

CUSTOMER	
SHIP NO.	
BUILDER	

Marks	Engine type	Turbocharger type	Tier3	Hydraulic supply oil
				Common system
01	6UEC50LSH-Eco-C3-EGR	MET60MB-EGB×1	x	x
		MET53MB-EGB×1	x	x
		MET48MB-EGB×1	x	x
		MET42MB-EGB×1	x	x
02	6UEC50LSH-Eco-C4-EGR	MET60MB-EGB×1	x	x
		MET53MB-EGB×1	x	x
		MET48MB-EGB×1	x	x
		MET42MB-EGB×1	x	x

x: Apply

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JAPAN ENGINE CORPORATION AGREES WITH WRITTEN MATERIALS.

DESTINATION		SERIAL NO.	MODEL 6UEC50LSH-Eco-C3/C4-EGR	
	ORDER NO.		諸管線図集 PIPING DIAGRAM	
	ENGINEERING DEPARTMENT			
	APPROVED 江戸			
	CHECKED 木下 吉川			
	DRAWN 甘利			
	DATE Nov.6, 2018		DRAWING NO.	
SHEETS		SHEETS U7-0K093		L
Total				

CONTENTS

<u>Name of piping diagram</u>		-C3	-C4
U7-OK093	①-1 19	×	×
" "	①-2 19	×	×
" "	② 19	×	
" "	② 19		×
" "	③ 19	×	
" "	③ 19		×
" "	④ 19	×	×
" "	⑤-1 19	×	×
" "	⑤-2 19	×	×
" "	⑥ 19	×	×
" "	⑦ 19	×	
" "	⑦ 19		×
" "	⑧ 19	×	×
" "	⑨ 19	×	×
" "	⑩ 19	×	×
" "	⑪-1 19	×	×
" "	⑪-2 19	×	×
" "	⑫ 19	×	×
" "	⑬ 19	×	×
" "	⑭ 19	×	×
" "	⑮ 19	×	×
" "	⑯ 19	×	×
" "	⑰ 19	×	×
" "	⑱ 19	×	×
" "	⑲ 19	×	×
×: Apply			

FIRE PROTECTIONS FOR FUEL OIL, LUBRICATING OIL AND OTHER FLAMMABLE OILS.

Protection for flammable oil spreading.

Pipe joints of flammable oil lines are covered with FN tape or aluminum cloth to comply with CLASSIFICATION SOCIETY RULES.

1. Pipe joints for fuel oil supply pipe
2. Pipe joints for fuel oil high pressure pipe
3. Pipe joints for fuel oil pressure gauge pipe
4. Pipe joints for piston cooling oil pipe
5. Pipe joints for turbocharger lubricating oil pipe
6. Pipe joints for lubricating oil pressure gauge pipe

可燃性油飛散防止対策について

以下の可燃性油管フランジ及び特殊継手部には、船級ルールに基づきFNテープまたは、アルミクロスにより飛散防止の措置を講じる。

1. 燃料油管継手
2. 燃料高圧管継手部
3. 燃料圧力計配管継手部
4. ピストン冷却油管継手部
5. 過給機潤滑油入口管継手部
6. 潤滑油圧力計配管継手部

※ Flat type sight glasses fitted in the lubricating oil and other flammable oil pipe lines are complied with JIS F7234 or equivalent.



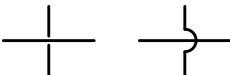



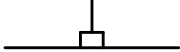
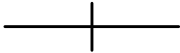
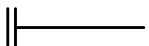
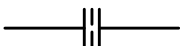









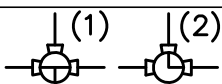
※ 潤滑油、その他可燃性油管に装備する平形サイトグラスはJIS F7234規格品若しくはそれ相当品を使用しております。

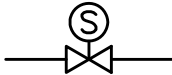



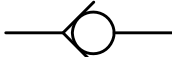



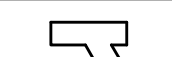

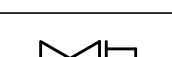
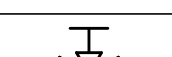
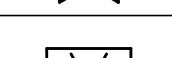
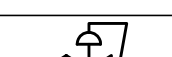
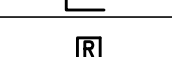




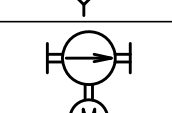
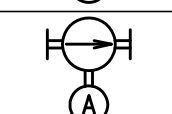
SYMBOLS FOR MAIN ENGINE PIPING DIAGRAM




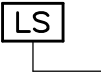



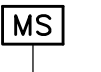




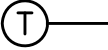
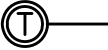
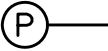


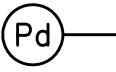
- Remarks
- 1 The pipe size in this document is subject to JIS(Japanese Industrial Standard) G3452 and G3454 "Nominal diameter"
 - 2 Scope of piping work is specified as follows;
—— Solid line: Engine Builder
----- Dotted line: Shipyard
 - 3 The content of symbol in piping diagram is described in the table.
(Page5~Page9)


SYMBOLS FOR MAIN ENGINE PIPING DIAGRAM

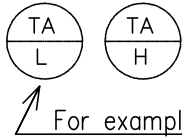
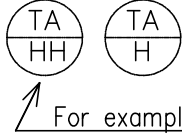
主 機 関 諸 管 線 図 記 号

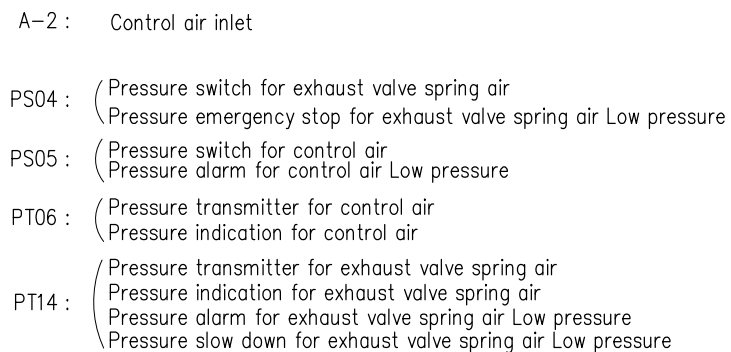
SYMBOLS 記 号	NAME	名 称	REMARKS 備 考
	Nominal inner diameter	称 呼 口 径	
	Crossing pipes, connected	連 結 管	
	Crossing pipes, not connected	不 連 結 管	
	To bilge	ビ ル ジ ヘ	
	Boss	ボ ス	
	Boss with plug	プ ラ グ 付 ボ ス	
	Joint, bossed	ボ ス 継 手	
	Joint, flanged	フ ラ ン ジ 継 手	
	Blind flange	閉 止 フ ラ ン ジ	
	Orifice	オ リ フ ィ ス	
	Flexible pipe	フ レ キ シ ブ ル パ イ プ	
	Hopper	ホ ッ パ ー	
	Hopper with cover	ふ た 付 ホ ッ パ ー	
	Air vent pipe	空 気 抜 管	
	Siphon	サ イ フ ォ ン	
	Air chamber	エ ア チ ャ ン バ ー	
	Seal pot	シ ー ル ポ ッ ト	
	Stop valve	止 め 弁	
	Butterfly valve	バ タ フ ラ イ 弁	
	Three-way cock	三 方 コ ッ ク	(1) T 形 (T-PORT) (2) L 形 (L-PORT)

SYMBOLS 記 号	NAME	名 称	REMARKS 備 考
	Solenoid operated valve	電磁弁	
	Gate valve	仕切弁	
	Safety valve	安全弁	
 	Check valve	逆止弁	
	Sight glass	サイトグラス	
	Simplex strainer	単式コシ	
	Duplex strainer	複式コシ	
	Y type strainer	Y形ストレーナ	
	Reducer	レジュース	
	Hose coupling	ホース継手	
	Regulating valve	自動調整弁	
	Self-seal joint	セルフシール継手	
	Filter and regulator	フィルタ及び調圧弁	
	Remote control valve	遠隔制御弁	
	Control valve	制御弁	
	Back pressure valve	背圧弁	
	Regulator	レギュレータ	
	Drain separator (with auto drain)	ドレンセパレータ (オートドレン付き)	
	Electric driven pump	電動ポンプ	
	Air driven pump	エア駆動ポンプ	

SYMBOLS 記 号	NAME	名 称	REMARKS 備 考
	Pressure switch	圧力スイッチ	
	Temperature switch	温度スイッチ	
	Float switch	フロートスイッチ	
	Limit switch	リミットスイッチ	
	Pressure transmitter	圧力トランスミッター	
	Temperature sensor	温度センサ	
	O ₂ concentration sensor	O ₂ 濃度センサ	
	Mist sensor	ミストセンサ	
	Smoke sensor	スモークセンサ	
	Oil or water level sensor	液面レベルセンサ	
	Differential pressure switch	差圧スイッチ	
	Oil mist detector	オイルミスト警報装置	
Bar type 	Thermometer	温度計	
Dial type 			
Engine side 	Pressure gauge	圧力計	
on Gauge board 			
	U Tube manometer	U字管式圧力計	
	Differential pressure gauge	差圧計	

SYMBOLS 記 号	NAME	名 称	REMARKS 備 考
	Remotely indicated	遠隔指示計	
PI	Pressure indication	圧力指示	
PA	Pressure alarm	圧力警報	
DPA	Differential pressure alarm	差圧警報	
PSD	Pressure slow down	圧力減速	
TI	Temperature indication	温度指示	
TA	Temperature alarm	温度警報	
TE	Temperature emergency stop	温度危急停止	
TSD	Temperature slow down	温度減速	
LI	Level indication	液面指示	
LA	Oil or water level alarm	液面指示	
FI	Flow indication	流れ指示	
FA	Flow alarm	流れ警報	
FSD	Flow slow down	流れ減速	
OI	O ₂ concentration indication	O ₂ 濃度指示	
OA	O ₂ concentration alarm	O ₂ 濃度警報	
MSA	Mist alarm	ミスト警報	
ASD	Auto slow down	自動減速	
pHIA	pH indication, alarm	pH指示、警報	
DIA	Density indication, alarm	比重指示、警報	

SYMBOLS 記 号	NAME	名 称	REMARKS 備 考
H	High (high press., high temp., high level)	压力高, 温度高, 液面高	
L	Low (low press., low temp., low level, low flow)	压力低, 温度低, 液面低, 流量低	
HH	High-High (high-high press., high-high temp.)	压力高々, 温度高々	
LL	Low-Low (low-low press.,low-low temp.,low-low level,low-low flow)	压力低々, 温度低々 液面低々, 流量低々	
D	Deviation	偏差大	
N.O.	Normal open	常 時 開	
N.C.	Normal close	常 時 閉	



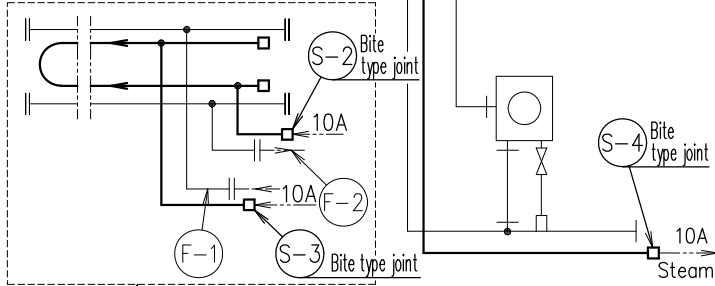
排気弁エアースプリング管線図 $\textcircled{\frac{1-2}{19}}$

-C4



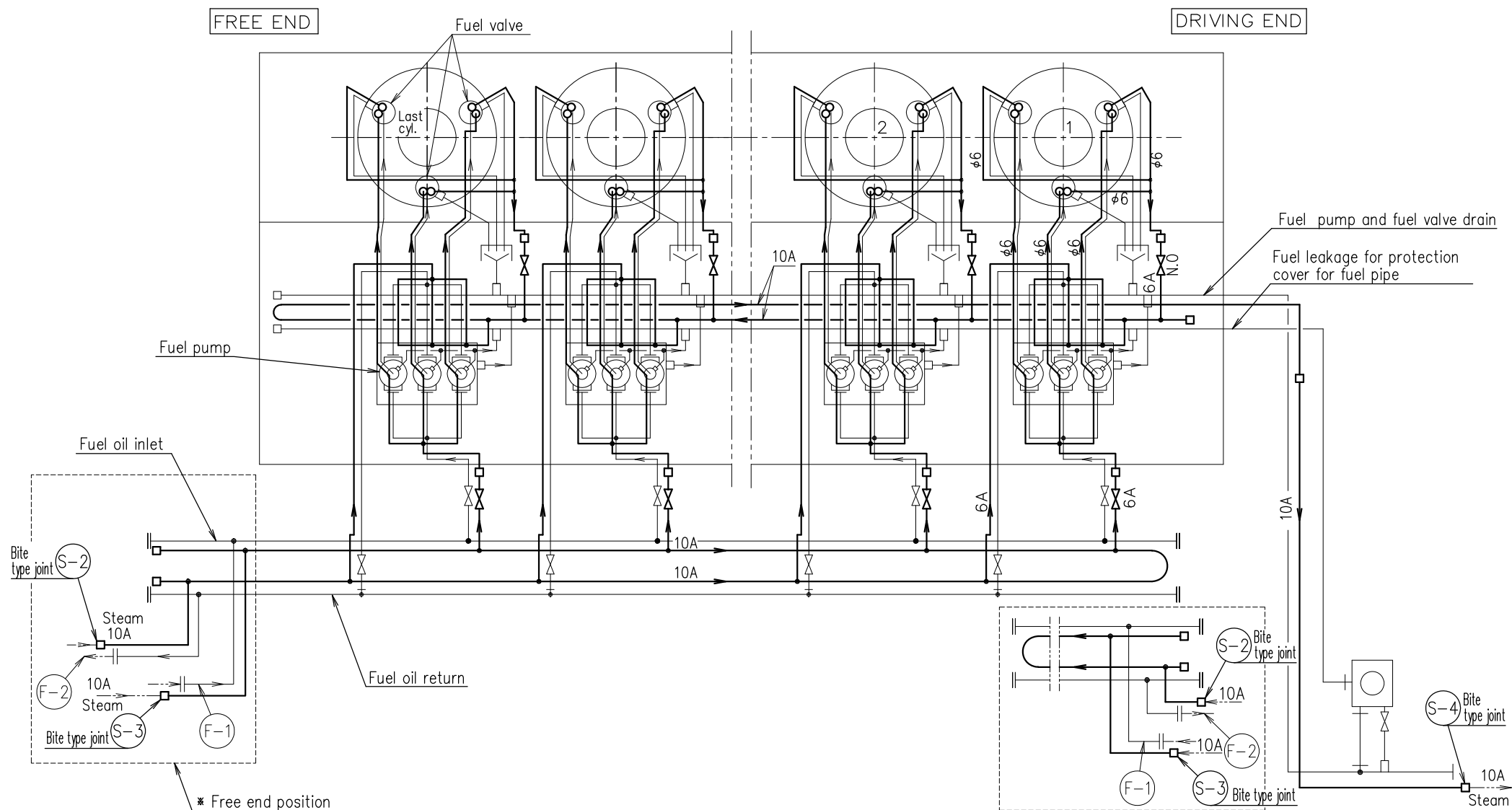


FS01: (Float switch for fuel leakage from protection cover of fuel pipe
Leakage level alarm for fuel leakage from protection cover of fuel pipe High level



※ Driving end position

$$\frac{3}{19}$$



* That of selecting one of the other.
 どちらか一方を選択のこと。

S-2, S-3 : Steam trace pipe inlet (for fuel oil pipe)
 S-4 : Steam trace pipe outlet

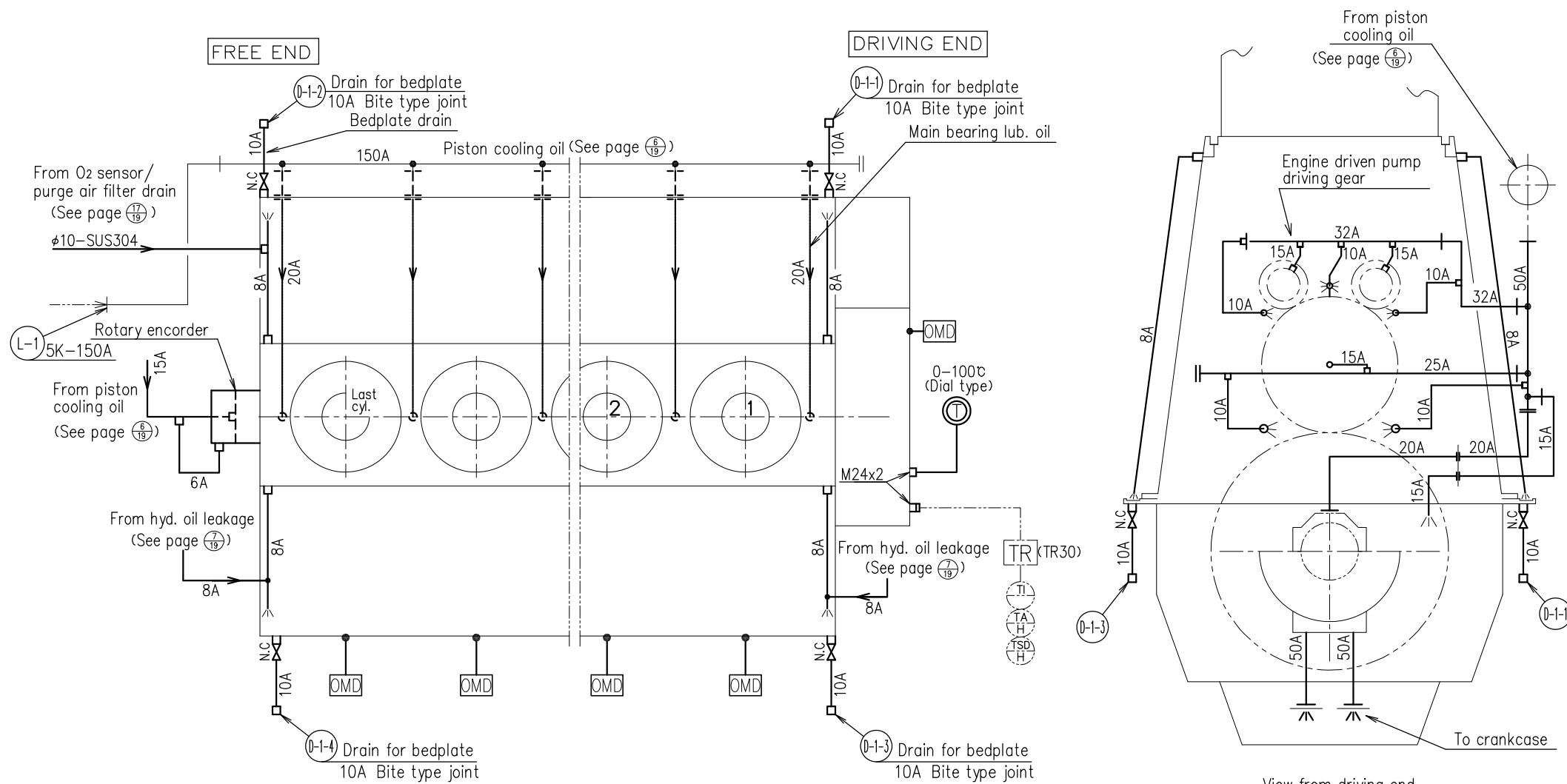
6UEC50LSH-Eco-EGR

Piping diagram of
 fuel oil steam

燃料油加熱蒸気管線図

-C4

3
19



L-1 : Piston cooling oil inlet
 D-1-1,D-1-2,D-1-3,D-1-4 : Drain for bed plate

TR30: (Temperature resistor for thrust bearing lubricating oil
 Temperature indication for thrust bearing lubricating oil
 Temperature alarm for thrust bearing lubricating oil High temperature
 Temperature slow down for thrust bearing lubricating oil High temperature
 OMD: Oil mist detector for crank case oil mist

6UEC50LSH-Eco-EGR

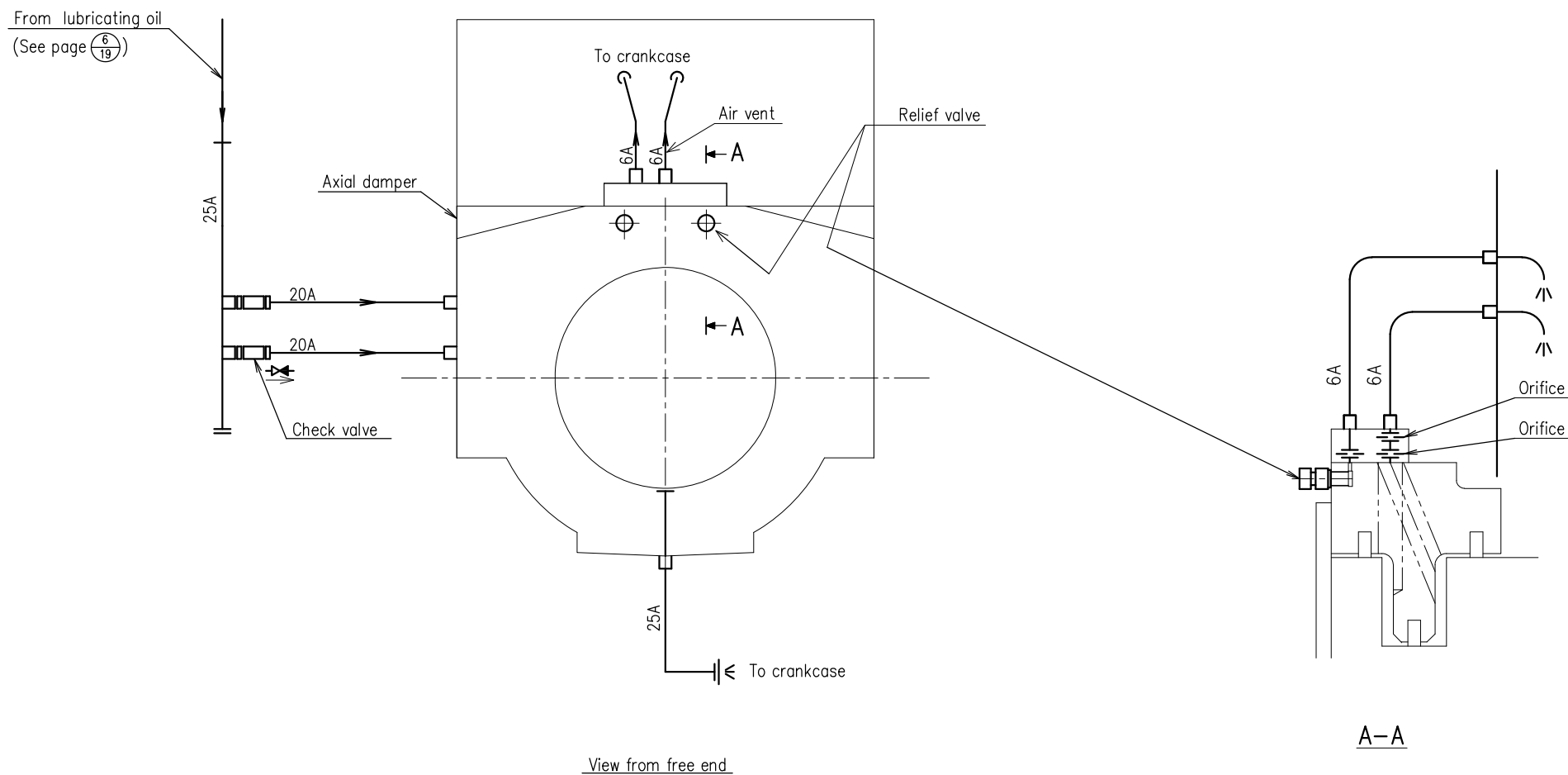
Piping diagram of
 lubricating oil

潤滑油管線図

-C3

-C4

4
19



6UEC50LSH-Eco-EGR

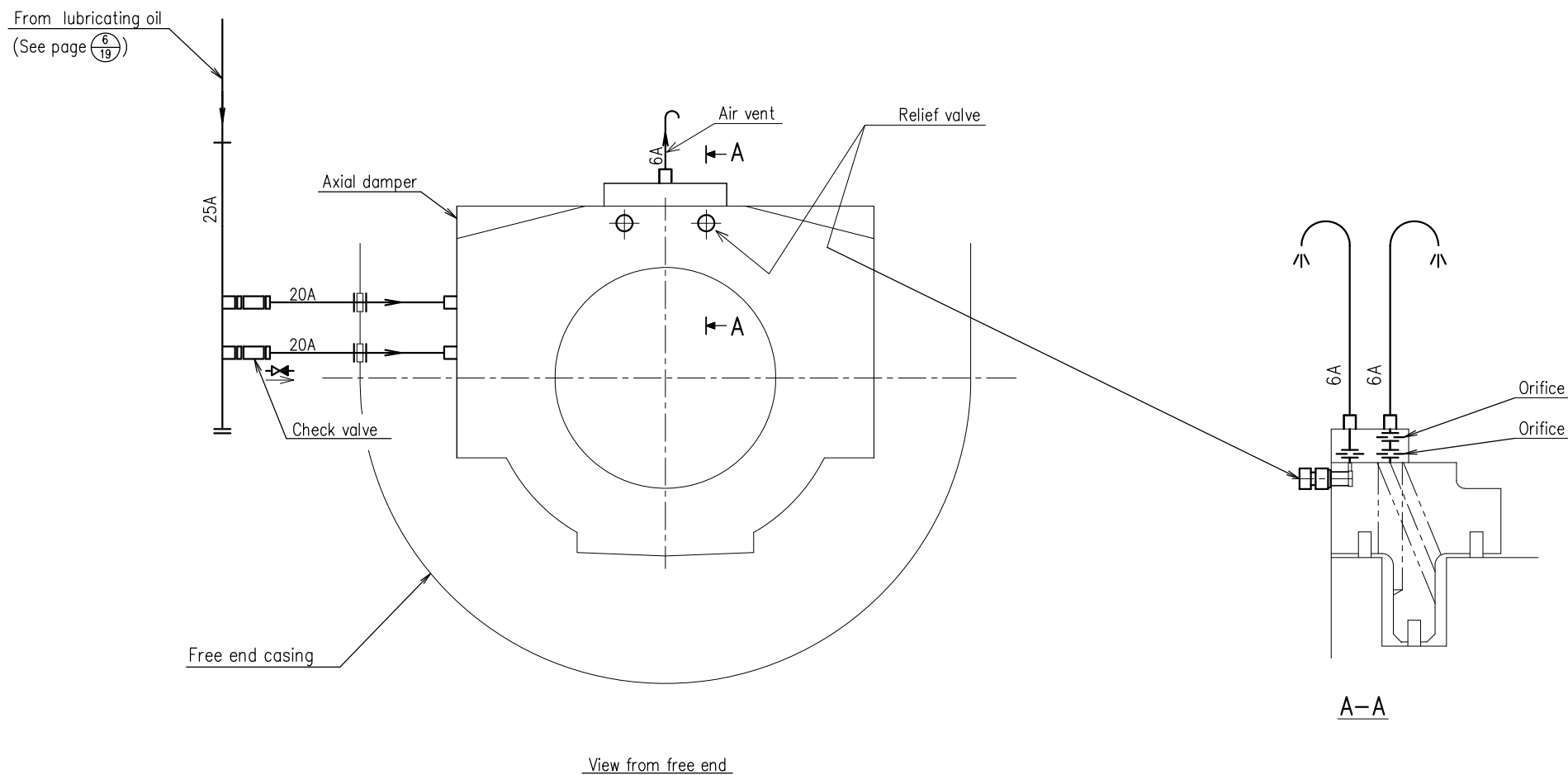
Piping diagram of
axial damper oil

縦振動ダンパー油管線図

-C3

-C4

⑤-1
19



6UEC50LSH-Eco-EGR

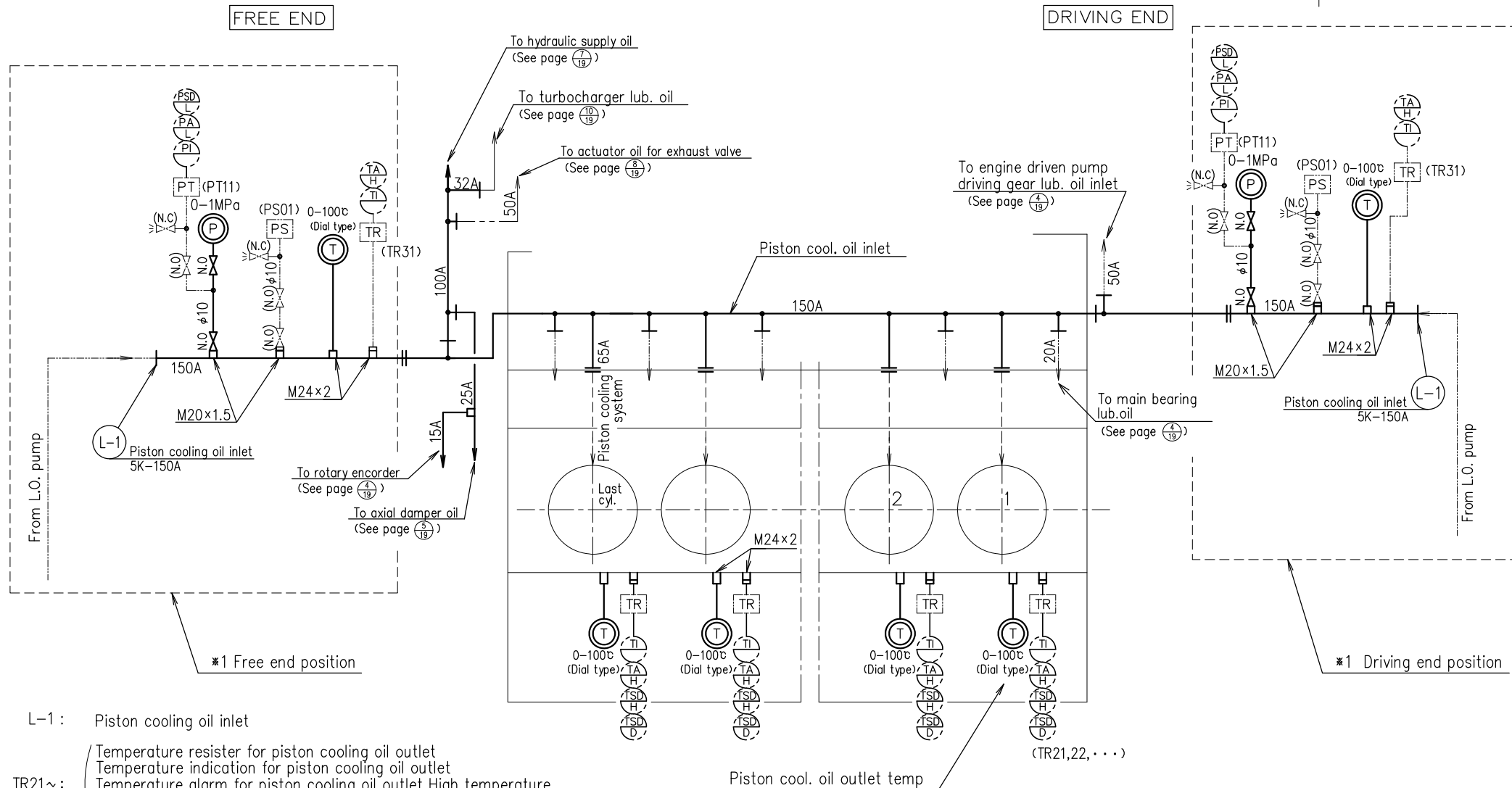
Piping diagram of
axial damper oil (with free end cover)

縦振動ダンパー油管線図

-C3

-C4

⑤-2/19



L-1 : Piston cooling oil inlet

TR21~: (Temperature resister for piston cooling oil outlet
 Temperature indication for piston cooling oil outlet
 Temperature alarm for piston cooling oil outlet High temperature
 Temperature slow down for piston cooling oil outlet High temperature
 Temperature slow down for piston cooling oil outlet High deviation

TR31: (Temperature resistor for lubricating oil inlet
Temperature indication for lubricating oil inlet
Temperature alarm for lubricating oil inlet High temperature

PT11: (Pressure transmitter for lubricating oil inlet
Pressure indication for lubricating oil inlet
Pressure alarm for lubricating oil inlet Low pressure
Pressure slow down for lubricating oil inlet Low pressure

PS01: (Pressure switch for lubricating oil inlet
Pressure emergency stop for lubricating oil inlet Low pressure

※1 That of selecting the one of the other.
どちらか一方を選択のこと。

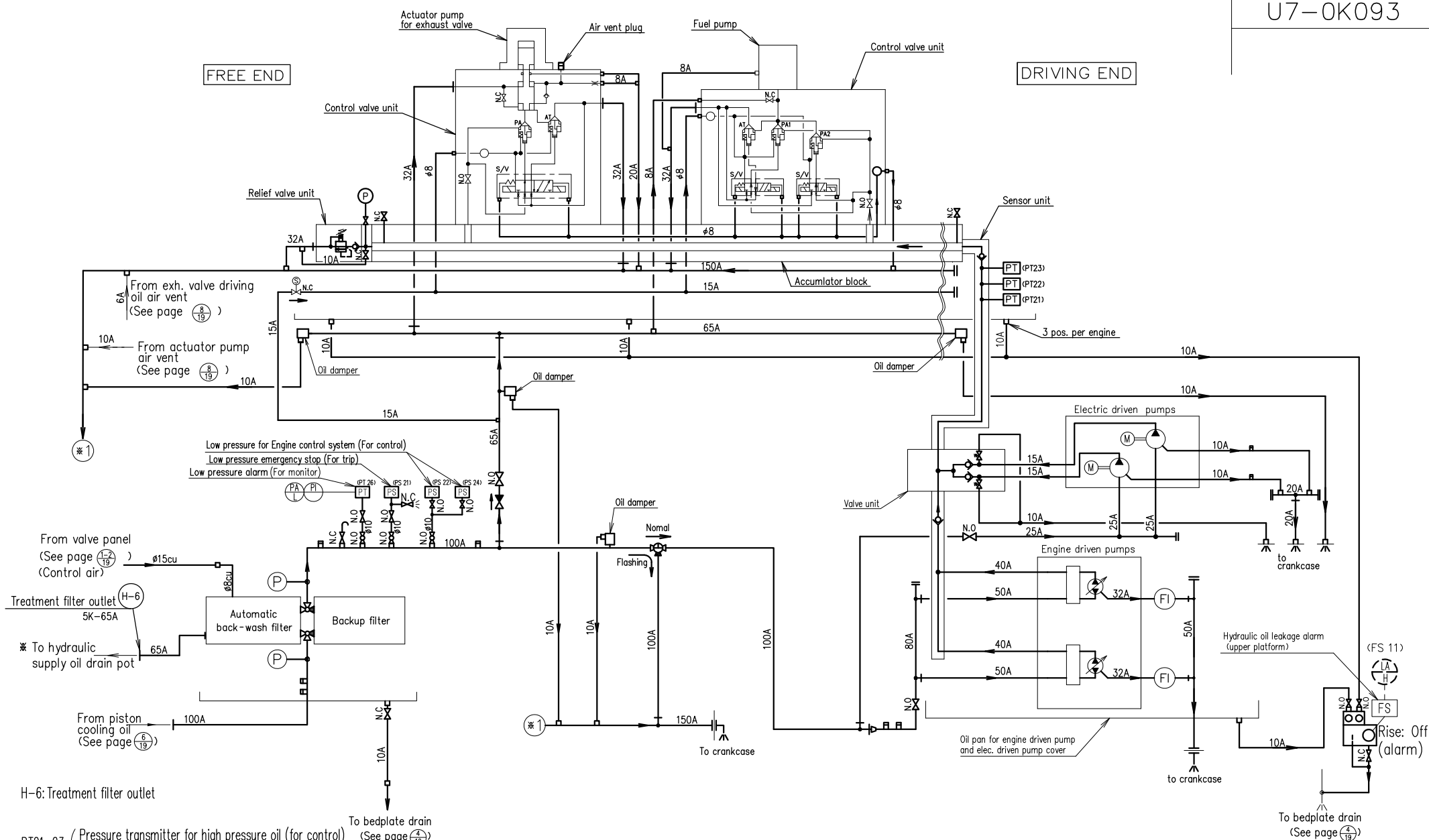
6UEC50LSH-Eco-EGR

Piping diagram of
piston cooling oil
ピストン冷却油管線図

-C3

-C4

$$\frac{6}{19}$$



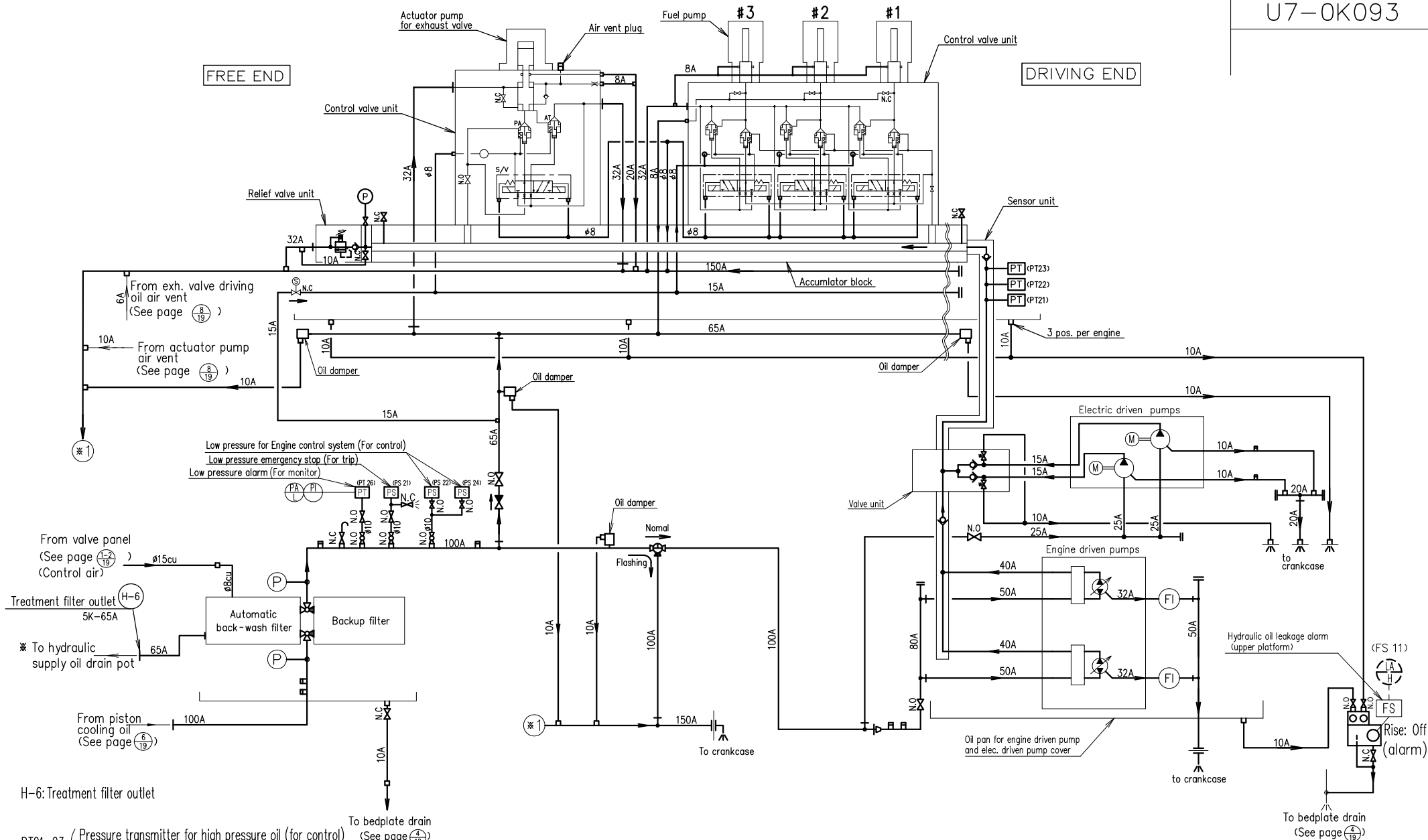
※ May not stand up the pipe to prevent build up oil until the drain tank.
And shall be contact the engine manufacturer if there is a need to stand up the pipe.
ドレンタンクまで油溜まりができないように管に立ち上げ部を作らないこと。
配管を立ち上げる必要のある場合はエンジンメーカーに問い合わせること。

6UEC50LSH-Eco-EGR

Piping diagram of
hydraulic supply oil
(Common system)
油圧作動油管線図 (共油系統)

-C3

7
19



6UEC50LSH-Eco-EGR

Piping diagram of
hydraulic supply oil
(Common system)

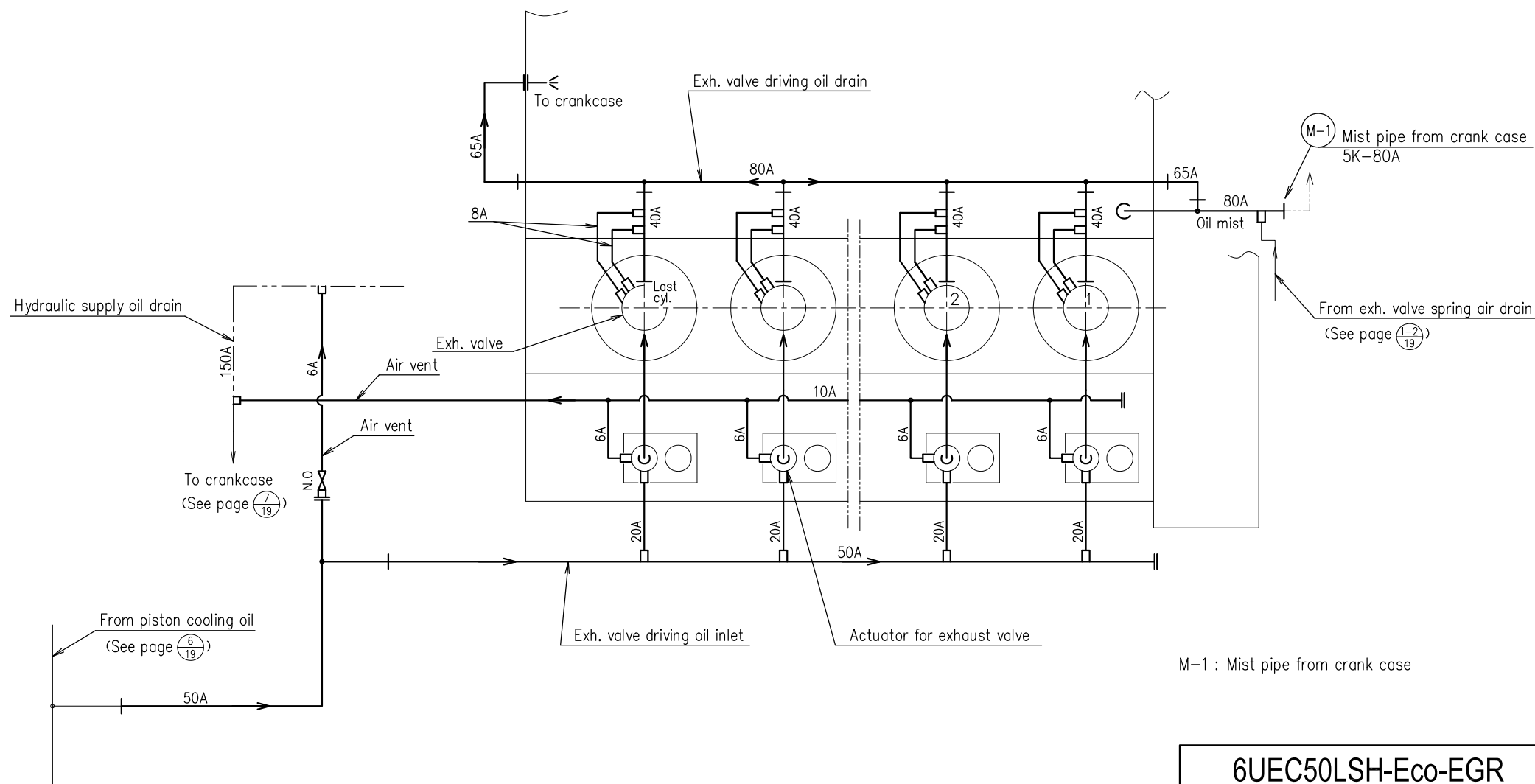
油圧作動油管線図 (共油系統)

-C4

7/19

FREE END

DRIVING END



M-1 : Mist pipe from crank case

6UEC50LSH-Eco-EGR

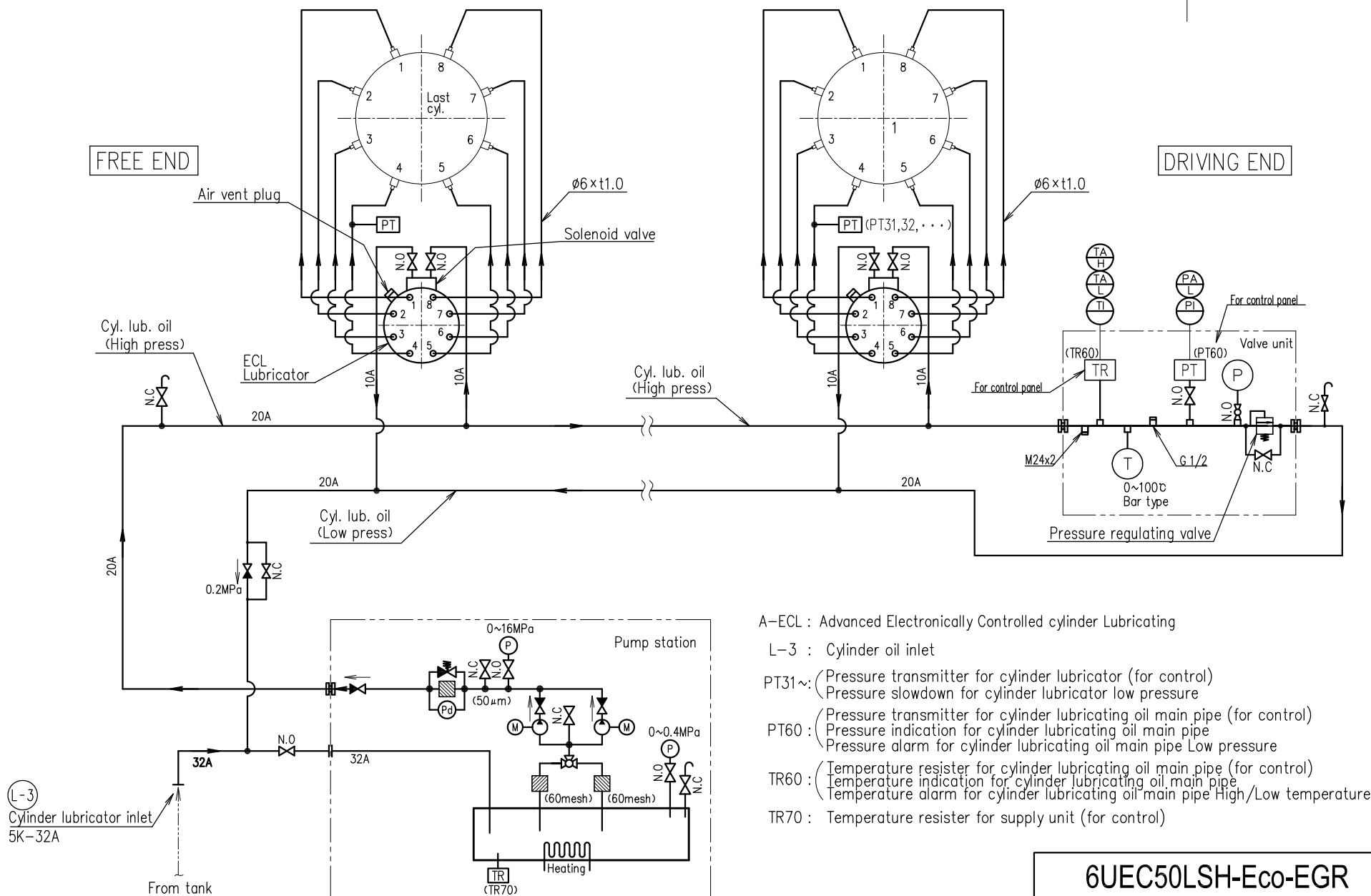
Piping diagram of
actuator oil for exhaust valve

排気弁駆動油管線図

-C3

-C4

$$\frac{8}{19}$$



A-ECL : Advanced Electronically Controlled cylinder Lubricating

L-3 : Cylinder oil inlet

PT31~: (Pressure transmitter for cylinder lubricator (for control)
Pressure slowdown for cylinder lubricator low pressure

PT60 : (Pressure transmitter for cylinder lubricating oil main pipe (for control)
Pressure indication for cylinder lubricating oil main pipe
Pressure alarm for cylinder lubricating oil main pipe Low pressure

TR60 : (Temperature resistor for cylinder lubricating oil main pipe (for control)
Temperature indication for cylinder lubricating oil main pipe
Temperature alarm for cylinder lubricating oil main pipe High/Low temperature

TR70 : Temperature resister for supply unit (for control)

6UEC50LSH-Eco-EGR

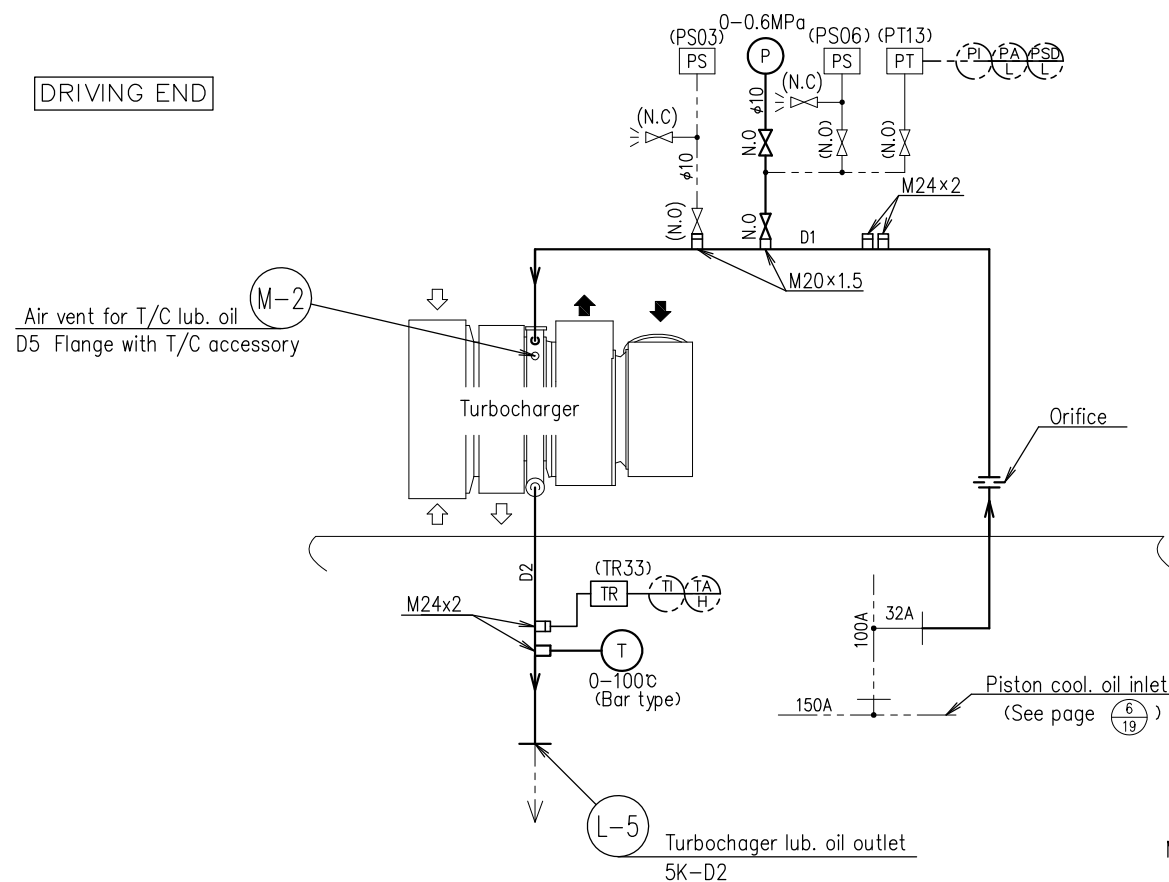
Piping diagram of
cylinder lubricating oil for A-ECL system

シリンダ注油管線図 (A-ECL用)

-C3

–C4

$$\frac{9}{19}$$



Turbocharger type	Pipe sizes		
	D1	D2	D5
MET60MB/-EGB×1	32A	80A	80A
MET53MB/-EGB×1	32A	65A	65A
MET48MB/-EGB×1	32A	65A	65A
MET42MB/-EGB×1	25A	50A	50A

L-5 : Turbocharger lubricating oil outlet
M-2 : Air vent for T/C lub. oil

TR33 : (Temperature resister for turbocharger lubricating oil outlet
Temperature indication for turbocharger lubricating oil outlet
Temperature alarm for turbocharger lubricating oil outlet High temperature

PT13 : (Pressure transmitter for turbocharger lubricating oil inlet
Pressure indication for turbocharger lubricating oil inlet
Pressure alarm for turbocharger lubricating oil inlet Low pressure
Pressure slow down for turbocharger lubricating oil inlet Low pressure

PS03 : (Pressure switch for turbocharger lubricating oil inlet
Pressure emergency stop for turbocharger lubricating oil inlet Low pressure

PS06 : Pressure switch for aux. blower start interlock

6UEC50LSH-Eco-EGR

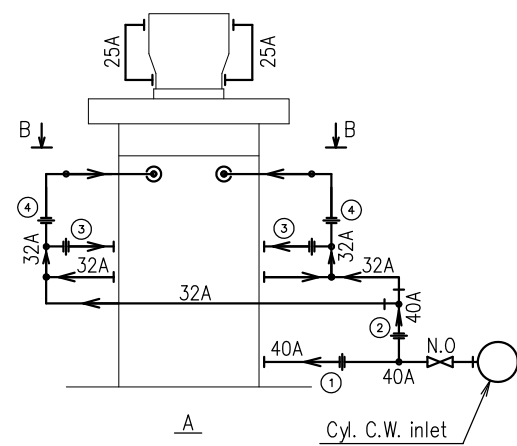
Piping diagram of
Turbocharger lubricating oil

過給機潤滑油管線図

-C3

-C4

10
19

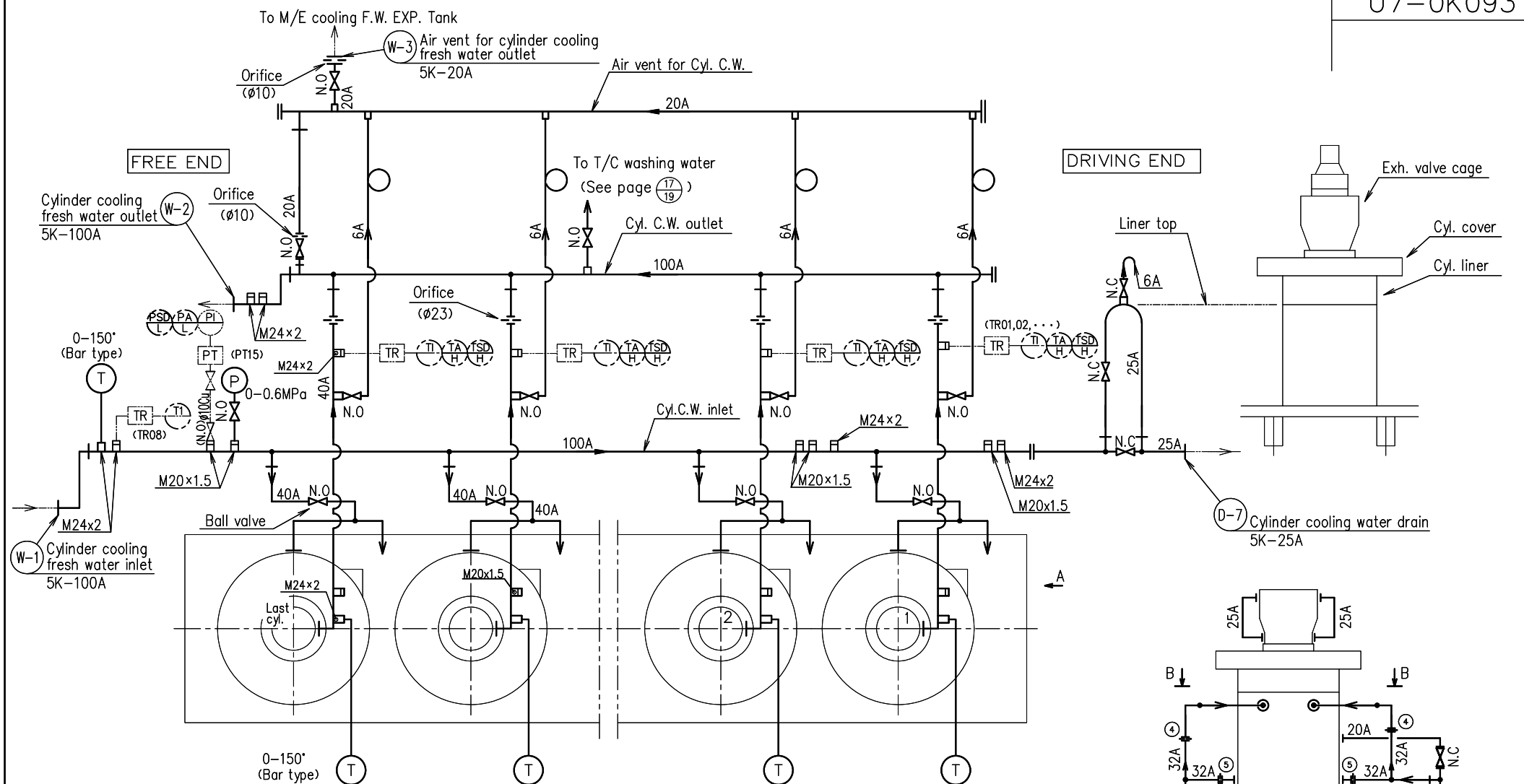


- | | | |
|--------|---|--|
| TR01~: | (| Temperature resister for cylinder cooling fresh water outlet |
| | | Temperature indication for cylinder cooling fresh water outlet |
| | | Temperature alarm for cylinder cooling fresh water outlet High temperature |
| |) | Temperature slow down for cylinder cooling fresh water outlet High temperature |
| PT15: | (| Pressure transmitter for cylinder cooling fresh water inlet |
| | | Pressure indication for cylinder cooling fresh water inlet |
| | | Pressure alarm for cylinder cooling fresh water inlet Low pressure |
| |) | Pressure slow down for cylinder cooling fresh water inlet Low pressure |

シリンドラ冷却水管線図 (ユニフロー冷却)

-C4

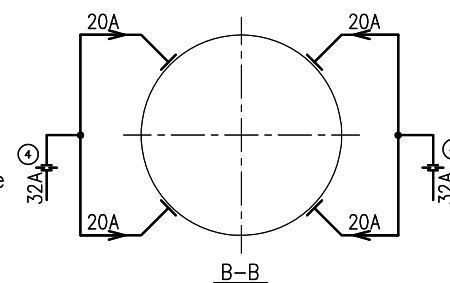
$$\frac{11-1}{19}$$



D-7 : Cylinder cooling fresh water drain
W-1 : Cylinder cooling fresh water inlet
W-2 : Cylinder cooling fresh water outlet
W-3 : Air vent for cylinder cooling fresh water outlet

Orifice	ϕ (mm)
②	
④	
⑤	

TR01~:	(Temperature resistor for cylinder cooling fresh water outlet
		Temperature indication for cylinder cooling fresh water outlet
		Temperature alarm for cylinder cooling fresh water outlet High temperature
)	Temperature slow down for cylinder cooling fresh water outlet High temperature
PT15:	(Pressure transmitter for cylinder cooling fresh water inlet
		Pressure indication for cylinder cooling fresh water inlet
		Pressure alarm for cylinder cooling fresh water inlet Low pressure
)	Pressure slow down for cylinder cooling fresh water inlet Low pressure



6UEC50LSH-Eco-EGR

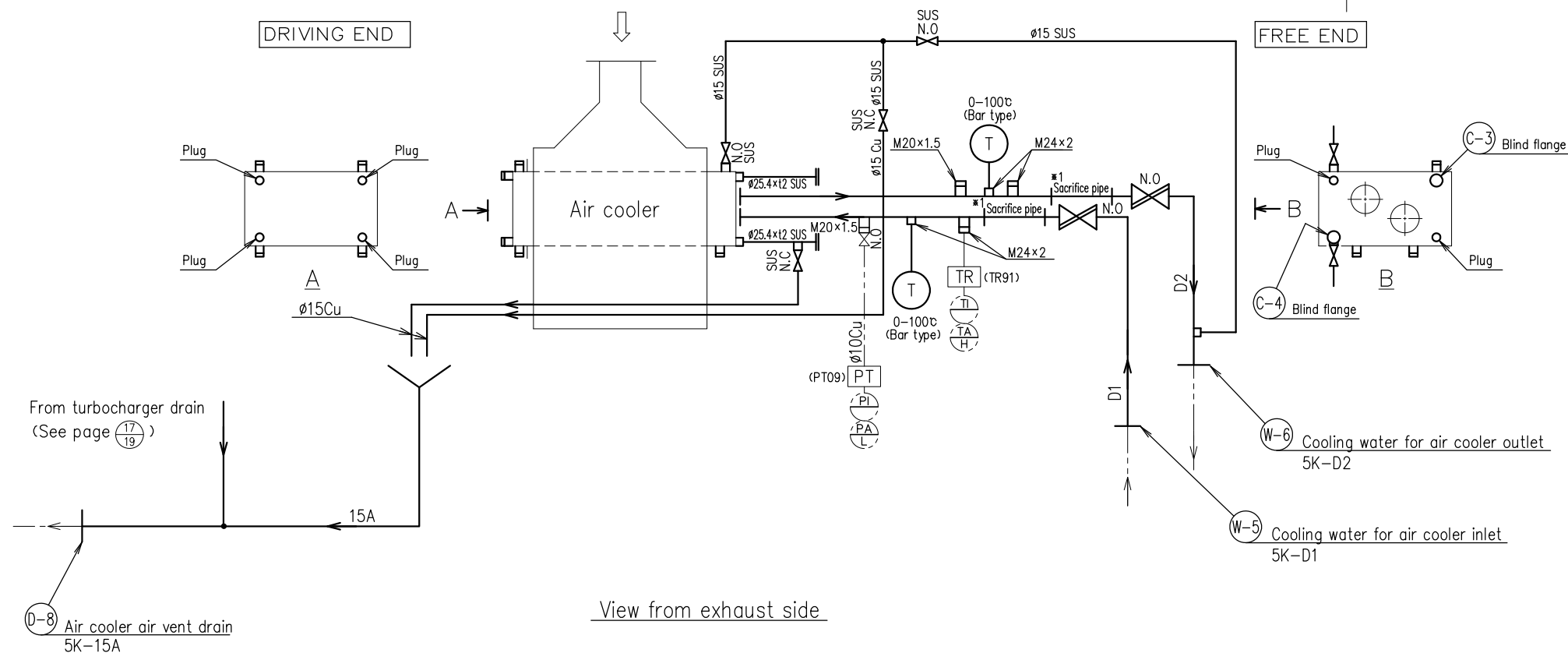
Piping diagram of
cylinder cooling water

シリンドラ冷却水管線図 (ループ冷却)

-C3

-C4

11-2
19



- D-8 : Air cooler air vent drain
W-5 : Cooling water for air cooler inlet
W-6 : Cooling water for air cooler outlet
TR91 : (Temperature resistor for air cooler cooling water inlet
Temperature indication for air cooler cooling water inlet
Temperature alarm for air cooler cooling water inlet High
PT09 : (Pressure transmitter for air cooler cooling water inlet
Pressure indication for air cooler cooling water inlet
Pressure alarm for air cooler cooling water inlet Low pressure)

* 2	Pipe sizes	
	D1	D2
CASE 1	200A	200A
CASE 2	250A	250A

*1: Only for sea water cooling
海水冷却の場合のみ

*2: Please contact us as it depends on the specifications
of each engine.

機関毎の仕様により異なりますのでお問い合わせください。

6UEC50LSH-Eco-EGR

Piping diagram of
air cooler cooling water

空気冷却器冷却水管線図

-C3

-C4

12/19

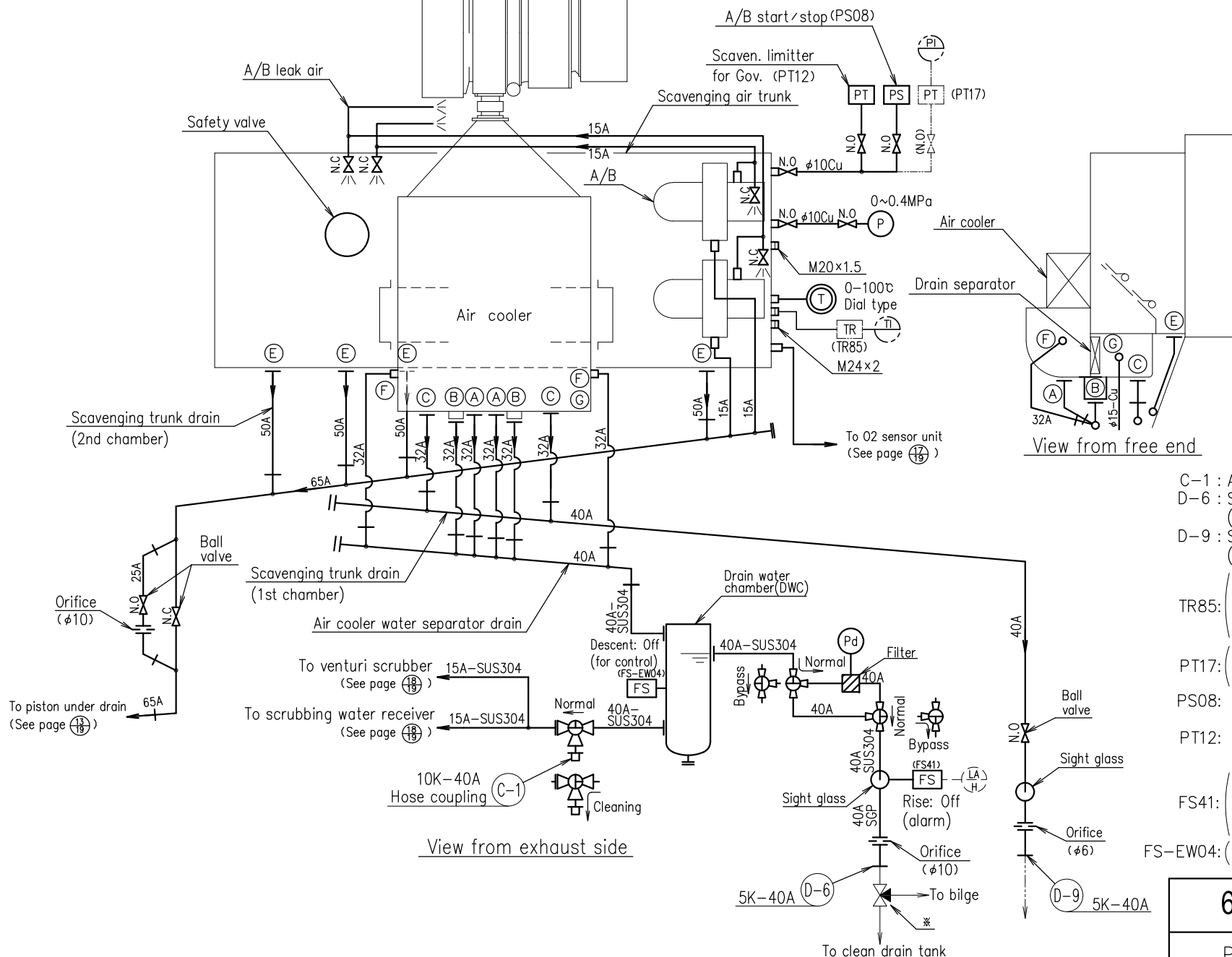


Piping diagram of
piston rod stuffing box drain

-C3

–C4

ピストン棒パッキン箱ドレン管線図 (13/19)



— ON LINE
 - - - SHIP YARD

* Supplied by shipyard.
 造船所蔵所掌

C-1 : Air cooler air side washing water outlet
 D-6 : Scavenging air trunk drain
 (after water separator)
 D-9 : Scavenging air trunk drain
 (after water separator)

TR85 : (Temperature resister for scavenging
 air trunk
 Temperature indication for scavenging
 air trunk)

PT17 : (Pressure transmitter for scavenging
 air trunk
 Pressure indication for scavenging
 air trunk)

PS08 : (Pressure switch for aux. blower
 auto start & stop)

PT12 : (Pressure transmitter for scavenging
 air trunk (scavenging limiter for gov.)
 Float switch for scavenging air trunk
 water drain

FS41 : (Level alarm for scavenging air trunk
 water drain High level)

FS-EW04 : (Float switch for DWC
 Level alarm for DWC water drain Low level)

6UEC50LSH-Eco-EGR

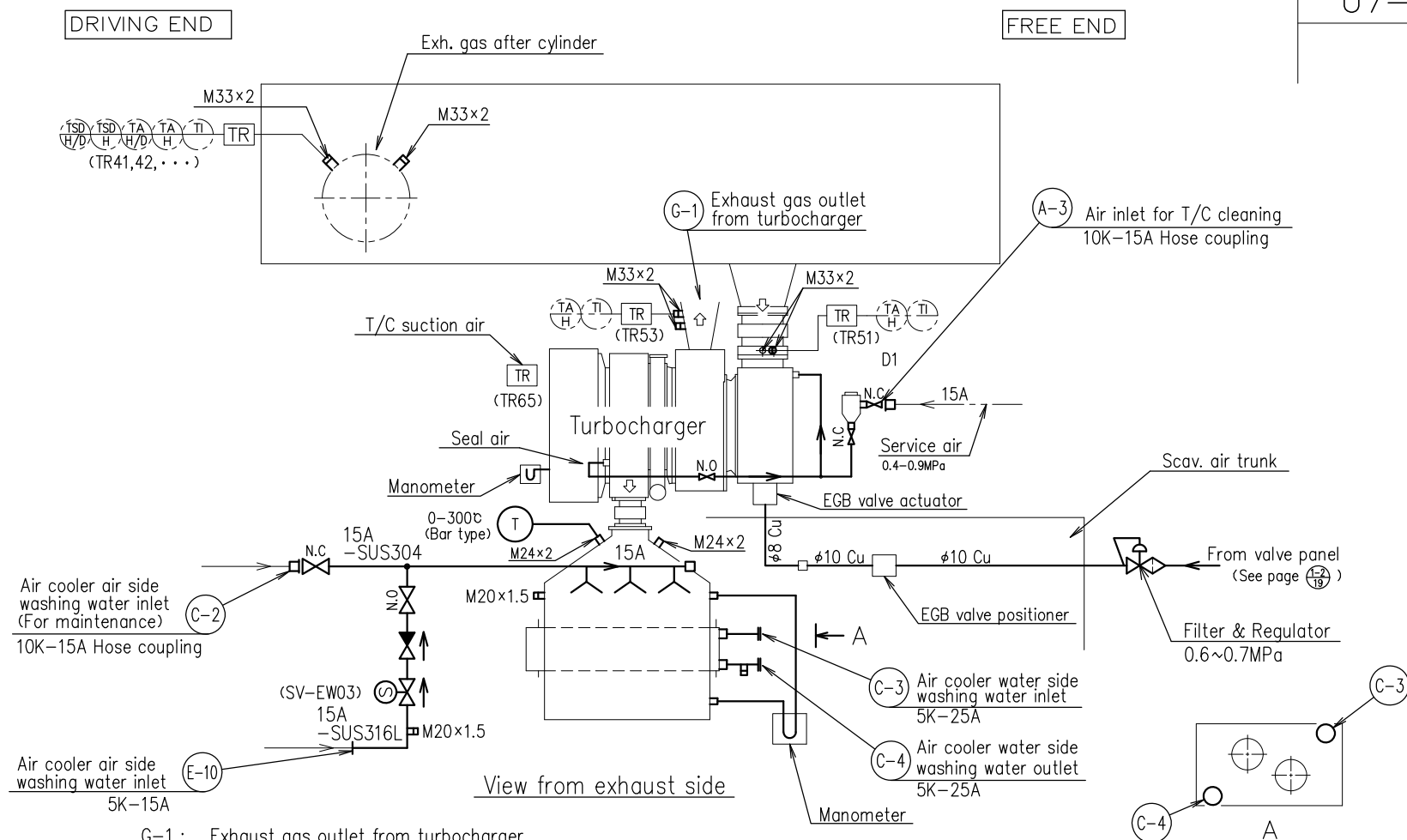
Piping diagram of
 scavenging air trunk drain for EGR

掃気トランクドレン管線図

-C3

-C4

14
 19



- G-1 : Exhaust gas outlet from turbocharger
 A-3 : Air inlet for turbocharger cleaning
 C-2 : Air cooler air side washing water inlet
 C-3 : Air cooler water side washing water inlet
 C-4 : Air cooler water side washing water outlet
 E-10 : Air cooler air side washing water inlet

- TR41~ : Temperature resister for exhaust gas cylinder outlet
 Temperature indication for exhaust gas cylinder outlet
 Temperature alarm for exhaust gas cylinder outlet High temperature
 Temperature alarm for exhaust gas cylinder outlet High deviation
 Temperature slow down for exhaust gas cylinder outlet High temperature
 Temperature slow down for exhaust gas cylinder outlet High deviation
- TR51 : Temperature resister for exhaust gas turbocharger inlet
 Temperature indication for exhaust gas turbocharger inlet
 Temperature alarm for exhaust gas turbocharger inlet High temperature
- TR53 : Temperature resister for exhaust gas turbocharger outlet
 Temperature indication for exhaust gas turbocharger outlet
 Temperature alarm for exhaust gas turbocharger outlet High temperature
- TR65 : Temperature resister for turbocharger suction air temperature(for control)

Turbocharger type

MET60MB-EGB

MET53MB-EGB

MET48MB-EGB

MET42MB-EGB

6UEC50LSH-Eco-EGR

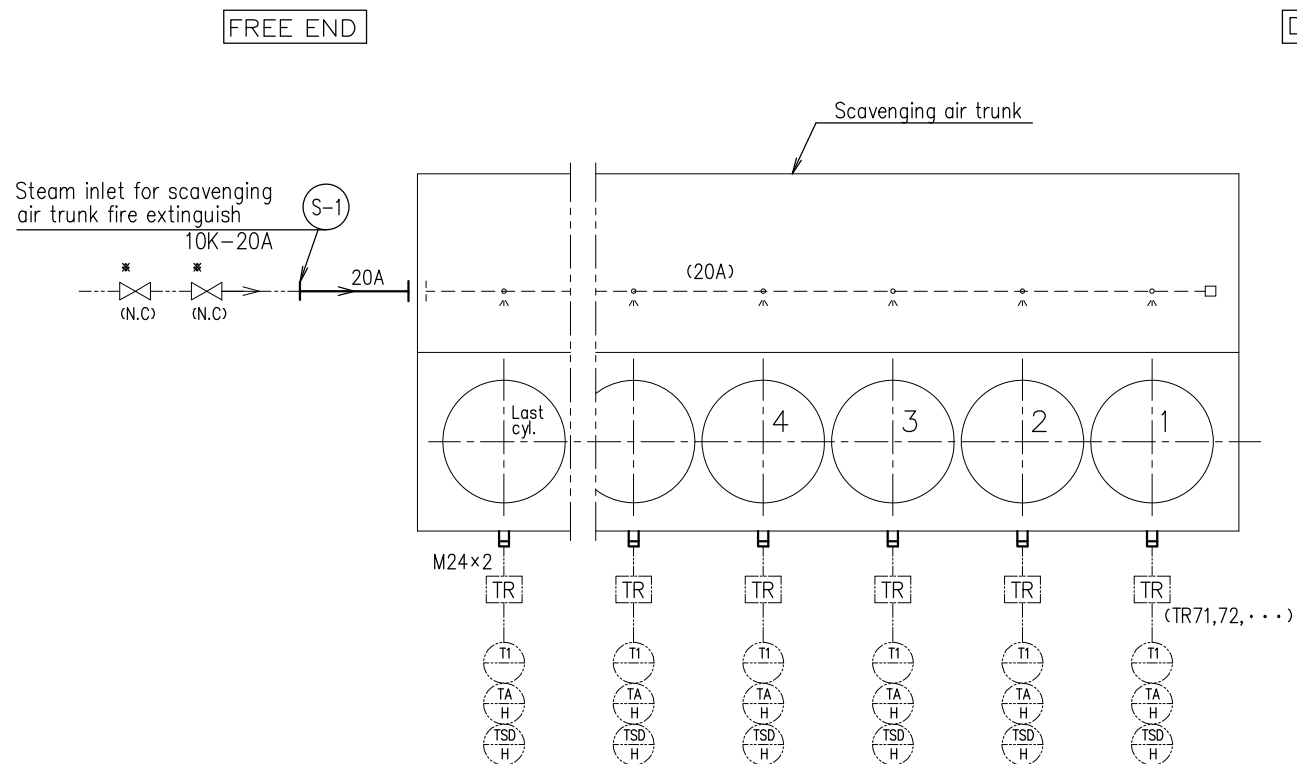
Piping diagram of
 turbocharger and air cooler
 washing water and exhaust gas system

過給機空気冷却器洗浄水管及び排気ガス線図

-C3

-C4

15
19



※ Supplied by shipyard.
造船所殿所掌

S-1: Steam inlet for scavenging air trunk fire extinguish
 (Temperature resistor for scavenging air under cylinder liner
 TR71~: Temperature indicator for scavenging air under cylinder liner
 (Temperature alarm for scavenging air under cylinder liner High temperature
 (Temperature slow down for scavenging air under cylinder liner High temperature

6UEC50LSH-Eco-EGR

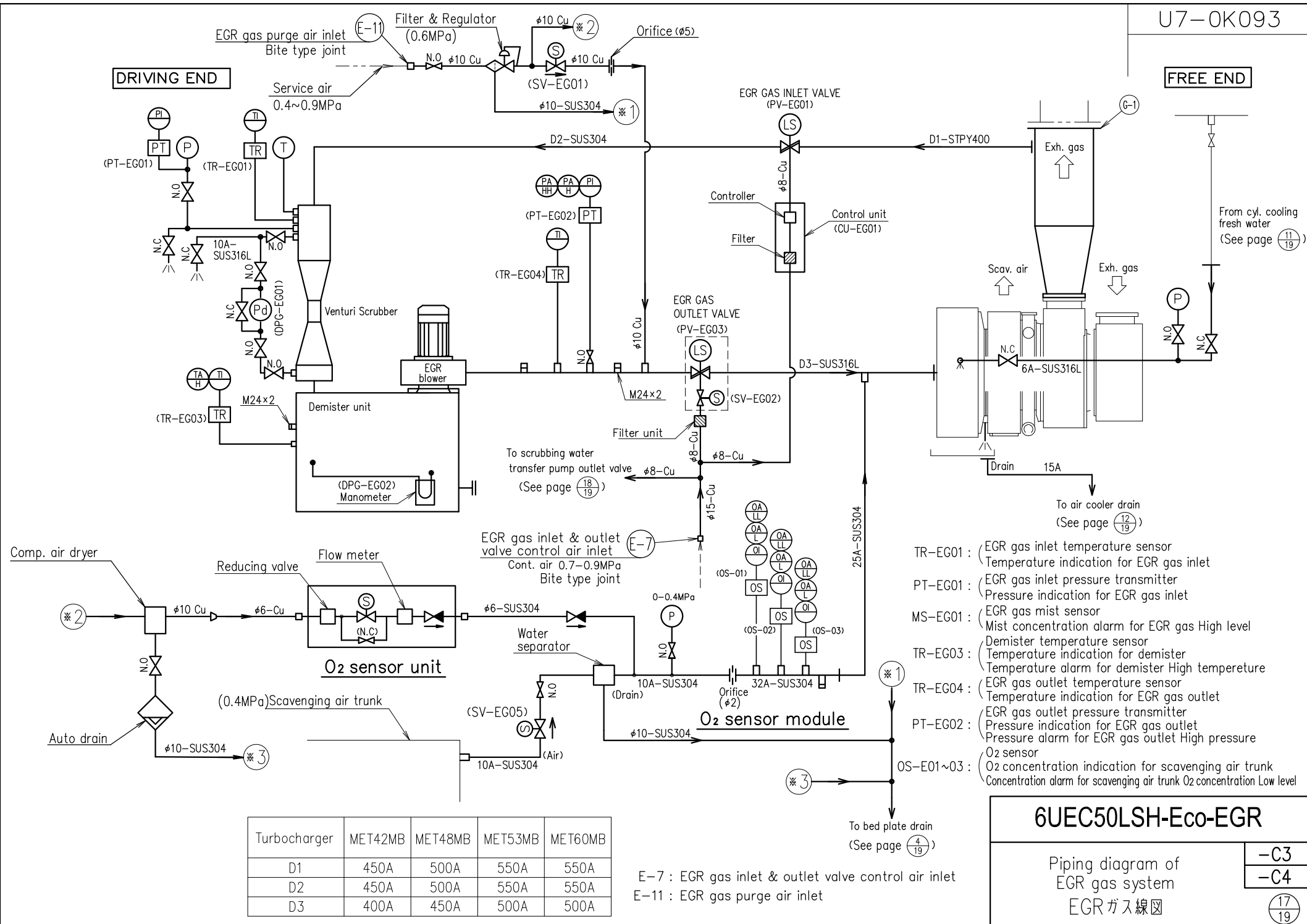
Piping diagram of
fire extinguishing

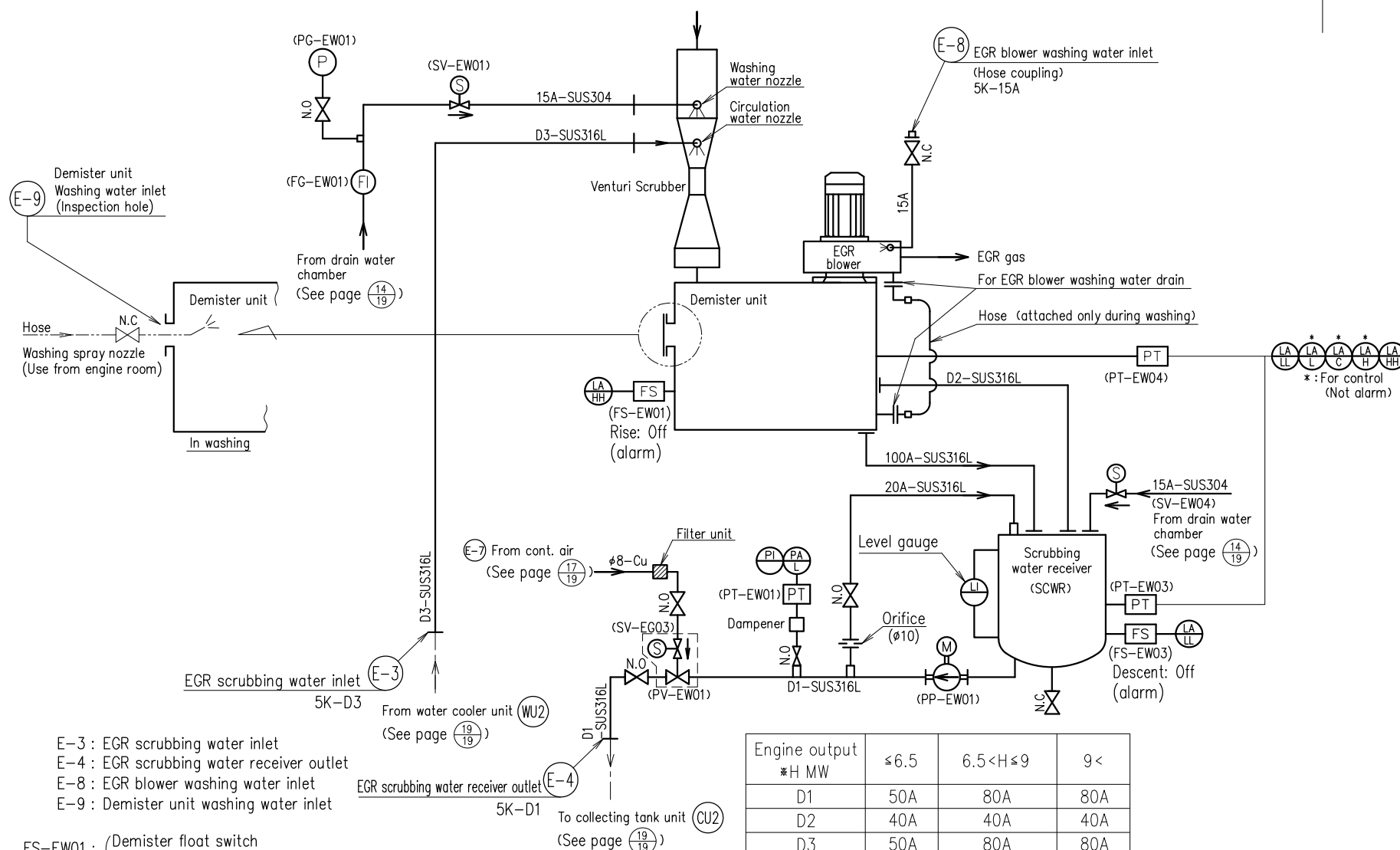
掃気室火災消火装置管線図

-C3

-C4

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19





6UEC50LSH-Eco-EGR

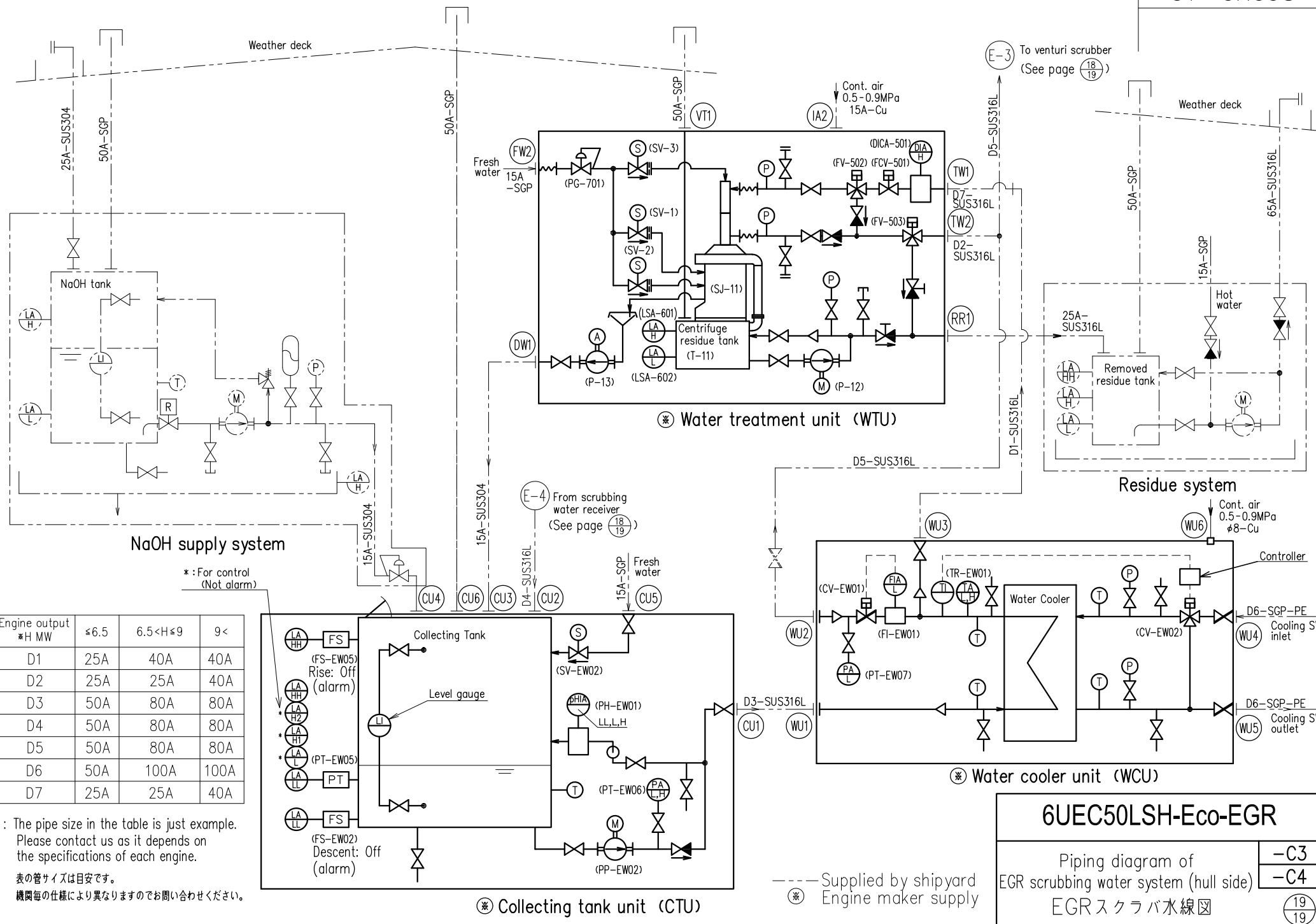
Piping diagram of
EGR scrubbing water system (on engine)

EGRスクラバ水線図

-C3

-C4

18/19



-C3

-C4

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19

REVISION CAREER		DWG NO.			
		U7-0K093			
REV.NO.	DESCRIPTION	DATE	APPROVED	CHECKED	DESIGNED
A	Revised whole pages. UC12627 -----	Aug.7,2020	S.lima	S.Yoshikawa	K.Amari
B	Revised page for 11-1/19,11-2/19,7/19, 15/19,17/19,18/19,19/19. UC12809 -----	Jan.22,2021	K.Imanaka	S.Yoshikawa	
C	Revised page for 4/19,7/19,8/19,14/19, 18/19,19/19 UC13086 -----	Apr.21,2021	S.lima	S.Yoshikawa	K.Amari
D	Revised page for P6, 17/19 ----- UC13127	May.17,2021	Y.Kinoshita	S.Yoshikawa	K.Amari
E	Revised page for P12, 18/19 ----- UC13278	July.30,2021	Y.Kinoshita	S.Yoshikawa	K.Amari
F	Revised page for P12,14,15,17,18,19/19 ----- UC13848	May.9,2022	Y.Kinoshita	S.lima S.Yoshikawa	K.Amari
G	Revised page for 19/19 ----- UC13907	Jun.7,2022	Y.Kinoshita	S.lima S.Yoshikawa	K.Amari
H	Revised page for 12/19, 15/19, 17/19 18/19 and 19/19 UC13960 -----	Jul.12,2022	Y.Kinoshita	S.lima S.Yoshikawa	K.Amari
I	Added "-C4" as mark 02. ----- Revised whole pages. UC14142	Nov.11,2022	Y.Kinoshita	S.lima S.Yoshikawa	K.Amari
J	Revised for page 10/19, 14/19. ----- UC14201	Des.26,2022	Y.Kinoshita	S.lima S.Yoshikawa	K.Amari
K	Revised for cover page, 2, 6, 7, 10, 12, 15 and 17/19. UC14311 -----	Mar.20,2023	Y.Kinoshita	S.lima S.Yoshikawa	K.Amari
L	Revised for page 6/19, 14/19 ----- UC14540	Oct.3,2023	Y.Kinoshita	S.lima S.Yoshikawa	K.Amari