ISO-14001 Certified
JQA-EM4858

ISO-9001 Certified
JQA-1232

NIPPON SHARYO
http://www.n-sharyo.co.jp/

NES SERIES

Diesel Engine Generator

Reliable technology, further evolution
Earth-friendly green generators

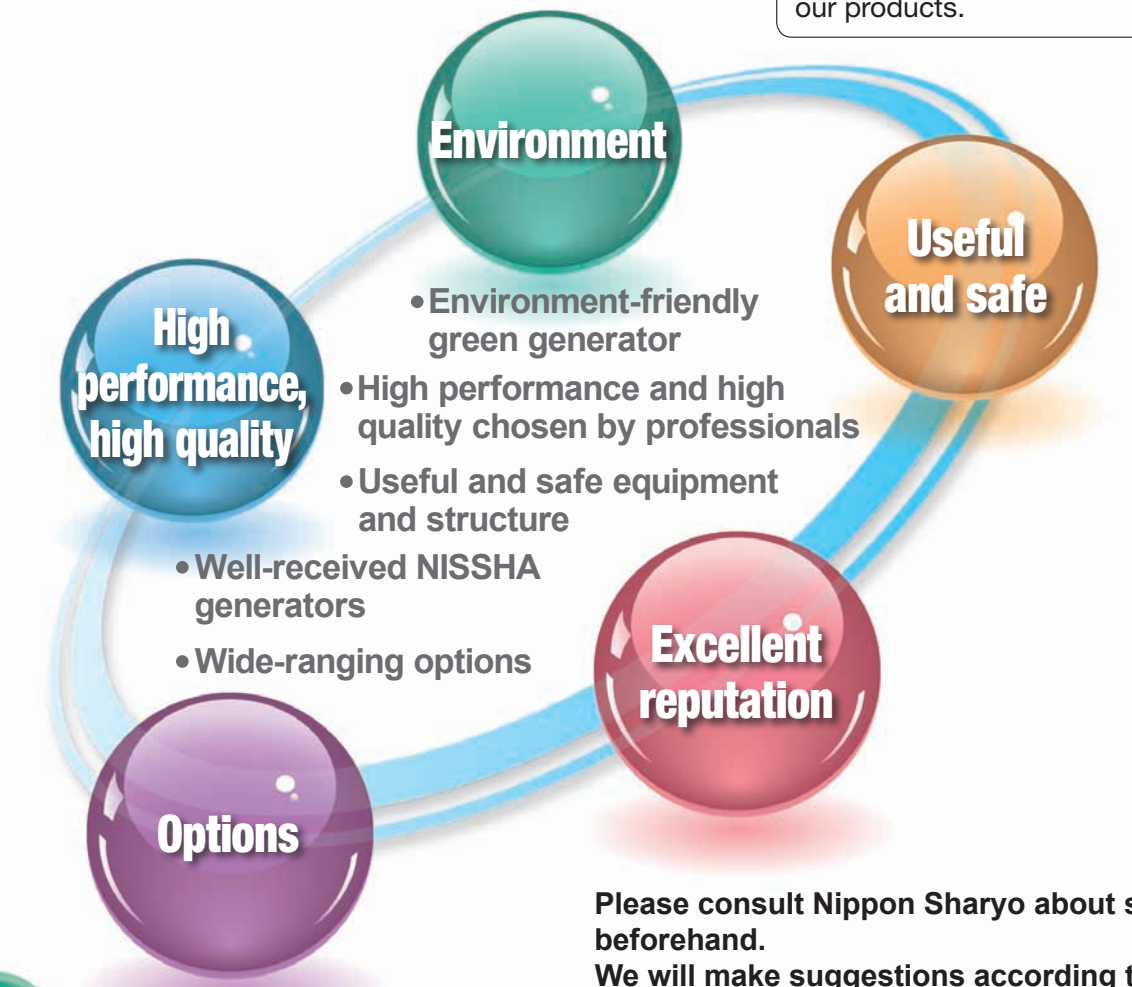
NES SERIES

Powerful and Earth-Friendly Generator

As a manufacturer of foundation construction equipment, Nippon Sharyo delivers leading-edge portable generators designed considering environmental issues such as global warming, air pollution and noise, with many years of construction experience.

Paving the way to the future

The history and progress of diesel generator sets cannot be told without Nippon Sharyo, Ltd. We have defined the times by launching various power production facilities with new innovative concepts. We continue to contribute to the environment and ergonomics through improving our products.



Please consult Nippon Sharyo about selection beforehand.
We will make suggestions according to your usage environment and load.

Environment-friendly

Super low noise level

Low noise design for environment-friendliness. The product line up NES25 – NES220 meets super low noise level.

Compact and light-weight

The body is small and light-weight, enabling easy transportation by truck and reducing transportation costs.

Oil guard as a standard

An oil guard is equipped as standard on all models that conform to the Third Emission Regulation. This reduces ground contamination from oil leakage.

Reduced fuel consumption

Fuel consumption can be reduced by using an optional e-Pon, energy saving remote control and slowdown device.

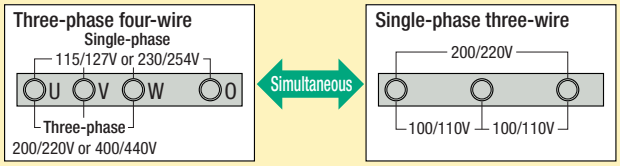
Note : For details, refer to the options table on pages 15 and 16.

High performance and High quality

Three-phase/single-phase three-wire simultaneous output (switching not required)

New function

The NES25 is provided with a three-phase/single phase three-wire independent terminal that enables simultaneous use.



Dual voltage

All models (except for the NES100EI) are equipped with a dual voltage feature to select either 200V for general use and 400V for large-capacity equipment. The dual voltage feature meets the need for globalization since 400V loads are more common overseas. The voltage currently selected is shown by the voltage indicator.

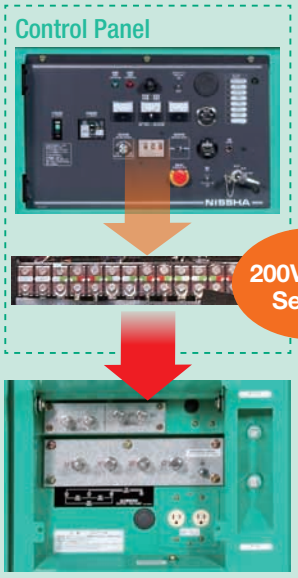
▲Voltage indicator

Methods

Voltage Changeover Terminal Block

(NES25 – NES60, NES100TI, NES125TI)

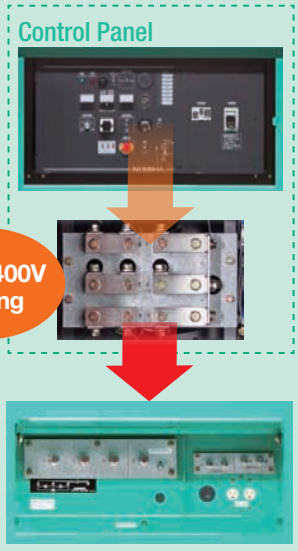
Example: NES45TY2



Voltage Changeover Terminal Board

(NES100EI, NES125EH, NES150 – NES800)

Example: NES150TI



High-quality power supply

The FET-type AVR (Automatic Voltage Regulator) and high-performance damper winding provide high-quality power with a voltage regulation of ±0.5%. In addition to working well with general linear loads, the generator also works well with non-linear loads such as inverters.

High insulation

The alternator winding is coated with varnish using dripping impregnation and vacuum impregnation to provide high insulation performance.

Weather resistant coating

Electrodeposition and weather-resistant baking finish are used on all models, providing high resistance to corrosion.

Fuel air bleeding

When the start/stop switch is in the ON position, a fuel pumps operates to execute air bleeding, which is very useful when changing fuel filters (standard equipment on NES25TK – NES400TI and NES100EI).

Tough and durable

NISSHA generators are known for toughness and durability. We continue to create products that satisfy our customers.

Note: Some of the above features are not included in some models.

Useful and safe equipment and structure

Oil guard

NES25TK – NES400TI are equipped with an oil guard that has passed leak test to protect the environment. In addition to offering rain protection, a drain cock is also provided to drain rainwater that has entered the oil guard.

▲Leak test

オイルガード搭載機 eco to series

Note: Rainwater collected in the oil guard needs to be drained.

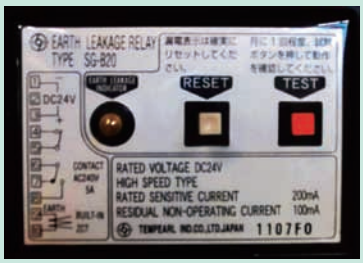
Large tank

NES25TKL, NES45TYL, and NES60TKL models are equipped with a large capacity fuel tank.
This makes it possible to support more than 48 hours of long term continuous operation on one tank without using an external tank (with a 50% load at 50Hz for each model).
Also, because an external tank is not used, it conforms to “electrical generator facilities that are not continuously monitored” of the electrical installation technical standards.

ビッグタンク オイルガード eco to series

Note: “Continuous monitoring” means a state under which a technician is continuously present at the location, site, etc. where the generator is installed, and can supervise its operation.

Earth leakage protector



To prevent electric shocks, a high-sensitivity, high-speed earth leakage relay is provided (detection in 0.1 seconds at 30mA). Also, leakage detection can be changed to 200mA as an option, which is effective in protection coordination with the leakage breaker on the load system side.

Daily check on one side

The fuel filler port, oil filler/inspection port, reserve tank and output terminal board are placed on one side, allowing easy access for daily checking and wiring (excluding the NES25).

Easy oil change

Oil can be changed quickly and easily without special tools. Maintenance time is saved and your hands keep clean (applies to NES25, NES45TY2, and NES60).

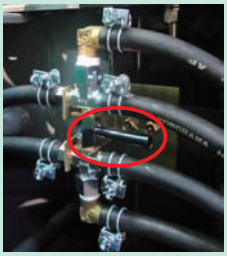
▲Oil drain hose

Easy radiator flushing

The front cover of the radiator is either a full-open type (NES25 to NES60) or hinged type (NES100 to NES800) to enable easy flushing of the radiator.

Fuel tank three-way cock

A single-lever, fuel tank changeover cock for switching between the internal and external tanks is provided to allow for long time operation. The cock is easy to operate and prevents mistakes switching. (Provided on NES25 to NES220, except NES25TKL, NES45TYL and NES60TKL.)



Three-way cock of fuel tank ▲

New IC monitor

New IC monitor checks the system for malfunction at all times before and during operation.

Note: Except machines equipped with second exhaust emission compliant engines and NES800SM.

Example: Control panel of NES100TI

	Item	Engine stop	Breaker trip	Lamp
Monitor	Low oil pressure	○	–	○
	High water temperature	○	–	○
	Overspeed	○	–	○
	Battery voltage failure	–	–	○
	Non charge	–	–	○
	Low fuel level	○	–	○
	Oil guard *1	–	–	○
	Diagnosis (ECU error) *2	○	–	○
Overcurrent		–	○	–
Earth leakage		–	○	○

*1: Large tank models only (NES25TKL, NES45TYL, NES60TKL).
*2: ECU models only (NES45 to NES400TI).

Certification

The specifications, registration and certification of government agencies and other organizations in Japan show the trust placed in NISSHA generators.

Construction equipment conforming to the Third Emission Regulation designated by MLIT (NES25TK – NES400TI)

Machines equipped with the Second Exhaust Emission engines (NES100EI – NES500EM)

Super low noise construction equipment designated by MLIT (NES25 – NES220)

Low noise construction equipment designated by MLIT (NES400 – NES800)

Oil guard integrated generator registered with NETIS by MLIT (NES25TK – NES400TI)

Note : Third Emission Gas Policy models

Portable generator certified by the Nippon Engine Generator Association (all models)

Specifications

▲NES45TY2

▲NES45TYL

Item				NES25TK		NES25TKL		NES45TY2		NES45TYL		NES60TK	
Alternator	Frequency		Hz	50	60	50	60	50	60	50	60	50	60
	Three-phase 4-wire type	Output	kVA	20	25	20	25	37	45	37	45	50	60
			kW	16	20	16	20	29.6	36	29.6	36	40	48
		200V Voltage	V	200	220	200	220	200	220	200	220	200	220
		200V Current	A	57.7	65.6	57.7	65.6	107	118	107	118	144	157
		400V Voltage	V	400	440	400	440	400	440	400	440	400	440
		400V Current	A	28.9	32.8	28.9	32.8	53.4	59.0	53.4	59.0	72.2	78.7
	Single-phase 3-wire type	100/200V Output*1	kVA	11.5[5.8]*7	14.4[7.2]*7	11.5[5.8]*7	14.4[7.2]*7	21.4	26.0	21.4	26.0	28.9	34.6
			kW	11.5[5.8]*7	14.4[7.2]*7	11.5[5.8]*7	14.4[7.2]*7	21.4	26.0	21.4	26.0	28.9	34.6
		100/200V Voltage*1	V	100/200	110/220	100/200	110/220	100/200	110/220	100/200	110/220	100/200	110/220
		100/200V Current*1	A	57.7[28.9]*7	65.6[32.8]*7	57.7[28.9]*7	65.6[32.8]*7	107	118	107	118	144	157
	Single-phase 2-wire type, auxiliary output	100V Output*5	kVA	6.0	6.6	6.0	6.6	12.0	13.2	12.0	13.2	15.0	16.6
			kW	6.0	6.6	6.0	6.6	12.0	13.2	12.0	13.2	15.0	16.6
		100V Voltage	V	100	110	100	110	100	110	100	110	100	110
		Dedicated terminal		—		—		60A × 2 circuits		60A × 2 circuits		75A × 2 circuits	
		Outlet		15A × 4		15A × 4		15A × 2		15A × 2		15A × 2	
	Type & Power Factor			Brushless Alternator, 3-Phase, 4-Wire, 4-Poles, Power Factor 80% Lagging									
Engine	Engine model			KUBOTA V2403-K3A		KUBOTA V2403-K3A		YANMAR 3-4TNV98TG		YANMAR 3-4TNV98TG		KUBOTA V3800-DI-TI-K3A	
	Type			Swirl chamber type				Direct injection type with turbocharger				Direct injection type with turbocharger and intercooler	
	Cylinders - Bore × Stroke		mm	4-87 × 102.4		4-87 × 102.4		4-98 × 110		4-98 × 110		4-100 × 120	
	Displacement		ℓ	2.434		2.434		3.319		3.319		3.769	
	Rated output		kW	19.1	23.7	19.1	23.7	37.9	45.6	37.9	45.6	49.2	57.5
	Revolution		min-1	1500	1800	1500	1800	1500	1800	1500	1800	1500	1800
	Fuel consumption	50% load	ℓ/H	3.1	3.8	3.1	3.8	4.2	5.3	4.2	5.3	5.8	7.2
		75% load		4.0	5.1	4.0	5.1	5.9	7.4	5.9	7.4	8.4	10.3
	Engine oil volume		ℓ	9.7		9.7		11.2		11.2		13.8	
	Battery			85D26L × 1		85D26L × 1		105D31L × 1		105D31L × 1		105D31 × 1	
	Fuel tank capacity		ℓ	70		195		145		330		180	
	Fuel			Diesel fuel									
	Oil guard capacity Total/Effective*6		ℓ	70/70		300/95		245/80		460/135		275/75	
Dimensions and weight	Length*2		mm	1540		1540		1740		2000		2050	
	Width		mm	700		700		880		880		930	
	Height		mm	1125		1460		1350		1585		1390	
	Dry weight		kg	645		735		1020		1125		1150	
	Operating weight		kg	720		915		1170		1440		1325	
Sound power level*3			dB	90【Super】		88【Super】		90【Super】		88【Super】		89【Super】	
Sound level at 7 meters*4			dB	61	64	61	61	61	63	57	60	59	62

*1: Colored characters denote options.
*2: Values in parentheses are dimensions excluding the rain cover.
*3: Value at 60Hz with zero load.【Super】denotes super low noise design machines, (Low) denotes low noise design machines.

▲NES125TI

NES150TI▲

NES220TI▲

	NES60TKL		NES100TI		NES125TI		NES150TI		NES220TI		NES400TI	
	50	60	50	60	50	60	50	60	50	60	50	60
	50	60	80	100	100	125	125	150	200	220	350	400
	40	48	64	80	80	100	100	120	160	176	280	320
	200	220	200	220	200	220	200	220	200	220	200	220
	144	157	231	262	289	328	361	394	577	577	1010	1050
	400	440	400	440	400	440	400	440	400	440	400	440
	72.2	78.7	115	131	144	164	180	197	289	289	505	525
	28.9	34.6	46.2	57.7	57.7	72.2	—	—	—	—	—	—
	28.9	34.6	46.2	57.7	57.7	72.2	—	—	—	—	—	—
	100/200	110/220	100/200	110/220	100/200	110/220	—	—	—	—	—	—
	144	157	231	262	289	328	—	—	—	—	—	—
	15.0	16.6	20.0	22.0	20.0	22.0	20.0	22.0	3.0	3.3	3.0	3.3
	15.0	16.6	20.0	22.0	20.0	22.0	20.0	22.0	3.0	3.3	3.0	3.3
	100	110	100	110	100	110	100	110	100	110	100	110
	75A × 2 circuits		100A × 2 circuits		100A × 2 circuits		100A × 2 circuits		—		—	
	15A × 2		15A × 2		15A × 2		15A × 2		15A × 2		15A × 2	
	Brushless Alternator, 3-Phase, 4-Wire, 4-Poles, Power Factor 80% Lagging											
	KUBOTA V3800-DI-TI-K3A		ISUZU BI-4HK1X		ISUZU BI-4HK1X		ISUZU BH-6HK1X		ISUZU BH-6UZ1X		ISUZU BH-6WG1X	
	Direct injection type with turbocharger and intercooler											
	4-100 × 120		4-115 × 125		4-115 × 125		6-115 × 125		6-120 × 145		6-147 × 154	
	3.769		5.193		5.193		7.790		9.839		15.681	
	49.2	57.5	95.8	113.6	95.8	113.6	135.2	166.5	185.2	203.7	309	346
	1500	1800	1500	1800	1500	1800	1500	1800	1500	1800	1500	1800
	5.8	7.2	9.6	12.5	11.8	15.2	14.1	18.0	22.1	25.8	39.6	50.6
	8.4	10.3	13.9	17.4	17.0	21.4	19.9	24.5	32.4	36.5	55.9	67.6
	13.8		23.5		23.5		41		42		52	
	105D31L × 1		170F51 × 1		170F51 × 1		120E41R × 2		195G51 × 2		195G51 × 2	
	400		250		250		250		390		490	
	Diesel fuel											
	400/140		255/205		255/205		390/280		435/265		605/410	
	2050		2900		2900		3480		3835		4780 (4490)	
	930		1180		1180		1180		1290		1500	
	1600		1550		1550		1650		1790		2200	
	1210		2000		2050		2720		3650		5520	
	1570		2250		2300		2990		4050		6050	
	88【Super】		93【Super】		93【Super】		92【Super】		94【Super】		97 (Low)	
	58	61	61	64	60	64	60	65	64	67	66	69

*4: Average sound pressure in 4 directions at no load.
*5: Total output value for dedicated terminals and power outputs.
*6: Total capacity means the capacity of the oil guard itself. Effective capacity means the capacity considering the fuel tank and other components.
*7: Values in [ ] are for three-phase 400V wire connections.

Specifications

NES100EI▲

NES125EH▲

NES220EM▲

Item				NES100EI		NES125EH		NES150EH		NES220EM	
Alternator	Frequency		Hz	50	60	50	60	50	60	50	60
	Three-phase 4-wire type	Output	kVA	80	100	100	125	125	150	195	220
			kW	64	80	80	100	100	120	156	176
		200V Voltage	V	200	220	200	220	200	220	200	220
		200V Current	A	231	262	289	328	361	394	563	577
		400V Voltage*1	V	400	440	400	440	400	440	400	440
		400V Current*1	A	115	131	144	164	180	197	281	289
	Single-phase 3-wire type	100/200V Output*1	kVA	46.2	57.7	57.7	72.2	—	—	—	—
			kW	46.2	57.7	57.7	72.2	—	—	—	—
		100/200V Voltage*1	V	100/200	110/220	100/200	110/220	—	—	—	—
		100/200V Current*1	A	231	262	289	328	—	—	—	—
	Single-phase 2-wire type, auxiliary output	100V Output*5	kVA	20.0	22.0	20.0	22.0	20.0	22.0	3.0	3.3
			kW	20.0	22.0	20.0	22.0	20.0	22.0	3.0	3.3
		100V Voltage	V	100	110	100	110	100	110	100	110
		Dedicated terminal		100A×2 circuits		100A×2 circuits		100A×2 circuits		—	
		Outlet		15A×2		15A×2		15A×2		15A×2	
	Type & Power Factor			Brushless Alternator, 3-Phase, 4-Wire, 4-Poles, Power Factor 80% Lagging							
Engine	Engine model			ISUZU DD-6BG1T		HINO J08C-UD		HINO J08C-UD		MITSUBISHI 6D24-TLE2B	
	Type			Direct injection type with turbocharger		Direct injection type with turbocharger and intercooler					
	Cylinders - Bore×Stroke		mm	6-105×125		6-114×130		6-114×130		6-130×150	
	Displacement		ℓ	6.494		7.961		7.961		11.94	
	Rated output		kW	73.6	91.2	118	140	118	140	181	199
	Revolution		min-1	1500	1800	1500	1800	1500	1800	1500	1800
	Fuel consumption	50% load	ℓ/H	9.8	12.6	11.8	14.7	14.1	17.6	22.1	26.5
		75% load	ℓ/H	13.6	17.6	16.7	20.0	20.0	24.0	30.9	36.6
	Engine oil volume		ℓ	20		24.5		24.5		37	
	Battery			95D31R×2		95D31R×2		95D31R×2		150F51×2	
	Fuel tank capacity		ℓ	200		250		250		370	
	Fuel			Diesel fuel							
Dimensions and weight	Length*2		mm	2730		3180		3180		3840	
	Width*1		mm	1050		1130		1130		1290 (1820)	
	Height		mm	1290		1450		1450		1750	
	Dry weight		kg	1650		2170		2270		3530	
	Operating weight		kg	1850		2420		2520		3910	
Sound power level*3			dB	93【Super】		94【Super】		95【Super】		95【Super】	
Sound level at 7 meters*4			dB	65		66		67		67	

*1: Colored characters denote options.
*2: Values in parentheses are dimensions excluding the rain cover.
*3: Value at 60Hz with zero load.【Super】denotes super low noise design machines, (Low) denotes low noise design machines.

▲NES400EM

▲NES500EM

▲NES800SM

	NES400EM		NES500EM		NES610SM		NES800SM	
	50	60	50	60	50	60	50	60
	350	400	450	500	554	610	700	800
	280	320	360	400	443	488	560	640
	200	220	200	220	200	220	200	220
	1010	1050	1299	1312	1599	1600	2021	2100
	400	440	400	440	400	440	400	440
	505	525	650	656	800	800	1010	1050
	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–
	3.0	3.3	3.0	3.3	3.0	3.3	3.0	3.3
	3.0	3.3	3.0	3.3	3.0	3.3	3.0	3.3
	100	110	100	110	100	110	100	110
	–		–		–		–	
	15A × 2		15A × 2		15A × 2		15A × 2	
	Brushless Alternator, 3-Phase, 4-Wire, 4-Poles, Power Factor 80% Lagging							
	MITSUBISHI S6B3-E2PTAA-3		MITSUBISHI S6A3-E2PTAA-1		MITSUBISHI S6R-PTA		MITSUBISHI S12A2-PTA	
	Direct injection type with turbocharger and intercooler							
	6-135 × 170		6-150 × 175		6-170 × 180		12-150 × 160	
	14.6		18.56		24.5		33.9	
	309	346	405	467	517	565	677	758
	1500	1800	1500	1800	1500	1800	1500	1800
	38.5	47.5	49.9	61.0	60.2	72.9	82.2	105
	55.1	67.4	71.8	86.1	84.0	99.2	113	141
	50		80		92		130 (+Sub Tank 85)	
	195G51 × 2		195G51 × 2		195G51 × 2		195G51 × 4	
	490		490		580		730	
	Diesel fuel							
	4550		5270 (4790)		5173 (4690)		6235 (5600)	
	1415 (2375)		1650		1650		1950	
	2090		2280		2400		2580	
	5510		6810		8190		11000	
	6030		7400		8860		12000	
	101 (Low)		98 (Low)		101 (Low)		101 (Low)	
	71		68		72		73	

*4: Average sound pressure in 4 directions at no load (60Hz).
*5: Total output value for dedicated terminals and power outputs.

NAC-300 (Full-auto parallel running device)

The NAC-300 is an auto-parallel running device for NES series generators. This controller includes auto start/stop, synchronizing, load sharing, controlling the number of operating units, and measurement and protection, allowing fully automatic parallel running of generators.
The number of operating generators are automatically controlled so that the optimum number are in operation according to changes in the power load, therefore only the minimum necessary number of generators are in operation and the remaining generators are stopped and placed in a standby state, thus improving the operating efficiency of the generators and saving fuel.

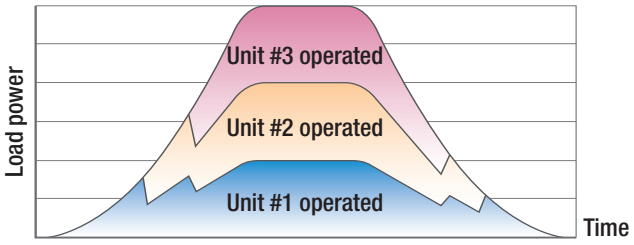
Features

- Compact unit that enables all-in-one control
- Full automatic control with a single switch
- Efficient operation for lower fuel consumption
- Up to 8 generators can be connected
- Remote auto start-stop of one or more generators via contact input (can be applied as standard emergency generator for power failures)

Front panel of NAC-300

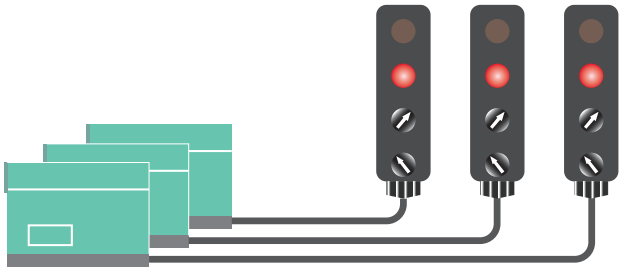
Functions

❶ Auto start/stop
❷ Auto synchronizing, load sharing
❸ Control for constant frequency and voltage
❹ Auto control of the number of operating units
Parallel running and disconnection are automatically controlled to run the optimum number of units according to changes in load power. (Generators are controlled by communications cables. Standard length of cables is 10m, with optional 99m cables available.)



Control of the number of operating units
(Conceptual illustration for 3 units)

❺ Control for heavy loads
The number of operating units can be increased in advance with a forced operation command, allowing heavy load equipment such as vibratory pile drivers, earth augers and tunnel excavators to be connected.
❻ Remote control of auto start/stop
Each generator can be controlled remotely. Various control methods are available.

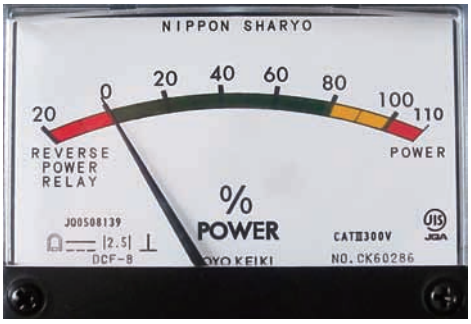


❼ Provided with reverse power protection and measurement display

Installation examples

Percent power meter

The shared power of each generator in parallel running is displayed in percentages so that the power balance can be checked at a glance. Reverse power protection is also provided, and can be used with manual parallel running devices.



Notes on parallel running

Although parallel running involves procedures such as load sharing, as well as monitoring the operation state, it offers a number of benefits:

- **Allows large power supply.**
- **The number of operating units can be easily set according to the load demand.**
- **Even if one generator fails, operation can be continued with other units.**

Furthermore, an advanced power generation system can be built by controlling the number of operating units and using the remote start/stop.

	Start/stop	Synchronizing	Load sharing	No. of operating units	Remote control
NAC-300	Auto	Auto	Auto	Auto	Option
Manual synchronizing	Manual	Manual	Manual	Manual	Option

Note: This table shows the basic functions of parallel running.

Three-phase/single-phase selector cam switch

Three-phase 200V and single-phase with three wires can be switched by one-touch operation with this voltage switching device.

Single-phase three-wire dedicated specification

The generator can be used for large capacity single-phase output (normal three-phase four-wire terminals are modified).

200V auxiliary output

Even if the main output is set to 400V, a separate terminal board can provide three-phase 200V output. This is useful when supplying power to 200V load equipment such as lighting fixtures and welders while using 400V load equipment such as heavy-duty electric augers.

Relevant models	Rated current of 200V dedicated output terminal
NES220	125A
NES400 – 610	225A
NES800	250A

e-Pon (Basic auto starter)

Start/stop and run/idle control of a generator can be controlled using external signals, enabling many useful applications.

Example ··· ❶

If a generator is used as a power supply for a temporary office at a work site where commercial power is unavailable, and the main circuit breaker on the distribution board in the office is equipped with an auxiliary contact, the generator can be started and stopped by turning the main circuit breaker on and off.

Example ··· ❷

If two or more generators are used as a power supply for an event and one of them fails, a back-up generator automatically starts up to supply power.

Example ··· ❸

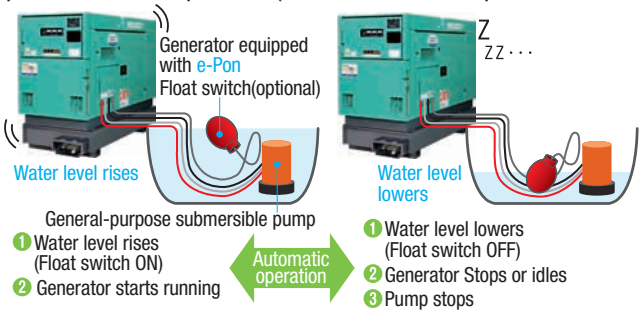
A system that automatically controls the start/stop or run/idle of a generator according to the water level can be built by combining a generator, submersible pump and float switch. (The float switch is optional equipment; the water pump is out of our scope of supply.)
With the conventional powering of a submersible pump from a generator, the generator keeps running at almost no-load rated speed when the water level is lower, consuming fuel. If the e-Pon is incorporated in the generator, fuel consumption can be reduced.

Example ··· ❹

A remote control (wired) can be used to link the run/stop contact points of the remote control to the running/stopping (or idling) of the generator, and an improvement in fuel consumption can be expected (remote control is purchased separately).

Advantage

- Allows energy-saving operation of a submersible pump.
- Reduced fuel consumption means reduced CO_2 emissions.
- Reduced fuel consumption adds value to the system.
- Prevents dry operation of the submersible pump, extending pump life.
- Reduces low-load operation of the generator, leading to shorter operation hours.

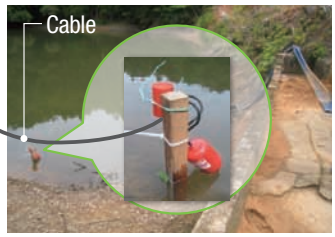


Example on-site

- Intended purpose: reservoir drainage
- Load: submerged pump
- Method: automatic operation by water level detection (run – stop)


Full view of reservoir

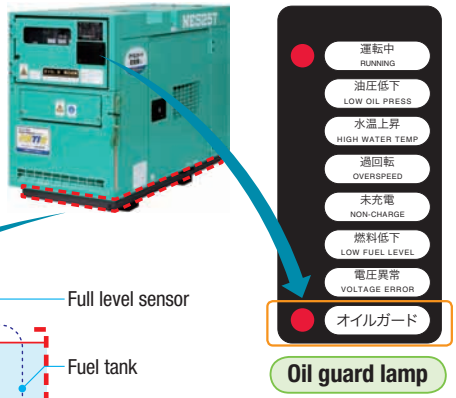

Float switch dedicated terminal



Float switch

e-Stop (Auto shutdown)

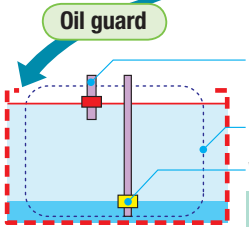
The oil guard of a generator is used to prevent oil leakage from accidents. However, if water stays in the oil guard and fills it, water and oil may overflow. To avoid this problem, level sensors detect the liquid level in the oil guard. The warning lamp notifies the user if water is present. If the oil guard becomes full, the full level sensor notifies the user and stops the engine. (A warning level sensor is standard on the NES25TKL, 45TYL and 60TKL.)



Operation

Liquid level	Lamp	Engine
Lower than warning level	OFF	—
Between warning and full levels	Flashes *1	—
Above full level	ON	Stopped *2

*1: For NES25TKL, 45TYL and 60TKL only.
*2: If the oil guard stop switch is on.



Oil guard and liquid level sensors

Energy-saving remote controller and slowdown device

The energy-saving remote controller and slowdown device remotely control engine operation for better fuel economy. Both are wired remote controllers.

○ : Available

Remote control	Energy-saving remote controller	Slowdown device
Idling/rated speed	○	○
Start/stop	—	○
Cable length	10m	30m

Slowdown device

Energy-saving remote controller

Auto start/stop unit

This unit automatically starts/stops a generator according to the commercial power state. The generator starts automatically when commercial power fails, and stops automatically after cooling down when commercial power is restored.
The unit is provided with an auto/manual switch to select auto or manual operation in the event of a power failure, as well as a test switch to check if the generator starts automatically.

Auto start/stop unit

Battery charger

This unit charges the battery used for starting the generator engine. The battery slowly discharges to supply stand-by power even when the generator is not operating. The battery charger is indispensable, preventing the battery from running down for an emergency generator that is equipped with an auto starting start/stop unit and maintaining a stand-by state at all times in case of emergencies.
The charger uses commercial power to charge the battery while the generator is in a stand-by state.

Model	Auto start/stop unit and charger		Battery charger	
	Built in NES unit	Separate board	Built in NES unit	Separate board
NES25TK	—	○	—	○
NES25TKL, NES45 to 100, NES125TI	—	○	○	○
NES125EH, NES150 to 800	○	○	○	○

Battery charger

Auto idling device

This device automatically idles the engine when the engine starts, extending engine life and reducing unnecessary fuel consumption.

Automatic oil supply unit

This unit consists of an oil sub-tank, solenoid valve, oil level regulator. It automatically supplies engine oil as it is consumed during operation. Long time operation of the generator becomes possible since the oil in the oil pan is maintained at the correct level.

Muffler flange

Flange structure (conforming to JIS 5k) is used for the muffler outlet of the exhaust piping.

NES model	25	45, 60	100 to 150	220	400	500	610, 800
Size	50A	65A	100A	150A	175A	200A	250A

Anti-theft cover

Special cover with lock is provided on the hoist hook to prevent generator theft.

Skid

Used when lifting generators with forklifts or when generators need to be raised.

Relevant models	Dimension of sleepers (height only)/number per generator
NES25 – 60, 100EI	85mm/2
NES100TI/125TI	105mm/3
NES125EH/150EH	85mm/4
NES150TI/220 – 500	105mm/4
NES610/800	105mm/5

Trailer

Single-axle/2-wheel and 2-axle/4-wheel trailers with leaf springs are available for easy movement of the generator on site (maximum speed: 25 km/h).

Single-axle/2-wheel trailer

2-axle/4-wheel trailer

Salt resistance

Assuming use at offshore work sites, the NES series generators are provided with salt damage prevention measures such as enhanced alternator insulation, corrosion resistant paint and stainless steel hinges. Specifications for enhanced protection against salt damage as well as economy specifications for simplified protection are also available as options.

Content of implementation	Simple salt damage	Salt damage prevention
Anti-corrosion paint	Standard	Standard
Electrical component/ terminal reinforcement	○	○
Generator insulation reinforcement	–	○
Output terminal rubber backing sheet	–	○ *1
Rain cover	–	○ *2

*1 Standard for NES500 – 800
*2 NES220EM and 400EM only (standard for NES400TI and 500 – 800)

Rain cover

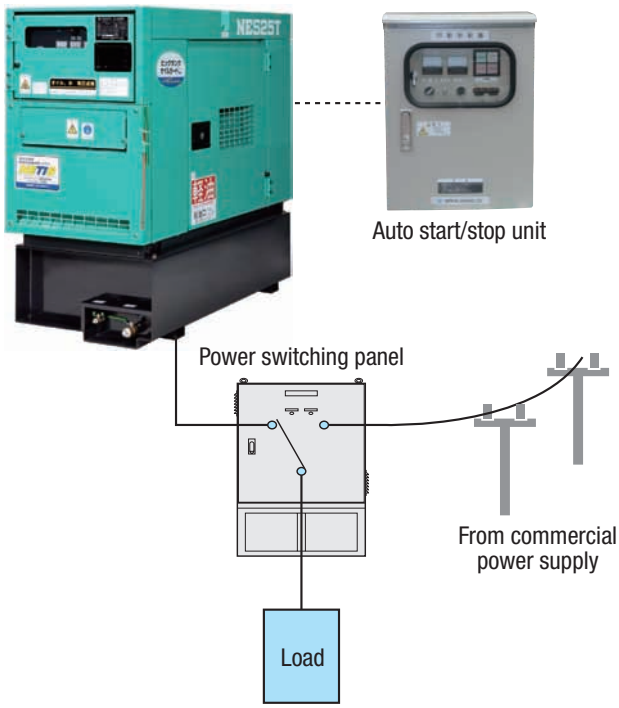
A detachable cover is attached for preventing rain water from entering the bonnet intake.
(When attaching to NES220EM and 400EM, total width increases.)

Output terminal cover

Makes main circuit wiring work easier when installing power generating devices.
(Total length and width varies with each model. Consult Nippon Sharyo for details.)

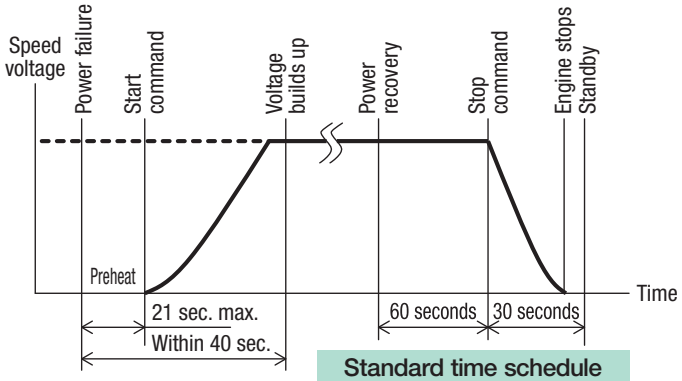
AMF system

Although the NES series portable generators are basically designed to provide power supply at work sites, options are available for use as AMF generators that automatically supply power in the event of a power failure. These options include the auto start/stop unit, battery charger and power switching panel, and an AMF generator can be configured using simple optional equipment.



Example of installation (NES60 class)

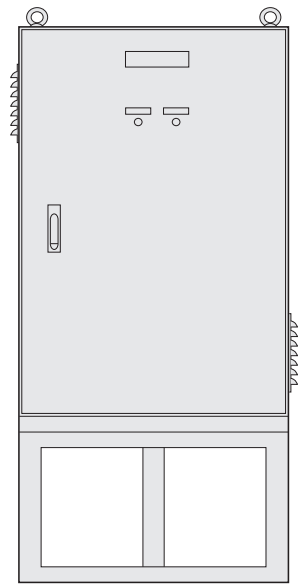
This example shows a system combining an auto start/stop unit, battery charger and power switching panel into one unit.



Standard time schedule

Power switching panel

This panel incorporates a switch to toggle between commercial power and generator output. The design is similar to a distribution board. Various models are available to meet your requirements for voltage, current and indoor/ outdoor use.



Power switching panel (Conceptual illustration)

Standard size of power switching panel (Indoor type)

Model	Voltage	Current	Dimensions (W × H × D)	Method
TPR-220	200V system	200A	700×1000×300	Wall-mounted
TPR-240		400A		
TPR-260		600A	800×1650×500	Free-standing
TPR-280		800A	800×1850×500	
TPR-2100		1000A	800×1950×500	
TPR-2120		1200A		
TPR-420	400V system	200A	700×1000×300	Wall-mounted
TPR-440		400A		
TPR-460		600A	800×1650×500	Free-standing
TPR-480		800A	800×1850×500	
TPR-4100		1000A	800×1950×500	
TPR-4120		1200A		

Note: • Please consult with Nippon Sharyo for special requirements such as incorporating an auto start/stop unit in the power switching panel.
• Please consult Nippon Sharyo about outdoor specifications.

Options

	Item	Page	25TK	25TKL	45TY2	45TYL	60TK	60TKL	100TI
Parallel running	NAC-300 (Full-auto parallel running device)	9,10	–	–	–	–	–	–	–
	Manual synchronizing device	10	–	–	–	–	–	–	–
	Percent power meter	10	–	–	–	–	–	–	–
Output	3-phase/single-phase 3-wire simultaneous output	2	●	●	–	–	–	–	–
	Dual voltages	2	●	●	●	●	●	●	●
	3-phase/single-phase selector cam switch	10	–	–	○	○	○	○	–
	Single-phase 3-wire dedicated specification	10	–	–	○	○	○	○	○
	200V auxiliary output	10	–	–	–	–	–	–	–
Operation control	e-Pon (Basic auto starter)	11	–	○	–	○	–	○	○
	e-Stop (Auto shutdown)	11	○	○	○	○	○	○	○
	Energy-saving remote controller	12	–	–	–	–	–	–	○
	Slowdown device	12	–	–	–	–	–	–	–
	Auto idling device	12	–	–	–	–	–	–	–
	Auto start/stop unit and charger	12	○ *1	○ *1	○ *1	○ *1	○ *1	○ *1	○ *1
	Battery charger	12	○ *1	○	○	○	○	○	○
	Power switching panel *1	14	○	○	○	○	○	○	○
Oil/fuel	Oil guard	3	●	●	●	●	●	●	●
	Fuel tank three-way cock	4	●	–	●	–	●	–	●
	Automatic oil supply unit	12	–	–	–	–	–	–	–
	Oil drain pump	–	–	–	–	–	–	–	–
	Fuel supply device	–	–	–	–	–	–	–	–
Others	Muffler flange	13	○ *2	○ *2	○ *2	○ *2	○ *2	○ *2	○
	Leak detection set at 200mA	3	○	○	○	○	○	○	○
	Salt resistance	13	○	○	○	○	○	○	○
	Rain cover	5 to 8,13	–	–	–	–	–	–	–
	Anti-theft cover *2	13	○	○	○	○	○	○	○
	Skid *2	13	○	○	○	○	○	○	○
	Panel door with key *2	–	○	○	○	○	○	○	○
	Fuel filler with key *2	–	●	○	○	○	○	○	○
	Output terminal rubber backing sheet *2	–	●	●	○	○	○	○	○
	Specified color	–	○	○	○	○	○	○	○
	Trailer	13	○	–	○	–	○	–	○
	Output terminal cover	13	○	○	○	○	○	○	○

*1: Attached externally via a separate panel
*2: Component options can also be covered.

● : Standard ○ : Option

	125TI	150TI	220TI	400TI	100EI	125EH	150EH	220EM	400EM	500EM	610SM	800SM
	–	–	○	○	–	–	–	○	○	○	○	○
	–	○	○	●	–	○	○	○	●	●	●	●
	–	–	○	○	–	–	–	○	○	○	○	○
	–	–	–	–	–	–	–	–	–	–	–	–
	●	●	●	●	○	●	●	●	●	●	●	●
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	–	–	○	○	–	–	–	○	○	○	○	○
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	○	○	○	○	–	○	○	○	○	○	○	○
	–	–	○	○	–	–	–	○	○	○	○	○
	–	–	–	○	–	–	–	○	○	○	○	●
	○ *1	○	○	○	○ *1	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○
	●	●	●	●	–	–	–	–	–	–	–	–
	●	●	●	○	●	●	●	●	○	○	○	○
	–	–	○	○	–	–	–	○	○	○	○	●
	–	–	○	○	–	–	–	○	○	○	○	○
	–	–	○	○	–	–	–	○	○	○	○	○
	○	○	○	○	○ *2	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○
	–	–	–	●	–	–	–	○	○	●	●	●
	○	○	○	–	●	○	○	○	–	–	–	–
	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	●	●	●
	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○

Note : Please consult with Nippon Sharyo if you have a specific requirement for options or specifications other than the above.
Some combinations of options are not available. Please consult with Nippon Sharyo for more information.

Selecting generator capacity

The following data shows a guideline for selecting generator when load of 3-phase, squirrel-cage induction motor (hereinafter referred to as a motor) is used.
The requirements may vary depending on the motor specifications and operating conditions. Please consult with Nippon Sharyo for more information.

● Conditions for calculating the required generator capacity

Motor efficiency is assumed to be 85%, starting kVA is assumed to be 7 kVA/kW and momentary voltage drop at motor startup is assumed to be 30%. The load applied to the engine may vary depending on the brake mean effective pressure of the engine.

Table 1 Required capacity for operation

Motor capacity (kW)	1.5	2.2	3.7	5.5	7.5	11	19	22	37	45	60
Generator capacity (kVA)	2.2	3.2	5.4	8.1	11.0	16.2	27.9	32.4	54.4	66.2	88.2

Table 2 Required capacity for starting

Motor capacity (kW)		1.5	2.2	3.7	5.5	7.5	11	19	22	37	45	60
Generator capacity (kVA)	Line starting	4.9	7.2	12.1	18.0	24.5	35.9	62.1	71.9	121	147	196
	Y - Δ	3.3	4.8	8.1	12.0	16.3	24.0	41.4	47.9	80.6	98.0	131

(1) Starting one motor or multiple motors simultaneously

Referring to Tables 1 and 2 above, find the generator capacity (kVA) corresponding to the motor capacity (kW) and select the higher value generator capacity.

Example: Starting 3.7 kW and 5.5 kW line-starting motors simultaneously

Motor capacity (kW)		3.7	5.5	3.7 + 5.5
Generator capacity (kVA)	Table 1	5.4	8.1	5.1+8.1=13.5
	Table 2	12.1	18.0	12.1+18.0=30.1

The required generator capacity is 30.1 kVA.

(2) Starting multiple motors sequentially

Find the generator capacity required for the steady-state operation of the motors already started (Table 1), and find the generator capacity required for starting the motor to be started last (Table 2). The sum of these values is the generator capacity required for sequential starting.

Example: Starting 7.5 kW, 11 kW and 19 kW (Y-Δ) motors sequentially

Motor capacity (kW)		7.5	11	19	7.5+11+19
Generator capacity (kVA)	Table 1	11.0	16.2		11.0+16.2+41.4 =68.6
	Table 2			41.4	

The required generator capacity is 68.6 kVA.

● Output reduction due to ambient temperature

Output decreases by 11% when the ambient temperature increases by 5°C, with JISB8002 standard conditions (atmospheric pressure of 100kPa, ambient temperature of 25°C, and humidity of 30%) as a baseline.

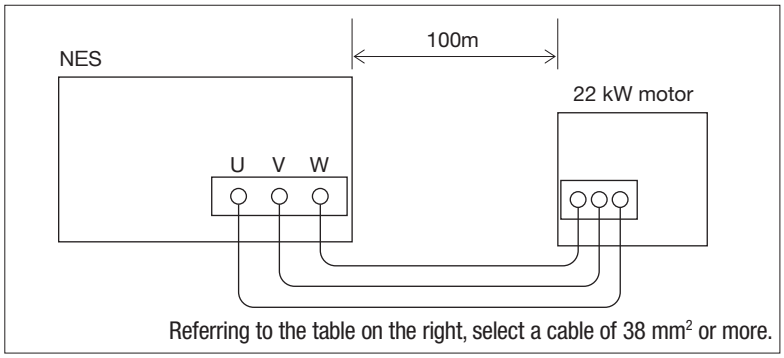
Example

Ambient Temperature	Output	% Decrease
25°C	100%	—
35°C	78%	22%

Cable selection guide

1 Voltage drop of the cable should be within 10V.
2 Amperes per square millimeter should be approximately 3 amps.

[Example] Selecting a cable for the following configuration



Referring to the table on the right, select a cable of 38 mm² or more.

Cable size (mm²)

Motor capacity (kW)	Full-load current (A)	Within 20m	Within 100m	Within 200m
1.5	7.3	3.5	3.5	5.5
2.2	10	3.5	5.5	8
3.7	16	5.5	5.5	14
5.5	24	8	14	22
7.5	31	14	14	22
11	45	22	22	38
19	74	30	30	60
22	87	38	38	80
37	143	50	60	100
45	175	60	80	150
60	220	80	100	200

Note : If a magnetic contactor is used to start a motor and the contactor chatters when starting, use a larger cable size.

When inquiring about Nippon Sharyo diesel generator sets, we would appreciate your filling in the Specification Requirements below and returning it to us. This will enable us to provide a quicker and more accurate quotation for your requirements.

SPECIFICATION REQUIREMENTS

1. End user's name

2. Model

NES _____ — _____

3. Quantity

_____ Unit(s)

4. Application

☐ Prime power ☐ Stand-by power

5. Output

____ kVA or _____ kW ____

6. Operating system

☐ Single operation ☐ Parallel running

_____ Units

7. Necessary optional equipment

8. Service conditions

Altitude: _____ meters

Temperature range _____ to _____ °C

9. Maximum humidity

_____ % at _____ °C

Distributor

Manufacturer

NIPPON SHARYO

URL http://www.n-sharyo.co.jp/

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