1.49)
without Fan	(psi)	(314)	(284)	(243)	(247)	(216)
Mean Piston Speed	m/s	11.0	11.0	11.0	8.8	11.0
	(ft/min)	(2165)	(2165)	(2165)	(1732)	(2165)
Maximum Regenerative Power	HP	204	204	204	163	204
Absorption Capacity without Fan	(kW)	(152)	(152)	(152)	(121)	(152)
Intake Air flow	m^3/min	192	171	145	112	129
	(CFM)	(6780)	(6038)	(5120)	(3955)	(4555)
Exhaust Gas Flow	m^3/min	509	451	383	297	341
	(CFM)	(17973)	(15925)	(13524)	(10487)	(12041)
Coolant Flow	liter/min	1650	1650	1650	1300	1650
	(U.S. GPM)	(436)	(436)	(436)	(343)	(436)
Allowable Fan Loss Horse Power	HP	82	82	82	54	82
	(kW)	(61)	(61)	(61)	(40)	(61)
Radiated Heat to Ambient	kcal/hr	145673	129224	109678	84963	97699
	(kJ/hr)	(609794)	(540937)	(459117)	(355659)	(408972)
	(BTU/min)	(9635)	(8547)	(7254)	(5619)	(6462)
Heat Rejection to Coolant	kcal/hr	1213945	1076869	913981	708023	814161
	(kJ/hr)	(5081628)	(4507822)	(3825965)	(2963816)	(3408114)
	(BTU/min)	(80289)	(71223)	(60449)	(46828)	(53848)
Heat Rejection to Exhaust	kcal/hr	1632907	1416114	1187750	869737	1061057
	(kJ/hr)	(6835421)	(5927916)	(4971974)	(3640758)	(4441632)
	(BTU/min)	(107998)	(93660)	(78556)	(57523)	(70177)
Noise Level	dB(A)	TBD	TBD	TBD	TBD	TBD

ENGINE RATING

All data represent net performance with standard accessories such as air cleaner, inlet /exhaust manifolds, fuel oil system, L.O. pump, etc. under the condition of 100kPa(29.6inHg) barometric pressure, 77°F(25°C) ambient temperature and 30% relative humidity.

ITEM	UNIT	STAND-BY POWER	PRIME POWER	CONTINUOUS C		CONTINUOUS D
		50Hz	50Hz	50Hz	60Hz	50Hz
Engine Speed	rpm	1500	1500	1500	1200	1500
No. of Cylinders		16				
Bore	mm (in.)	170 (6.69)				
Stroke	mm (in.)	220 (8.66)				
Displacement	liter ($in.^3$)	79.9 (4876)				
Brake Horse power without Fan	HP (kW)	2905 (2167)	2627 (1960)	2252 (1680)	1823 (1360)	2001 (1493)
Brake Mean Effective Pressure (MPa) without Fan (psi)	kgf/cm^2 (MPa) (psi)	22.1 (2.17) (314)	20.0 (1.96) (284)	17.1 (1.68) (243)	17.4 (1.71) (247)	15.2 (1.49) (216)
Mean Piston Speed	m/s (ft/min)	11.0 (2165)	11.0 (2165)	11.0 (2165)	8.8 (1732)	11.0 (2165)
Maximum Regenerative Power Absorption Capacity without Fan	HP (kW)	204 (152)	204 (152)	204 (152)	163 (121)	204 (152)
Intake Air flow	m^3/min (CFM)	192 (6780)	171 (6038)	145 (5120)	112 (3955)	129 (4555)
Exhaust Gas Flow	m^3/min (CFM)	509 (17973)	451 (15925)	383 (13524)	297 (10487)	341 (12041)
Coolant Flow	liter/min (U.S. GPM)	1650 (436)	1650 (436)	1650 (436)	1300 (343)	1650 (436)
Oil Flow to External Oil Cooler	liter/min (U.S. GPM)	70 (18)	70 (18)	70 (18)	56 (15)	70 (18)
Allowable Fan Loss Horse Power	HP (kW)	82 (61)	82 (61)	82 (61)	54 (40)	82 (61)
Radiated Heat to Ambient	kcal/hr (kJ/hr) (BTU/min)	145673 (609794) (9635)	129224 (540937) (8547)	109678 (459117) (7254)	84963 (355659) (5619)	97699 (408972) (6462)
Heat Rejection to Coolant	kcal/hr (kJ/hr) (BTU/min)	1165387 (4878362) (77077)	1033794 (4327508) (68374)	877422 (3672928) (58032)	679702 (2845263) (44955)	781595 (3271792) (51694)
Heat Rejection to External Cooler (external oil cooler, mounted on radiator)	kcal/hr (kJ/hr) (BTU/min)	72837 (304899) (4817)	64612 (270469) (4273)	54839 (229558) (3627)	42481 (177827) (2810)	48850 (204488) (3231)
Heat Rejection to Exhaust	kcal/hr (kJ/hr) (BTU/min)	1560071 (6530527) (103181)	1351502 (5657448) (89387)	1132911 (4742416) (74929)	827255 (3462926) (54714)	1012207 (4237144) (66946)
Noise Level	dB(A)	TBD	TBD	TBD	TBD	TBD