

**ShinMaywa**

# **Submersible Pumps**

(Channel Impeller) **CN/CN-MT/CNH·CNL Series**



**“SUBMERSIBLE SLUDGE PUMP” ~ CN Series**  
— Suitable for transfer and discharge of Sludge  
at sewage treatment plant

## Features and Construction

### Cable entry with core wire seal

The core wire seal shuts the water out from penetrating into the motor through the core wire.



### Motor protector

Thermal protector (a built-in automatic reset type motor protector) or thermal switches are embedded to the motor winding.



### Air-filled submersible motor

### Shaft seal

A highly wear resistant double mechanical seal is employed. Besides, combined use of an oil seal further extends the life. (except for some models)

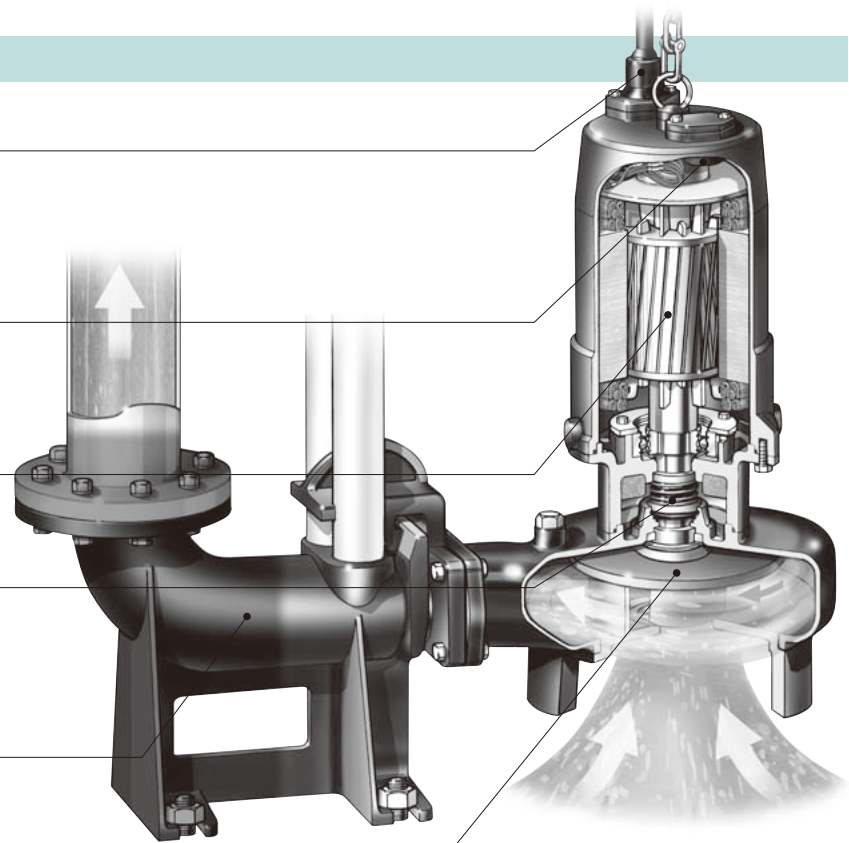


### Discharge connection

The pump is automatically connected to the discharge pipe.

### Impeller

The solid handling type channel impellers are fully adjusted in the factory to the dynamic/static balance.



#### Semi-open type

CN401T-501(T)-651-80-100-MT  
CNL Series



#### Closed type

CNH100  
CN150-MT  
CN150

# Improved Pump Efficiency and Solid-Handling Operation

**ShinMaywa Submersible Pumps offer MANY ADVANTAGES.**

## Applications

- Treatment processes at onsite wastewater treatment systems
- Treatment processes at sewage-treatment plants and night-soil treatment plants
- Pumping stations in the sewerage / wastewater collection system
- As sanitary equipment for effluent from building facilities
- Draining stormwater from roads or underpass
- Treatment processes at industrial wastewater treatment facilities

## Main Specifications

<b>Handling liquid</b>	Kind of liquid	Sewage water	
	Temperature	0.25-7.5 kW	0-40°C
		11-22 kW	0-32°C
	CNL	0-32°C	
<b>Material</b>	Cable	0.25-7.5 kW	PVC insulated PVC sheathed cable
		11-22 kW	EPR insulated PCP sheathed cable
	Motor shaft	420J2 stainless steel	
	Pump housing	0.25-7.5 kW	Gray iron casting (FC250)
		CNH100	Gray iron casting (FC200)
		CN150	Gray iron casting (FC250)
	Impeller	0.25-7.5 kW	Gray iron casting (FC250)
CNH 11/15 kW		Gray iron casting (FC200)	
CN150 11/15kW		Gray iron casting (FC250)	
22kW		Spheroidal graphite iron casting (FCD500)	
<b>Electric motor</b>	Type	Air-filled submersible induction motor	
	Insulation class	0.25-7.5 kW	Class F
		11-22 kW	Class E
		CNL	Class E
	Enclosure	IP68	
	Phase	3-phase	
Voltage	Several voltage between 200 and 480V		

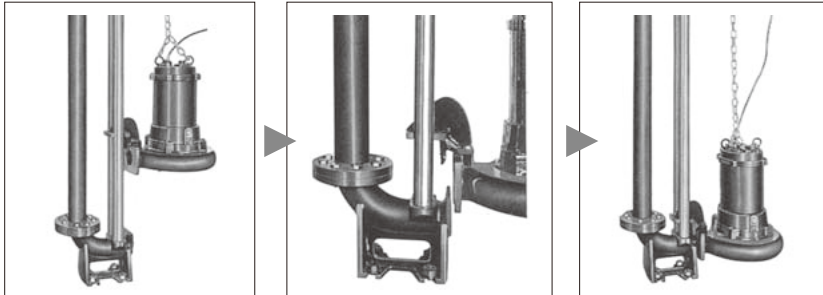
## Optional Specifications

<b>Motor insulation</b>	11-22kW	Class F
	CNL	Class F
<b>Cable extension</b>	Cable length: 10 to 30 m (every 5m)	
<b>Material change</b>	Impeller	304 or 316 stainless steel casting
	Suction cover	304 or 316 stainless steel casting
	Lifting chain	304 or 316 stainless steel
<b>Other</b>	<ul style="list-style-type: none"> <li>•For the availability of mounting motor protector(s) for each model, please contact us.</li> <li>•For specifications other than the above, please contact us.</li> </ul>	

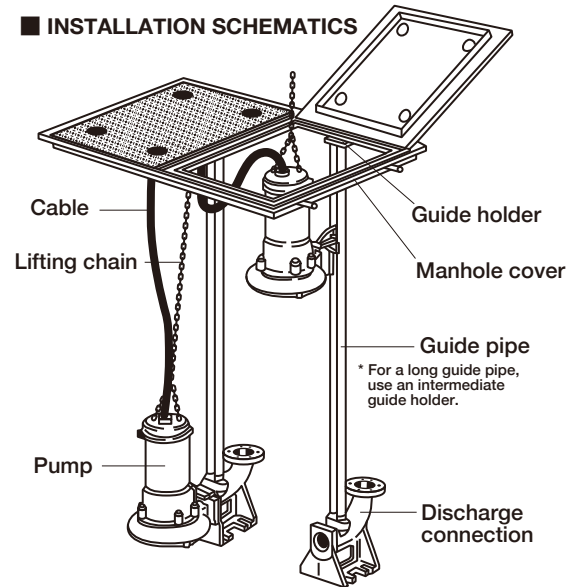
# GUIDE RAIL INSTALLATION SIMPLIFIES MAINTENANCE



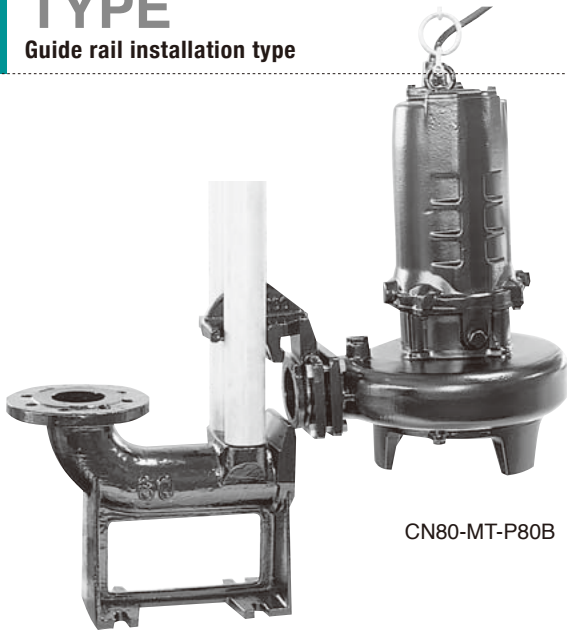
One of the reasons for the popularity of ShinMaywa submersible pumps is the guide rail installation kit. When the pump is lowered along the guide rail (pipe), the pump is connected to the discharge pipe via the discharge connection and can be taken out of the pump pit just by being lifted up. No bolts, nuts or packing are used in the connected portion. This guide rail installation kit facilitates maintenance. There is no need to enter the pump pit, pump out sewage, or loosen or tighten the bolts in order to raise the pump.



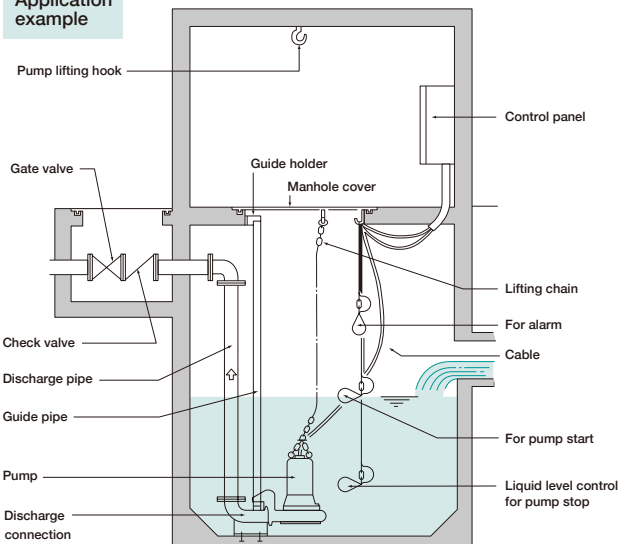
## INSTALLATION SCHEMATICS



### P TYPE Guide rail installation type



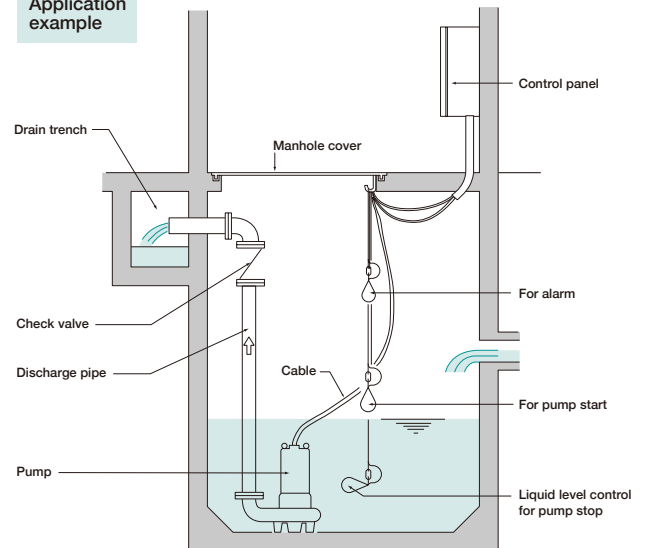
#### Application example



### F TYPE Free standing type

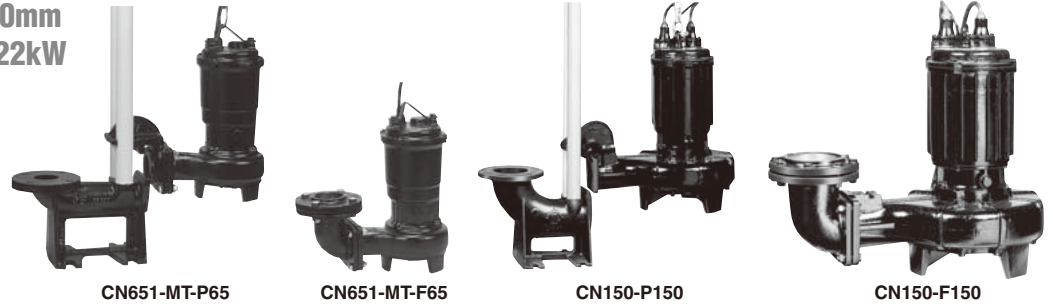


#### Application example



# CN/CN-MT/CNH Series

〈Discharge size〉 40~150mm  
 〈Rated output〉 0.25~22kW  
 〈Phase〉 3



## Standard Specifications

Discharge (mm)	Pump model	Installation kit No.		Rated output (kW)	No. of poles	Flow-Total head (m <sup>3</sup> /min-m)		Solid passage dia. (Soft solid) (mm)		Pump weight (kg)		
		Guide rail installation	Free standing			50Hz	60Hz	50Hz	60Hz			
40	CN401T-MT	P40	F40	0.25	2	0.1 -5.5	0.1 -5.5	21	20	17		
50	CN501T-MT	P50	F50	0.4	2	0.15 -6.0	0.15 -6.0	28	24	17		
	CN501-MT			0.75		0.2 -8.2	0.2 -7.5	30	29	18		
65	CN501T-MT	P65B	F65B	0.4	2	0.15 -6.0	0.15 -6.0	28	24	17		
	CN501-MT			0.75		0.2 -8.2	0.2 -7.5	30	29	18		
	CN651-MT			1.5		0.4 -10.6	0.4 -10.0	41	33	29		
	CN80-MT	P65	F65	2.2	4	0.8 -8.4	0.8 -8.6	54	51	58		
				3.7		[1] 1.0 -11.8	1.0 -11.8	53	54	70		
						[3] 0.8 -14.4						
80	CN651-MT	P80	F80	1.5	2	0.4 -10.6	0.4 -10.0	41	33	29		
				2.2		0.8 -8.4	0.8 -8.6	54	51	58		
	CN80-MT	P80B	F80	3.7	4	[1] 1.0 -11.8	1.0 -11.8	53	54	70		
						[3] 0.8 -14.4						
	CN100-MT			[1] 1.2 -12.9		[2] 1.2 -13.6	60	53	95			
				[3] 0.9 -18.0		[4] 0.9 -18.0	54					
	7.5	[1] 1.4 -15.2	[2] 1.4 -16.7	60	53	108						
		[3] 1.0 -21.8	[4] 1.0 -22.5	60	60							
100	CN80-MT	P100B	F100	2.2	4	0.8 -8.4	0.8 -8.6	54	51	58		
						[1] 1.0 -11.8	1.0 -11.8	53	54	70		
				[3] 0.8 -14.4								
				5.5		[1] 1.2 -12.9	[2] 1.2 -13.6	60	53	95		
	CN100-MT	[3] 0.9 -18.0	[4] 0.9 -18.0	54								
			7.5	[1] 1.4 -15.2	[2] 1.4 -16.7	60	53	108				
			[3] 1.0 -21.8	[4] 1.0 -22.5	60	60						
	CNH100	P100C	F100B	11	4	1.57 -22	1.58 -22	54	54	216		
15				1.9 -26		1.86 -26	54	55	230			
22				1.8 -35		1.96 -35	55	58	290			
				5.5		2.0 -10	1.96 -10	70	65	122		
150	CN150-MT	P150	F150	7.5	4	2.48 -12	2.33 -12	75	70	134		
				11		2.54 -16	2.6 -16	64	57	215		
	15			2.87 -19		3.0 -19	70	62	228			
	22			3.6 -22		3.86 -22	76	67	326			
	CN150											

\*The starting method is direct-on-line for 7.5 kW or less and star-delta for 11 kW and over. [ ] indicates the impeller number. Note: Please inform us of the pump model and installation kit number.

## Standard Accessories

- Cable (7.5kW or less) ..... 1pc.      6m for 0.75kW or less
- Cable (11kW or more) ..... 3pcs.      8m for 1.5kW or more

### Guide Rail Installation Kit

- Discharge connection
- Guide holder (with bolts and nuts)
- Sliding bracket
- Lifting chain (6m)

Discharge (mm)	Installation kit No.	Kit weight (kg)	Connection weight (kg)
40	P40	11	4.5
50	P50	11	4.5
65	P65B	20	14.5
	P65	24	15
80	P80	31.5	20.5
	P80B	31.5	18
100	P100B	40.5	27
	P100C	55	37
150	P150	60	42

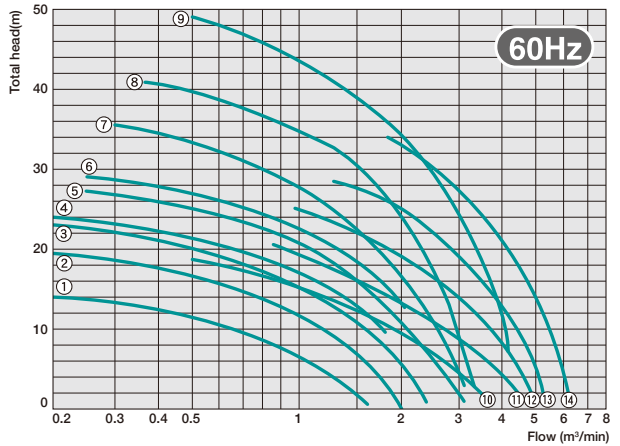
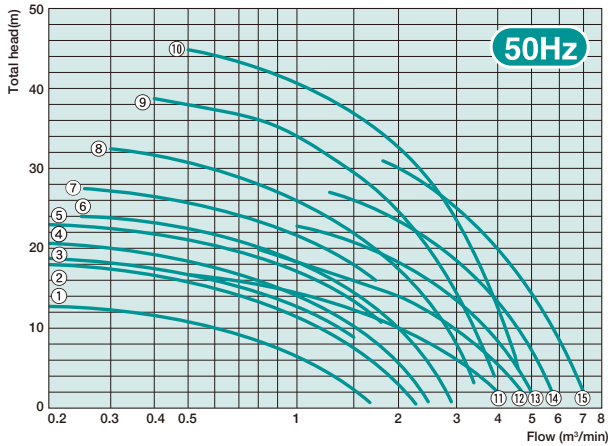
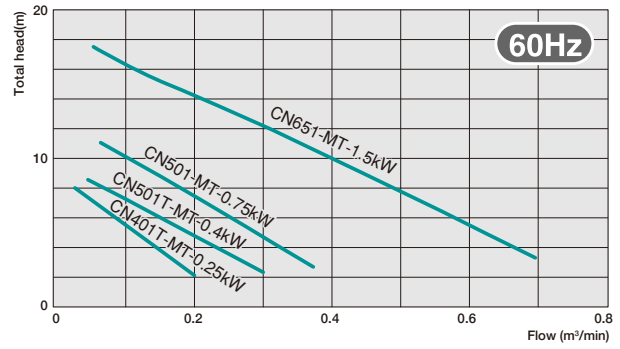
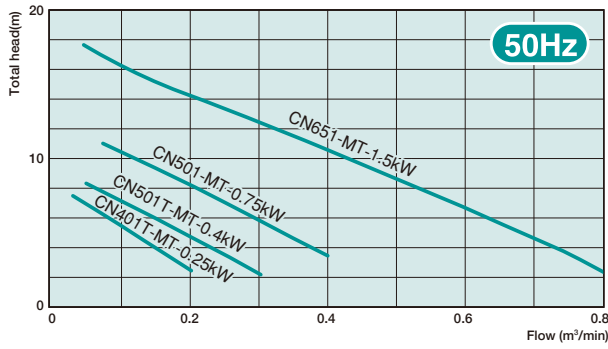
### Free Standing Kit

- Discharge flange
- Companion flange (with bolts, nuts and gasket)

Discharge (mm)	Installation kit No.	Kit weight (kg)
40	F40	☆
50	F50	☆
65	F65B	5.5
	F65	7
80	F80	9.5
100	F100	11
	F100B	12
150	F150	30

☆Built into the pump.

# Performance Curves

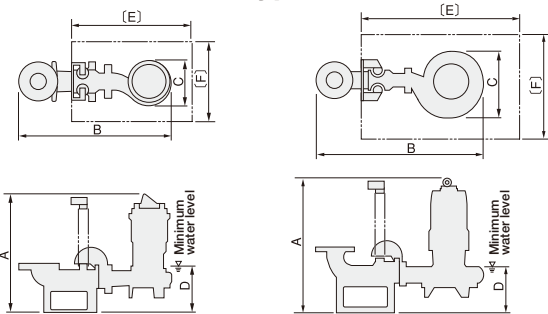


- ① CN80-MT-2.2kW                      ⑥ CN100-MT-7.5kW (1)                      ⑪ CN150-MT-5.5kW
  - ② CN80-MT-3.7kW (1)                      ⑦ CN100-MT-7.5kW (3)                      ⑫ CN150-MT-7.5kW
  - ③ CN80-MT-3.7kW (3)                      ⑧ CNH100-11kW                              ⑬ CN150-11kW
  - ④ CN100-MT-5.5kW (1)                      ⑨ CNH100-15kW                              ⑭ CN150-15kW
  - ⑤ CN100-MT-5.5kW (3)                      ⑩ CNH100-22kW                              ⑮ CN150-22kW
- [ ] : indicates the impeller number.

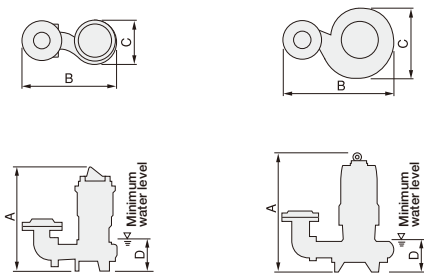
- ① CN80-MT-2.2kW                      ⑥ CN100-MT-7.5kW (4)                      ⑪ CN150-MT-7.5kW
- ② CN80-MT-3.7kW                      ⑦ CNH100-11kW                              ⑫ CN150-11kW
- ③ CN100-MT-5.5kW (2)                      ⑧ CNH100-15kW                              ⑬ CN150-15kW
- ④ CN100-MT-5.5kW (4)                      ⑨ CNH100-22kW                              ⑭ CN150-22kW
- ⑤ CN100-MT-7.5kW (2)                      ⑩ CN150-MT-5.5kW                              [ ] : indicates the impeller number.

# Dimensions

## Guide rail installation type



## Free standing type



Pump model	Installation kit No.	Rated output (kW)	A	B	C	D	E	F	
CN401T-MT	P40	0.25	460	447	170	180	550	350	
CN501T-MT	P50	0.4	460	447	170	180	550	350	
	P65B	0.75		520					
CN651-MT	P65	1.5	530	663	192	215	550	350	
	P80		570	739					255
CN80-MT	P65	2.2	584	754	292	260	600	500	
	P80B		624	830					
	P100B		645	843					
	CN100-MT	P65	3.7	645	773	331	260	700	600
		P80B		685	849				
P100B		685		862					
CNH100	P100C	11	861	1,110	486	335	900	700	
		15							
		22							
		22							
CN150-MT	P150	5.5	779	1,094	400	325	900	700	
		7.5	824						
CN150	P150	11 · 15	871	1,148	450	345	900	700	
		22	967	1,188	489	345			

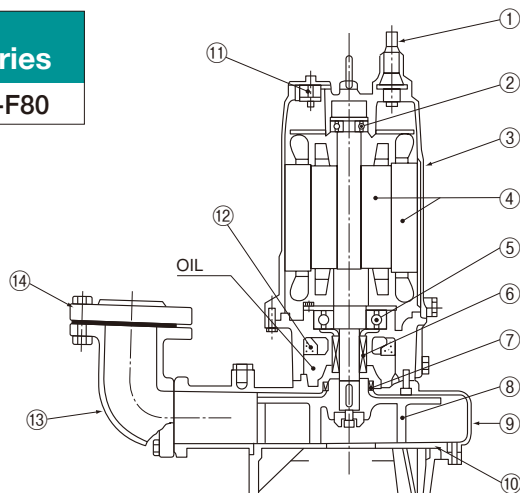
Pump model	Installation kit No.	Rated output (kW)	A	B	C	D
CN401T-MT	F40	0.25	414	249	170	135
CN501T-MT	F50	0.4	414	249	170	135
		0.75		344		
CN651-MT	F65	1.5	454	418	192	140
				433		
				509		
CN80-MT	F80	2.2	554	524	292	190
				541		
				528		
				543		
				560		
CN100-MT	F100	3.7	615	601	355	190
				618		
				616		
				633		
CNH100	F100B	11	782	848	486	255
		15				
		22				
		22				
CN150-MT	F150	5.5	713	836	400	260
		7.5	758			
		11 · 15	805			
CN150	P150	22	915	930	489	295



## Sectional View

### CN Series

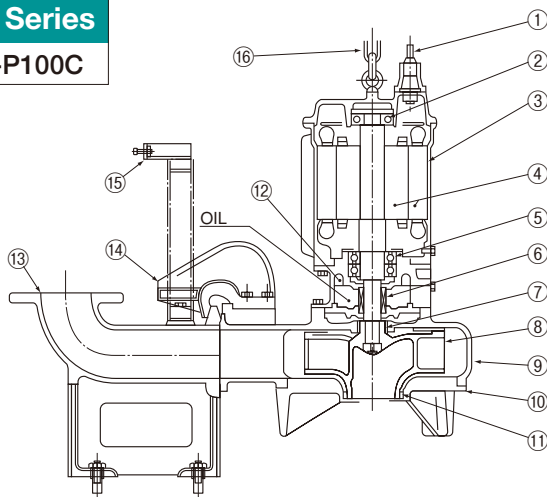
CN80-MT-F80



No.	Part Name	Material
1	Cable	PVC insulated PVC sheathed cable
2	Ball bearing (upper)	–
3	Stator housing	Gray iron casting (FC250)
4	Motor	Shaft: 420J2 stainless steel
5	Ball bearing (lower)	–
6	Mechanical seal	–
7	Oil seal	Acrylonitrile butadiene rubber
8	Impeller	Gray iron casting (FC250)
9	Pump housing	Gray iron casting (FC250)
10	Suction cover	Gray iron casting (FC250)
11	Thermal protector	–
12	Pressure equalizer	Foamed acrylonitrile butadiene rubber
13	Discharge flange	Gray iron casting (FC250)
14	Companion flange	Gray iron casting (FC250)

### CNH Series

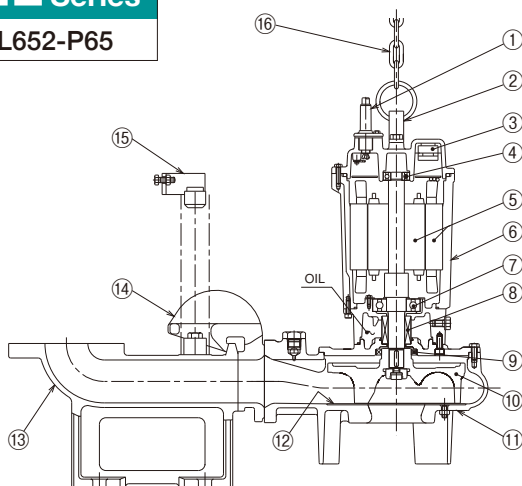
CNH100-P100C



No.	Part Name	Material	
1	Cable	EPR insulated PCP sheathed cable	
2	Ball bearing (upper)	–	
3	Stator housing	Gray iron casting (FC200)	
4	Motor	Shaft: 420J2 stainless steel	
5	Ball bearing (lower)	–	
6	Mechanical seal	–	
7	Seal ring	Copper alloy casting (CAC406)	
8	Impeller	11, 15 kW	Gray iron casting (FC200)
		22 kW	Spheroidal graphite iron casting (FCD500)
9	Pump housing	Gray iron casting (FC200)	
10	Suction cover	Gray iron casting (FC200)	
11	Wear ring	Copper alloy casting (CAC406)	
12	Pressure equalizer	Foamed acrylonitrile butadiene rubber	
13	Discharge connection	Gray iron casting (FC200)	
14	Sliding bracket	Gray iron casting (FC200)	
15	Guide holder	304 stainless steel casting	
16	Lifting chain	Structural steel	

### CNL Series

CNL652-P65



No.	Part Name	Material
1	Cable	PVC insulated PVC sheathed cable
2	Handle	304 stainless steel
3	Thermal protector	–
4	Ball bearing (upper)	–
5	Motor	Shaft: 420J2 stainless steel
6	Stator housing	Gray iron casting (FC200)
7	Ball bearing (lower)	–
8	Mechanical seal	–
9	Oil seal	Acrylonitrile butadiene rubber
10	Impeller	Gray iron casting (FC250)
11	Pump housing	Gray iron casting (FC250)
12	Chopper plate	304 stainless steel
13	Discharge connection	Gray iron casting (FC200)
14	Sliding bracket	Gray iron casting (FC200)
15	Guide holder	304 stainless steel casting
16	Lifting chain	Structural steel

# Special Accessories

**Liquid Level Regulators** - All models are of an environmentally-friendly no-mercury structure.

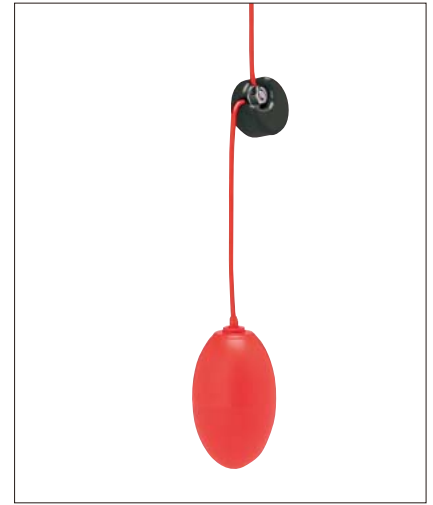
**LC** "Level Switch"



**MS** "Mini Switch"



**FV** "Oval Float"



## Features

**LC** Useful for potable water, wastewater and sewage containing suspended solids. Strong for corrosion or rust even when immersed in a corrosive liquid.

**MS** Useful for wastewater and sewage containing a few suspended solids. The MS is available in two types, MS11 (single float) and MS21 (double float).

**FV** Useful for fresh water as well as wastewater not containing suspended solids. A single FV can control both the upper and lower liquid levels.

## Specifications

Model	LC12	MS11, MS21	FV11
Switch	Micro switch	Reed switch	Reed switch
Specific gravity of liquid	0.95~1.15	0.95~1.10	0.95~1.10
Liquid temperature	0~60°C		
Voltage	AC/DC30V or under		
Max operable current	5A	0.5A	0.6A
Cable length	6m, 13m, 20m (with cable extensions in 10m increments) MAX. length 100m		
Cable type	0.75mm <sup>2</sup> ×3 cores, Flat type	0.2mm <sup>2</sup> ×2 cores×O.D.4.7mm	0.5mm <sup>2</sup> ×2 cores×O.D.5.8mm
Weight (including cable)	6m:1.2kg, 13m:1.6kg, 20m:2.0kg	0.6kg (MS11, 6m cable)	1.0kg (6m cable)
Material	Case	Polypropylene resin	ABS resin
	Cable	PVC	
	Others	Chain: 304 stainless steel	Sinker:PVC Resin coating is applied to FC 150

Specifications and dimensions are subject to change without notice.

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**ShinMaywa ONO PLANT**

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