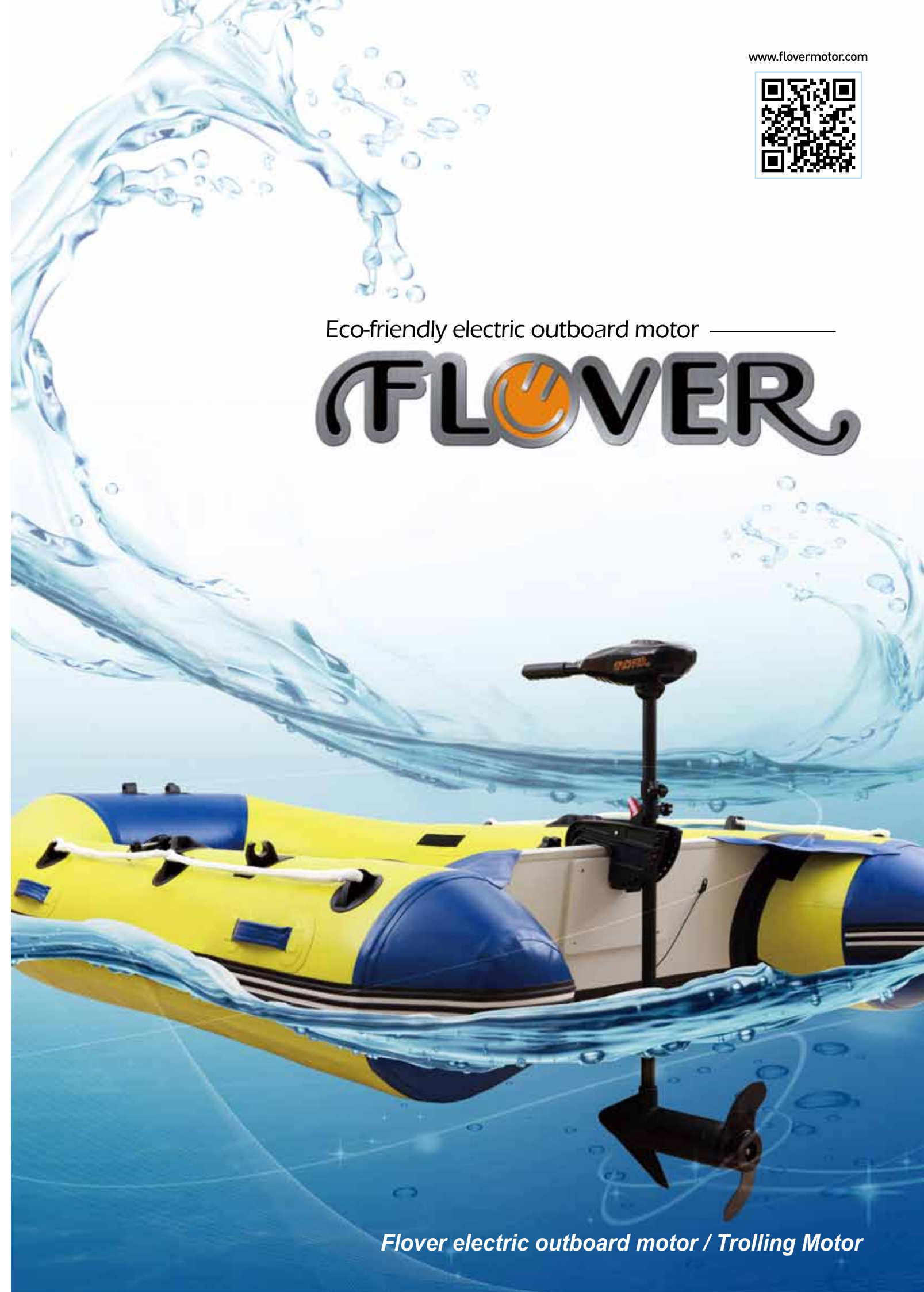




Eco-friendly electric outboard motor

# FLOVER

**FLOVER**  
Eco-friendly electric outboard motor





## CEO Message

For over 20 years, CSM Tech has been concentrated its energy on producing DC motor and MDPS Motors. In 2011, CSM Tech Co., Ltd acquired FLOVER brand and started to produce electric outboard motors as a manufacturer and supplier. As time passed, FLOVER is receiving positive consumer response in the marketplace.

The next steps is to provide a better service to the customer through good management and better staff training. We look forward to working with our customers by listening to the challenges, understanding the needs and opportunities and responding accordingly with the very capable Flover team we have here at CSM TECH Co, Ltd

As always, we pledge to do our best to serve our customers in the global market.

Thank you

Moon Ho, Kang / CEO

## History

- 1990.09 Established CHANG SUNG Company
- 2005.05 Incorporated CHANG-SUNG CO., LTD.
- 2008.02 MDPS Core & Assembly Device – patent
- 2008.02 MDPS Core & Assembly Device – patent / MDPS Core & Bobbin Device – patent
- 2009.03 MDPS Core & Winding Device – patent / Company changed its name to CSM TECH CO., LTD.
- 2010.04 Acquired Electric Outboard Motor FLOVER
- 2011.11 CE Certification obtained - Registered No. K1553/E07R  
ISO Certification obtained - ISO 9001 : 2008 / KS Q ISO 9001 : 2009
- 2012.01 Certification of origin by Customs Authorization  
Obtained Certification of origin by Customs Authorization - No. 030-12-200011
- 2013.05 Moved manufacturing operations from Jeongwan to  
Jang- An Industrial complex, Busan
- 2014.03 2HP - BLDC electric outboard motor will come  
out at the beginning of next year





# FLOVER

## Fresh water Type Trolling Motor

Flover is excellent for inflatables, canoes and fishing craft.  
Light, powerful and efficient.  
Just ideal for tenders, fishermen wanting to quietly prowl  
around a lake, duck shooters and kayakers.





# FLOVER

## Salt water Type Trolling Motor

Flover is excellent for inflatables, canoes and fishing craft.  
Suitable for quiet sheltered coastal water fishing.  
Outboards go GREEN with flover electric outboard motors!



**Line ups**

	FLOVER 33F	FLOVER 33	FLOVER 35	FLOVER 40	FLOVER 45	FLOVER 50	FLOVER 55
Thrust in lb/Kg	33/15.0	33/15.0	35/15.9	40/18.1	45/20.4	50/22.7	55/24.9
Amp	30~33A	30~33A	32~35A	36~40A	41~45A	45~50A	50~55A
Voltage	12	12	12	12	12	12	12
Prop dia x pitch in in	9 x 4	9 x 4	9 x 4	9 x 4	11 x 4	11 x 4	11 x 4
Shaft length in m	750	750	750	850	850(1000)	850	850(1000)
Battery gauge	No	Optional	Optional	Optional	Optional	Optional	Optional
Battery (V)	12V, 80Ah / 100Ah Deep Cycle Battery						
Transom mount	10 Level lock bracket						
Control handle	Fixed	Telescopic (extendable by 14cm)					
Speeds steps	5 forwards steps / 3 reverse steps						
Shaft type	Aluminum						
Net Wt. in lb/Kg	15.0/6.8	15.0/6.8	16.0/6.8	16.5/7.8	19.0/8.6	19.4/8.8	19.8/9.0
Gross Wt. in lb/Kg	22.9/10.3	22.9/10.3	22.9/10.3	22.6/11.8	27.8/11.8	28.0/12.6	28.7/12.9
Selection	F, T, TG		T, TG	T, TG	T, TG, TGS	T, TG	T, TG, TGS
Carton size in cm	107 * 57 * 18			118 * 57 * 18 (TGS 134 * 57 * 18)			
Quantity/20' 40' GP	Mixed 260 / 560 pcs						

F : Fixed Handle Tiller / T : Telescopic Tiller / G : Battery Gauge / S : Saltwater / TG : T + G / TGS : T + G + S

**Thrust(lb) to HP / Watt**

	Amp Draw / hour	Voltage	approx. HP	Watt
FLOVER 33F	33	12	0.53	396
FLOVER 33	33	12	0.53	396
FLOVER 35	35	12	0.56	420
FLOVER 40	40	12	0.64	480
FLOVER 45	45	12	0.72	540
FLOVER 50	50	12	0.80	600
FLOVER 55	55	12	0.88	660

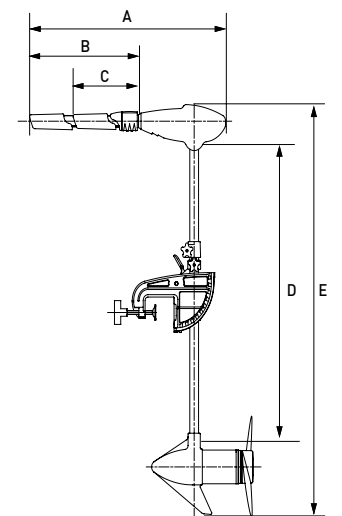
**Hours of usage**

	Full Amp	Amp Draw / hour	Consumption	Hours
FLOVER 33F	100	33	85%	2.58
FLOVER 33	100	33	85%	2.58
FLOVER 35	100	35	85%	2.43
FLOVER 40	100	40	85%	2.13
FLOVER 45	100	45	85%	1.89
FLOVER 50	100	50	85%	1.70
FLOVER 55	100	55	85%	1.55

i. assume we use a fully-charged deep cycle battery with a capacity of 100Amp / ii. assume we consume 85% of the battery charged

**Schematics**

	A	B	C	D	E
FLOVER 33F	-		185	750	1020
FLOVER 33	645	375	235	↑	↑
FLOVER 35	↑	↑	↑	↑	↑
FLOVER 40	↑	↑	↑	850	1120
FLOVER 45	↑	↑	↑	↑	↑
FLOVER 50	↑	↑	↑	↑	↑
FLOVER 55	↑	↑	↑	↑	↑
FLOVER 45/55TGS	↑	↑	↑	1000	1270





## FLOVER 33F



### PURPOSES

Trolling for game fish  
a secondary means of propulsion

### PERFORMANCE

Thrust	33 pound
Voltage	12V
Amp	30~33A
Shaft Length	750mm
Prop Dia x Pitch in inch	9X4
Approx. HP	0.53
Watt	396
Control Handle	Fixed
Battery gauge	No

#### FLOVER DIV., CSM TECH CO., LTD

Trolling for game fish; a motor used for this purpose is usually a secondary means of propulsion, and mounted on the transom alongside the primary outboard motor or on a bracket made for the purpose

Primary source of propulsion for smaller water craft, such as canoes and kayaks, and on lakes where the use of a gasoline-powered engine is prohibited.

## FLOVER 33T,TG



### PURPOSES

Trolling for game fish  
a secondary means of propulsion

### PERFORMANCE

Thrust	33 pound
Voltage	12V
Amp	30~33A
Shaft Length	750mm
Prop Dia x Pitch in inch	9X4
Approx. HP	0.53
Watt	396
Control Handle	Telescopic type
Battery gauge	Optional(TG)

#### FLOVER DIV., CSM TECH CO., LTD

High Sound Quality with remarkable capacity  
Telescopic Handle and Battery gauge  
Great Mobility and Durability  
Ergonomic Design and Stylish Touch  
Two-Year Warranty



## FLOVER 35T,TG



### PURPOSES

Trolling for game fish  
a secondary means of propulsion

### PERFORMANCE

Thrust	35 pound
Voltage	12V
Amp	33-35A
Shaft Length	750mm
Prop Dia x Pitch in inch	9X4
Approx. HP	0.56
Watt	420
Control Handle	Telescopic type
Battery gauge	Optional(TG)

#### FLOVER DIV., CSM TECH CO., LTD

Trolling for game fish; a motor used for this purpose is usually a secondary means of propulsion, and mounted on the transom alongside the primary outboard motor or on a bracket made for the purpose

Primary source of propulsion for smaller water craft, such as canoes and kayaks, and on lakes where the use of a gasoline-powered engine is prohibited.

## FLOVER 40T,TG



### PURPOSES

Trolling for game fish  
a secondary means of propulsion

### PERFORMANCE

Thrust	40 pound
Voltage	12V
Amp	36-40A
Shaft Length	850mm
Prop Dia x Pitch in inch	9X4
Approx. HP	0.64
Watt	480
Control Handle	Telescopic type
Battery gauge	Optional(TG)

#### FLOVER DIV., CSM TECH CO., LTD

High Sound Quality with remarkable capacity  
Telescopic Handle and Battery gauge  
Great Mobility and Durability  
Ergonomic Design and Stylish Touch  
Two-Year Warranty



## FLOVER 45T,TG



### PURPOSES

Trolling for game fish  
a secondary means of propulsion

### PERFORMANCE

Thrust	45 pound
Voltage	12V
Amp	45~50A
Shaft Length	850mm
Prop Dia x Pitch in inch	11X4
Approx. HP	0.72
Watt	540
Control Handle	Telescopic type
Battery gauge	Optional(TG)

#### FLOVER DIV., CSM TECH CO., LTD

Trolling for game fish; a motor used for this purpose is usually a secondary means of propulsion, and mounted on the transom alongside the primary outboard motor or on a bracket made for the purpose

Primary source of propulsion for smaller water craft, such as canoes and kayaks, and on lakes where the use of a gasoline-powered engine is prohibited.

## FLOVER 50T,TG



### PURPOSES

Trolling for game fish  
a secondary means of propulsion

### PERFORMANCE

Thrust	50 pound
Voltage	12V
Amp	45~50A
Shaft Length	850mm
Prop Dia x Pitch in inch	11X4
Approx. HP	0.80
Watt	600
Control Handle	Telescopic type
Battery gauge	Optional(TG)

#### FLOVER DIV., CSM TECH CO., LTD

High Sound Quality with remarkable capacity  
Telescopic Handle and Battery gauge  
Great Mobility and Durability  
Ergonomic Design and Stylish Touch  
Two-Year Warranty





## FLOVER 55T,TG



### PURPOSES

Trolling for game fish  
a secondary means of propulsion

### PERFORMANCE

Thrust	50 pound
Voltage	12V
Amp	45~50A
Shaft Length	850mm
Prop Dia x Pitch in inch	11X4
Approx. HP	0.80
Watt	600
Control Handle	Telescopic type
Battery gauge	Optional(TG)

#### FLOVER DIV., CSM TECH CO., LTD

Trolling for game fish; a motor used for this purpose is usually a secondary means of propulsion, and mounted on the transom alongside the primary outboard motor or on a bracket made for the purpose

Primary source of propulsion for smaller water craft, such as canoes and kayaks, and on lakes where the use of a gasoline-powered engine is prohibited.

## FLOVER 45TGS



### PURPOSES

Trolling for game fish  
a secondary means of propulsion

### PERFORMANCE

Thrust	45 pound
Voltage	12V
Amp	41~45A
Shaft Length	1000mm
Prop Dia x Pitch in inch	11X4
Approx. HP	0.72
Watt	540
Control Handle	Telescopic type
Battery gauge	Optional(TG)

#### FLOVER DIV., CSM TECH CO., LTD

High Sound Quality with remarkable capacity  
Telescopic Handle and Battery gauge  
Great Mobility and Durability  
Ergonomic Design and Stylish Touch  
Two-Year Warranty



# FLOVER 55TGS



## PURPOSES

Trolling for game fish  
a secondary means of propulsion

## PERFORMANCE

<b>Thrust</b>	55 pound
<b>Voltage</b>	12V
<b>Amp</b>	50~55A
<b>Shaft Length</b>	1000mm
<b>Prop Dia x Pitch in inch</b>	11X4
<b>Approx. HP</b>	0.88
<b>Watt</b>	660
<b>Control Handle</b>	Telescopic type
<b>Battery gauge</b>	Optional(TG)

**FLOVER DIV., CSM TECH CO., LTD**

Trolling for game fish; a motor used for this purpose is usually a secondary means of propulsion, and mounted on the transom alongside the primary outboard motor or on a bracket made for the purpose

Primary source of propulsion for smaller water craft, such as canoes and kayaks, and on lakes where the use of a gasoline-powered engine is prohibited.

Model	Step	Amp Draw	Consumption	Using hour
F33	5	30	75%	2:30
	4	20	75%	3:45
	3	14	75%	5:21
	2	10	75%	7:30
	1	8	75%	9:22
F35	5	34	75%	2:12
	4	25	75%	3:00
	3	20	75%	3:45
	2	16	75%	4:41
	1	11	75%	6:49
F40	5	40	75%	1:52
	4	27	75%	2:46
	3	20	75%	3:45
	2	14	75%	5:21
	1	10	75%	7:30
F45	5	42	75%	1:47
	4	28	75%	2:40
	3	22	75%	3:24
	2	16	75%	4:41
	1	12	75%	6:15
F50	5	42	75%	1:47
	4	28	75%	2:40
	3	22	75%	3:24
	2	18	75%	4:10
	1	14	75%	5:21
F55	5	50	75%	1:30
	4	30	75%	2:30
	3	24	75%	3:07
	2	18	75%	4:10
	1	14	75%	5:21



## PARTS LIST I – Understructure Parts

SECTION	CODE	INCLUSION	INCLUSION	APPLICATION
Understructure Ass'y	F200	ARMATURE Ass'y	1xARMATURE Ass'y, 1xBearing 608ZD, 1xE-Ring	F33R~F33TG
	F201	ARMATURE Ass'y	1xARMATURE Ass'y, 1xBearing 608ZD, 1xE-Ring	F35T~F35TG
	F202	ARMATURE Ass'y	1xARMATURE Ass'y, 1xBearing 608ZD, 1xE-Ring	F40T~F40TGS
	F203	ARMATURE Ass'y	1xARMATURE Ass'y, 1xBearing 608ZD, 1xE-Ring	F45T~F45TGS
	F204	ARMATURE Ass'y	1xARMATURE Ass'y, 1xBearing 608ZD, 1xE-Ring	F50T~F50TGS
	F205	ARMATURE Ass'y	1xARMATURE Ass'y, 1xBearing 608ZD, 1xE-Ring	F55T~F55TGS
	F210	Brush Plate Ass'y	1xBrush Plate,2xCarbon Brush Ass'y,2xBrush Spring	F33R~F35TG
	F211	Brush Plate Ass'y	1xBrush Plate,2xCarbon Brush Ass'y,2xBrush Spring	F40T~F55TGS
	F220	Carbon Brush Ass'y	2xCarbon Brush Ass'y	F33R~F35TG
	F221	Carbon Brush Ass'y	2xCarbon Brush Ass'y	F40T~F55TGS
	F230	Rear endbell Ass'y	1xRear endbell Ass'y, 1xBrush Plate Ass'y	F33R~F35TG
	F231	Rear endbell Ass'y	1xRear endbell Ass'y, 1xBrush Plate Ass'y	F40T~F55TG
	F232	Rear endbell Ass'y	1xRear endbell Ass'y, 1xBrush Plate Ass'y	F40TGS~F55TGS
	F240	Yoke Ass'y	1xYoke Ass'y	F33R~F35TG
	F241	Yoke Ass'y	1xYoke Ass'y	F40T~F40TG
	F242	Yoke Ass'y	1xYoke Ass'y	F45T~F55TG
	F243	Yoke Ass'y	1xYoke Ass'y	F40TGS
	F244	Yoke Ass'y	1xYoke Ass'y	F45TGS~F55TGS
	F250	Frontendbell Ass'y	1 x Front end bell, 1 x Retainer,Guide 1 x bushing	F33R~F35TG
	4251	Frontendbell Ass'y	1 x Front end bell, 1 x Retainer,Guide 1 x bushing	F40T~F55TG
	F252	Frontendbell Ass'y	1 x Front end bell, 1 x Retainer,Guide 1 x bushing	F40TGS~F55TGS
	F260	Propeller Kit	1x Nut, 1x Washer, 1x Pin	F33R~55TG
	F261	Propeller Anode Kit	1x Anode, 1x Washer, 1x Pin	F40TGS~F55TGS
	F270	Propeller Anode Kit	2x Retainer, 1x Guide	F33R~F55TGS
	F271	O-Ring Kit	1xO-Ring ( A ) 1xO-Ring ( B ) 2xO-Ring( E )	F33R~35TG
	F272	O-Ring Kit	1xO-Ring ( C ), 1xO-Ring ( D ), 2xO-Ring( E )	F40~55TGS
	Understructure Parts	F300	Bearing 608ZD	1xBearing 608ZD
F301		E-Ring	1xE-Ring	F33R~F55TGS
F302		Steel Washer	1xSteel Washer	F33R~F55TGS
F303		Poly Washer	1xPoly Washer	F33R~F55TGS
F304		Brush Plate	1xBrush Plate	F33R~F35TG
F305		Brush Plate	1xBrush Plate	F40T~F55TGS
F306		Brush Spring	2xBrush Spring	F33R~F35TG
F307		Brush Spring	2xBrush Spring	F40T~F55TGS
F308		Bolt	2xBolt	F33R~F55TGS
F309		Lead Wire(B)	1xLead Wire(B)	F33R~F35TG
F310		Lead Wire(R)	1xLead Wire(R)	F33R~F35TG
F311		Lead Wire(B)	1xLead Wire(B)	F40T~F55TG
F312		Lead Wire(R)	1xLead Wire(R)	F40T~F55TG
F313		Lead Wire(B)	1xLead Wire(B)	F40TGS~F55TGS
F314		Lead Wire(R)	1xLead Wire(R)	F40TGS~F55TGS
F315		Frontendbell	1xFrontendbell	F33R~F55TG
F316		Frontendbell	1xFrontendbell	F40T~F55TG
F317		Frontendbell	1xFrontendbell	F40TGS~F55TGS
F318		Oilseal Retainer	2xOilseal Retainer	F33R~F55TGS
F319		Retainer Guide	1xRetainer Guide	F33R~F55TGS
F320		Oilless Flange Bush	1xOilless Flange Bush	F33R~F55TGS
F321		O-Ring(A)	1xO-Ring(A)	F33R~F35TG
F322		O-Ring(B)	1xO-Ring(B)	F33R~F35TG
F323		O-Ring(c)	1xO-Ring(c)	F40T~F55TG
F324		O-Ring(d)	1xO-Ring(d)	F40T~F55TG
F325		O-Ring(e)	2xO-Ring(e)	F33R~F55TGS
F326		Lock Bolt	2xLock Bolt - 140 mm	F33R~F35TG
F327		Lock Bolt	2xLock Bolt -161 mm	F40T~F40TGS
F328		Lock Bolt	2xLock Bolt - 190 mm	F45T~F55TGS
F329		Propeller Low	1xPropeller Low	F33R~F40TGS
F330		Propeller High	1xPropeller High	F45T~F55TGS
F331		Propeller Pin	1xPropeller PIN	F33R~F55TGS
F332		Propeller Nut	1xPropeller Nut	F33R~F55TGS
F333		Propeller Anode	1xPropeller Anode	F40TGS~F55TGS
F334	Steel Washer	1xSteel Washer	F33R~F55TGS	

## PARTS LIST II – Upperstructure Parts

SECTION	CODE	INCLUSION	INCLUSION	APPLICATION
Upperstructure Parts	F400	AL Shaft	1xAL Shaft	F33R~F35TG
	F401	<b>AL Shaft</b>	1xAL Shaft	F40T~F55TG
	F402	AL Shaft	1xAL Shaft	F40TGS~F55TGS
	F403	Bracket Ass'y	1xBracket Ass'y	F33R~F55TG
	F404	Bracket Ass'y	1xBracket Ass'y	F40TGS~F55TGS
	F405	Up Cover	1xUp Cover	F33F~F55TG
	F406	Down Cover	1xDown Cover	F33F~F55TG
	F407	Up Cover	1xUp Cover	F40TGS~F55TGS
	F408	Down Cover	1xDown Cover	F40TGS~F55TGS
	F409	Coller Depth	1xColler Depth	F33F~F55TG
	F410	Coller Depth	1xColler Depth	F40TGS~F55TGS
	F411	Control Switch	1xControl Switch	F33F~F55TGS
	F412	Battery Cable	1xBattery Cable	F33F~F35TG
	F413	Battery Cable	1xBattery Cable	F40T~F55TGS
	F414	Gauge PCB	1xGauge PCB	F33TG~35TG, 40TG~F55TGS
	F415	Sticker Large	1xSticker Large	F33T~F33TG
	F416	Sticker Large	1xSticker Large	F35T~F35TG
	F417	Sticker Large	1xSticker Large	F40T~F40TGS
	F418	Sticker Large	1xSticker Large	F45T~F45TGS
	F419	Sticker Large	1xSticker Large	F50T~F50TGS
	F420	Sticker Large	1xSticker Large	F55T~F55TGS
	F421	Sticker Small Plain	1xSticker Small Plain	F33F,33T,35T,40T~55T
	F422	Sticker Small Gauge	1xSticker Small Gauge	F33TG~35TG,40TG~F55TGS
	F423	HANDLE Ass'y	1xHANDLE Ass'y	F33F
	F424	HANDLE Ass'y	1xHANDLE Ass'y	F33F~F55TGS
	F425	Bolt 6*45	1xBolt 6*45	F33F~F55TGS
	F426	Nut M6	1xNut M6	F33F~F55TGS
	F427	Piece / 4*16	6xPiece / 4*16	F33F~F55TGS