



mitsubishi S12R-PTAA2

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[Mechanical noise data](#)
[Fuel consumption](#)



**MITSUBISHI DIESEL ENGINE
TECHNICAL INFORMATION**

ITEM NO.

T0215-0005E Rev.2 (1/4)

DATE

February, 2014

Specification Sheets of S12R-PTAA2 Engine

Specification Sheets of S12R-PTAA2 Engine are enclosed herein.

Revision	First Edition : September, 2007 (T13-0352-E Jul.'04)	Engine Engineering Department High Speed Engine Designing Section		
	Rev.1 : February, 2012			
	Rev.2 : February, 2014	Approved by	Checked by	Drawn by

GENERAL ENGINE DATA

Type	4-Cycle, Water Cooled	
Aspiration	Turbo-Charged, Air to Air Cooler	
Cylinder Arrangement	60°V	
No. of Cylinders	12	
Bore mm(in.)	170	(6.69)
Stroke mm(in.)	180	(7.09)
Displacement liter(in ³)	49.03	(2992)
Compression Ratio	13.5:1	
Dry Weight - Engine only - kg(lb)	5520	(12172)
- Radiator & Piping - kg(lb)	1562	(3444)
Wet Weight - Engine only - kg(lb)	5830	(12855)
- Radiator & Piping - kg(lb)	1764	(3890)

PERFORMANCE DATA

Steady State Speed Stability Band at any Constant Load		
Hydraulic (std.) or Electric Governor - %	±0.25 or better	
Maximum Overspeed Capacity - rpm	2100	
Moment of inertia of Rotating Components - kgf·m ² (lbf·ft ²)	75.3	(1787)
(Includes Std. Flywheel)		
Cyclic Speed Variation with Flywheel at 1800rpm	1/507	
1500rpm	1/294	

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Flywheel Housing - kgf·m(lbf·ft)	450	(3256)
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AIR INLET SYSTEM

Maximum Intake Air Restriction (Includes piping)		
With Clean Filter Element - mm H ₂ O (in. H ₂ O)	400	(15.7)
With Dirty Filter Element - mm H ₂ O (in. H ₂ O)	635	(25.0)

EXHAUST SYSTEM

Maximum Allowable Back Pressure - mm H ₂ O (in. H ₂ O)	600	(23.6)
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LUBRICATION SYSTEM

Oil Pressure at Idle - kgf/cm ² (psi)	2~3	(29~43)
at Rate Speed - kgf/cm ² (psi)	5~6.5	(71~93)
Maximum Oil Temperature - °C(°F)	110	(230)
Oil Capacity of Standard Pan High - liter (U.S. gal)	150	(39.6)
Low - liter (U.S. gal)	110	(29.1)
Total System Capacity (Includes Oil Filter) - liter (U.S. gal)	180	(47.6)
Maximum Angle of Installation (Std. Pan) Front Down	6.5°	
(Engine Only) Front Up	6.5°	
Side to Side	22.5°	

COOLING SYSTEM

Coolant Capacity - Engine - liter (U.S. gal)	125	(33.0)
- Radiator & Piping - liter (U.S. gal)	202	(53.4)
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)
Maximum Outlet Pressure of Engine Water Pump - kgf/cm ² (psi)	2	(28.6)
Standard Thermostat (modulating) Range-°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 Cooling Air Temperature at Air to Air Cooler Inlet, TAA type-°C(°F)	40	(104)
Maximum Air Restriction on Discharge Side of Radiator and Fan-mm H ₂ O(in. H ₂ O)	40	(1.6)

APPLICATION : GENERATOR

FUEL SYSTEM

Fuel Injector	Mitsubishi PS6 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	24-30
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	300
Below 5°C(41°F) through - 5°C(23°F)	600

The specifications are subject to change without notice.

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		
		60Hz	50Hz		60Hz	50Hz	
Engine Speed	rpm	1800	1500		1800	1500	
No. of Cylinders		12					
Bore	mm (in.)	170 (6.69)					
Stroke	mm (in.)	180 (7.09)					
Displacement	liter (in. ³)	49.03 (2992)					
Brake Horse power without Fan	HP (kW)	2189 (1633)	1932 (1441)		1989 (1484)	1761 (1314)	
Brake Mean Effective Pressure with Fan	kgf/cm ² (MPa) (psi)	22.6 (2.22) (321)	24.0 (2.35) (341)		20.6 (2.02) (293)	21.9 (2.15) (311)	
Mean Piston Speed	m/s (ft/min)	10.8 (2126)	9.0 (1772)		10.8 (2126)	9.0 (1772)	
Maximum Regenerative Power Absorption Capacity without Fan	HP (kW)	193 (144)	141 (105)		193 (144)	141 (105)	
Intake Air flow	m ³ /min (CFM)	148 (5226)	129 (4555)		134 (4732)	118 (4167)	
Maximum Air Temperature at Charge Air Cooler Inlet, TAA type	°C	230	220		230	220	
Maximum Air Temperature at Charge Air Cooler Outlet, TAA type	°C	70	70		70	70	
Allowable Pressure Drop at Charge Air Cooler	kgf/cm ² (kPa) (psi)	0.27 (26) (4)	0.16 (16) (2)		0.27 (26) (4)	0.16 (16) (2)	
Charge Air Cooler Working Pressure	kgf/cm ² (MPa) (psi)	3.5 (0.345) (50)	3.5 (0.345) (50)		3.5 (0.345) (50)	3.5 (0.345) (50)	
Exhaust Gas Flow	m ³ /min (CFM)	391 (13806)	343 (12111)		355 (12535)	312 (11017)	
Coolant Flow	liter/min (U.S. GPM)	1850 (489)	1650 (436)		1850 (489)	1650 (436)	
Cooling Air Flow	m ³ /min (CFM)	1800 (63558)	1800 (63558)		1800 (63558)	1800 (63558)	
Allowable Fan Loss Horse Power	HP (kW)	50 (37)	50 (37)		50 (37)	50 (37)	
Radiated Heat to Ambient	kcal/hr (BTU/min)	111193 (7354)	97528 (6450)		101047 (6683)	88933 (5882)	
Heat Rejection to Coolant	kcal/hr (BTU/min)	518900 (34319)	455132 (30102)		471554 (31188)	415020 (27449)	
Heat Rejection to Air to Air Cooler	kcal/hr (BTU/min)	481836 (31868)	422623 (27952)		437872 (28960)	385375 (25488)	
Heat Rejection to Exhaust	kcal/hr (BTU/min)	1190396 (78731)	1036643 (68562)		1081781 (71548)	945281 (62520)	
Noise Level (1 m height & distance) (excludes, Intake,Exhaust & Fan)	dB(A)	TBD	TBD		TBD	TBD	

The specifications are subject to change without notice.

APPLICATION : GENERATOR

Pub. No. T0215-0005E Rev.2 4/4



**MITSUBISHI DIESEL ENGINE
TECHNICAL INFORMATION**

ITEM NO.

T0307-0007E Rev.2 (1/2)

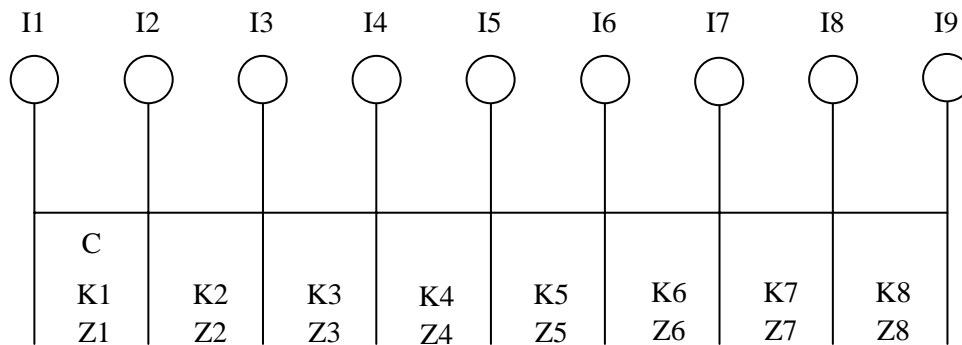
DATE

April, 2009

Elastic data of S12R Engine

Elastic data of S12R Engine are enclosed herein.

Revision	First Edition : July, 2006 (Refer to ELASTIC-S12R-PTA Oct.,2003, S12R.0)	Engine Engineering Department Large Engine Design Section		
	Rev.1 : July, 2006	Approved by	Checked by	Drawn by
	Rev.2 : April, 2009			

S12R-PTA ELASTIC DATA

(USE:45R89-19502 CONNECTING ROD)

	Moment of inertia J kg.m ²	Damping coefficient Nm/rad/s	Spring const. x10 ⁷ Nm/rad	Tensile strength N/mm ²	Section modulus cm ³
I1	DAMPER ×1pc. ×2pcs.	1.01 2.02	C=524.6 C=1049.3	K1=0.0	0.0
I2	PULLEY Damper 1pc. Damper 2pcs.	1.37 2.16	—	K2=1.089	834
I3	No.1 CRANK	0.999	—	K3=0.735	834
I4	No.2 CRANK	0.610	—	K4=0.735	834
I5	No.3 CRANK	0.999	—	K5=0.735	834
I6	No.4 CRANK	0.999	—	K6=0.735	834
I7	No.5 CRANK	0.610	—	K7=0.735	834
I8	No.6 CRANK	0.998	—	K8=1.304	834
I9	FLYWHEEL 21in	11.21	—		

Hysteresis constant: 92 No. of Cylinder: 12 Bore:170mm Stroke:180mm

Length of Con-Rod: 340mm Weight of Reciprocating Parts: 12.63 kg

Firing order:1-12-5-8-3-10-6-7-2-11-4-9

Firing interval:0-60-120-180-240-300-360-420-480-540-600-660

APPLICATION : LAND USE

The data is subject to change without notice.



**MITSUBISHI DIESEL ENGINE
TECHNICAL INFORMATION**

ITEM NO.

T0402-0001E Rev.1 (1/2)

DATE

May, 2008

Exhaust Gas Emission Data

Exhaust Gas Emission Data is enclosed herein.

These data are subject to change without notice.

Revision	First Edition : May, 2008	Engine Engineering Department Engine System Designing Section		
	Rev.1: February, 2013			
		Approved by	Checked by	Drawn by

EXHAUST GAS EMISSION DATA OF DIESEL ENGINE FOR GENERATOR
For Reference

MODEL	S6A3-P/A		S12A2-P/A		S12H-P/A		S6R-P/A		S12R-P/A		S12R-PTA2		S12R-PTAA2 (W/FAN)		S16R-P/A		S16R-PTA2		S16R-PTAA2 (W/FAN)		S16R2-PTAW
	400/ 1500	890	679/ 1500	825	935/ 1500	877	515/ 1500	940	1110/ 1500	1190/ 1800	1195/ 1500	1340/ 1800	1277/ 1500	1387/ 1800	1480/ 1500	1590/ 1800	1630/ 1500	1775/ 1800	1684/ 1500	1895/ 1800	
Prime Rating kW/min ⁻¹ (without fan)																					
NOx	3.7	3.7	3.5	3.4	3.8	3.6	3.7	3.5	3.7	3.5	3.9	3.7	3.5	3.2	3.8	3.7	3.9	3.4	3.1	3.6	659
CO	8.6	8.6	7.7	7.7	8.8	8.2	8.4	8.4	7.7	8.4	8.8	7.7	8.4	7.3	8.7	7.7	8.8	7.7	7.1	5.8	119
HC	(220)	(210)	(220)	(210)	(310)	(210)	310	210	(310)	(210)	(310)	(210)	(320)	(200)	(310)	(210)	(310)	(210)	(200)	(200)	0.4
CO ₂	6.7	6.2	6.7	6.2	6.9	6.5	8.0	7.1	6.9	6.5	6.7	6.5	6.7	6.5	6.7	6.5	6.7	6.5	6.5	8.0	0.10
PM	0.12	0.12	0.12	0.11	0.12	0.11	0.10	0.12	0.12	0.11	0.10	0.09	0.09	0.08	0.11	0.12	0.11	0.12	0.09	0.07	0.03
	0.37	0.37	0.38	0.37	0.38	0.37	0.34	0.35	0.35	0.37	0.34	0.33	0.33	0.31	0.33	0.39	0.33	0.33	0.31	0.31	0.04

Notes

- Allowance: +25%
- Condition: 100kPa(750mmHg) barometric pressure, 298K(25°C) ambient temperature and 30% relative humidity.
- NOx, CO, HC[PPM]: with 13% O₂ Level.
NOx, CO, HC, Particulates[μg/Nm³]: with 5% O₂ Level.
NOx, CO, HC, Particulates[μg/PS-h]: with 13% O₂ Level.
CO₂[%]: Calculated Data.
(): Estimated Data.
- *1: Standby Rating
- *2: These data are subject to change without notice.





**MITSUBISHI DIESEL ENGINE
TECHNICAL INFORMATION**

ITEM NO.

T0404-0009E (1/3)

DATE

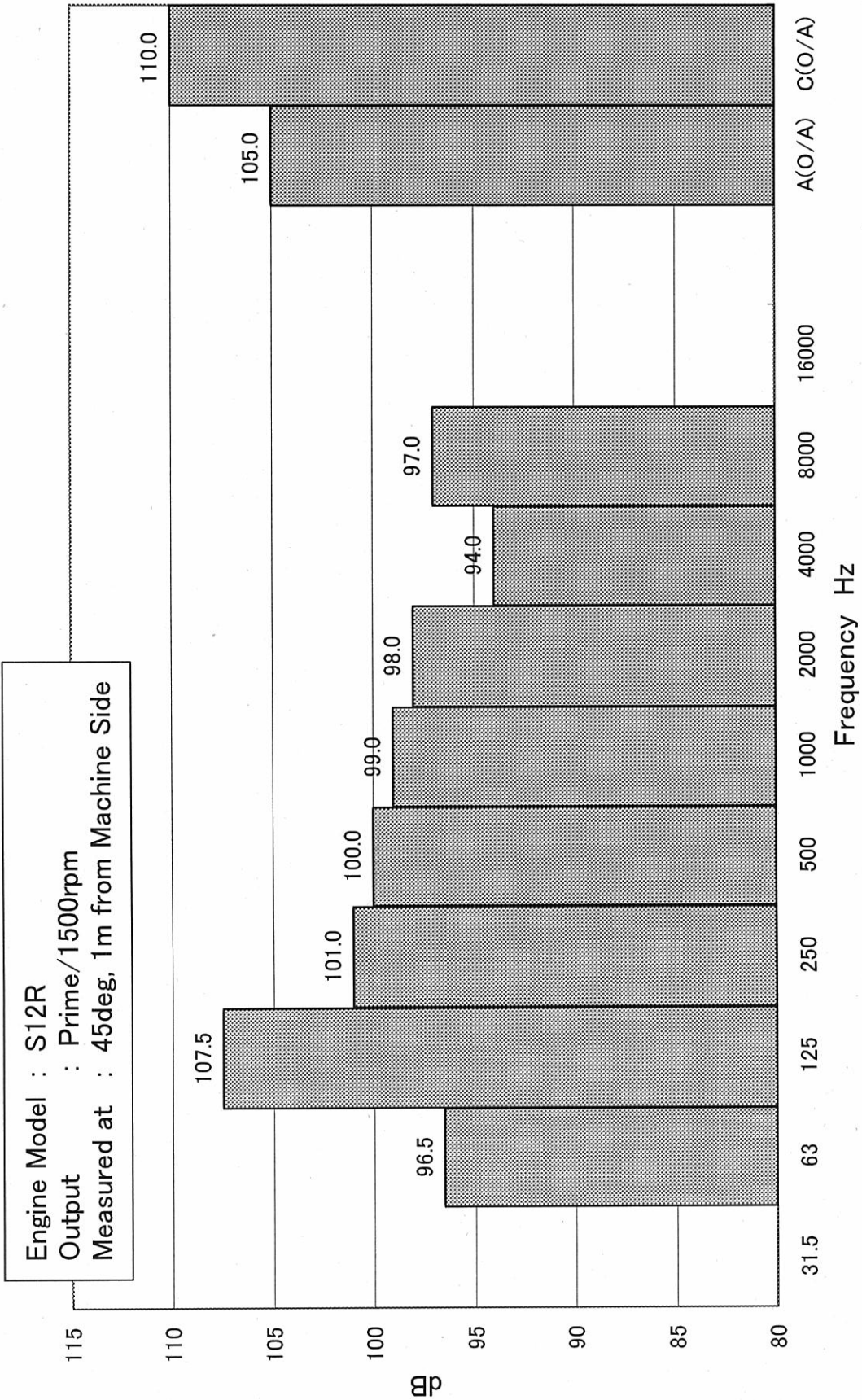
Sep., 2006

Mechanical Noize Data of S12R

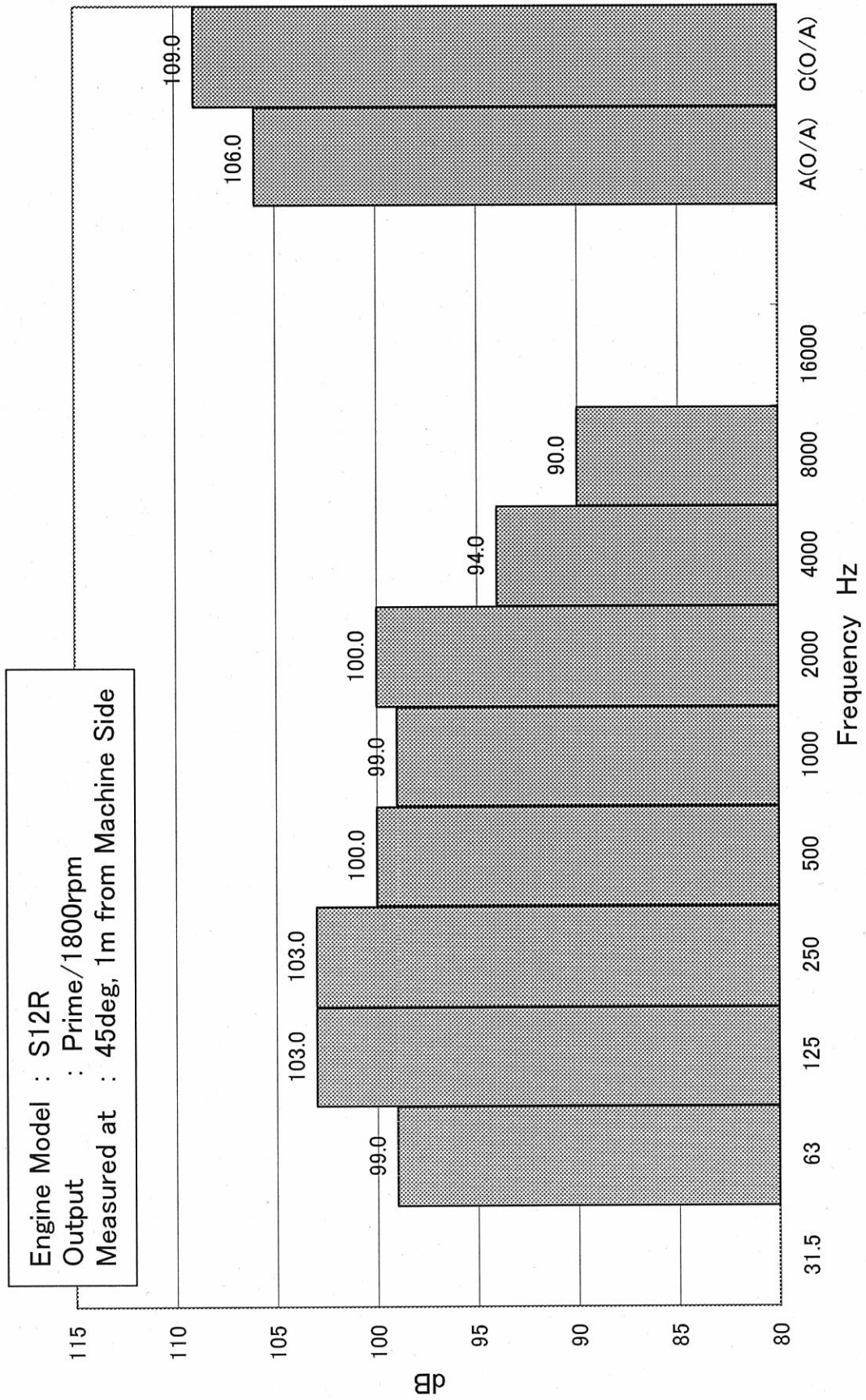
Mechanical Noize Data of S12R is enclosed herein.

Revision	First Edition : Sep.,2006	Engine Engineering Department Large Engine Design Section		
		Approved by	Checked by	Drawn by

Mechanical Noise Analysis



Mechanical Noise Analysis





**MITSUBISHI DIESEL ENGINE
TECHNICAL INFORMATION**

ITEM NO.

T33-0100-E

DATE

Jun. 1999

FUEL CONSUMPTION

(SB, SA, SH, SR SERIES ENGINES FOR GENERATOR DRIVE)

ENGINE MODEL	ENGINE rpm	REMARKS
S6B-PTA, PTK	1500	W/Fan, W/O Fan
	1800	
S6B3-PTA, PTK	1200	W/Fan, W/O Fan
	1500	
S6A3-PTA, PTK	1800	W/Fan, W/O Fan
	1200	
S12A2-PTA, PTK	1500	W/Fan, W/O Fan
	1800	
S12H-PTA	1500	W/Fan, W/O Fan
	1800	
S6R-PTA, PTK	1200	W/Fan, W/O Fan
	1500	
S6R2-PTA, PTK	1800	W/Fan, W/O Fan
	1000	
S12R-PTA, PTK	1200	W/Fan, W/O Fan
	1500	
S12R-PTA2, PTK2	1800	W/Fan, W/O Fan
	1500	
S16R-PTA, PTK	1200	W/Fan, W/O Fan
	1500	
S16R-PTA2, PTK2	1800	W/Fan, W/O Fan
	1500	
S6A3-PTAA	1500	W/Fan
	1800	
S6R2-PTAA	1500	W/Fan
	1500	
S12R-PTAA2	1500	W/Fan
	1800	
S16R-PTAA2	1500	W/Fan
	1800	

First Edition : Jun. 1999

Engine Engineering Department
Large Engine Design Section

Revision

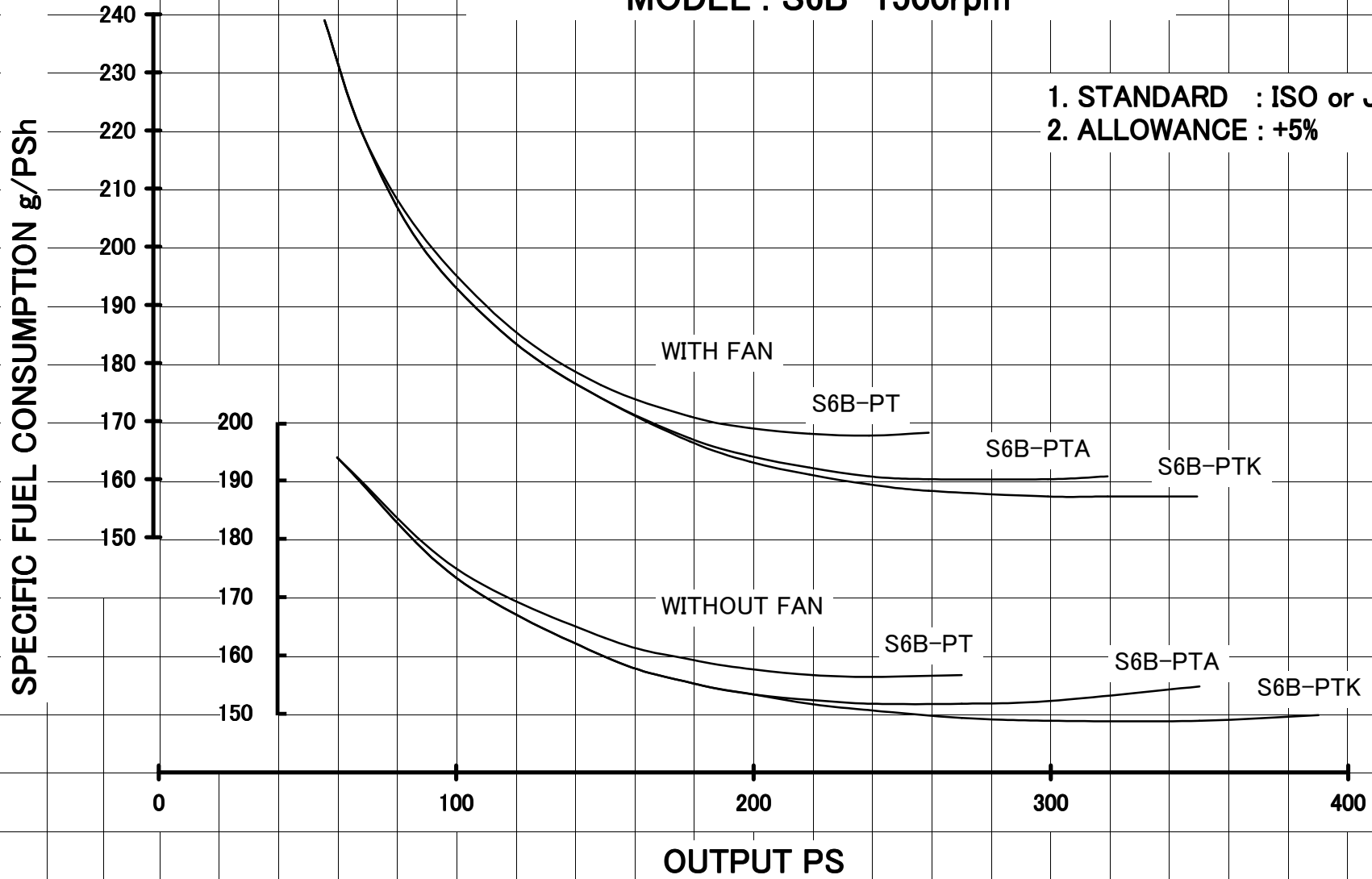
Approved by

Checked by

Drawn by

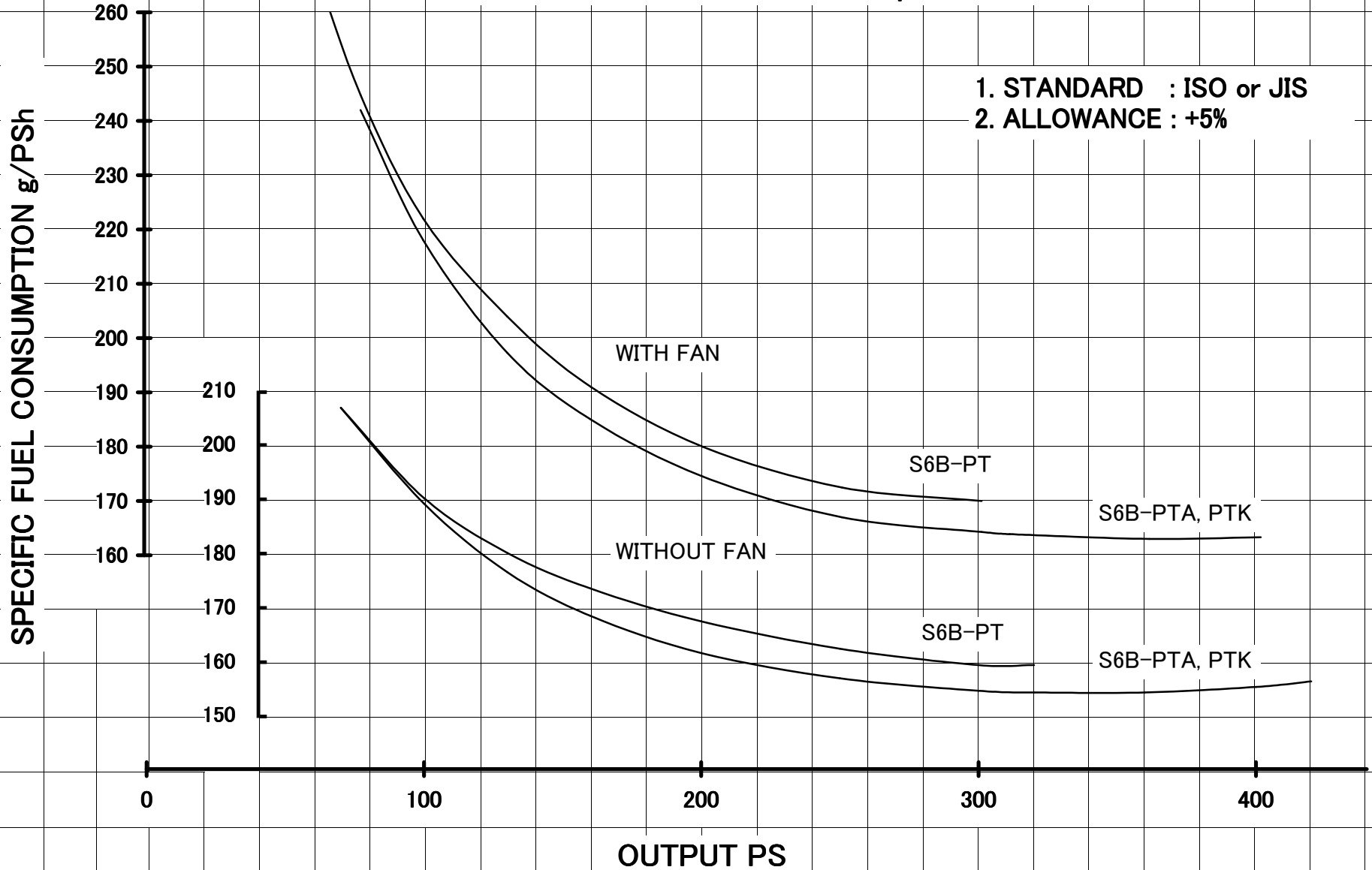
SPECIFIC FUEL CONSUMPTION MODEL : S6B 1500rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%



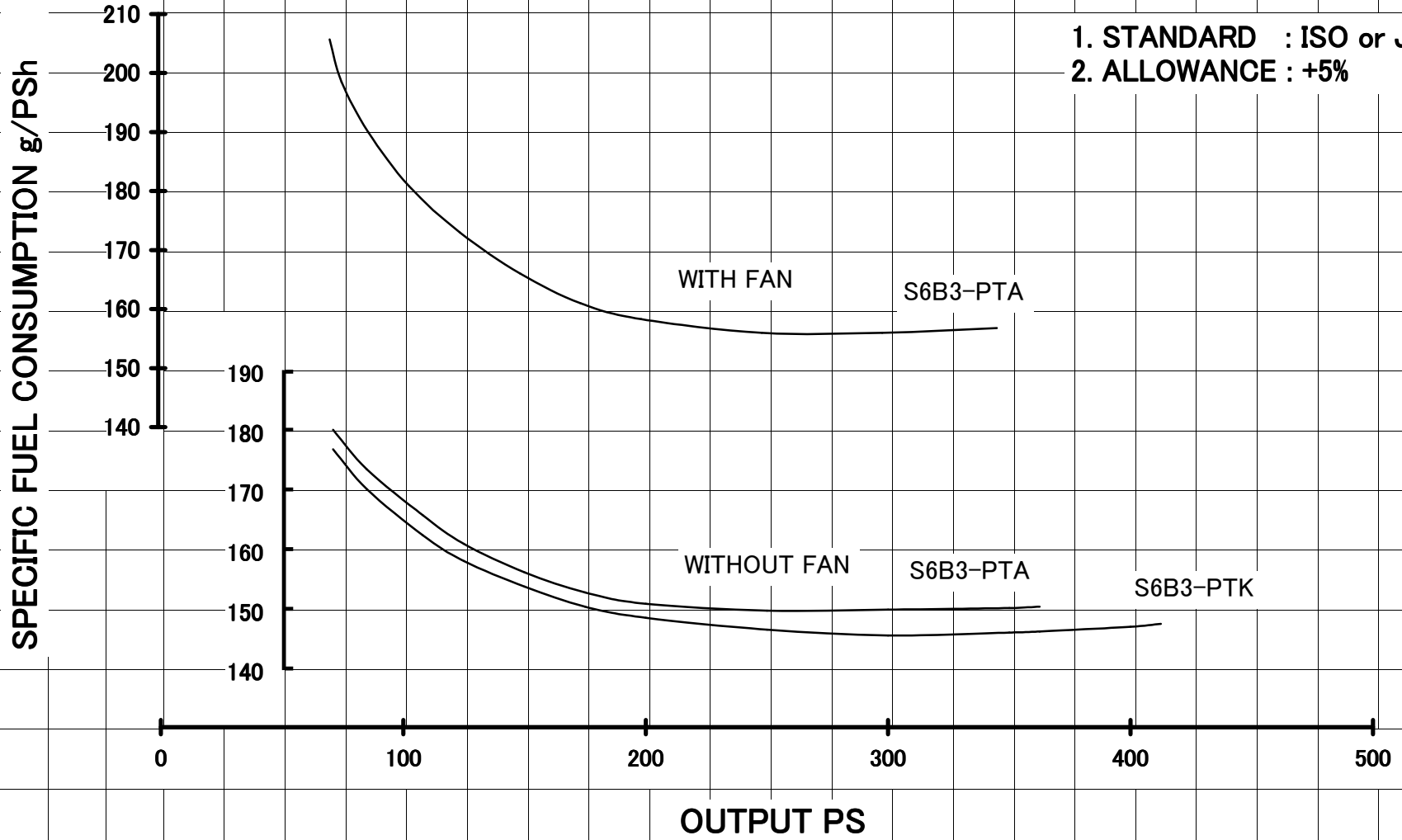
SPECIFIC FUEL CONSUMPTION MODEL : S6B 1800rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%



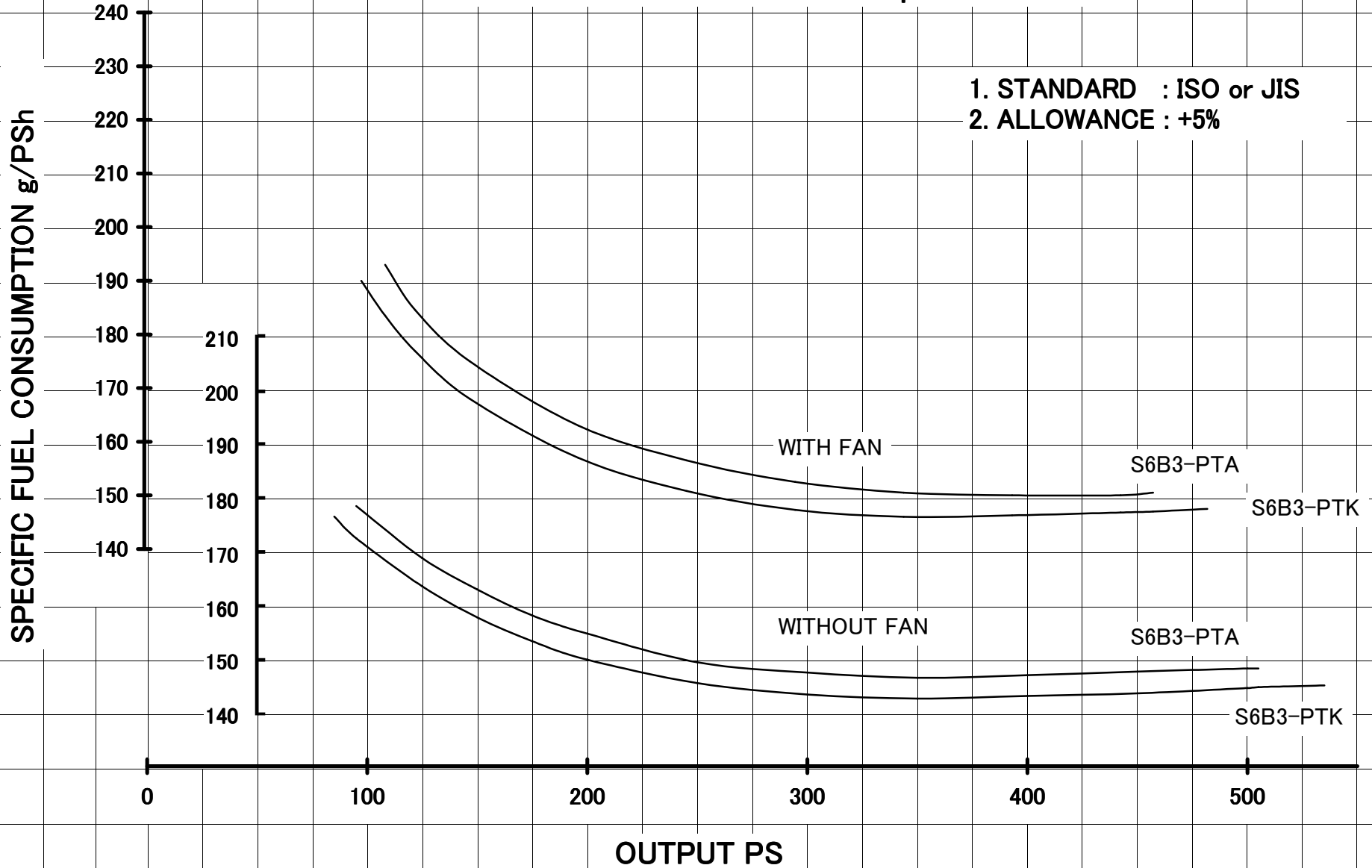
SPECIFIC FUEL CONSUMPTION MODEL : S6B3 1200rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%



SPECIFIC FUEL CONSUMPTION MODEL : S6B3 1500rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

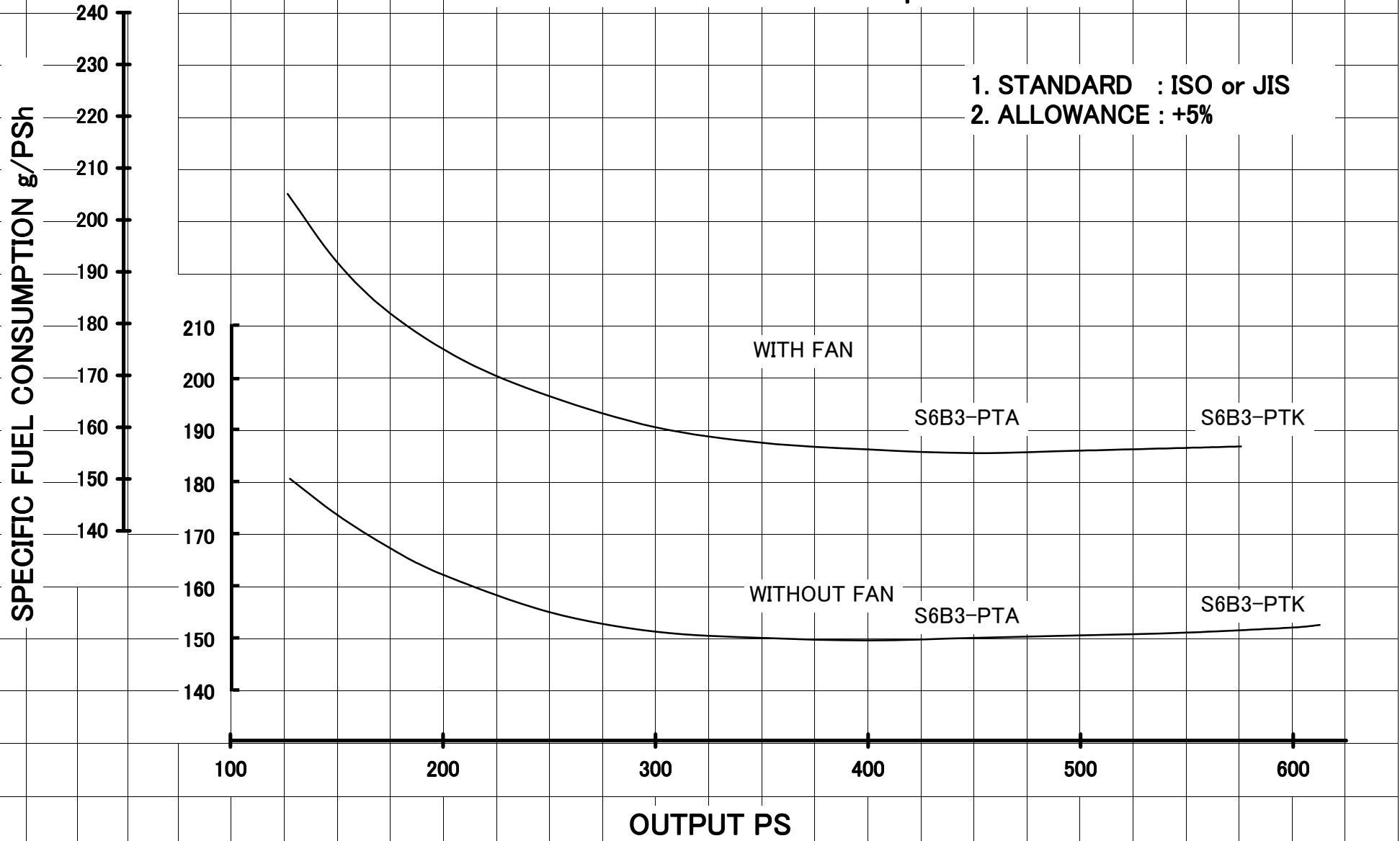


SPECIFIC FUEL CONSUMPTION

MODEL : S6B3 1800rpm

1. STANDARD : ISO or JIS

2. ALLOWANCE : +5%



SPECIFIC FUEL CONSUMPTION

MODEL : S6A3 1200rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

SPECIFIC FUEL CONSUMPTION g/PS_h

210
200
190
180
170
160
150
140

190
180
170
160
150
140

WITH FAN

WITHOUT FAN

S6BA3-PTA

S6A3-PTK

0

100

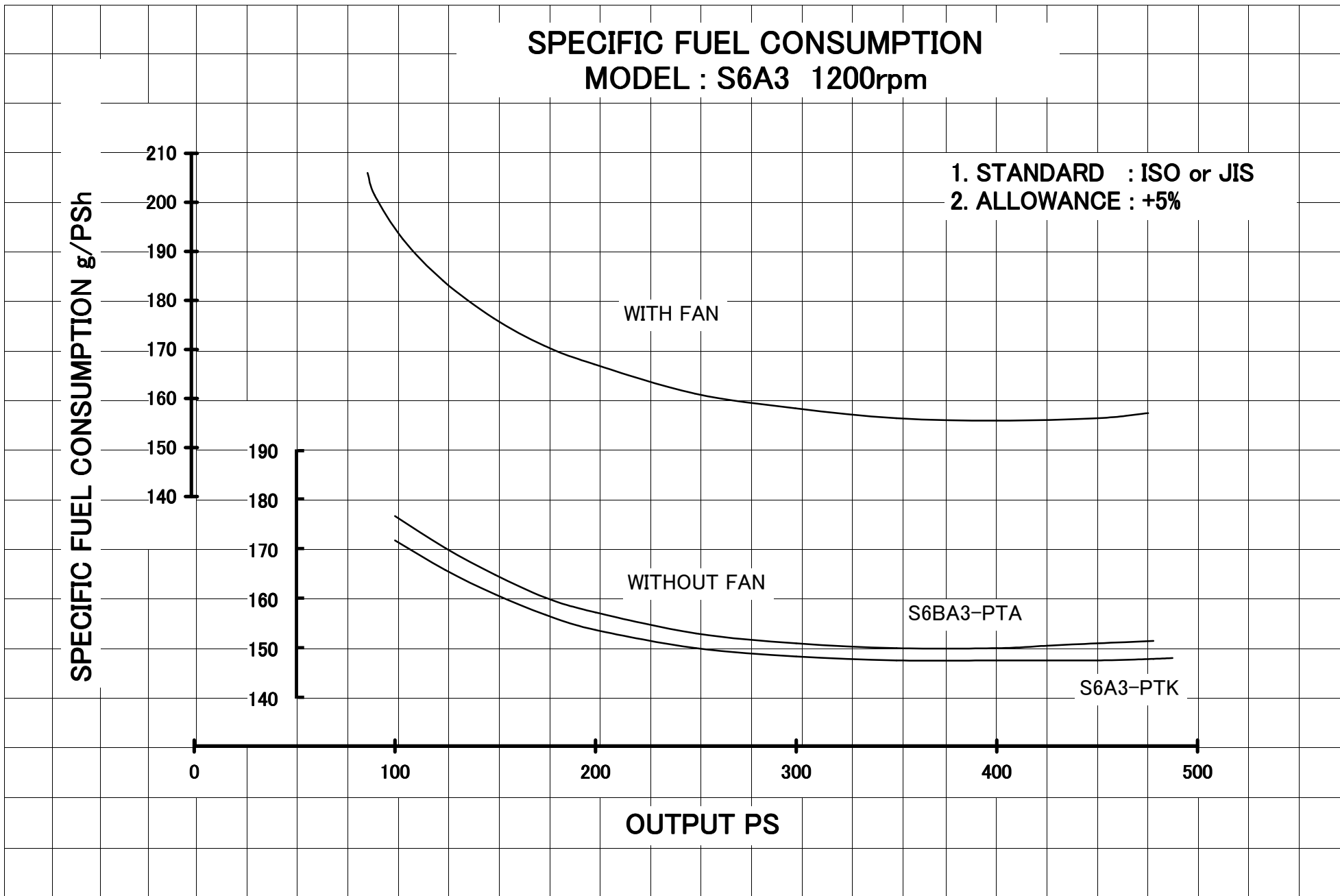
200

300

400

500

OUTPUT PS



SPECIFIC FUEL CONSUMPTION MODEL : S6A3 1500rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

SPECIFIC FUEL CONSUMPTION g/PSH

220
210
200
190
180
170
160
150
140

210
200
190
180
170
160
150
140

WITH FAN

S6A3-PTA

S6A3-PTK

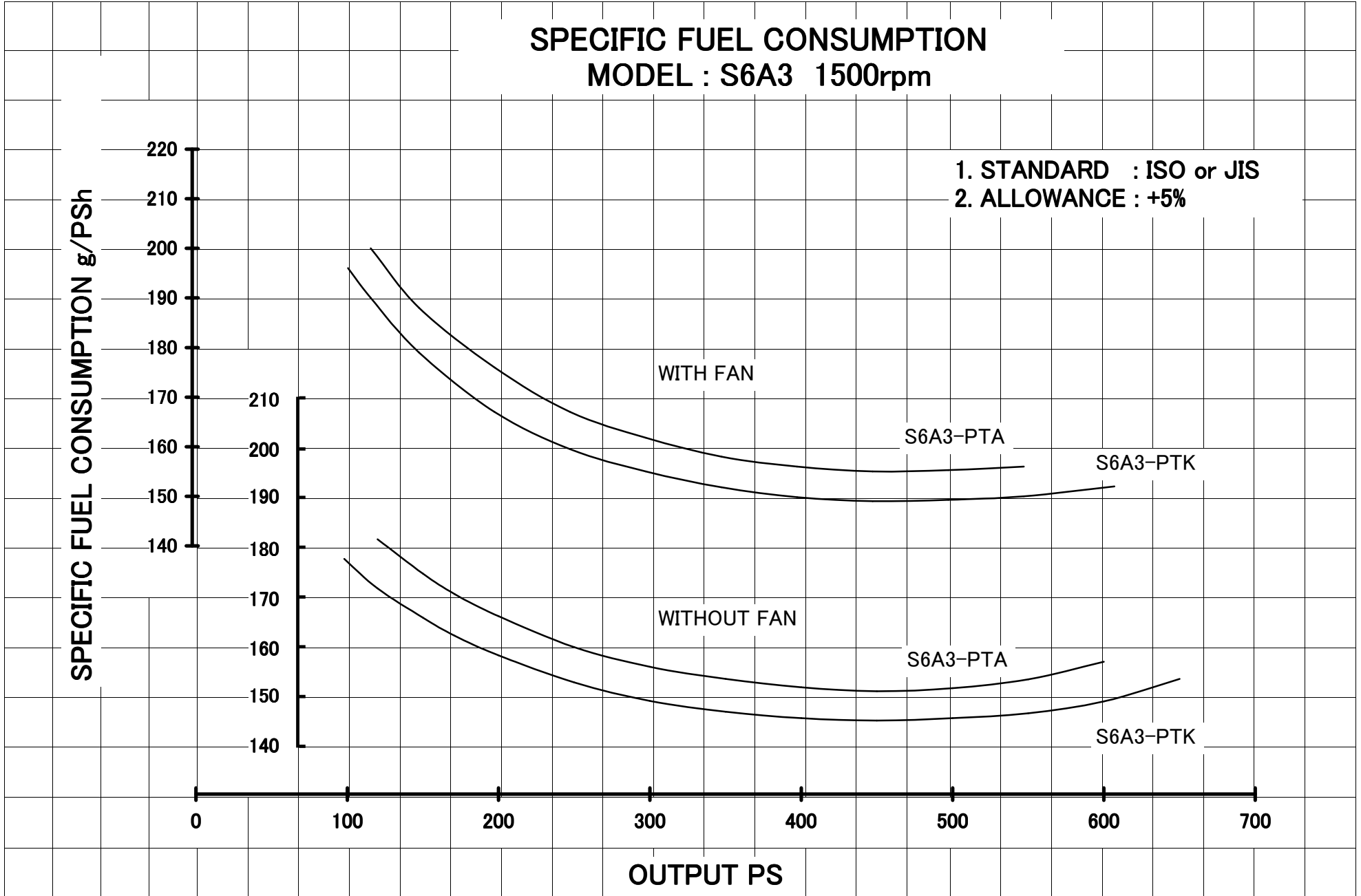
WITHOUT FAN

S6A3-PTA

S6A3-PTK

0 100 200 300 400 500 600 700

OUTPUT PS



SPECIFIC FUEL CONSUMPTION

MODEL : S6A3 1800rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

SPECIFIC FUEL CONSUMPTION g/PS_h

230
220
210
200
190
180
170
160
150

210
200
190
180
170
160
150

WITH FAN

WITHOUT FAN

S6A3-PTA

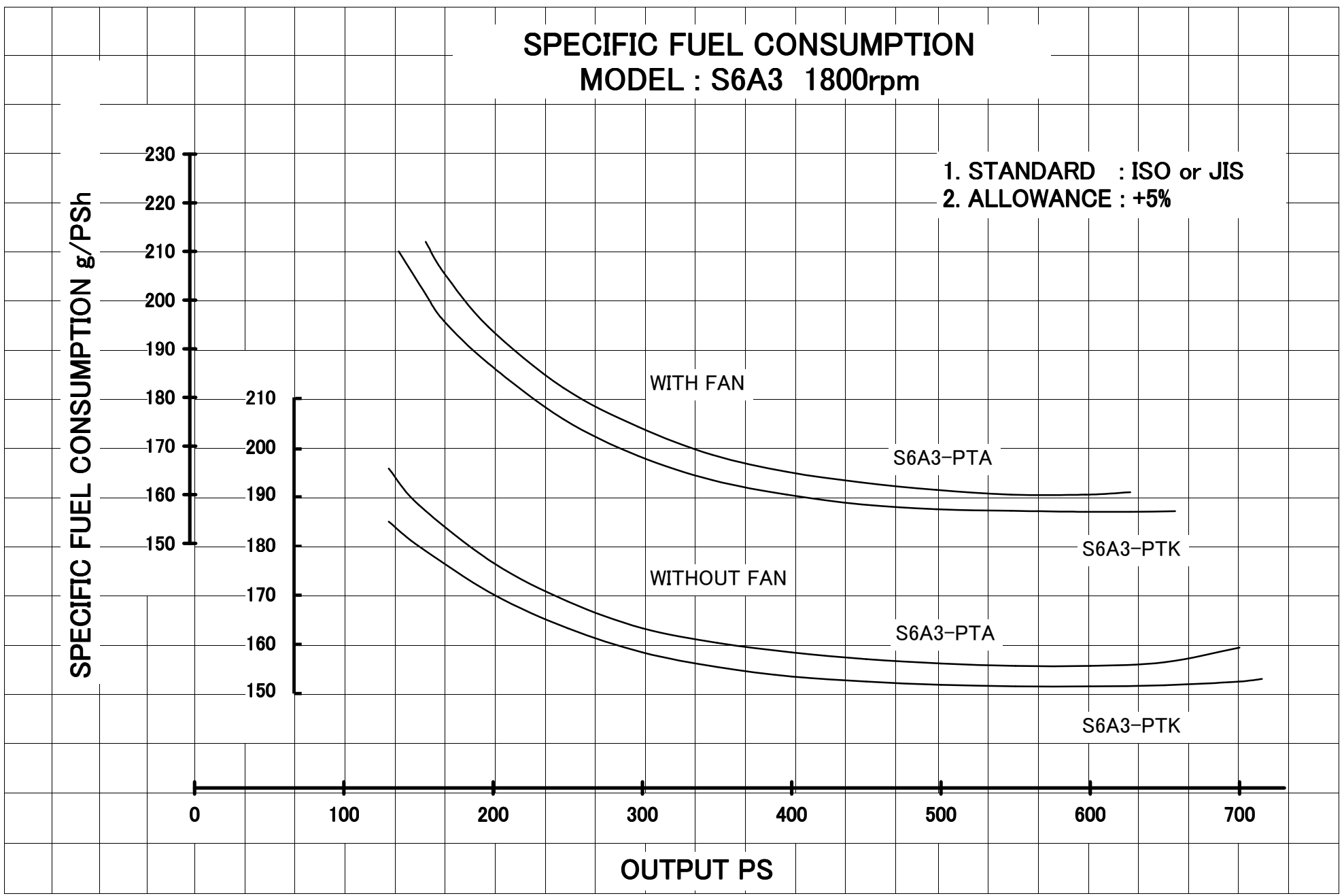
S6A3-PTK

S6A3-PTA

S6A3-PTK

0 100 200 300 400 500 600 700

OUTPUT PS



SPECIFIC FUEL CONSUMPTION MODEL : S12A2 1200rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

SPECIFIC FUEL CONSUMPTION g/PS_h

190
180
170
160
150

WITH FAN

S12A2-PT

S12A2-PTA

S12A2-PTK

180
170
160
150

WITHOUT FAN

S12A2-PT

S12A2-PTA

S12A2-PTK

0

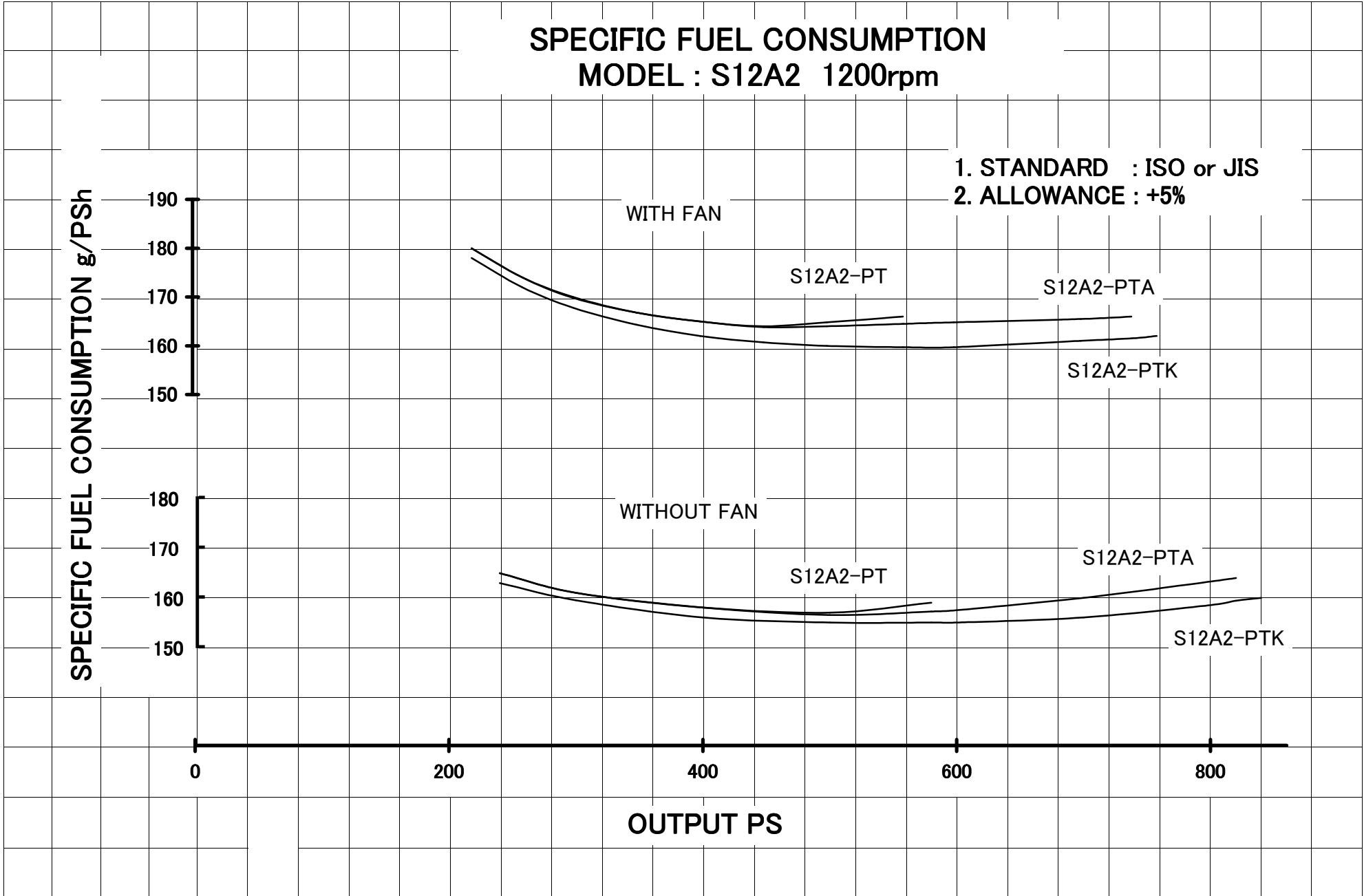
200

400

600

800

OUTPUT PS



SPECIFIC FUEL CONSUMPTION MODEL : S12A2 1500rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

SPECIFIC FUEL CONSUMPTION g/PS_h

190
180
170
160
150

190
180
170
160
150
140

0

200

400

600

800

1000

OUTPUT PS

WITH FAN

S12A2-PT

S12A2-PTA

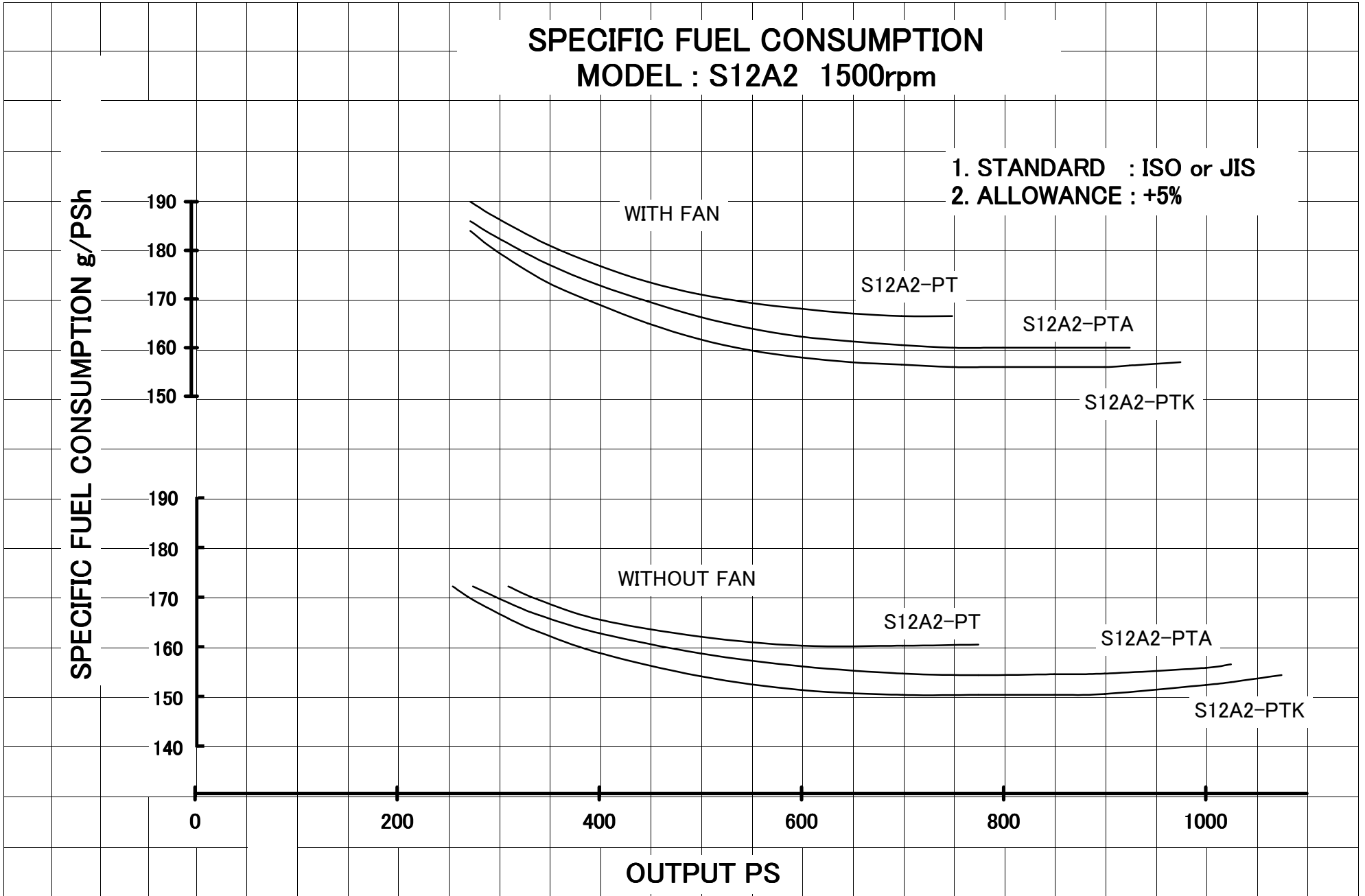
S12A2-PTK

WITHOUT FAN

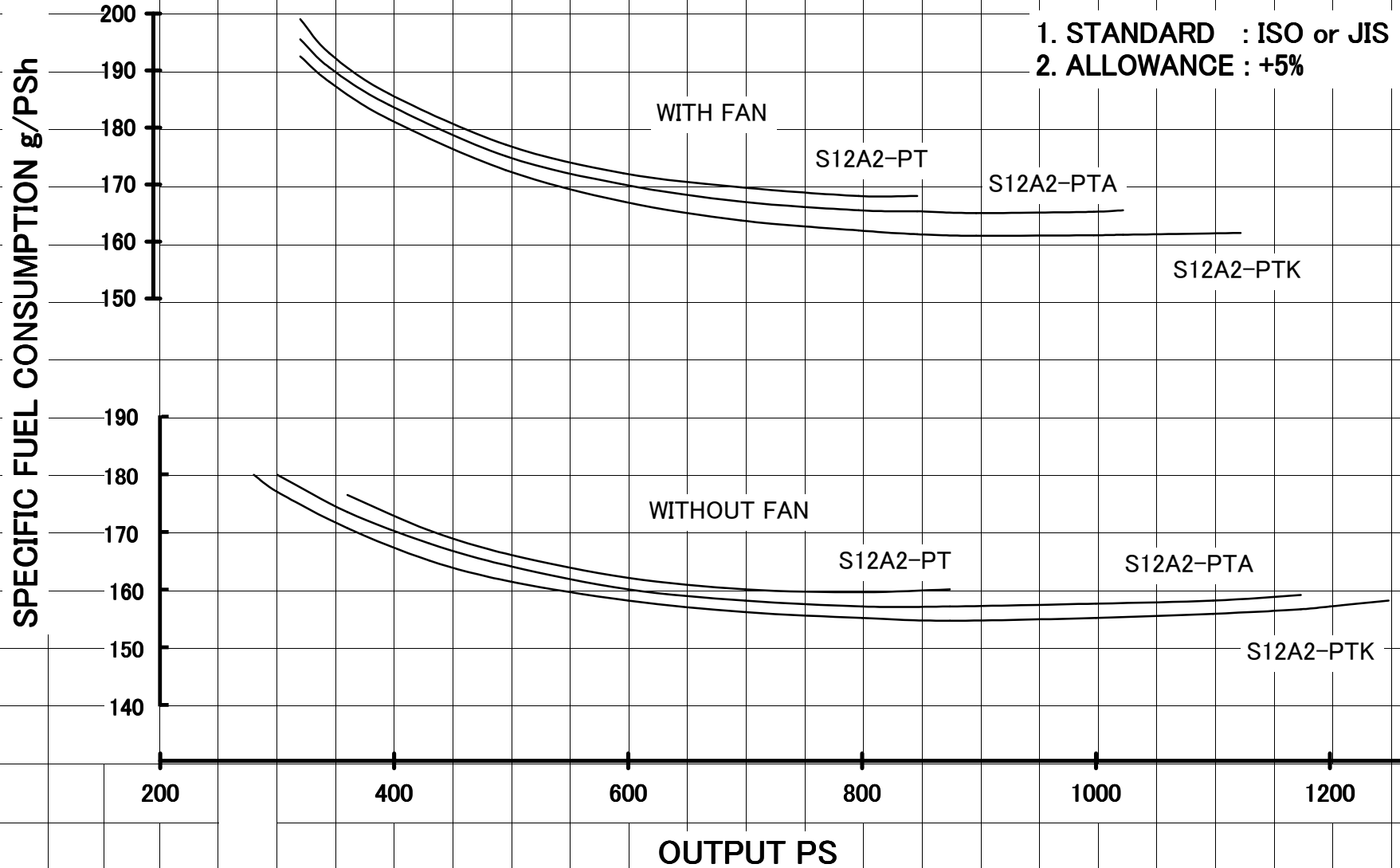
S12A2-PT

S12A2-PTA

S12A2-PTK

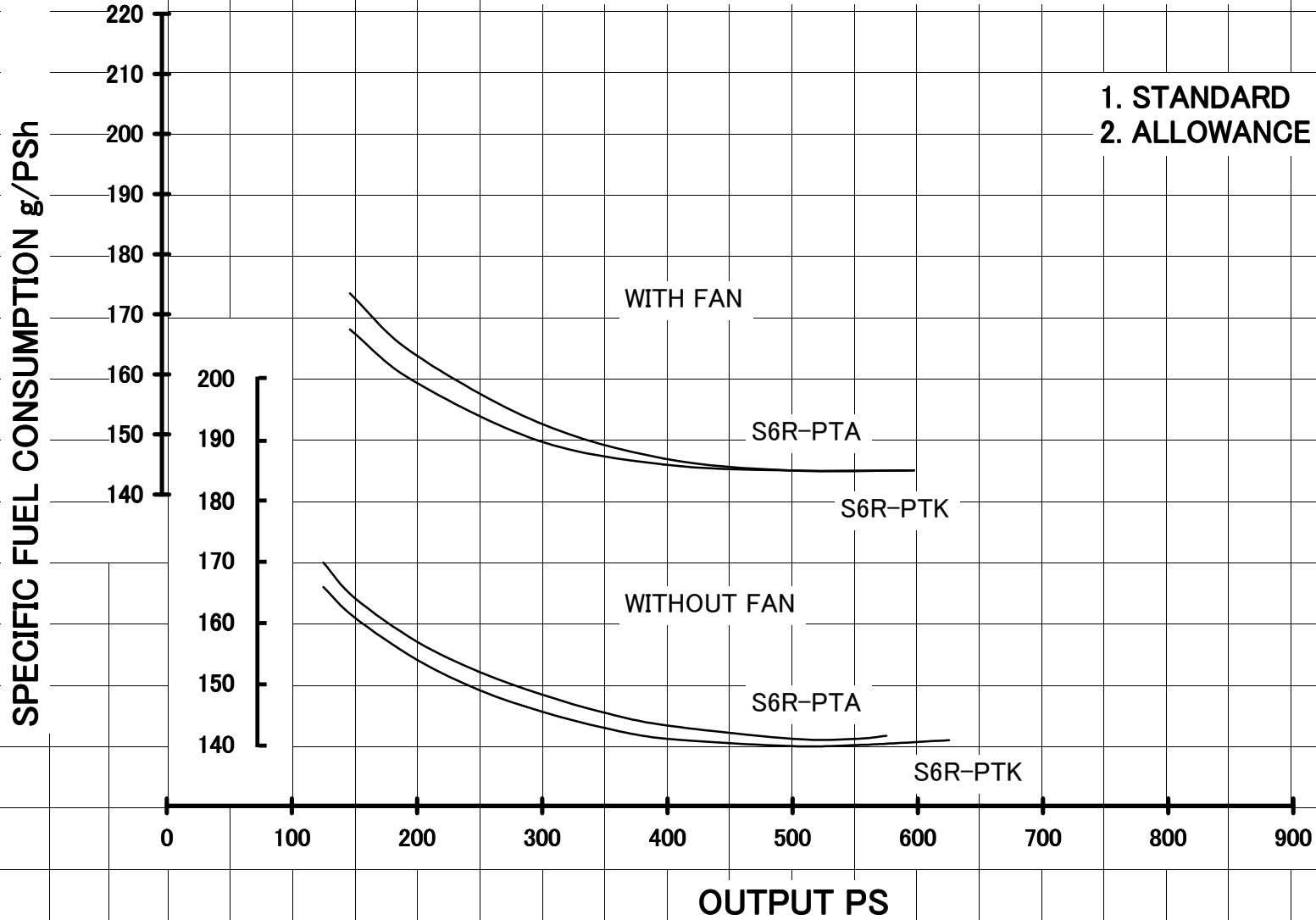


SPECIFIC FUEL CONSUMPTION MODEL : S12A2 1800rpm



SPECIFIC FUEL CONSUMPTION MODEL : S6R 1200rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

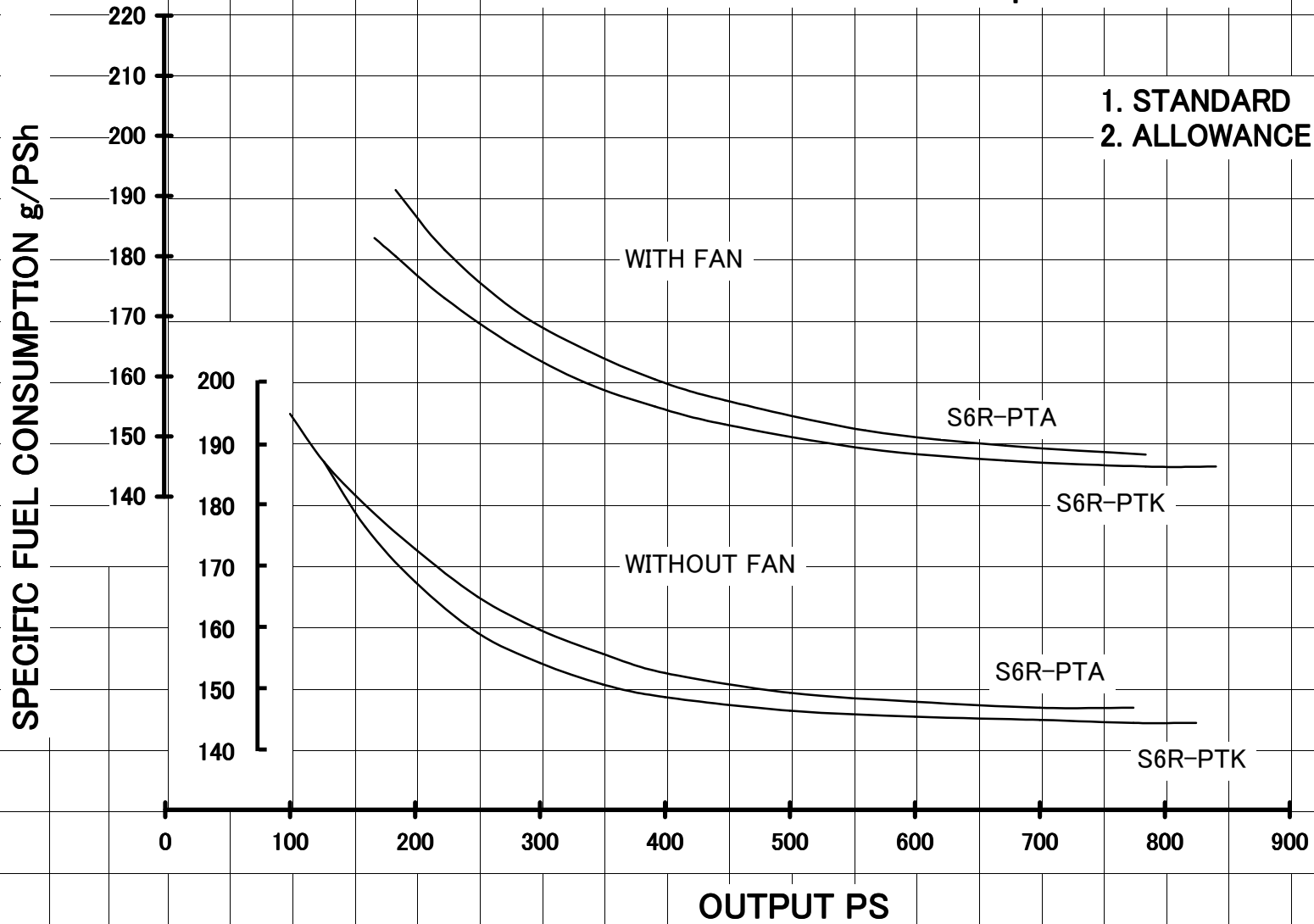


SPECIFIC FUEL CONSUMPTION

MODEL : S6R 1500rpm

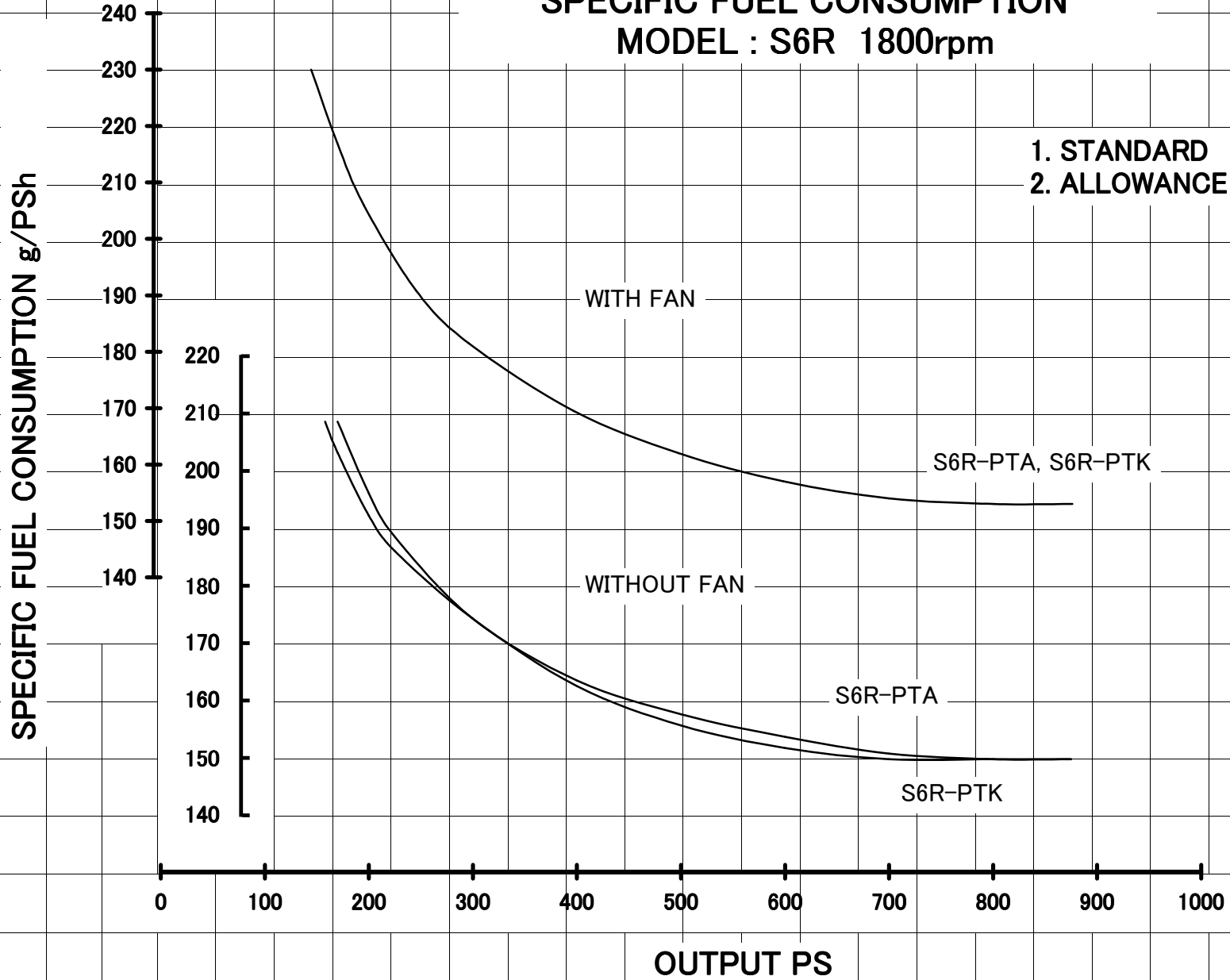
1. STANDARD : ISO or JIS

2. ALLOWANCE : +5%



SPECIFIC FUEL CONSUMPTION MODEL : S6R 1800rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

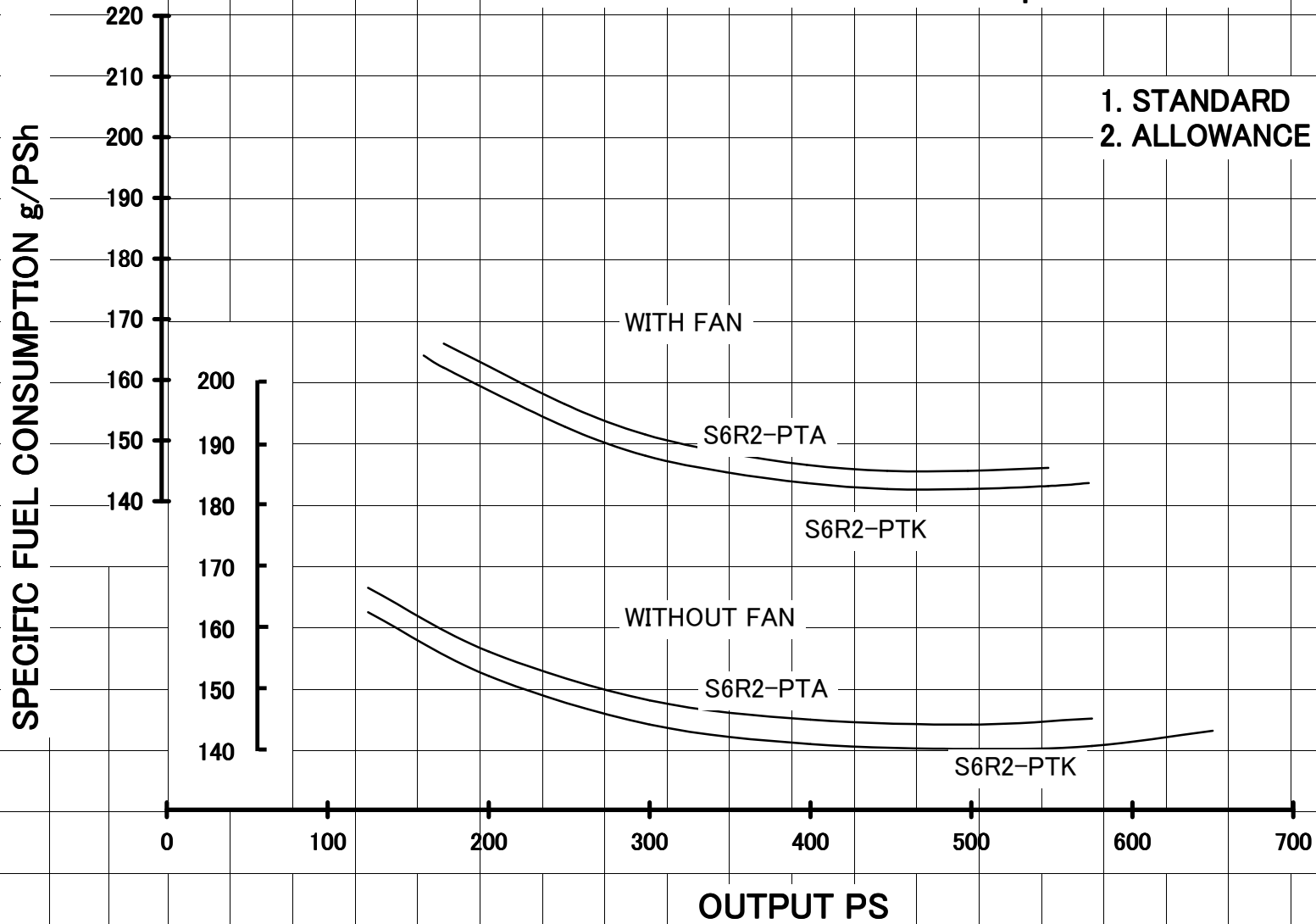


SPECIFIC FUEL CONSUMPTION

MODEL : S6R2 1000rpm

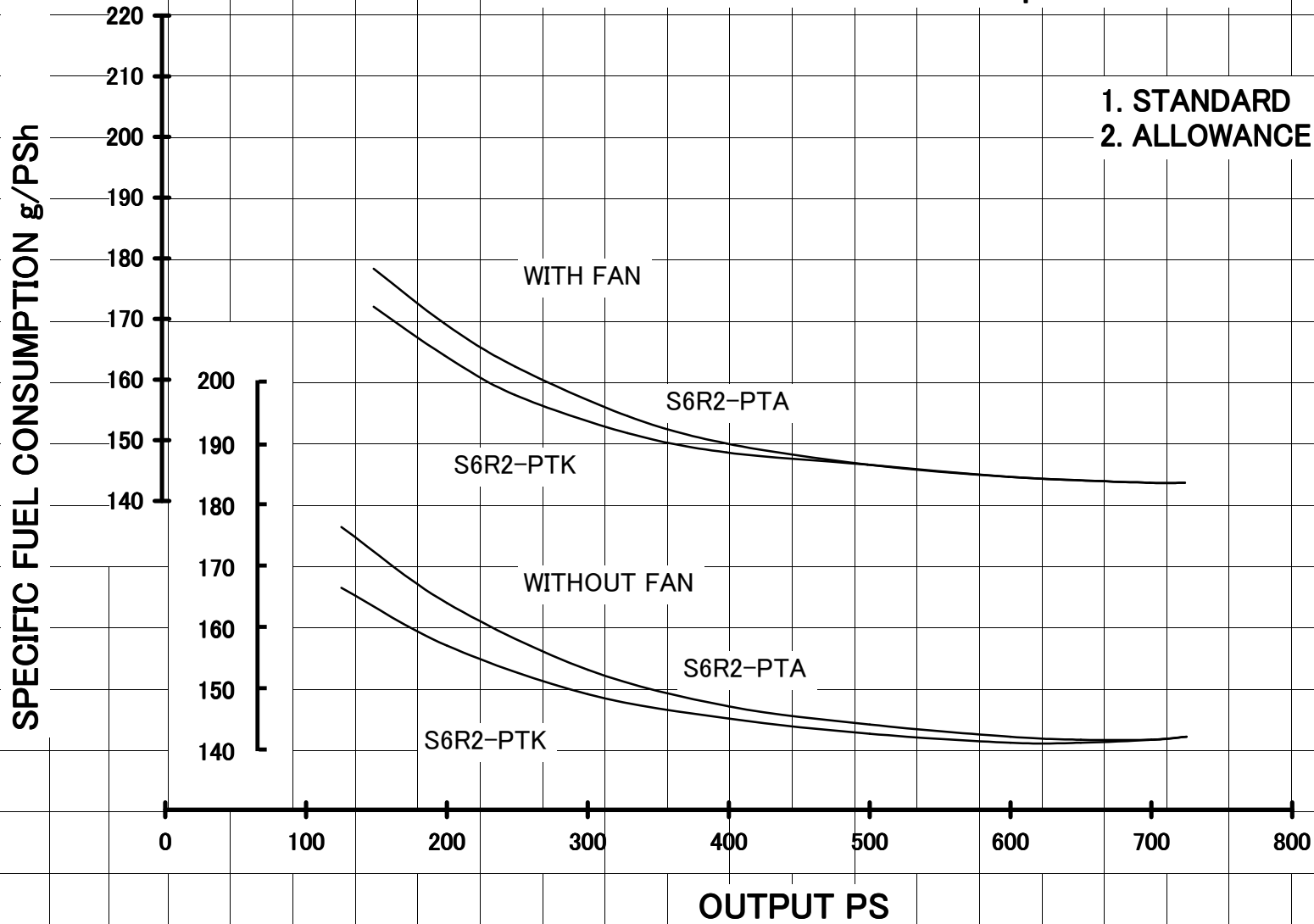
1. STANDARD : ISO or JIS

2. ALLOWANCE : +5%



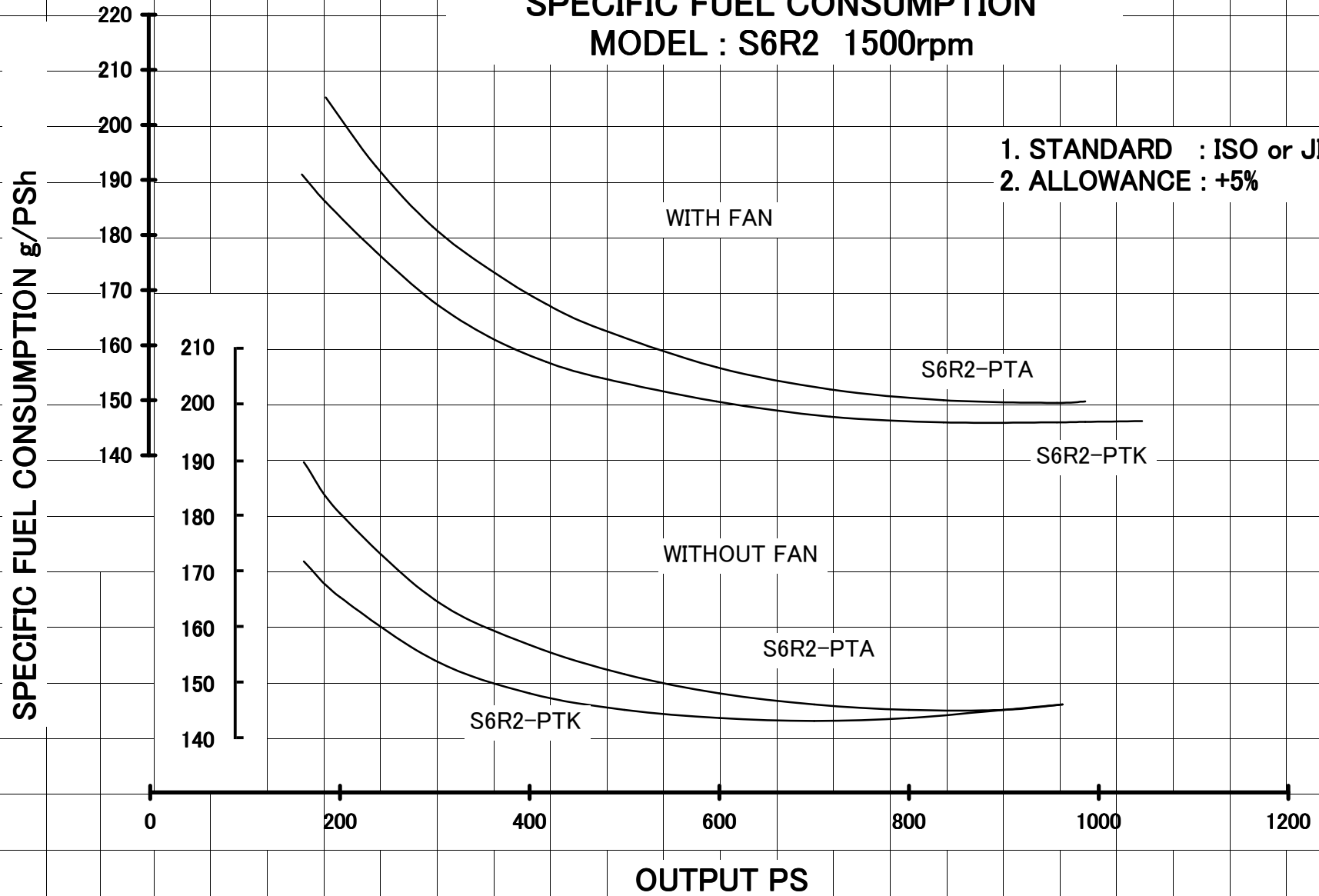
SPECIFIC FUEL CONSUMPTION MODEL : S6R2 1200rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%



SPECIFIC FUEL CONSUMPTION MODEL : S6R2 1500rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

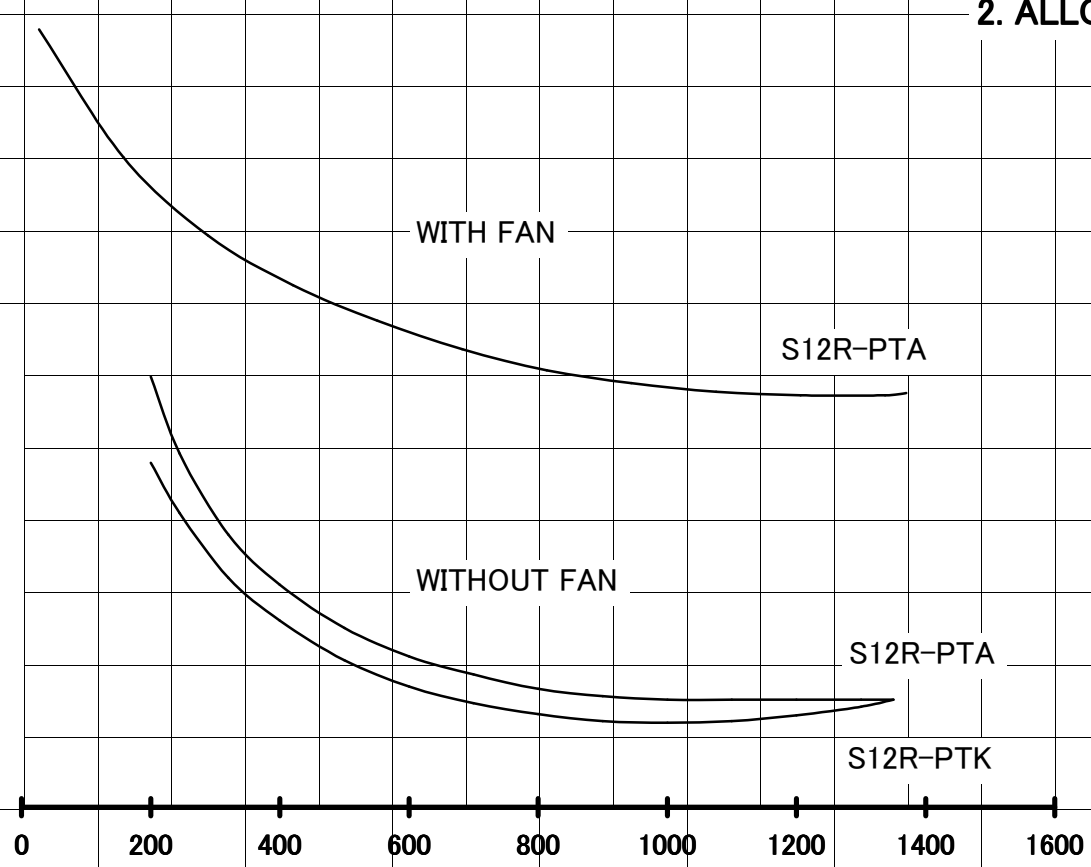


SPECIFIC FUEL CONSUMPTION MODEL : S12R 1200rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

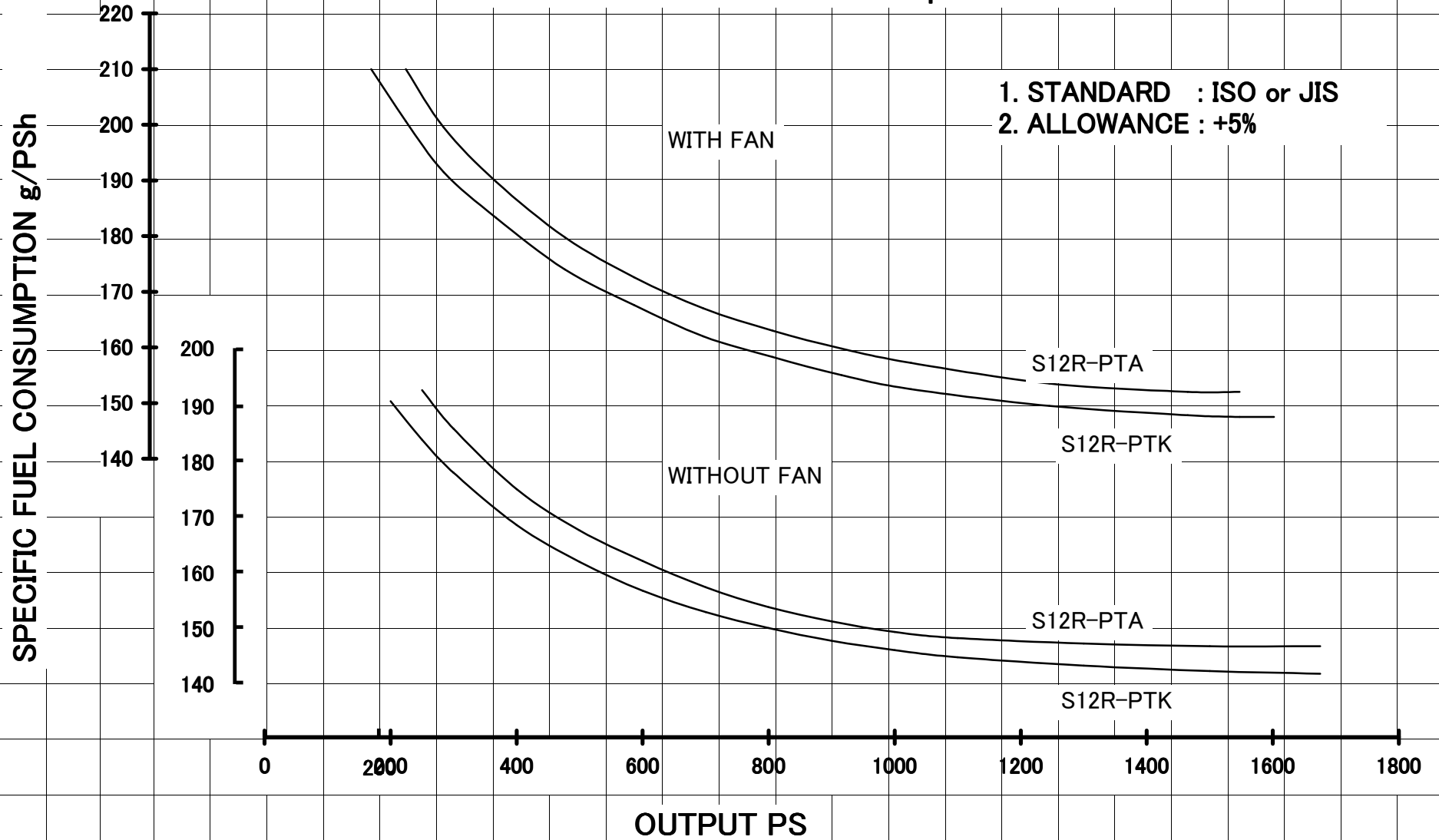
SPECIFIC FUEL CONSUMPTION g/PS_h

200
190
180
170
160
150
140
190
180
170
160
150
140

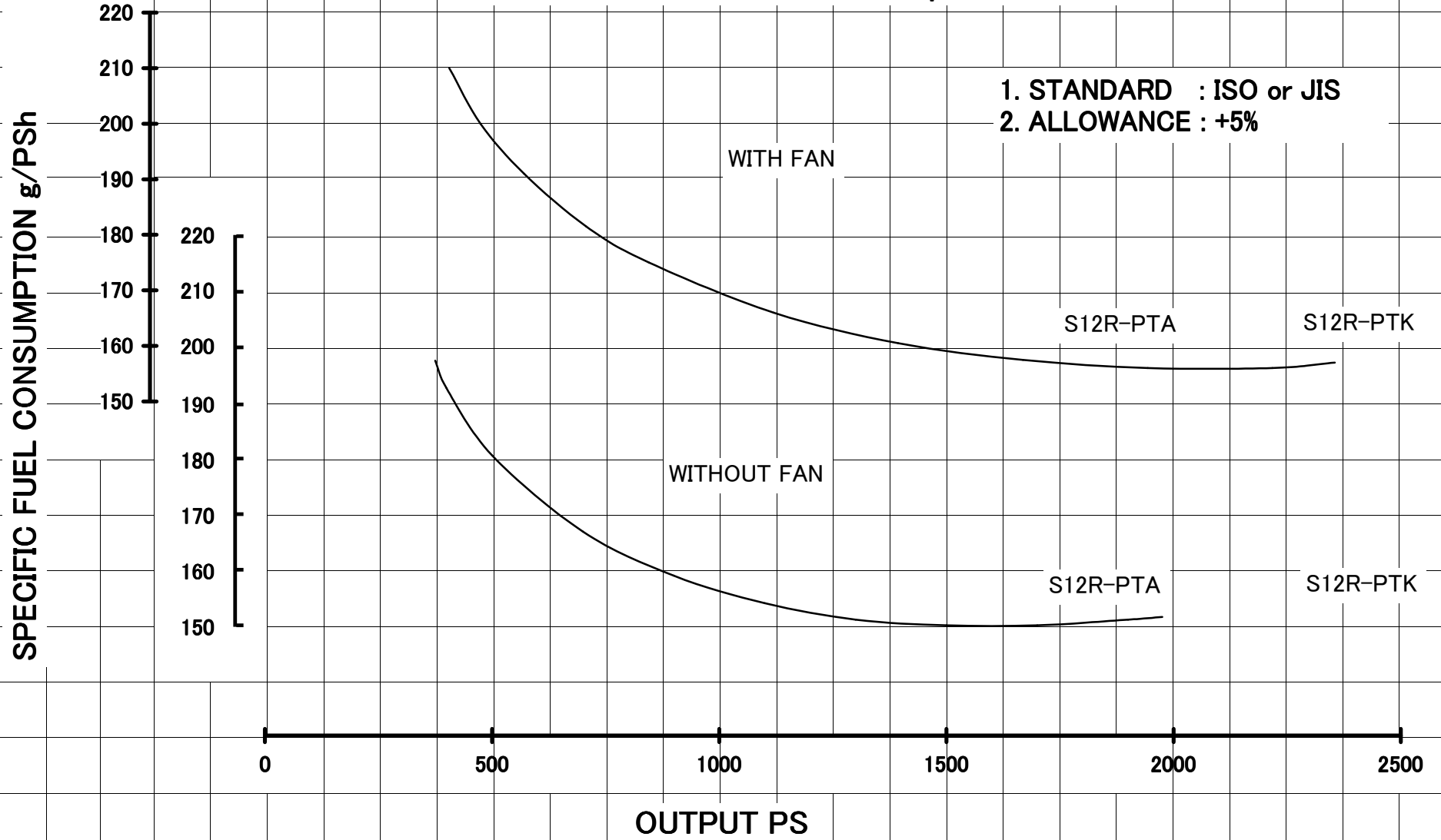


OUTPUT PS

SPECIFIC FUEL CONSUMPTION MODEL : S12R 1500rpm

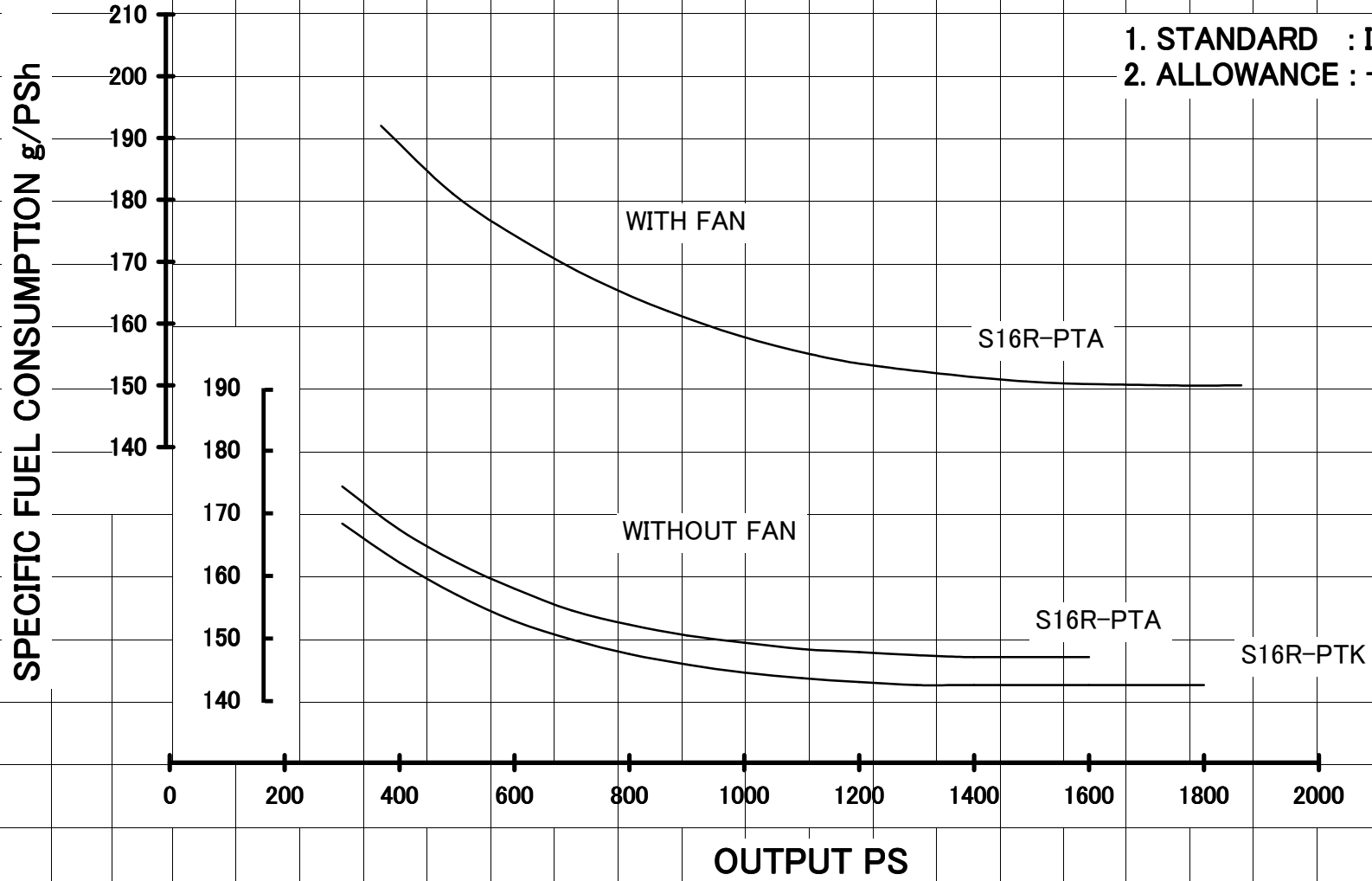


SPECIFIC FUEL CONSUMPTION MODEL : S12R 1800rpm



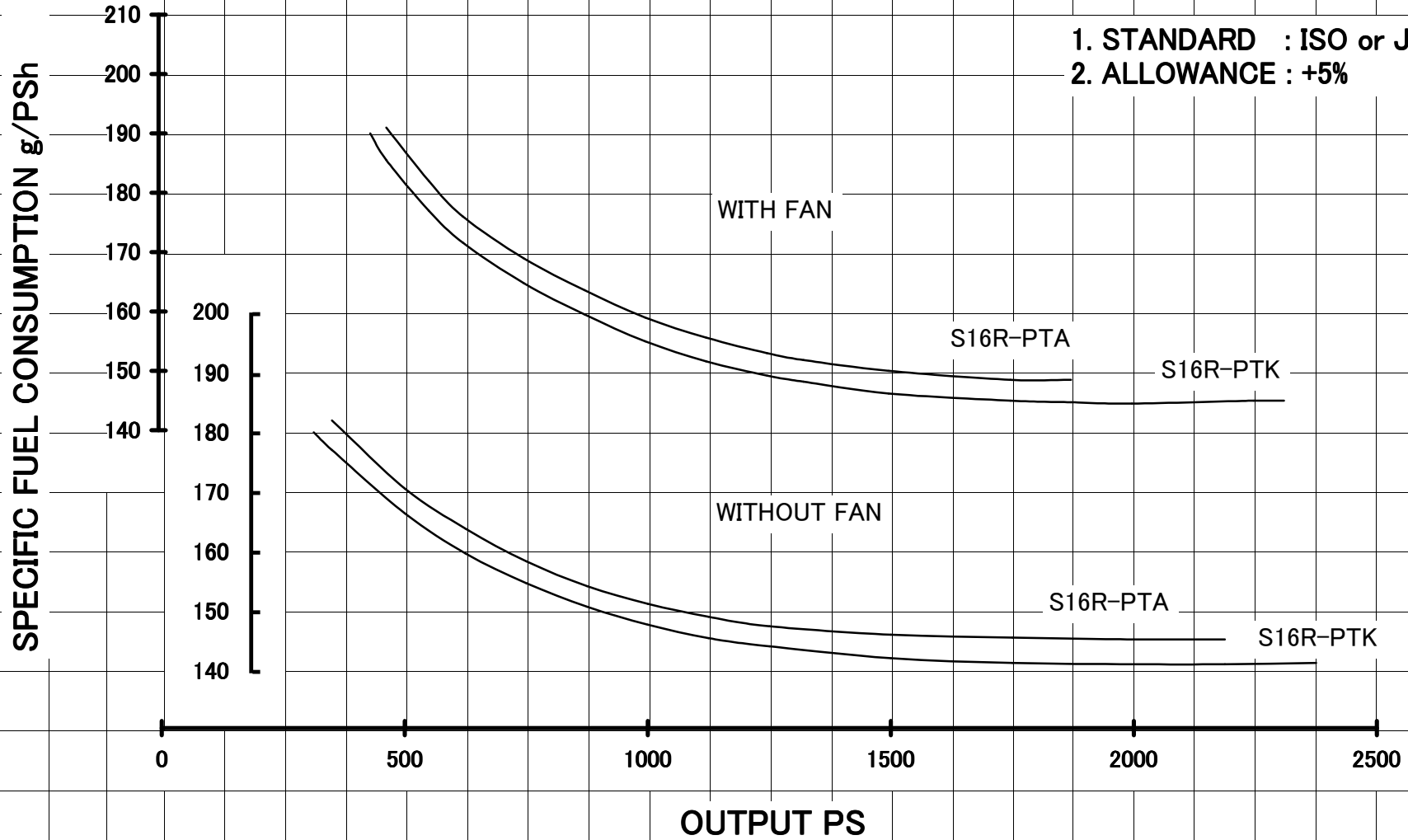
SPECIFIC FUEL CONSUMPTION MODEL : S16R 1200rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%



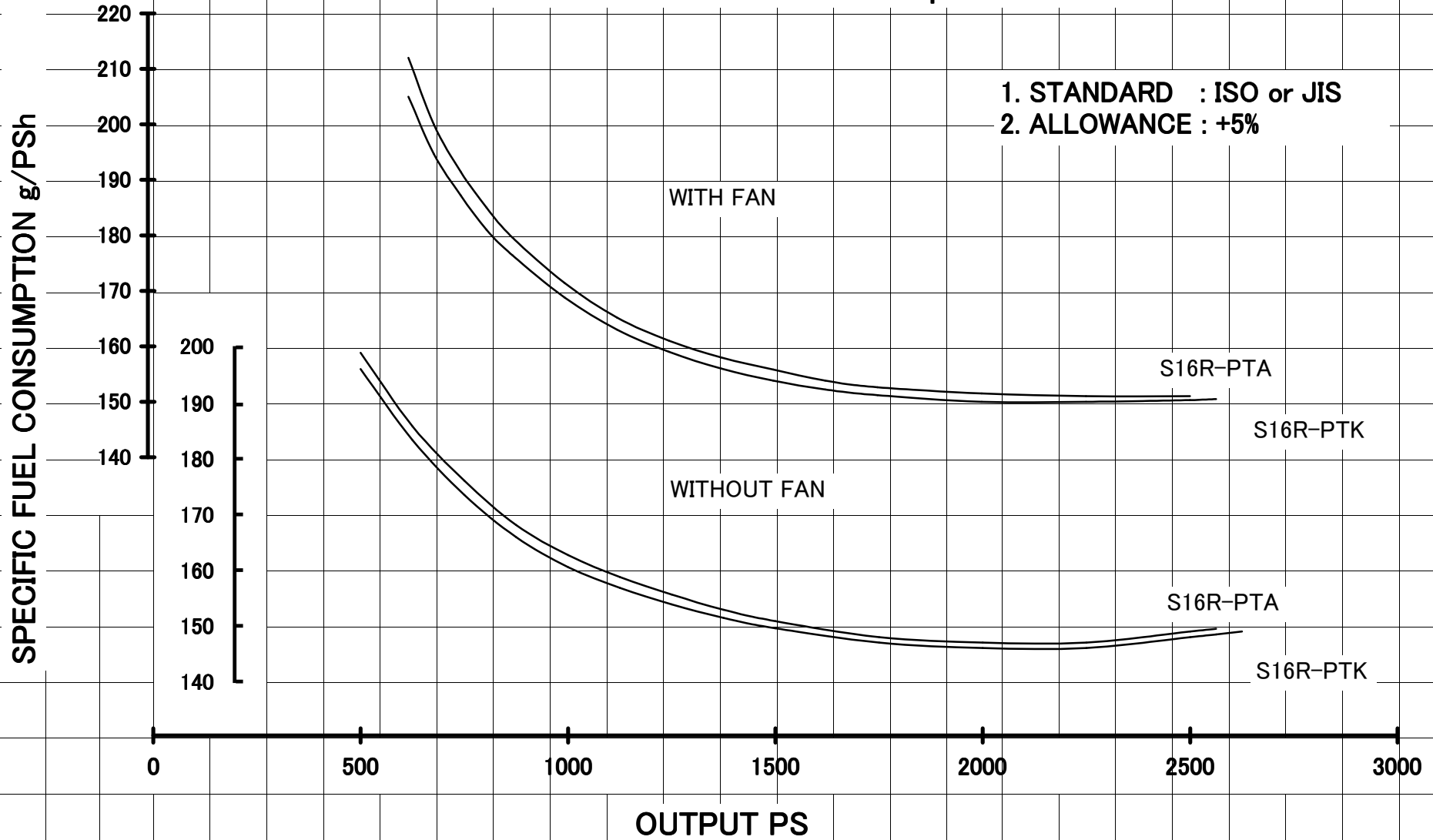
SPECIFIC FUEL CONSUMPTION MODEL : S16R 1500rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%



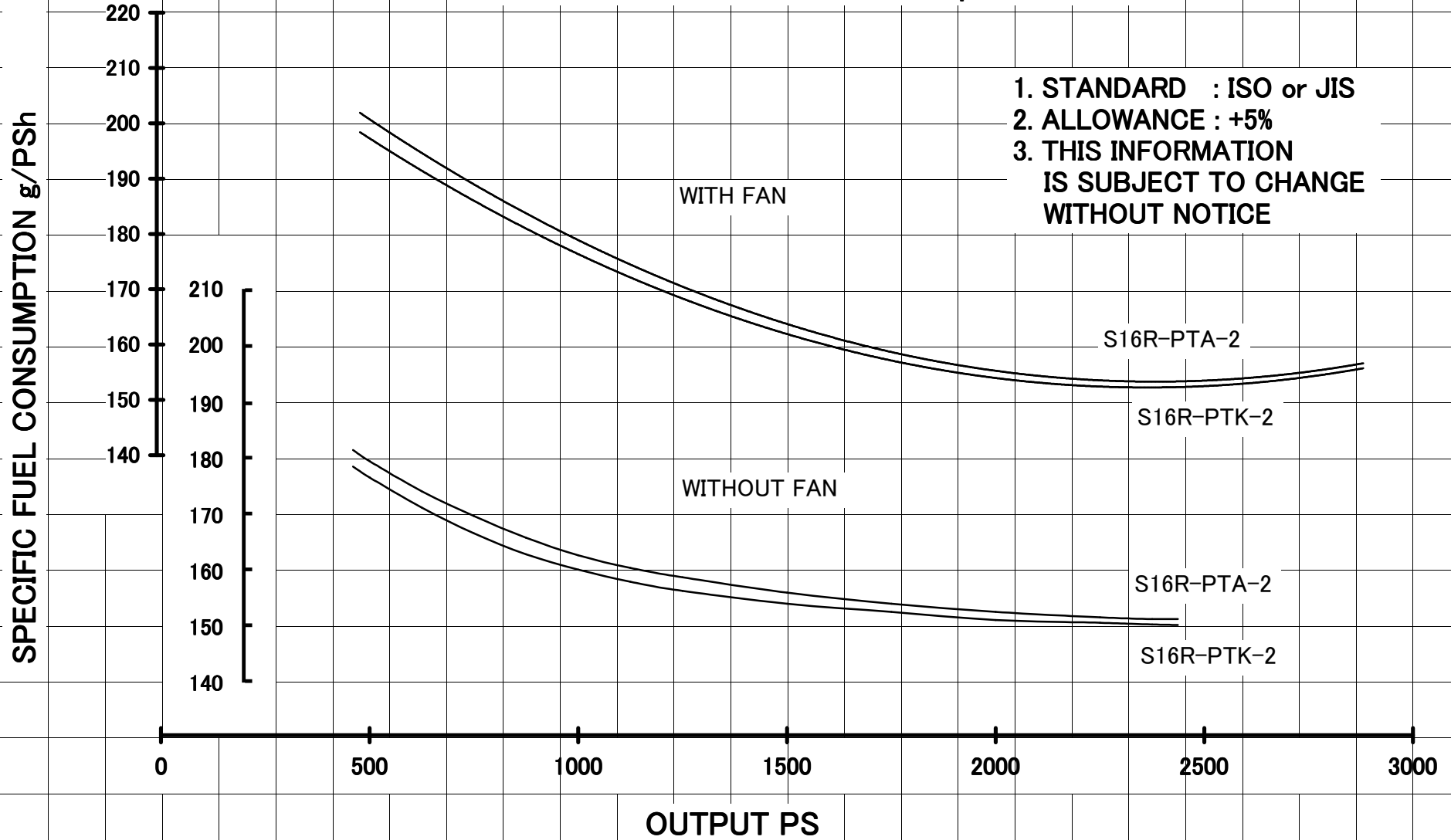
SPECIFIC FUEL CONSUMPTION MODEL : S16R 1800rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%



SPECIFIC FUEL CONSUMPTION MODEL : S16R-2 1500rpm

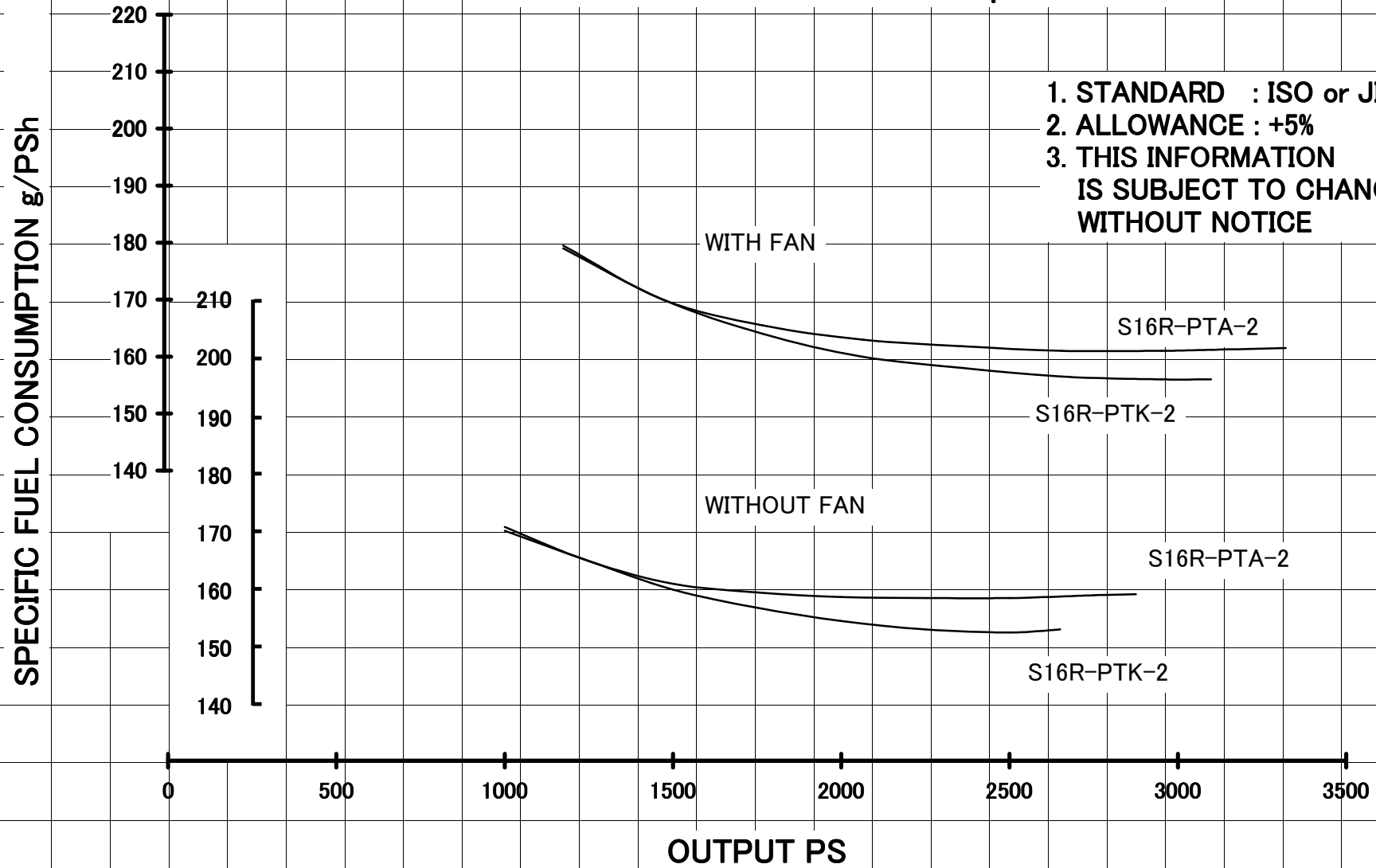
- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%
- 3. THIS INFORMATION IS SUBJECT TO CHANGE WITHOUT NOTICE



SPECIFIC FUEL CONSUMPTION

MODEL : S16R-2 1800rpm

1. STANDARD : ISO or JIS
2. ALLOWANCE : +5%
3. THIS INFORMATION IS SUBJECT TO CHANGE WITHOUT NOTICE



**SPECIFIC FUEL CONSUMPTION
MODEL : S6R2-PTAA 1500rpm**

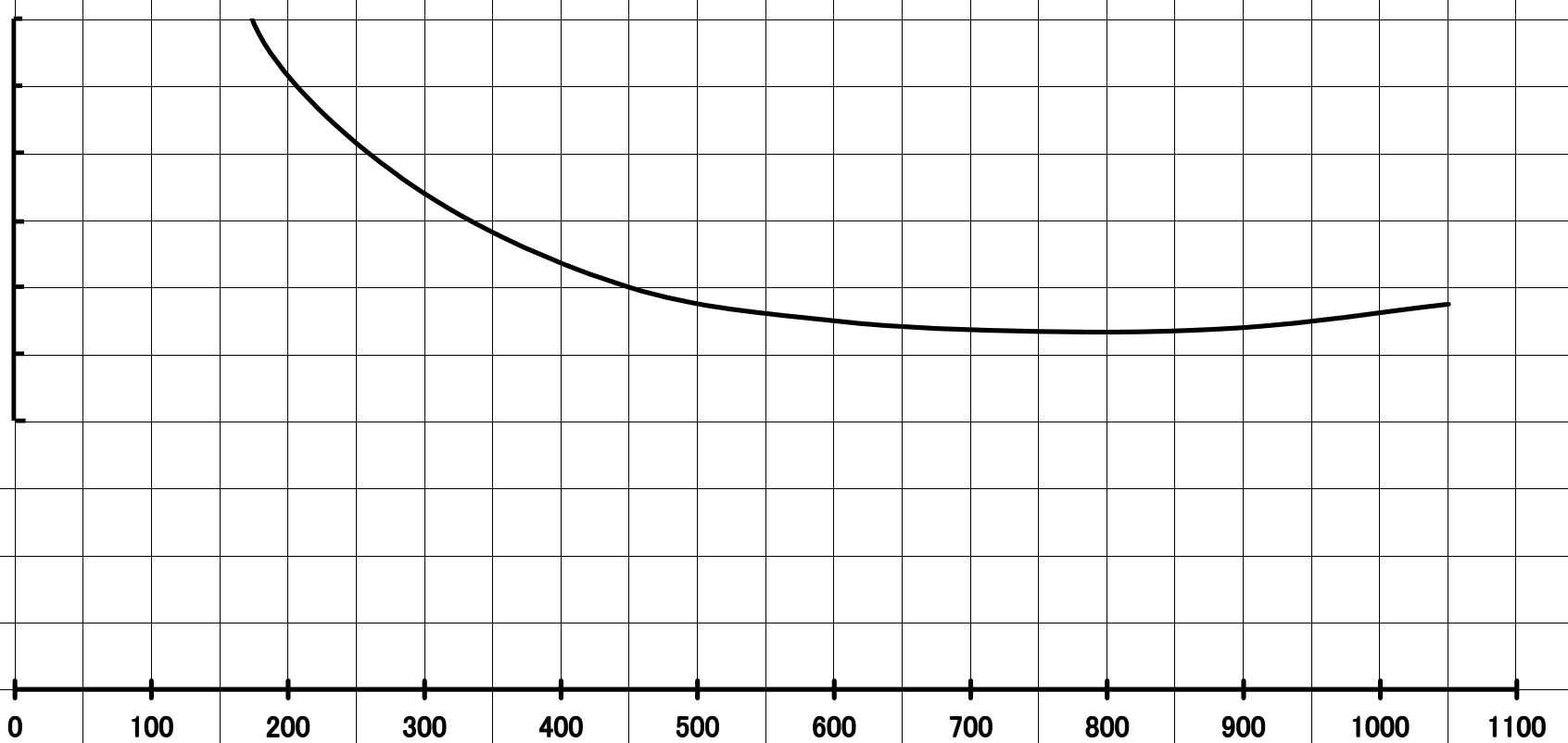
- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

SPECIFIC FUEL CONSUMPTION g/PS_h

200
190
180
170
160
150
140

0 100 200 300 400 500 600 700 800 900 1000 1100

OUTPUT PS



SPECIFIC FUEL CONSUMPTION MODEL : S12H-PTA 1500rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

SPECIFIC FUEL CONSUMPTION g/PS_h

200
190
180
170
160
150
140

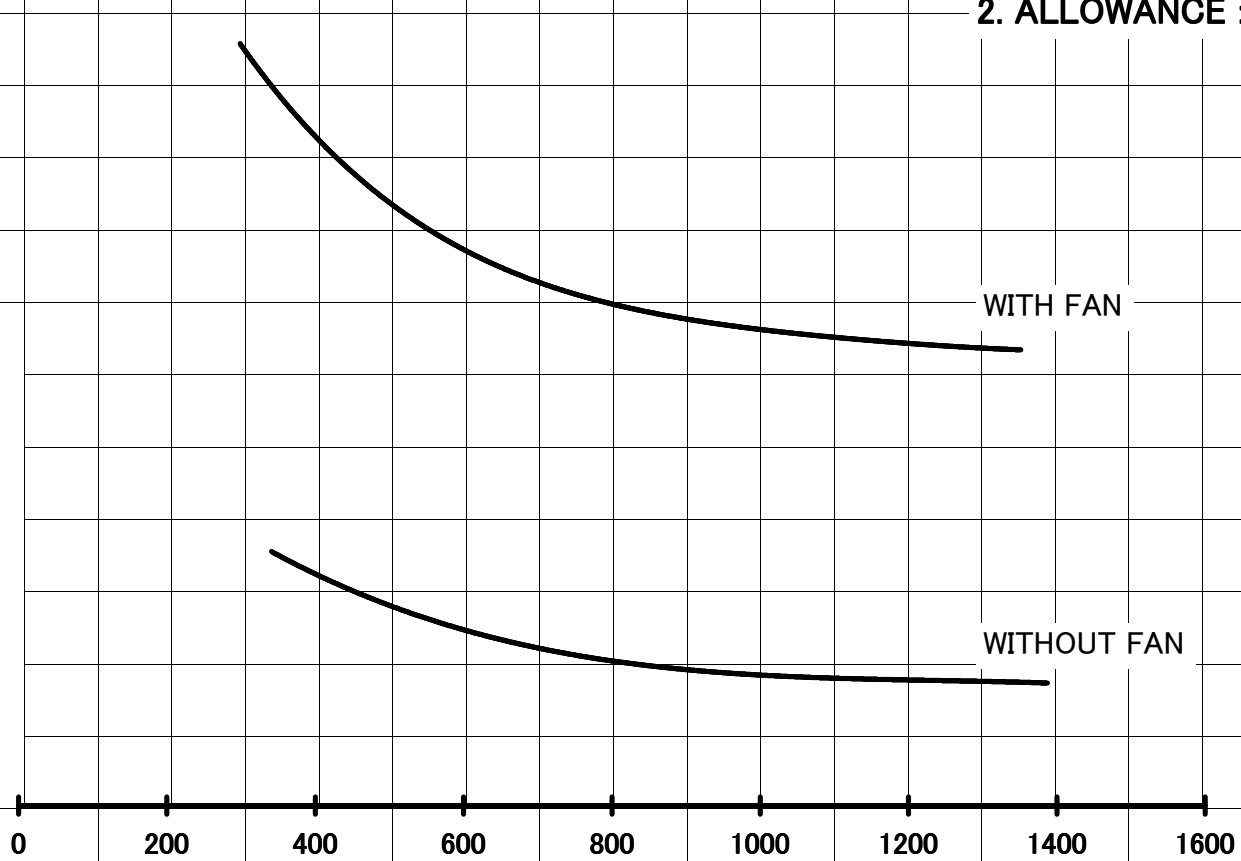
190
180
170
160
150
140

0 200 400 600 800 1000 1200 1400 1600

OUTPUT PS

WITH FAN

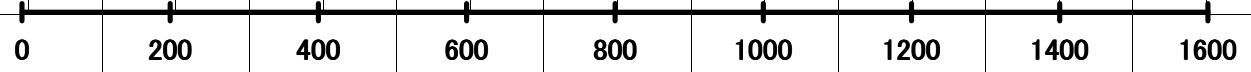
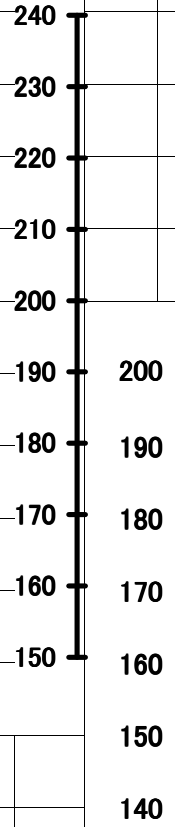
WITHOUT FAN



SPECIFIC FUEL CONSUMPTION
MODEL : S12H-PTA 1800rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

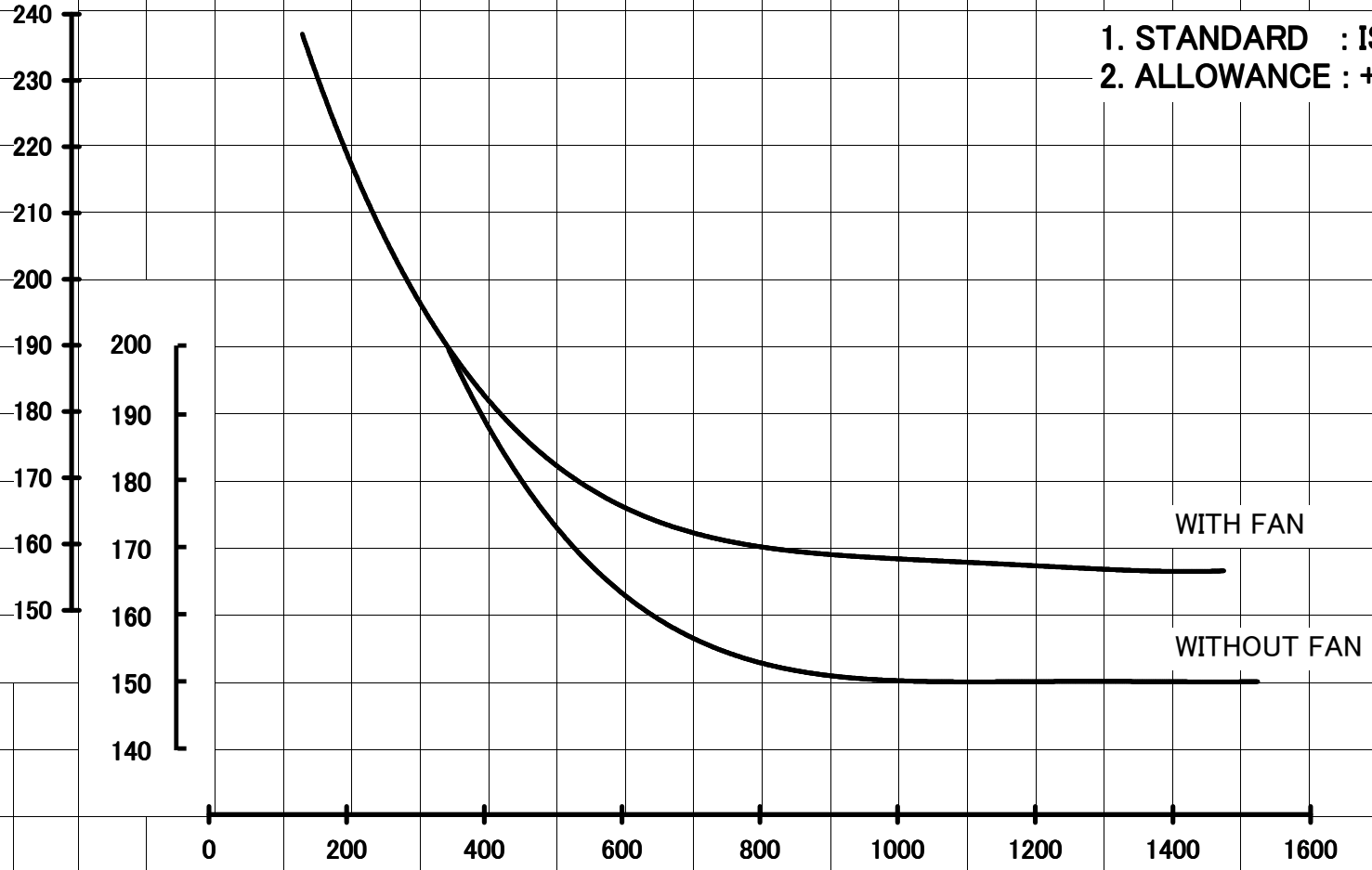
SPECIFIC FUEL CONSUMPTION g/PSH



OUTPUT PS

WITH FAN

WITHOUT FAN



SPECIFIC FUEL CONSUMPTION MODEL : S12R-PTAA2

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

SPECIFIC FUEL CONSUMPTION g/PS_h

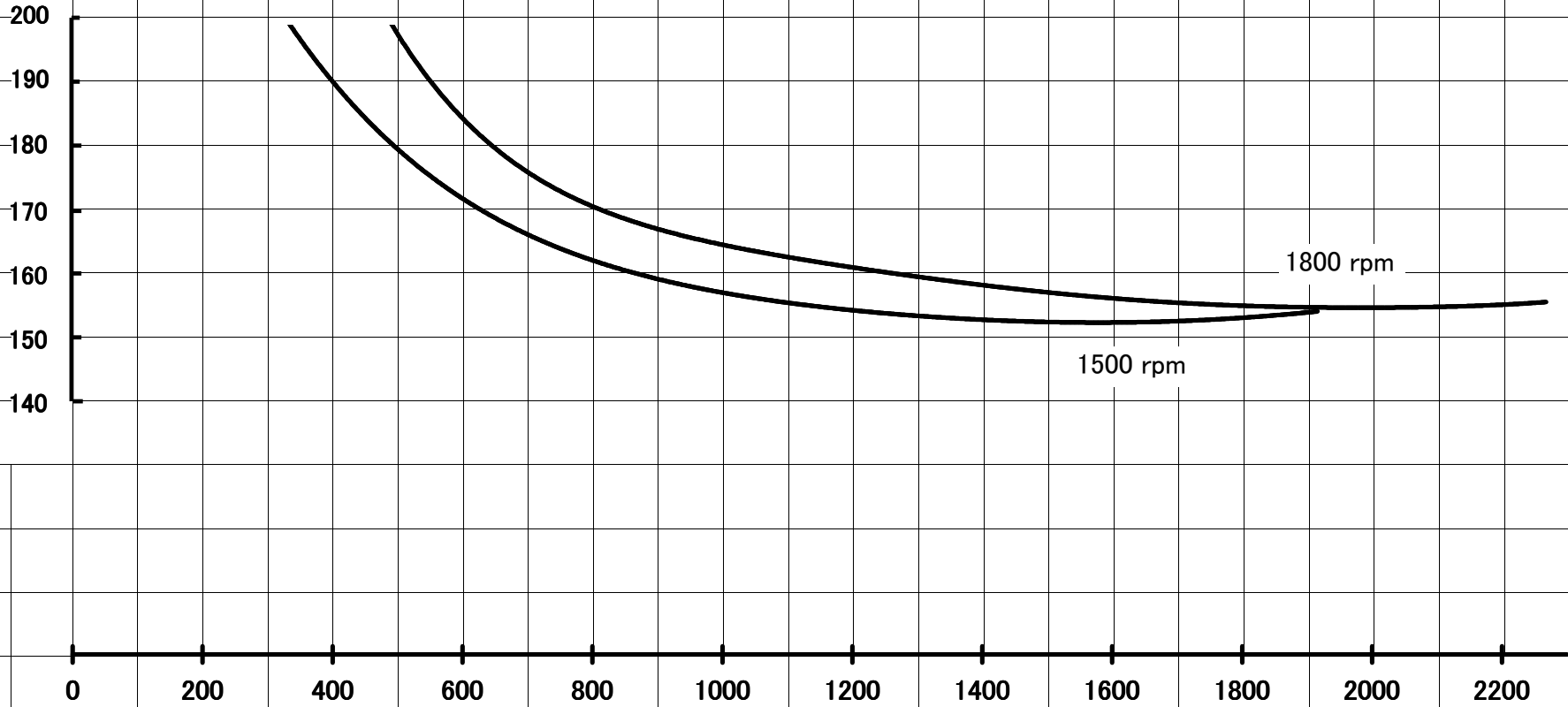
200
190
180
170
160
150
140

0 200 400 600 800 1000 1200 1400 1600 1800 2000 2200

OUTPUT PS

1500 rpm

1800 rpm



**SPECIFIC FUEL CONSUMPTION
MODEL : S16R-PTAA2**

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

SPECIFIC FUEL CONSUMPTION g/PS_h

200
190
180
170
160
150
140

1800 rpm

1500 rpm

0

500

1000

1500

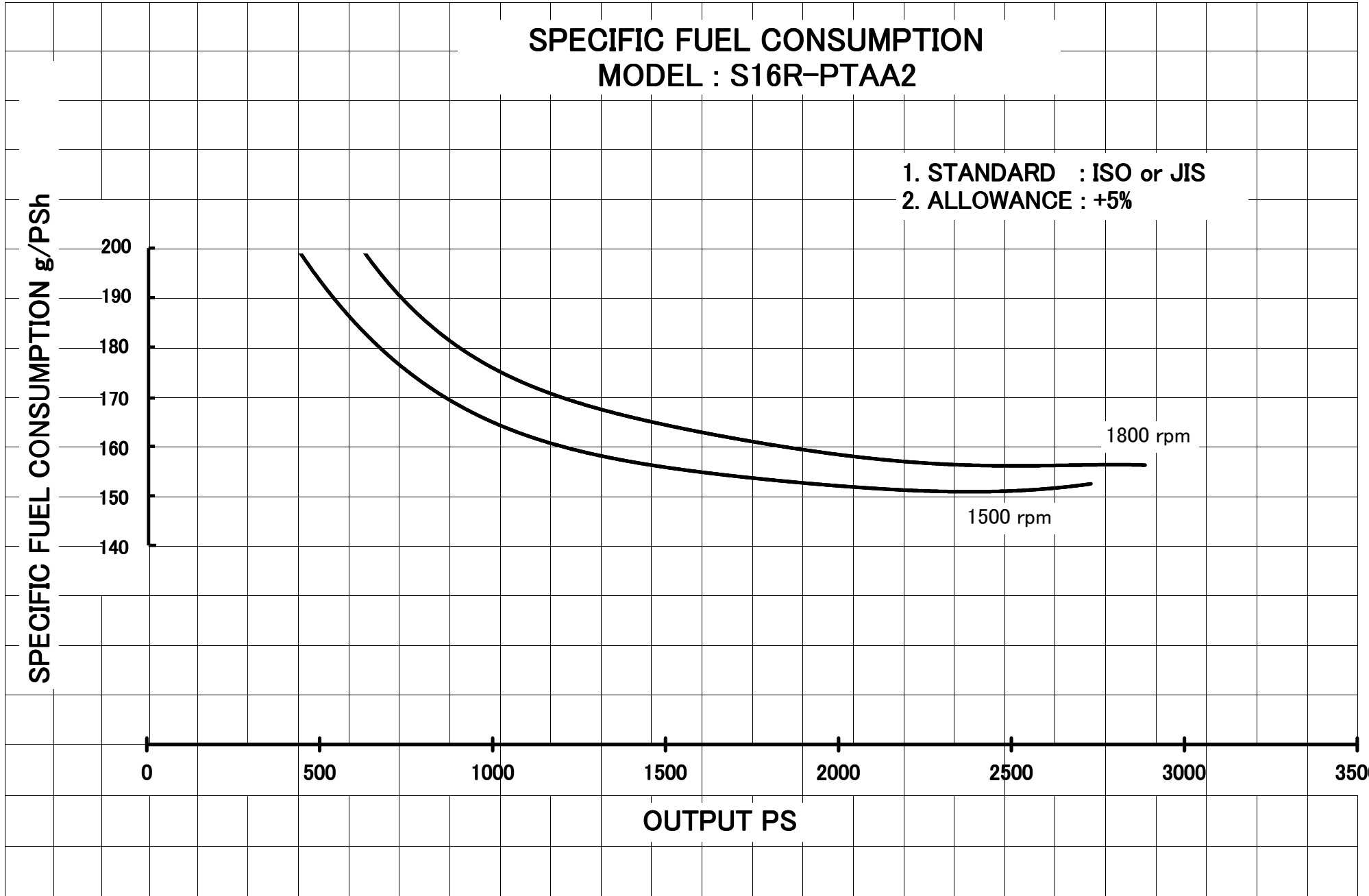
2000

2500

3000

3500

OUTPUT PS



SPECIFIC FUEL CONSUMPTION MODEL : S12R-2 1500rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

SPECIFIC FUEL CONSUMPTION g/PS_h

220
210
200
190
180
170
160
150
140

200
190
180
170
160
150
140

0 200 500 1000 1500 2000 2100

OUTPUT PS

WITH FAN

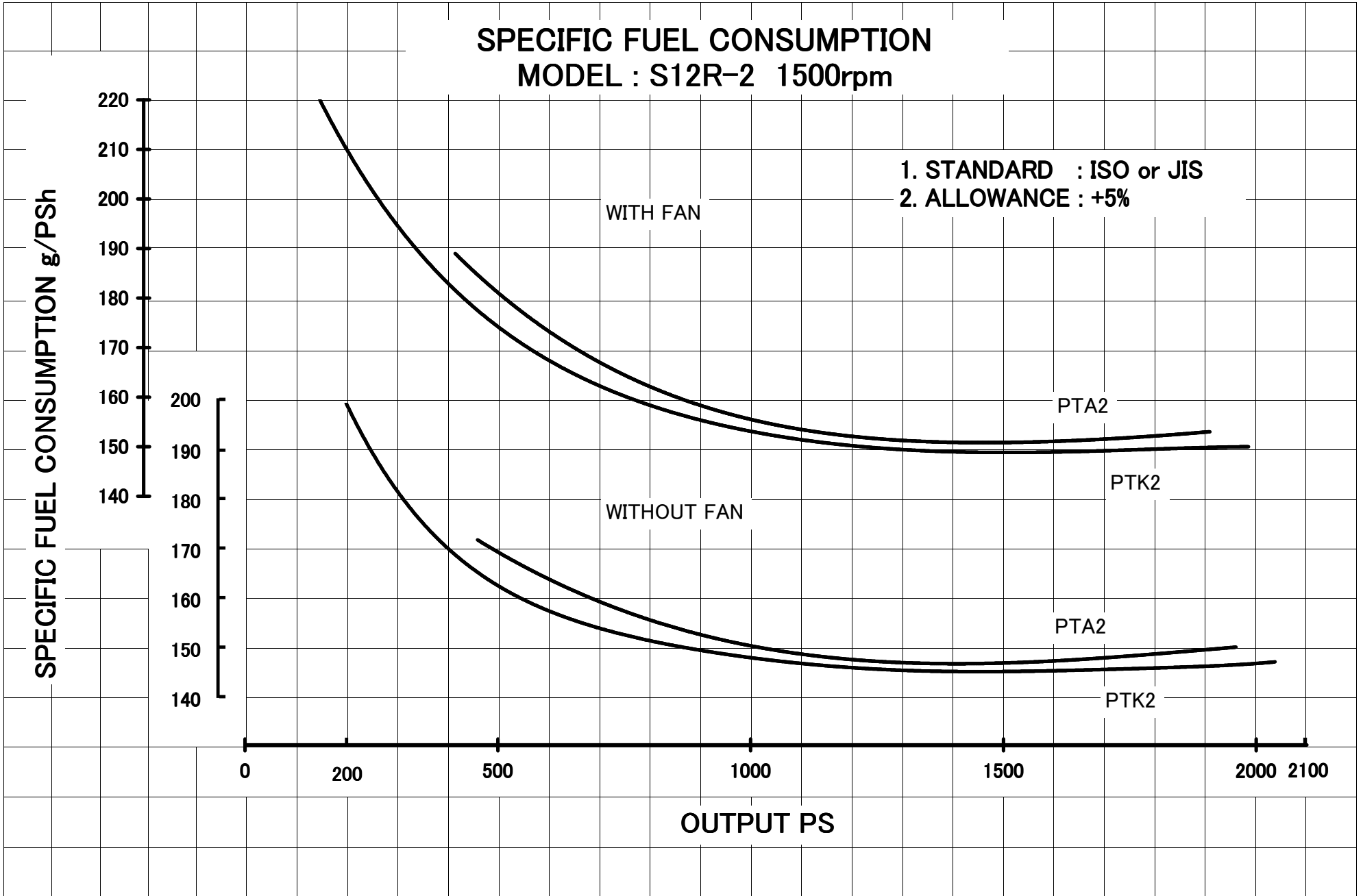
WITHOUT FAN

PTA2

PTK2

PTA2

PTK2



SPECIFIC FUEL CONSUMPTION MODEL : S12R-2 1800rpm

- 1. STANDARD : ISO or JIS
- 2. ALLOWANCE : +5%

