

# GENERAL SPECIFICATION

NR2-104mm (Mod.1)  
Pelletizing Machine

FREESIA MACROSS CORPORATION

Ver. 2013

# Freesia Macross Corporation

Head office: 6-8-3, Sotokanda, Chiyodaku, Tokyo, Japan

Factory: 17-9, Shono, Kazo-shi, Saitama, JAPAN

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## 1 Component of machine

### 1-0. Specification

<b>Model</b>	:	NRII-104mm (Model 1) Twin screw extruder
<b>Type</b>	:	Co-rotated, Deep channel, high torque, Vent type
<b>Output Capacity (ABS)</b>	:	1.500kg/hr(300kw motor)(Standard)
<b>Dimension</b>		
Center height	:	835mm
Length	:	7,000mm
Width	:	2,000
Height	:	1,800mm
Wieight	:	12.0 ton
<b>Power Supply</b>		
Voltage:	:	AC380-440V, 50-60Hz, 3 phase (standard) AC200-220V, 50-60Hz, 3 phase (option)
Capacity	:	420 KVA (300 kw motor / standard) 720 KVA (600 kw motor / option)
<b>Standard (option)</b>	:	UL / CE / JIS / Rohs

### 1-1. Barrel

1-1-1	<b>Material</b>	:	Nitrided steel (standard) Hardness over HRC63
	L/D	:	40                      24~48(option)
	<b>Quantity of barrel</b>	:	10 pieces
			Feed barrel    x 1 pieces
			Standard barrel x 7 pieces
			Vent barrel    x 2 pieces
			Side feed barrel (option)
	<b>Vent</b>		Adding Liquid injection hole on the vent pot plug (option) 2 vent (standard)    1 vent    3 vent Vent plug with heater (option)
1-1-2	<b>Barrel Heating</b>		
	Heater	:	Brass casted heater
	Temperature control zone:	:	9 zone (standard)
	Capacity of heater	:	110kw
	Control	:	PID temperature control
1-1-3	<b>Barrel Cooling</b>		
	Method	:	Water cooling
	Control	:	PID temperature control
	Feed zone	:	Independently cooled
	Solenoid valve	:	9 pieces

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- 1-2. **Screw**
- Type : Segment Type
  - Shaft : Involute spline
  - L/D : 40(standard) 24~48(option)
  - Diameter :  $\phi$  106mm
  - Material : Hardening SKD
  - : Hardness over HRC 63
  - : Nitriding after quenched (option)
  - RPM : MAX550 rpm
  - Screw element : 5 types
  - Kneading blocks : 4 types
  - Screw set : Master batch set
  - : Compound set
  - : Filler set
  - : Side feed GF set
  - : Side feed filler set
  - : PVC set
  - : PET set
- 1-3. **Gear box**
- Model : Model 1
  - Material of casing : FC 300
  - Bearings : Roller or ball type (by NTN/NSK, and etc)
  - Gears : Heat treated and polished
  - Material of gears : SNCM 616
  - Lubrication : Circulated by pump (oil pump by NOP) 200V-0.2kw
- 1-4. **Twin screw feeder**
- 1-4-1
- Screw
  - Screw diameter :  $\phi$  63mm
  - Material of screw : S45C,hard chromium-plated
  - RPM : 0-182 rpm
  - Rotation : Co-rotation, twin screw
- 1-4-2
- Motor
  - Capacity of motor : AC380-440V AC200-220V
  - : 1.5kw-4P
  - Control : Inverter (variable speed)
- 1-4-3
- Hopper
  - Material : SUS 304
  - Capacity : 25L
  - Type : Square type
- 1-5. **Adaptor, Die (standard type)**
- Type : strand die
  - : Square flange, 2 eye bolts (Standard)
  - Diameter of nozzle :  $\phi$  5.0 mm
  - The number of nozzles : 33 (standard)
  - Heater : Band heater, Space heater, Pipe heater
  - Capacity of heater : 6.4kw
  - Temperature control : PID controlled
  - Voltage of power supply in heater : 380-440V (standard)
  - Breaker : Breaker plate Breaker ring(option)

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- 1-6. **Main motor**
- Capacity : 300kw (standard)
  - Voltage of power supply : AC380-440V AC200-220V
  - Speed : Max 1750 rpm
  - Type : DC motor controlled by thyrister
  - Insulation : Class F
  - Index of Protection : IP22
- 1-7. **Control panel**
- 1-7-1 PID temperature controllers : 11 zone
- For barrel x 9 zone
  - For adapter x 1 zone
  - For adapter x 1 zone (by OMRON)
- 1-7-2 Indicator
- Digital Indicator : Screw RPM
  - : Main motor ammeter,
  - : Feed screw RPM
  - Display Indicator : Power On
  - : Main Motor ON
  - Alarm Indicator : Main Motor Overload
  - : Barrel Temperature Error
  - : Heater Snapping
  - : Lubrication Oil Pressure Down
  - : Shortage of Cooling water, etc.
- 1-7-3 Electromagnetic Switch & Breaker Switch
- 1-7-4 Programable logic controller : OMRON
- 1-8 **Cooling water circulation system**
- Primary cooling water : Supplied by user
  - Secondary cooling water : Pure water (circulated by pump)
  - Solenoid valve : 9 pieces (controlled by PID temperature controller)
  - Cooling water tank : 2 pieces
- 1-9 **Side feeder (option)**
- Screw diameter :  $\phi$  63 mm
  - Material of screw : Special tool steel SKS
  - Speed : 0-182rpm
  - Rotation : Co-rotation, twin screw inter-meshing
  - Motor : AC200-220V AC380V-440V  
1.5Kw-4P
  - Control : Inverter controlled
  - Hopper Material : SUS304
  - Capacity : 25 L
  - Type : Square type
- 1-10. **Standard tools**
- screw removing tools : 1 set
  - Special tool set : 1 set

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## 1-11. Other options

### 1-11-1 Resin pressure gauge

Display : Digital display on the control panel  
Alarm : Displayed on the control panel  
Sensor : On the adapter  
Range : 0-500kg / f/cm<sup>2</sup>(0-5MPa)

### 1-11-2 Resin thermometer

Display : Digital display on the control panel  
Alarm : Capable to output  
Sensor : On the adapter  
Range: : 0-500 °C

### 1-11-3 Safety clutch

Spring type, easily reset

Safety clutch between main motor and main shaft

When the main motor is over torque, the shaft will be separated so that the damage of screw and barrel will be reduced

Alarm : Displayed on the control panel

## 2 Down stream equipment (cold cut system)

### 2-1 9m cooling water bath

Dimension : L 9,000 x W 360 x D 220 mm  
Material : SUS 304  
Guide roller : MC nylon  
: 6 pieces (4 pcs downward / 2 pcs upward)

### 2-2 2 tower type drier (vacuum type)

The number of sucking nozzle : 31x 2 towers x2units  
Sucking blower  
Type : Turbo blower  
Wind volume : 30.2m<sup>3</sup>/min  
Static pressure : 325 Aq (3.1 kPa)  
Motor : AC200-220V AC380V-440V  
1.5kw-2P

### 2-3 NSP-SG10 Pelletizer

Main motor : AC200-220V AC380V-440V  
7.5kw-4P  
Controlled by inverter  
Length of pellet : 3mm  
Stand : with caster  
Rotary blade : SUS base with cemented carbide tips  
φ 150mm (diameter)  
250m (width)  
26 pieces of blades, single herical  
All in one piece on stainless steel base  
Fixed blade : SUS base with cemented carbide tip (both side)  
Take-up roller : Rubber lining roller x 1 piece  
Knuring roller x 1 piece  
Take-up speed : Max 84 m/min

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## 2-4 1.5t/h classifier,pneumatic blower unit

Vibrator	: AC200-220V	AC380V-440V
	0.2kw-4P (*2pcs)	
Classifier screen	: $\phi$ 7mm	round hole $\phi$ 5mm(option)
	1.5 x 12.5 mm slit	
Material	: SUS 304 (contacting part with pellets)	
	SS 400 (frame)	
Pneumatic blower	: AC200-220V	AC380V-440V
	5.5kw/7.5kw-4P	

\*Includes: Dust box, Filter element, Ejector

\*The hose between blower and catcher tank is 5m long (option)

## 2-5 2000 L (1000kg) catcher tank

Material	: SUS 304 (Tank)
	SS400 (stand)
Capacity	: 2000L (approximately 1000Kg)
With door for cleaning. SUS butterfly valve and castors	

## 2-6 Vacuum pump

Type	: FM-150B Water sealed type	
Motor	: AC200-220V	AC380V-440V
	5.5Kw-4P	
Pumping speed	: 2100/2500L/min	
Ultimate pressure	: 2.3 kPA	
Dimension	: 1453mmx713mmx625mm	

## 3 Spare parts (option)

### 3-1 spare parts for extruder

3-1-1	Screw set (complete)	0	Set (s)
3-1-2	Screw elements		
	S210-140 Large Lead Long type	0	Piece(s)
	S210-105 Middle Lead Long type	0	Piece(s)
	S210-70 Short Lead Long type	0	Piece(s)
	S140-140 Large Lead Middle type	0	Piece(s)
	S70-70L Short Lead Short type	0	Piece(s)
	R104570 Kneading block right	0	Piece(s)
	N104570 Kneading block neutral	0	Piece(s)
	W104170 Kneading block wide	0	Piece(s)
	L104570 Kneading block left	0	Piece(s)
3-1-3	Screw related parts		
	Joint	0	Piece(s)
	Adjusting plastes	0	Piece(s)
	Fixsing lock nuts	0	Piece(s)
	Half collars	0	Piece(s)
	Screw shafts	0	Piece(s)
	Screw caps	0	Piece(s)
3-1-4	Barel related parts		
	plug for vent port	0	Piece(s)
	vent port chamber	0	Piece(s)
3-1-5	Jig		
	Jig for barrel assembly	0	Piece(s)
	Jig for adjusting phase of shafts	0	Piece(s)
3-1-6	Breaker plate	0	Piece(s)
	Breaker ring	0	Piece(s)

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3-1-7	Heater set for extruder (each type, 1 pce)	0	Set(s)
	heater set for screen changer (cach type, 1 pce)	0	Set(s)
3-1-8	Filter		
	Carbon Brush		
	Thyristor		
	Fuse		
	DC300kw motor has 20 brushes and 1 filter		
	Thyristor unit has 6 thyristor and 3 fuses		
3-1-8	Temperaturer controller for barrel	0	Piece(s)
	Temperature contoller for adaptor and die	0	Piece(s)
	Thermocouple	0	Piece(s)
	Solenoid valve	0	Piece(s)
	Resin pressure sensor	0	Piece(s)
	Resin thermosensor	0	Piece(s)
3-2	<b>Spare part for Downstream equipment</b>		
3-2-1	<b>For NSP-SG10 Pelletizer</b>		
	Rotary blade	0	Piece(s)
	Fixed blade	0	Piece(s)
	Rubber roller	0	Piece(s)
	Knurling roller	0	Piece(s)
	Nylon gear	0	Piece(s)