SGNR
Type M Type S
High Performance Nutrunner

Dimensions

● Spindle Assembly (Straight type)
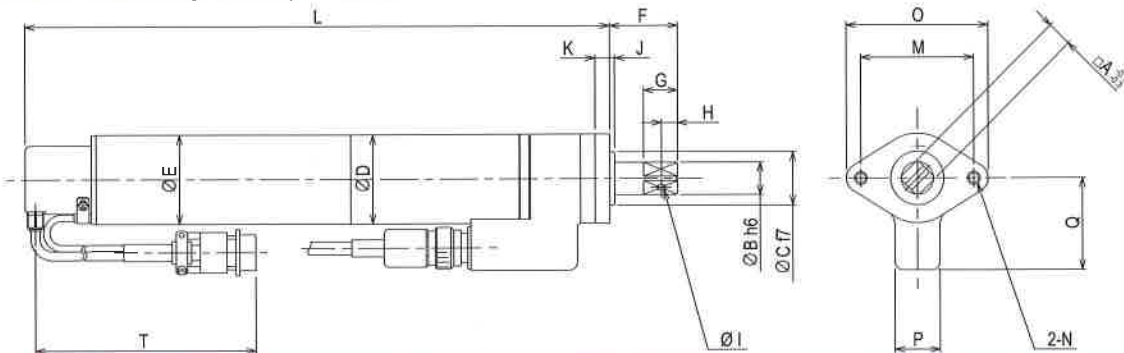
MODEL	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	T	Wt(kg)
SGN-SP1-005S	9.52	12	22	42	42	25	12	5.5	3	3	7	256	54	M6	66	28	50	250	1.5
SGN-SP1-010S	9.52	12	22	42	42	25	12	5.5	3	3	7	256	54	M6	66	28	50	250	1.5
SGN-SP1-025S	9.52	12	22	42	42	25	12	5.5	3	3	7	279	54	M6	66	28	50	250	1.7
SGN-SP2-050S	12.7	15	28	55	55	32	15	7	4	3	9	362.5	70	M8	88	28	56.5	250	3.9
SGN-SP2-100S	15.88	20	33	55	55	42	21	10	5.5	3	9	362.5	70	M8	88	28	56.5	250	3.9
SGN-SP3-180S	15.88	20	35	75	75	42	21	10	5.5	3	10	376.5	96	M10	115	28	66.5	250	7.4
SGN-SP3-320S	19.05	25	40	75	75	50	25	12	6.5	3	12	391.5	96	M10	115	28	66.5	250	8
SGN-SP3-580S	25.4	32	50	103	75	60	33	16	6.5	3	16	446.5	128	M12	150	28	80.5	250	16.1
SGN-SP3-1000S	31.75	40	64	128	75	65	41	20	6.5	3		488.5				30	94	250	23.5
SGN-SP3-1800S	38.1	50	75	150	75	75	50	26	8.5	5		513.5				30	105	250	34

All dimensions in Millimeters.

● Spindle Assembly (Offset type)
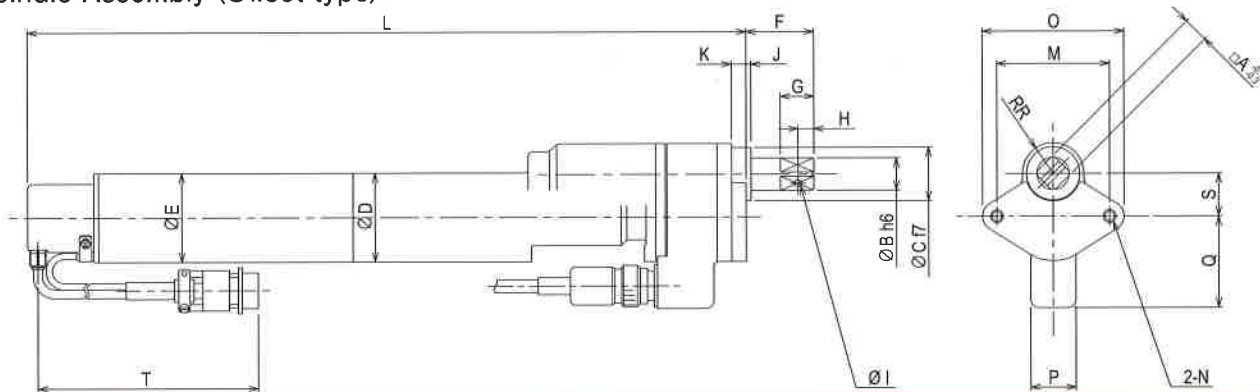
MODEL	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	Wt(kg)
SGN-SP1-005F	9.52	12	22	42	42	25	12	5.5	3	3	7	314	54	M6	66	28	50	13	17	250	1.9
SGN-SP1-010F	9.52	12	22	42	42	25	12	5.5	3	3	7	314	54	M6	66	28	50	13	17	250	1.9
SGN-SP1-025F	9.52	12	22	42	42	25	12	5.5	3	3	7	337	54	M6	66	28	50	13	17	250	2.1
SGN-SP2-050F	12.7	15	28	55	55	32	15	7	4	3	9	445.5	70	M8	88	28	56.5	19	26.4	250	5.1
SGN-SP2-100F	15.88	20	33	55	55	42	21	10	5.5	3	9	445.5	70	M8	88	28	56.5	19	26.4	250	5.1
SGN-SP3-180F	15.88	20	35	75	75	42	21	10	5.5	3	10	465.5	96	M10	115	28	66.5	23	32.4	250	9.5
SGN-SP3-320F	19.05	25	40	75	75	50	25	12	6.5	3	12	503.5	96	M10	115	28	66.5	27	38.2	250	11
SGN-SP3-580F	25.4	32	50	103	75	60	33	16	6.5	3	16	537	128	M12	150	28	80.5	30	41	250	22

All dimensions in Millimeters.

Special/custom designed Nutrunners may also be supplied.
Specifications subject to change without notice.

JQA-QM3832   CM009

SANYO MACHINE WORKS, LTD.

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New Global SGNR Fastening System

SGNR
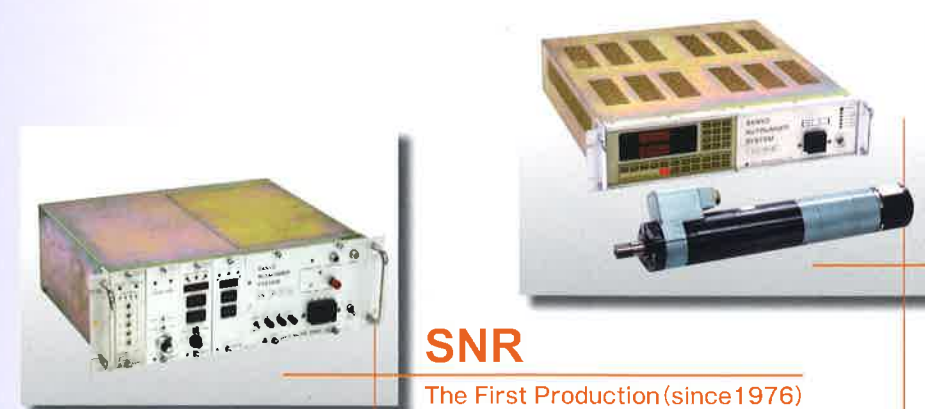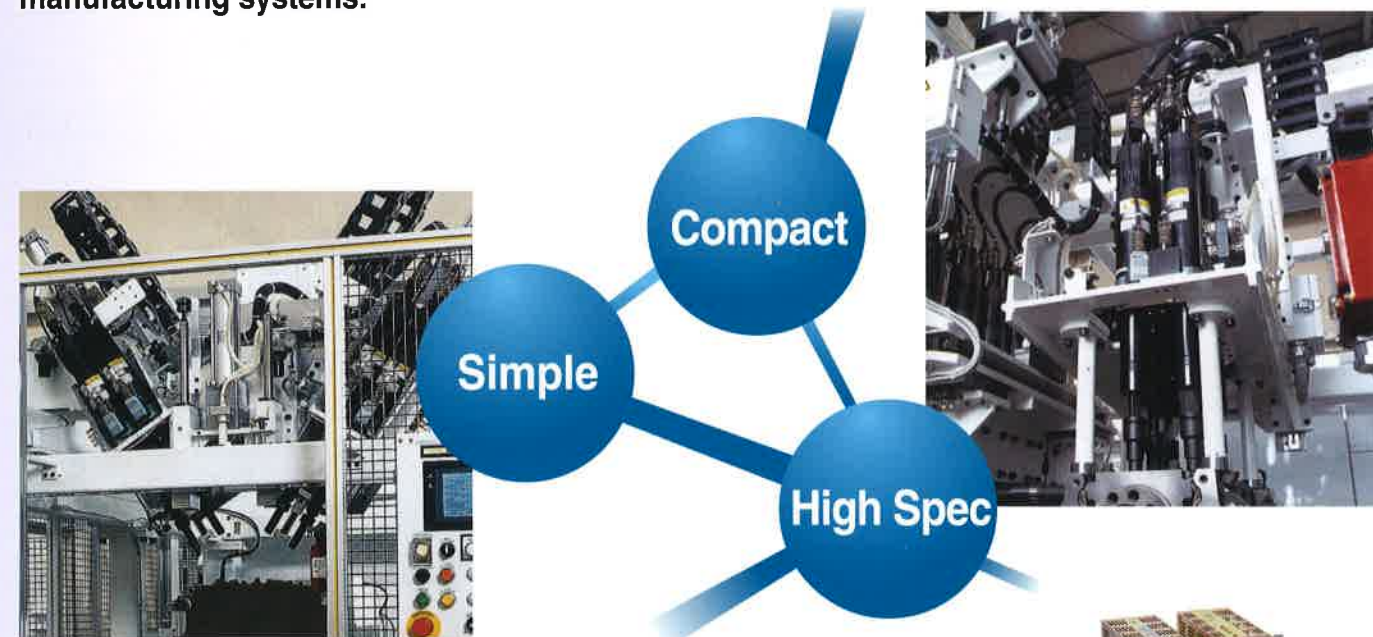New Generation Nutrunner

Sanyo Machine is a comprehensive, technology centered manufacturer in the automobile, consumer-electronics and the railway industry. We develop and manufacture assembly lines and fastening systems from concept to installation with continuous support and service.

The SGNR fastening systems meet the demands and production volumes of the modern world by reducing cycle times and increasing data speeds. With the flexibility these tools provide, a wide array of products can be fastened, cost effectively.

From a proven track record and over 35 years in the industry, the SGNR Nutrunners have evolved into a new high-quality industrial tool with high-durability and accuracy. The SGNR series integrates a high-speed CPU for fast data processing and transmission speed.
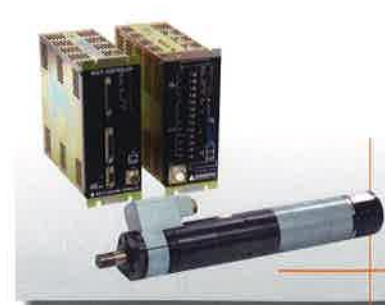By controlling the high speed and high performance servo motor, it can be used by various manufacturing systems.

Compact

Simple

High Spec

SDNR
The 5th Nutrunner

SVNR
The 4th Nutrunner

STNR
The 3rd Nutrunner

SCRH
The 2nd Nutrunner

SNR
The First Production (since 1976)

Keep High-Quality
ISO 9001

JQA-QM3832 CM009

SANYO MACHINE WORKS, LTD.

Features

Multi-Controller and Driver

■ Compact Size Saves Space

Newly designed SGNR Multi-Controller and Drivers reduce size by 30mm from our previous model.

○ The compact size of our Multi-Controller and Driver allows for efficient use of space.

30mm

SGNR Model

The previous model (SDNR Model)

■ High Precision Fastening

Accuracy of fastening is +/-4% or less. (6 Sigma / rated torque)

### ■ High Durability and Excellent Reliability

Spindles Assembly have been tested for 1 million cycles, at rated torque, to ensure outstanding durability.

○ For traceability and ISO 9000 compliance, all units are tested for durability and tightening accuracy before shipment.

■ Interface Options

The Multi-Controller has multiple option board interfaces to correspond to various manufacturing systems and global networks.

○ RS232C, USB interface and 1 option board slot come standard.
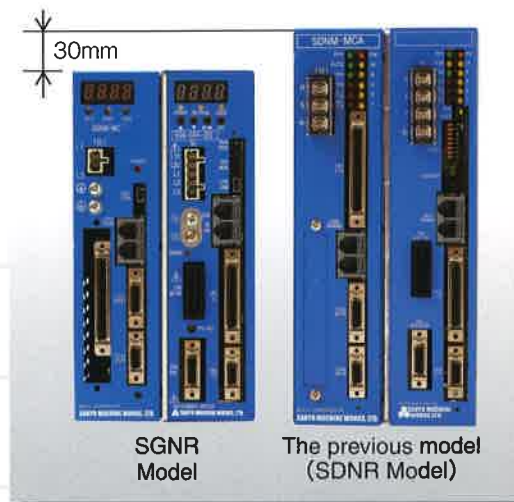
Input / Output board	Sink input（NPN)
	Source input（PNP)
Field bus board	CC-Link
	CC-Link Ver.2
	DeviceNet
	Profibus
	Ethernet/IP
Data-communications board	Ethernet

■ Optional Expansion Unit

Optional Expansion Unit allows for up to 4 additional option boards for increased flexibility.

Option Expansion Unit (shown here) is required when 4 additional option boards are being used.

■ Power Supply Separation

To respond to global safety standards, the Drivers power supply was divided into control and drive power supply. This allows for setting up and monitoring when the machine is in an E-stop condition.

■ Development of a High-power and High-speed Fastening Motor

The new generation high-power and high-speed motor shortens cycle times. The maximum free speed of our model SGN-SP1-010 is over 3 times faster than our previous model.

○ SGNR utilizes a high speed CPU for increased processing speed of motor control and fastening operations.

■ New On-Board 7-segment LED Display for Easy Status Results

By using a 7 segment display, fastening judgement and results are now intelligible.

○ The Multi-Controller displays program No. and parameter No. during the fastening process.
○ The Driver displays the fastening torque or angle in the fastening process.
○ When fastening abnormalities occur, an error message is displayed.

■ Flexible Fastening Settings

Eight different fastening programs and 32 independent fastening parameters can be pre-programmed for each connected spindle. Flexible program settings allow for different models and different parts to be fastened by one machine.

○ Various selectable and changeable settings such as fastening speeds, sequences, strategies, operation parameters, and output shaft rotation direction can be customized for your application.
○ This flexibility even makes it possible to mix fastening methods such as the torque control and angle control and allows for simultaneous and/or sequential tightening operations.
○ Various fastening options can be performed, such as double tightening and torque retention.

■ Process Quality Monitoring

SGNR system performs process management and continuous monitoring during the entire tightening process to ensure high-quality fastening.

○ Judgement function detection features over 59 fastening errors which can be monitored.
○ Over 45 items can be selected for end-of-cycle fastening data such as various torque, time and angle judgements.

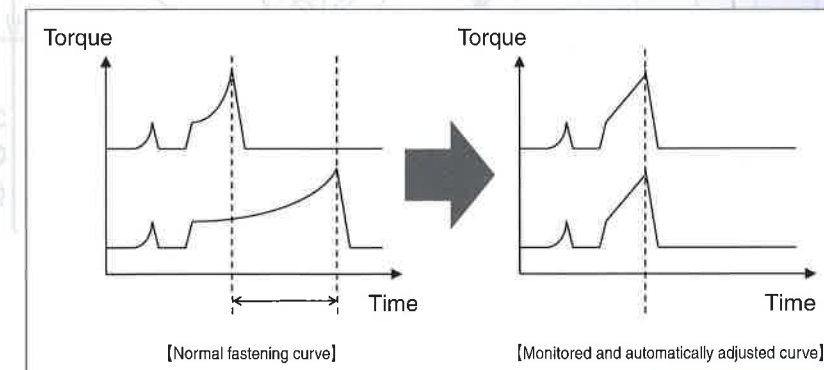### ■ Various Fastening Methods

SGNR allows for multiple fastening methods from basic to advanced.
The following fastening methods can be performed.
○ Angle monitoring torque control
○ Torque-turn control
○ Torque-tension control
○ Yield point detection control
○ Angle monitoring timed torque control

■ Monitored and Automatically Adjusted Torque Control

When fastening, Sanyo's patented control method, measures and monitors angle and time to adjust motor speed automatically to insure the fastening process is completed in the set amount of time.

Torque / Time [Normal fastening curve] → Torque / Time [Monitored and automatically adjusted curve]

Component Descriptions

Display Panel

DISPLAY PANEL

NR 01 Judge   OK   Select 1 - 01

Tighten Pk.Torque
100. 0   N.m

Tighten Pk.Current
28. 51   A

Tighten Angle
12. 0   deg

End of Cycle

SYSTEM F 1 F 2 F 3 F 4 F 5

SPUP SPDW ALL ITEM MAIN

SANYO MACHINE WORKS,LTD.

■ Features

In addition to displaying Nutrunner functions, the user can configure the screen to display PLC operations.
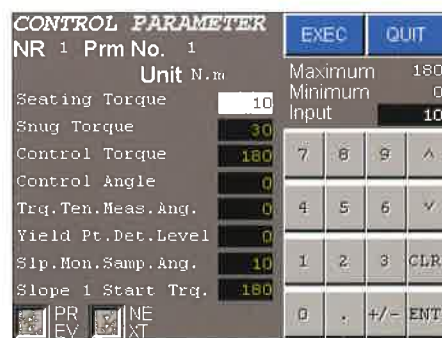(Screen configuration software is required)

○ You can choose from 5.7 inches TFT color, STN color, STN monochrome or 12 inches TFT color according to your budget.

○ There are multiple display languages; Japanese, English and Korean.

○ PLC is able to accept fastening data from this machine.

○ With the use of a high-speed CPU and highly efficient depiction LSI, information is displayed at near real-time.

■ Programmable Operator Interface

Two-in-one Display Panel allows for programmable PLC interface and Nutrunner operation.

○ Software for configuring the interface screen is provided.

User Interface Terminal Software (Option)

The User Interface Terminal Windows based software is a useful tool for the initial configuration of a fastening system, collecting fastening data, displaying torque curves, and saving settings.

Fastening Settings Display Mode

■ Features

○ System configuration (programming)
○ Fastening data acquisition
○ Torque curve acquisition and display
○ Display of reject history (NG Report)
○ System maintenance
○ Data acquisition and exportation
○ Communicate with a PC via RS232C Serial Communications, USB cable, Ethernet and/or optional high speed ARCNET unit.

Fastening Data Acquisition Display
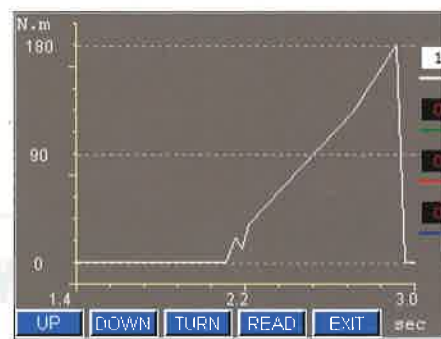

Torque Curve Display

■ Nutrunner Operation

○ Fastening setting
  (Program & Parameters)
○ Data display
○ Torque curve monitoring
○ NG and fastening reports
○ USB port for saving settings and NG reports
○ Maintenance mode for diagnostics
○ Manual operation mode
○ Back-Up settings to memory
○ Password protection option
○ Key lock protection option
○ Type M/S switiching

NR 01 Judge   OK   Select 1 - 01

Tighten Pk.Torque
180. 5

Tighten Pk.Current
49. 35

Tighten Angle
63. 6

End of Cycle

SPUP SPDW ALL ITEM MAIN

Fastening Data Display Mode

CONTROL PARAMETER
NR 1 Prm No. 1   Unit N.m

EXEC QUIT

Seating Torque   10   Maximum   180
Snug Torque   30   Minimum   0
Control Torque   180   Input   10
Control Angle   0   7 8 9 ∧
Trq.Ten.Meas.Ang.   0   4 5 6 ∨
Yield Pt.Det.Level   0   1 2 3 CLR
Slp.Mon.Samp.Ang.   10   0 . +/- ENT
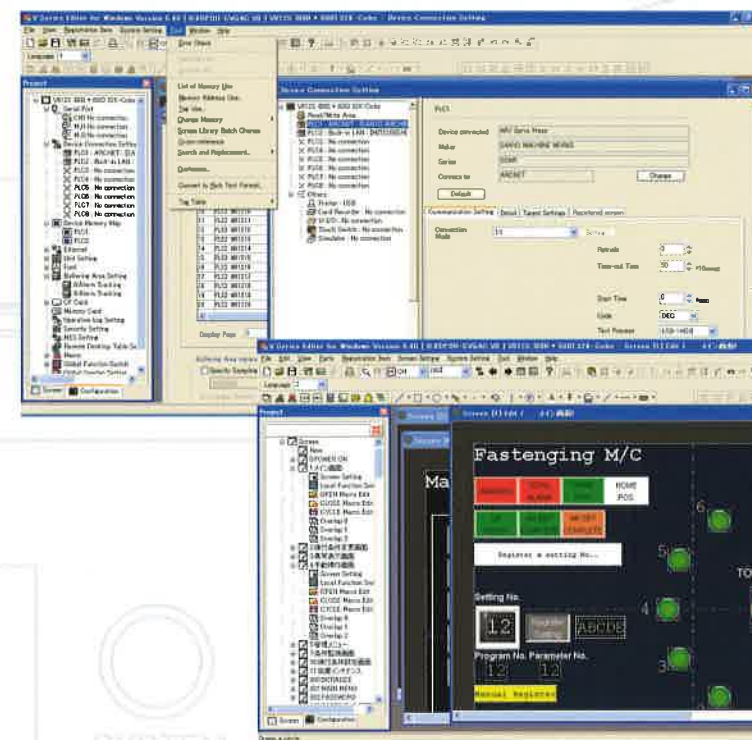Slope 1 Start Trq.   180   PREV NEXT
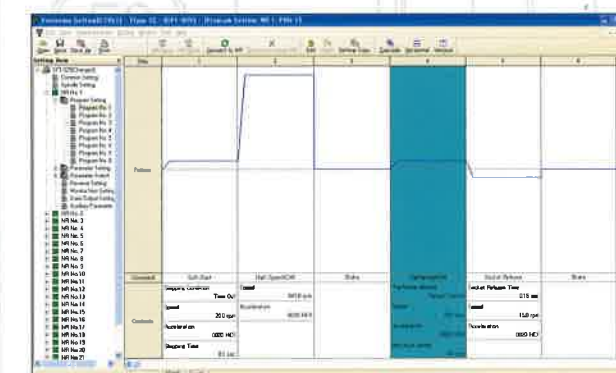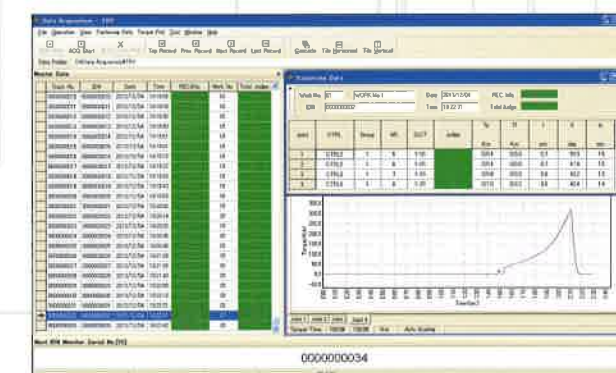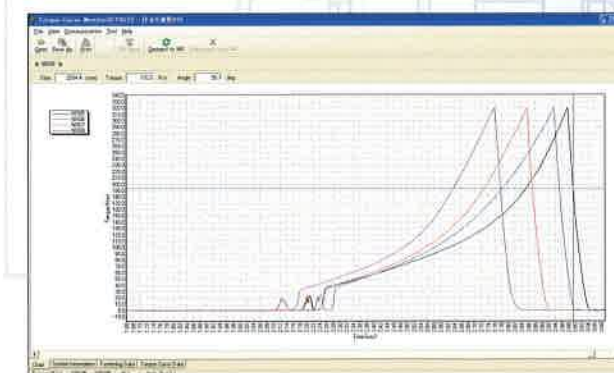
Fastening Settings Display Mode

Torque Curve Display

NG REPORT

Unit Contents Time
MC   Cycle Time Max TR 10/12/ 8 09:51
NRO1 Tight Time Up NG 10/12/ 8 09:48
NRO1 Peak Torque Lo NG 10/12/ 8 09:48

RESET ERASE CSV Save CF EJECT EXIT

NG Report Display

Peripheral Equipment

● Manually Operated Articulating Arm

- ○ Ultra-Light and high-rigidity body.
- ○ Eliminates torque reaction to the operator.
- ○ You can choose within position detection or without.
- ○ Error proofing through the use of position detection.
- ○ The automatic change of a fastening parameter is possible either by position location or fastener number.
- ○ A maximum of 32 positions can set up.
- ○ Space saving design.
- ○ Easy installation.
- ○ Piping of air is not required.

Manually Operated Articulating Arm

● Automatic Smart Arm

- ○ Compact design allows for multiple arms to be installed per station.
- ○ Cycle times reduced over manually operated arms.
- ○ Its simple design allows it to operate at high speed.
- ○ Ultra-Light and high-rigidity body.
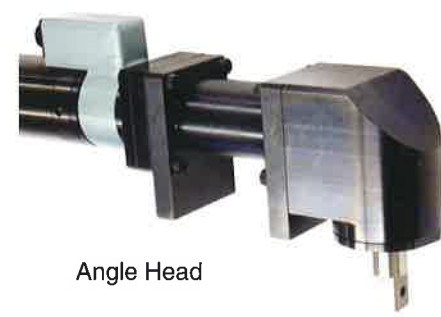- ○ Easy installation.

Automatic Smart Arm

● Options

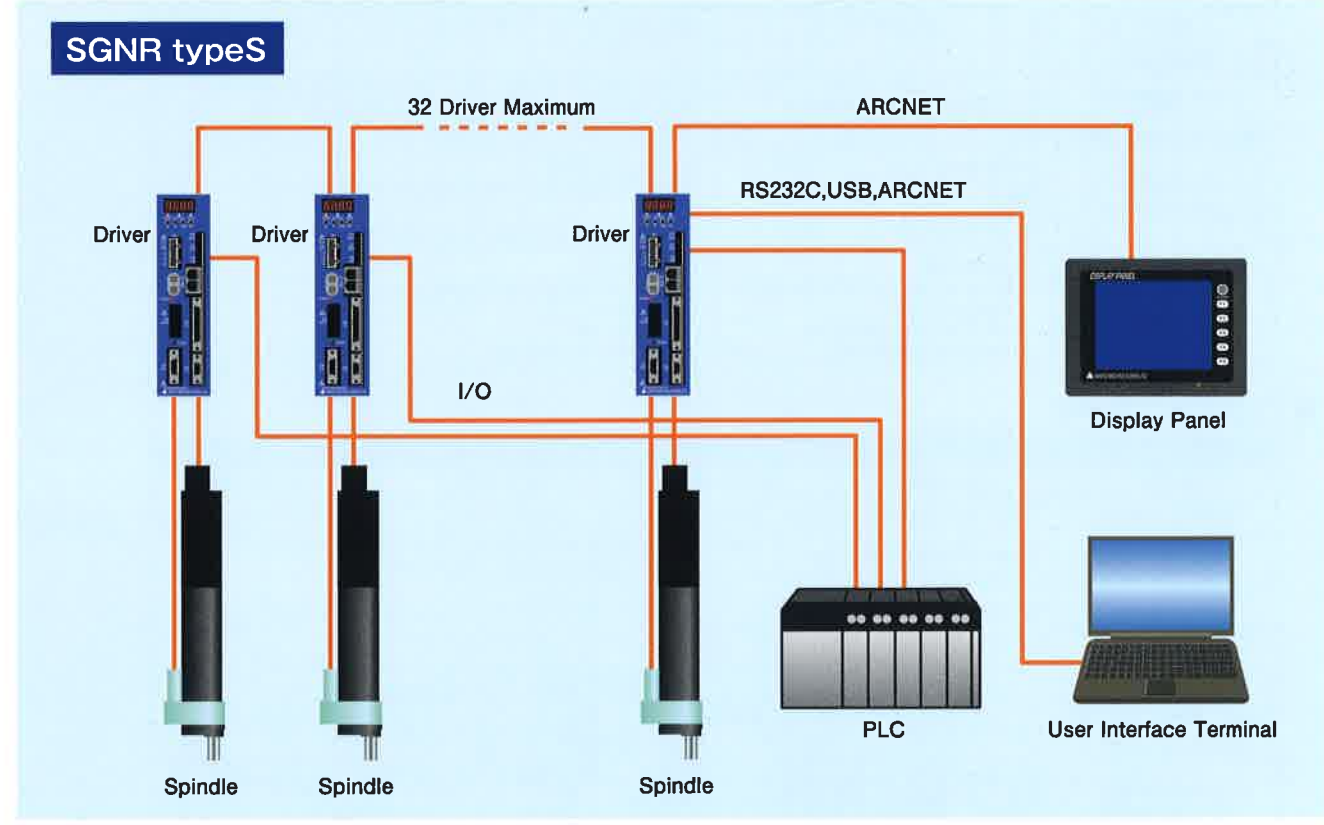- ○ Many end-of-tool options to choose from.

Gear Socket

Socket Extension

Angle Head

System Configuration

SGNR typeM

32 Driver Maximum

ARCNET

RS232C, USB, Ethernet, ARCNET

Driver Driver Driver

Multi Controller

Expansion Unit

Display Panel

PLC

User Interface Terminal

Spindle Spindle Spindle

SGNR typeS

32 Driver Maximum

ARCNET

RS232C, USB, ARCNET

Driver Driver Driver

I/O

Display Panel

PLC

User Interface Terminal

Spindle Spindle Spindle

Specifications

Dimensions

Nutrunner Set Models / Specifications Table

Nutrunner Set Models			Multi-Controller	Rated Torque (N·m)	Tightening Accuracy	Free Speed (rpm)	Ave Power Consumption (W)	Peak Power Consumption (W)	Temp (℃)
	Spindle Assembly	Driver							
SGNR(T※1)-005S	SGN-SP1-005S	SGN-DR1-005		5.00		3570			
SGNR(T※1)-005F	SGN-SP1-005F						70	500	
SGNR(T※1)-010S	SGN-SP1-010S	SGN-DR1-010		10.0		2200			
SGNR(T※1)-010F	SGN-SP1-010F								
SGNR(T※1)-025S	SGN-SP1-025S	SGN-DR1-025		25.0		750			
SGNR(T※1)-025F	SGN-SP1-025F				≦4% (6σ/ Rated Torque)				0～50 (Non condensing)
SGNR(T※2)-050S	SGN-SP2-050S	SGN-DR2-050	SGNM-MC (TypeM)	50.0		750	250	1900	
SGNR(T※2)-050F	SGN-SP2-050F								
SGNR(T※2)-100S	SGN-SP2-100S	SGN-DR2-100		100		750			
SGNR(T※2)-100F	SGN-SP2-100F								
SGNR(T※3)-180S	SGN-SP3-180S	SGN-DR3-180		180		465			
SGNR(T※3)-180F	SGN-SP3-180F								
SGNR(T※3)-320S	SGN-SP3-320S	SGN-DR3-320		320		300	390	2500	
SGNR(T※3)-320F	SGN-SP3-320F								
SGNR(T※3)-580S	SGN-SP3-580S	SGN-DR3-580		580		155			
SGNR(T※3)-580F	SGN-SP3-580F								
SGNR(T※3)-1000S	SGN-SP3-1000S	SGN-DR3-1000		1000		85			
SGNR(T※3)-1800S	SGN-SP3-1800S	SGN-DR3-1800		1800		50			

※ It is "M" when using with a Multi-Controller. It is "S" when using without Multi-Controller.
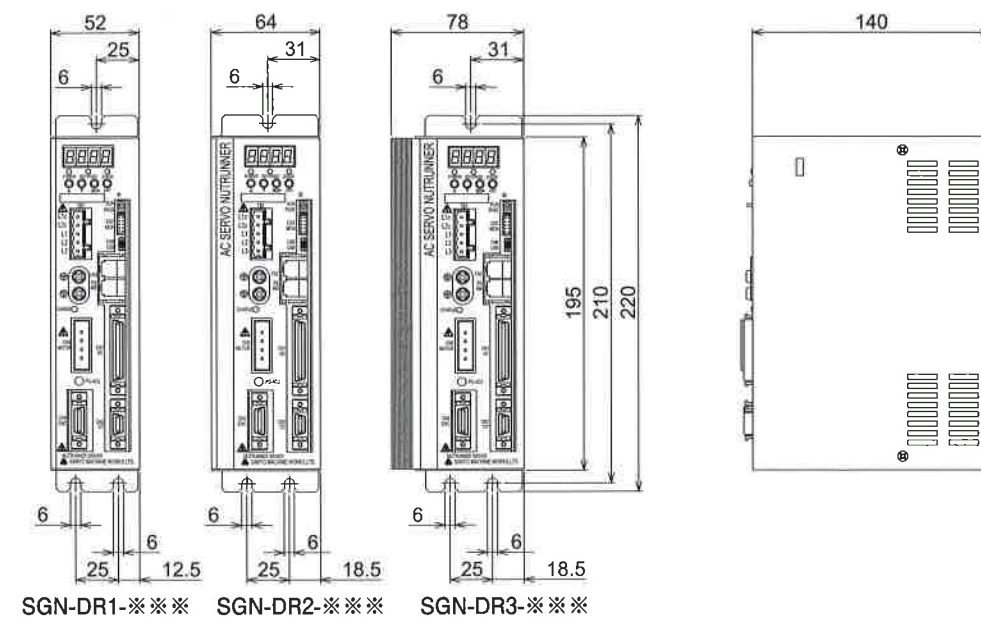
◆ Multi-Controller · Driver

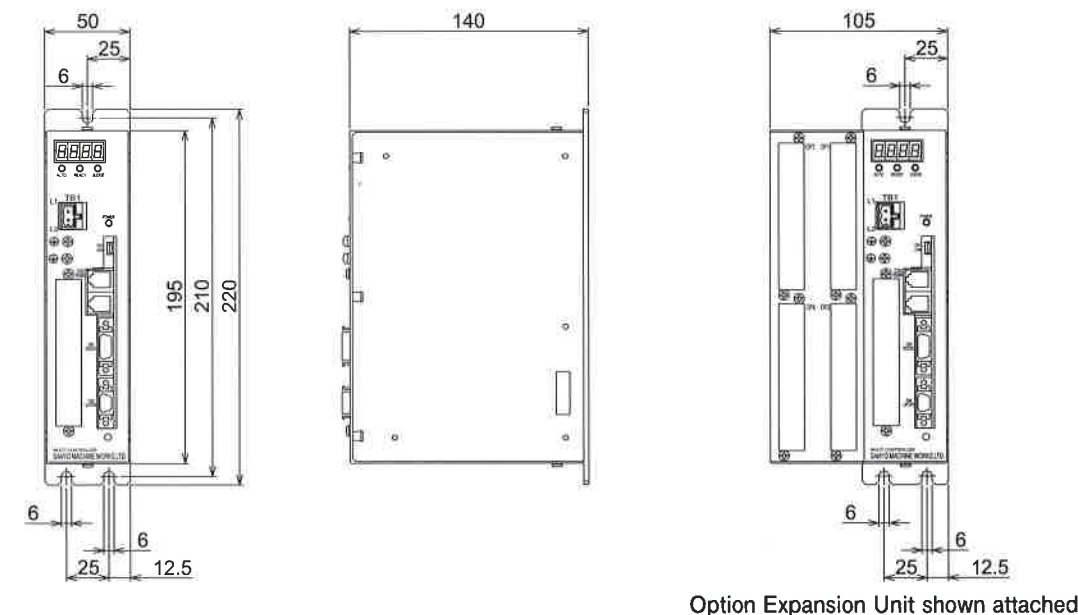| Item	Specification			
Name	Multi-Controller	Driver		
Model	SGNM-MC	SGN-DR1-※※※	SGN-DR2-※※※	SGN-DR3-※※※
Weight (kg)	1.1	1.0	1.4	1.7
Power Supply (V)	AC180～242, Single-phase 50/60Hz	Control power : AC180～242, Single-phase 50/60Hz　Drive power : AC180～242, Three-phase 50/60Hz		
Power Consumption (W)	Approx. 7	Approx. 500	Approx. 1900	Approx. 2500
Interface for external device	USB (mini-B_5pin) RS232C RS485 For Option board	USB (mini-B_5pin) I/O (It corresponds to the polarity of NPN and PNP.) RS485 Monitor terminal (Torque, Rotation pulse and Speed etc.)		
Representational function	· 3-color LED admission decision of fastening · 7-segments LED Multi-Controller condition abnormal message etc.	· 3-color LED admission decision of fastening · 7-segments LED fastening data abnormal message etc.		

◆ Display Panel

Item	Specification			
Model	SGN-DP06M	SGN-DP06C	SGN-DP06T	SGN-DP12T
Display Device	STN monochrome	STN color	TFT color	TFT color
Color	16-grade (with blinks)	65,536 colors (without blinks) /32,768 colors (without blinks) / 128 colors (with 16-color blinks)		
Screen size (inches)	5.7			12
Display Resolution (dots)	320 × 240			800 × 600
Weight (kg)	0.8			2.9
Power Supply (V)	DC24 ± 10%			
Power Consumption (W)	Approx. 17			Approx. 30
Interface for NR	ARCNET			
Interface for external device	Two serial ports (modular jack) for connecting with PLC or other external devices are equipped. MJ1 ··· RS-232C, RS-485 (2-wire connection) MJ2 ··· RS-232C, RS-485 (2-wire connection), RS-422 (4-wire connection)			

● Driver

SGN-DR1-※※※　　SGN-DR2-※※※　　SGN-DR3-※※※

● Multi-Controller

Option Expansion Unit shown attached

● Display Panel

SGN-DP06※　　　　SGN-DP12T