

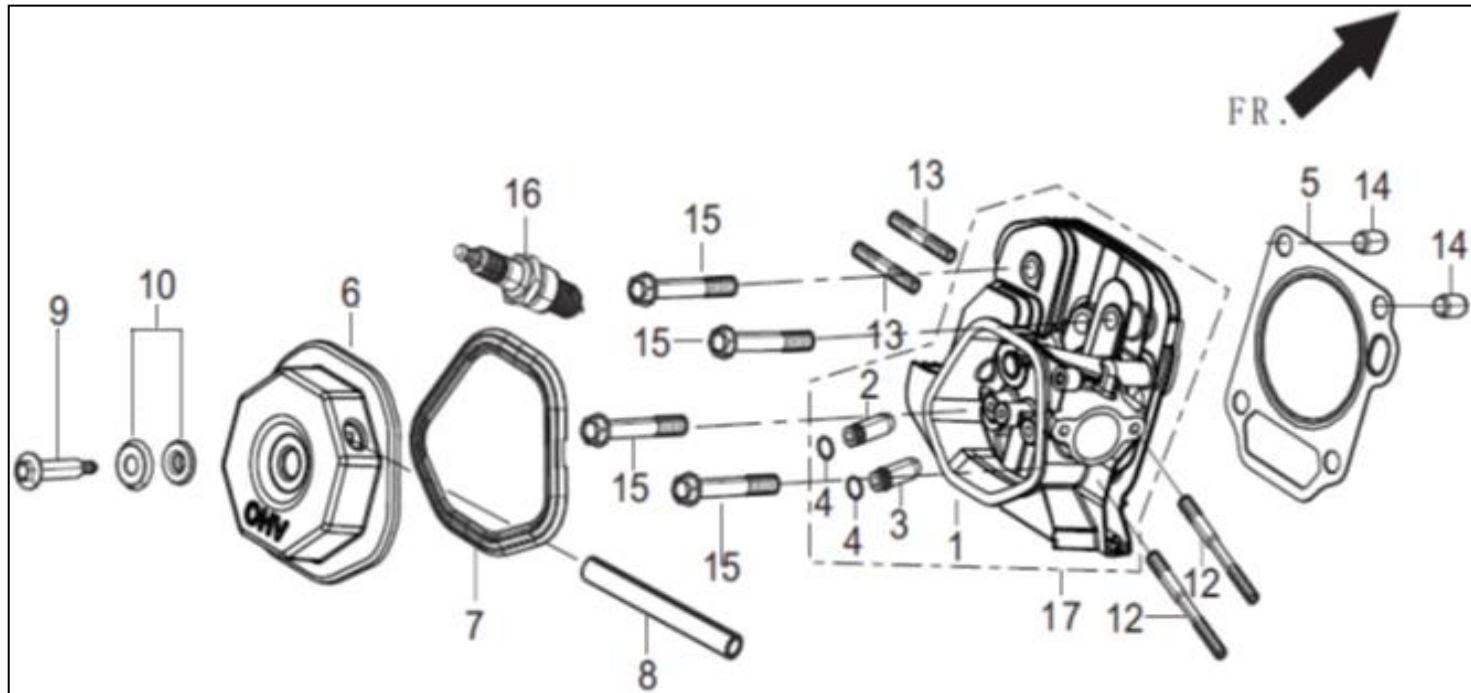
1-0216 Engine 420cc Electric Start

For parts Call 888-279-9274

VENDOR:	RATO
MODEL:	R-420
DATE:	07/02/13
DRAWN BY:	A COATES

DATE:	DESCRIPTION:	BY:
8/15/13	CORRECTED MITM # 45-0420 TO 45-0422 FIG. 5 PART NUMBER 5-01	ALC
6/4/20	UPDATED THE VENDOR'S PART # FOR MUFFLER ASSEMBLY	JVA
4/27/22	ADDED NEW AIR CLEANER PARTS	JJR
10/6/22	ADDED WASHER TO AIR FILTER & ADDED NEW CARB. ASSEMBLY	JJR
1/13/23	REPLACE 80-0149 WITH 45-0435 GASKET, THEY ARE THE SAME	JJR
5/30/23	UPDATED VENDOR PART NUMBERS 45-0562 & 45-0563	JJR
7/17/23	UPDATED PART # OF FLYWHEEL SUB ASSY FROM 45-0438 TO 45-0595	JJR
12/1/23	REPLACE 45--0436 & 45-0325 NUT WITH 45-1114 LOCK NUT ON MUFFLER STUD	JJR
5/9/24	ADDED HIGH ALTITUDE KITS AND A KEY FOR THE STARTER	JJR
10/1/24	REMOVED STUD 45-0323 FROM MUFFLER ASSEMBLY & REMOVED IT FROM MUFFLER ASS'Y KIT	JJR
3/4/25	REPLACE 45-0900 BUTTERLFY NUT WITH 45-1158 SIX AN KNOB ON AIR CLEANER	JJR
3/4/25	REPLACE 45-0893 AIR FILTER ASSEMBLY WITH 45-1157	JJR
7/1/25	UPDATED CRANKCASE ASSY PICTURE AND PART NUMBERS	JJR

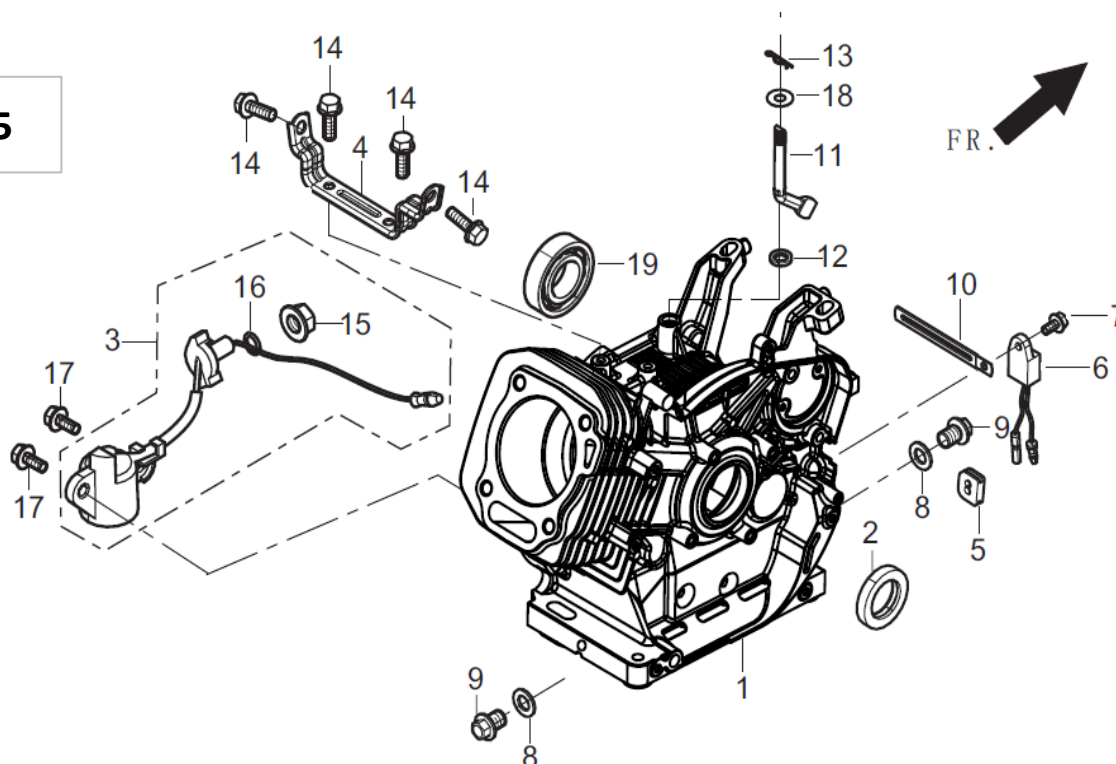
FIG.1 CYLINDER HEAD SUBASSEMBLY



Ref #	Description	Qty	MiTM	RATO
1-05	GASKET CYLINDER HEAD	1	45-0415	12131-Z190310-0000
1-06	CYLINDER HEAD COVER SUBASSY	1	45-0252	12410-Z580110-0000
1-07	GASKET-CYLINDER HEAD COVER	1	45-0240	12004-Z580110-0000
1-08	TUBE-BREATHER	1	45-0297	17004-Z100110-0000
1-09	CYLINDER HEAD COVER BOLT	1	45-0562	12032-Z080111-01A0
1-10	CYLINDER HEAD COVER BOLT SEAL SET	1	45-0563	12034-Z080110-0099
1-12	STUD-CARBURETOR	2	45-0322	90204-Z100210-0000
1-13	STUD	2	45-0323	90204-Z100320-0000
1-14	PIN-CYLINDER HEAD	2	45-0330	90502-1220-00
1-15	BOLT- CYLINDER HEAD	4	45-0239	12003-Z080110-0000
1-16	SPARK PLUG	1	45-0310	30010-Z010210-0000
1-17	CYLINDER HEAD SUBASSY	1	45-0416	12140-Z190220-0B99

FIG.2 CRANKCASE/GOVERNOR GEAR ASSEMBLY (BEFORE 6/1/25)

BEFORE 6/1/25



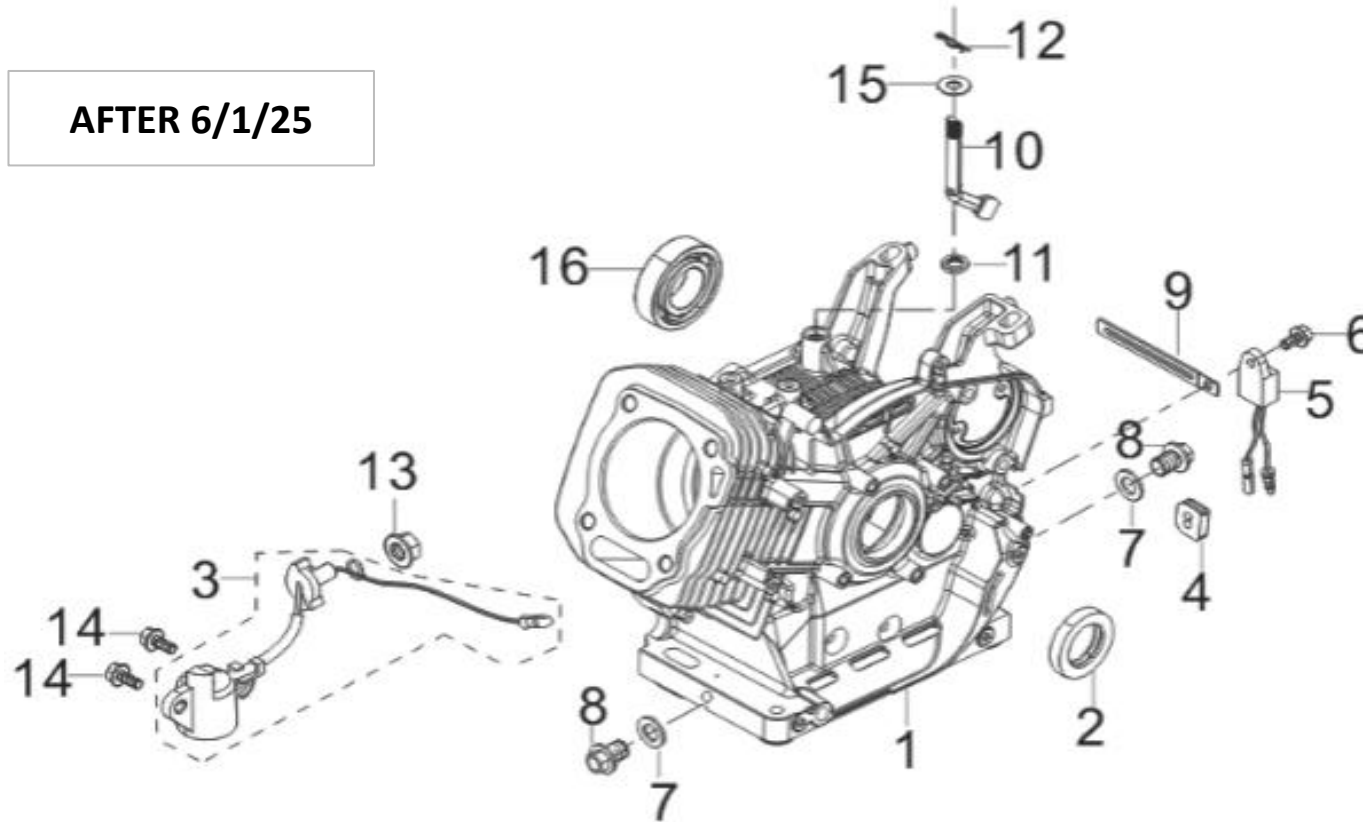
Ref #	Description	Qty	MiTM	RATO
2-01	CRANKCASE SUBASSY	1	45-0417	11310-Z220110-0B00
2-02	SEAL-OIL	1	45-0385	90682-Z100110-0000
2-03	SENSOR-ENGINE OIL	1	45-0314	37060-Z080110-0000
2-04	BRACKET-CRANKCASE REAR	1	45-0286	16612-Z080110-H300
2-05	PLUG-DRAIN	1	45-0306	28101-Z080110-0000
2-06	PROTECTOR-OIL	1	45-0313	37050-Z010210-0000
2-07	BOLT-OIL PROTECTOR	1	45-0315	90001-0612-01
2-08	WASHER-DRAIN PLUG	2	45-0326	90412-Z080110-0000
2-09	BOLT-DRAIN PLUG	2	45-0236	11007-Z080110-0000

FIG.2 CRANKCASE/GOVERNOR GEAR ASSEMBLY CONTINUED

Ref #	Description	Qty	MiTM	RATO
2-10	CLIP	1	45-0335	90684-Z030120-0000
2-11	GOVERNOR ARM	1	45-0278	16061-Z100110-0000
2-12	SEAL-OIL	1	45-0334	90682-Z100210-0000
2-13	PIN	1	45-0328	90501-Z010110-0000
2-14	BOLT-CRANKCASE BRACKET REAR	4	45-0320	90001-0820-01
2-17	BOLT	2	45-0316	90001-0616-01
2-18	WASHER-GOVERNOR ARM	1	45-0327	90412-Z080210-0000
2-19	BALL BEARING	1	45-0331	90548-0202-00

FIG.2 CRANKCASE/GOVERNOR GEAR ASSEMBLY (AFTER 6/1/25)

AFTER 6/1/25

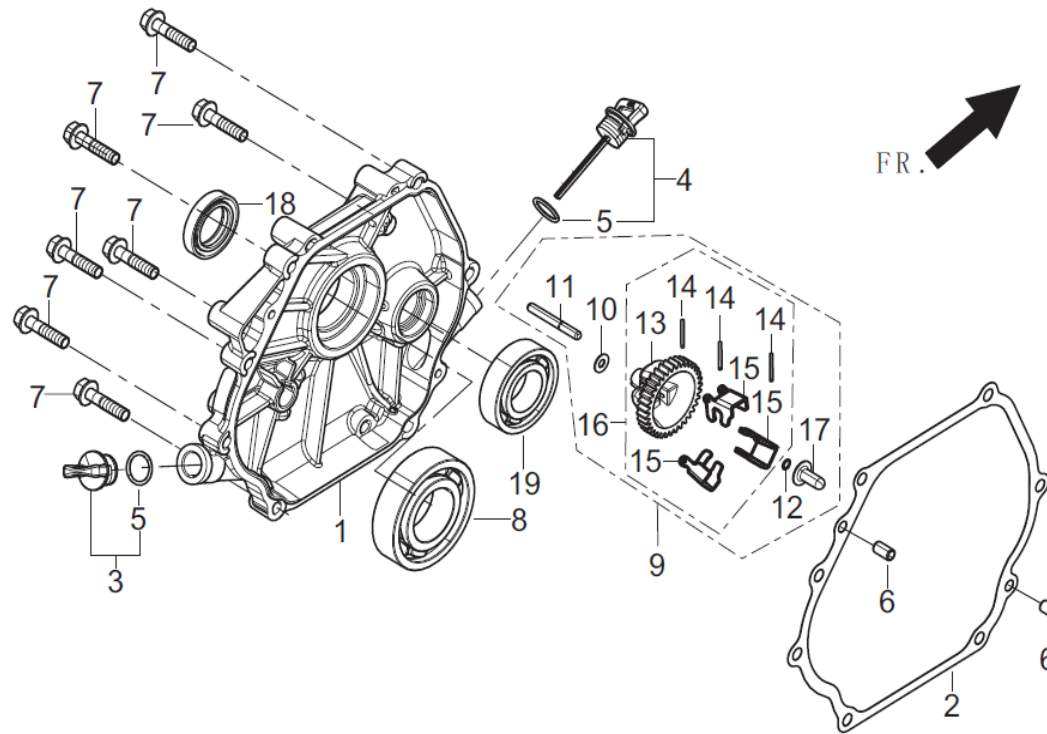


Ref #	Description	Qty	MiTM	RATO
2-01	CRANKCASE SUBASSY	1	45-0417	11310-Z220110-0B00
2-02	SEAL-OIL	1	45-0385	90682-Z100110-0000
2-03	SENSOR-ENGINE OIL	1	45-0314	37060-Z080110-0000
2-04	PLUG-DRAIN	1	45-0306	28101-Z080110-0000
2-05	PROTECTOR-OIL	1	45-0313	37050-Z010210-0000
2-06	BOLT-OIL PROTECTOR	1	80-0405	90001-0612-01
2-07	WASHER-DRAIN PLUG	2	45-0326	90412-Z080110-0000
2-08	BOLT-DRAIN PLUG	2	45-0236	11007-Z080110-0000
2-09	CLIP	1	45-0335	90684-Z030120-0000

FIG.2 CRANKCASE/GOVERNOR GEAR ASSEMBLY CONTINUED

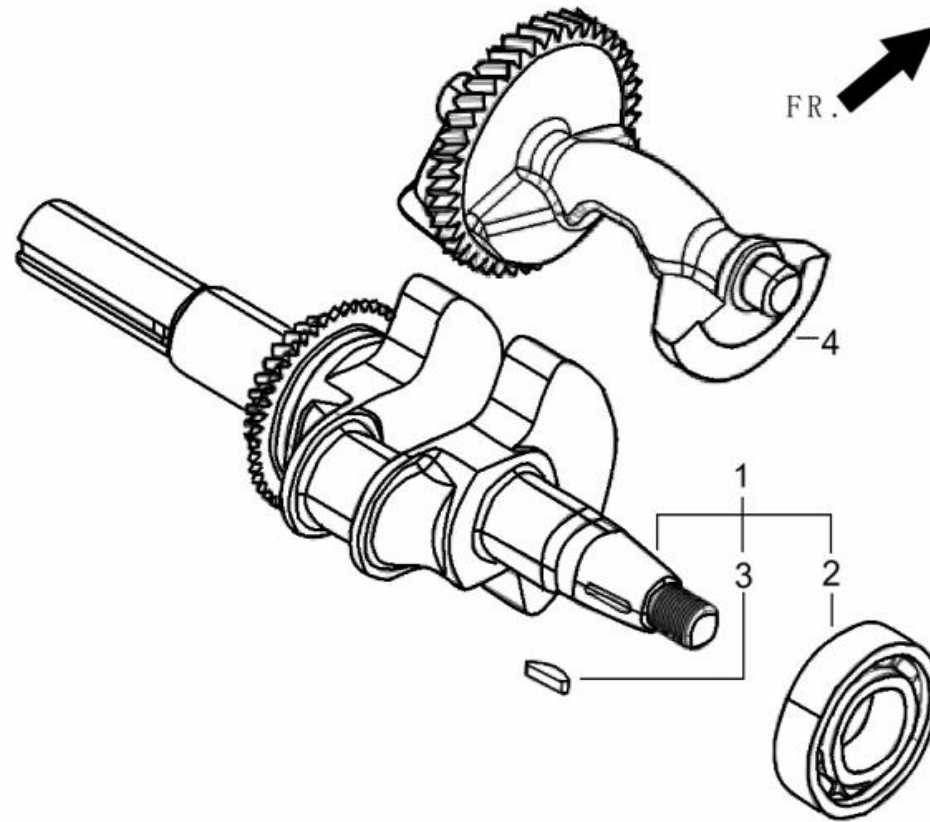
Ref #	Description	Qty	MiTM	RATO
2-10	GOVERNOR ARM	1	45-0278	16061-Z100110-0000
2-11	SEAL-OIL	1	45-0334	90682-Z100210-0000
2-12	COTTER PIN	1	45-0328	90501-Z010110-0000
2-13	FLANGE HEXAGON NUT	1	45-0789	90305-Z010210-01A0
2-14	BOLT	2	45-0316	90001-0616-01
2-15	WASHER-GOVERNOR ARM	1	45-0327	90412-Z080210-0000
2-16	BALL BEARING	1	45-0331	90548-0202-00

FIG.3 CRANKCASE COVER SUBASSEMBLY/GOVERNOR GEAR ASSEMBLY



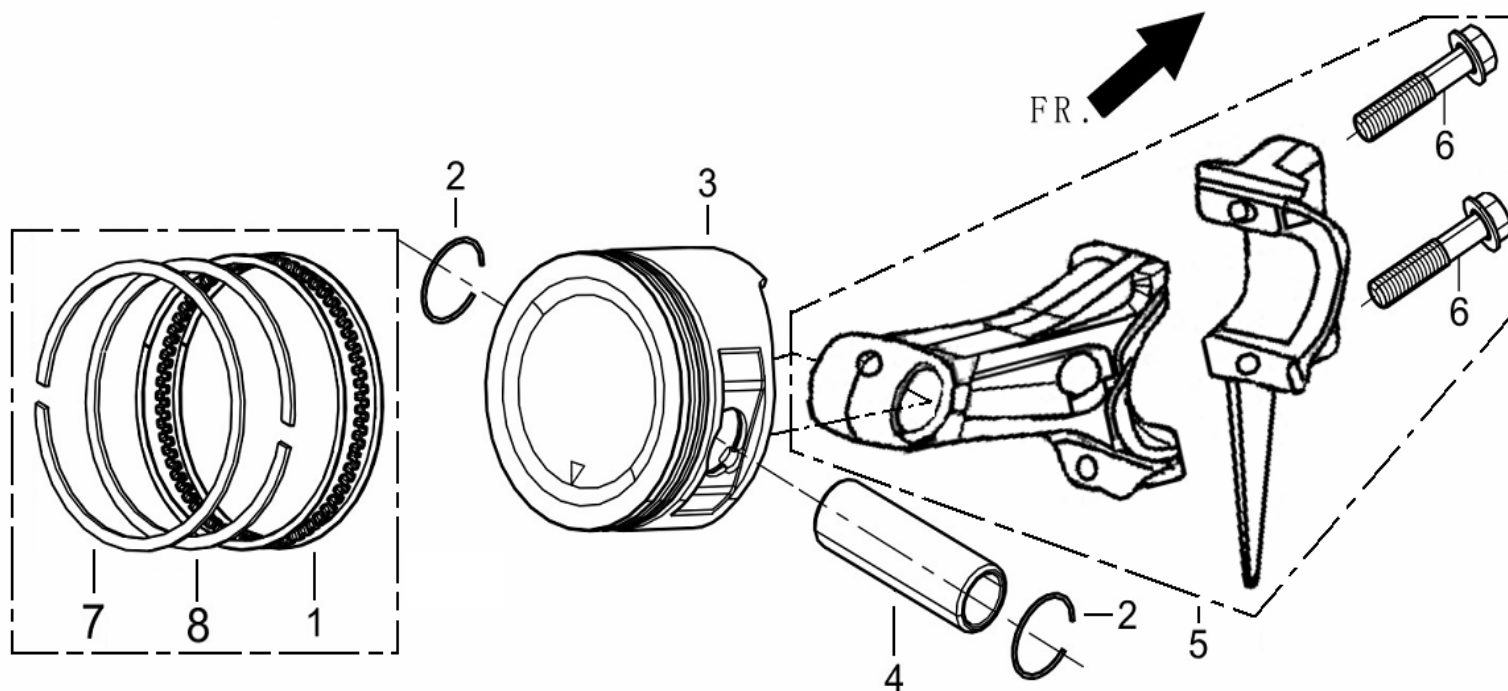
Ref #	Description	Qty	MiTM	RATO
3-01	CRANKCASE COVER	1	45-0418	11411-Z100510-0B00
3-02	GASKET-CRANKCASE	1	45-0419	11001-Z100210-0000
3-03	OIL PLUG SUBASSY	1	45-0273	15030-Z080120-Q500
3-04	DIPSTICK SUBASSY-OIL	1	45-0272	15010-Z080120-Q500
3-06	PIN	2	45-0329	90502-0912-00
3-07	BOLT-CRANKCASE	7	45-0321	90001-0840-01
3-08	BEARING-CRANKSHAFT	1	45-0420	90547-0207-00
3-09	GOVERNOR GEAR ASSY	1	45-0284	16400-Z100110-0000
3-18	OIL SEAL	1	45-0385	90682-Z100110-0000
3-19	BEARING-GOV ARM	1	45-0331	90548-0202-00

FIG.4 CRANKSHAFT CONNECTING ROD



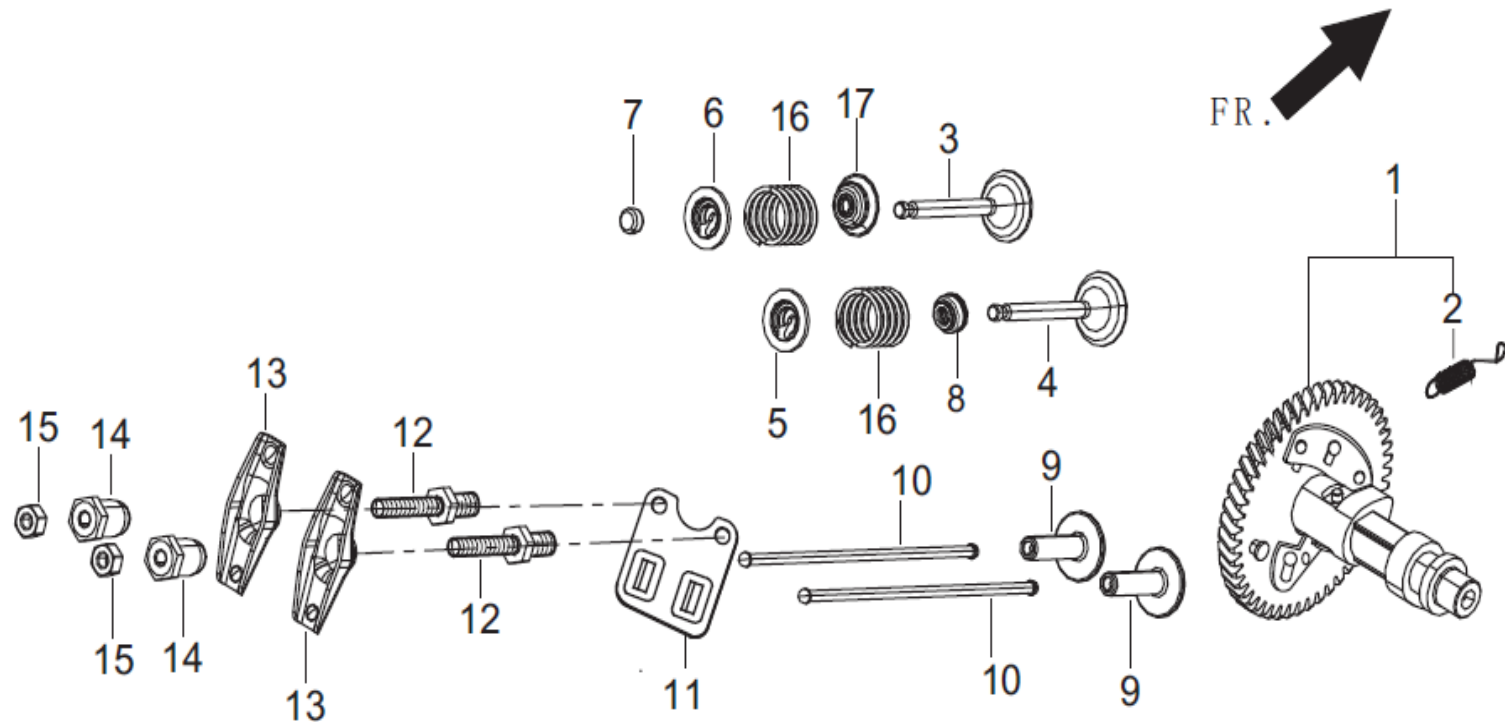
Ref #	Description	Qty	MiTM	RATO
4-01	CRANKSHAFT ASSY	1	45-0421	13300-Z190620-RB00
4-04	BALANCING SHAFT ASSY	1	45-0261	13400-Z190110-0000

FIG.5 PISTON SUBASSEMBLY



Ref #	Description	Qty	MiTM	RATO
5-01	RING SET-OIL	1	45-0422	13210-Z190210-0099
5-02	CLIP-PISTON PIN	2	45-0256	13122-Z100110-0000
5-03	PISTON	1	45-0423	13111-Z190310-0099
5-04	PIN-PISTON	1	45-0255	13121-Z100110-0000
5-05	ROD-CONNECTING	1	45-0253	13010-Z190110-0000
5-07	RING-THE FIRST	1	45-0424	13201-Z190210-0099
5-08	RING-THE SECOND	1	45-0425	13202-Z190210-0099

FIG.6 TRAIN VALVE / CAMSHAFT SUBASSEMBLY

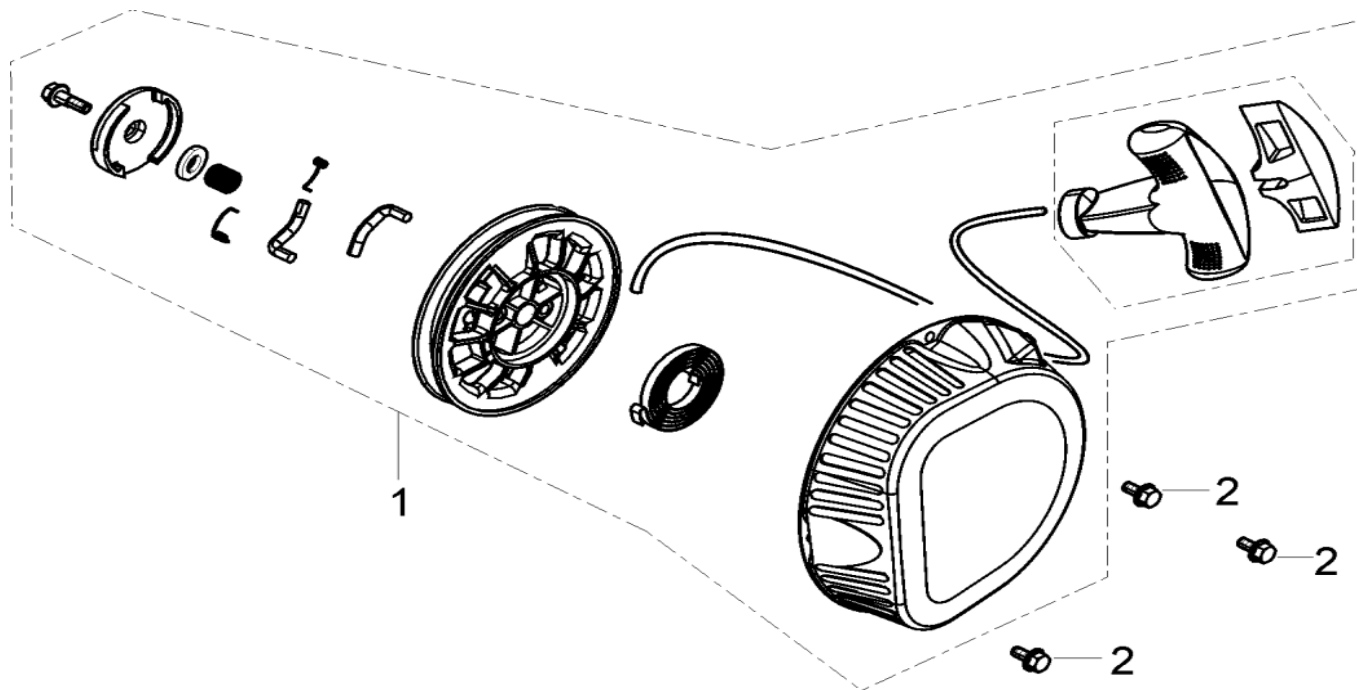


Ref #	Description	Qty	MiTM	RATO
6-01	CAMSHAFT ASSY	1	45-0426	14200-Z190310-0099
6-03	VALVE-EXHAUST	1	45-0427	12121-Z190110-0099
6-04	VALVE-INTAKE	1	45-0428	12111-Z100110-0099
6-05	SEAT-VALVE SPRING	1	45-0248	12112-Z080110-0000
6-06	EXHAUST VALVE-RETAINER	1	45-0246	12107-Z080110-0000
6-07	VALVE-ROTATOR	1	45-0244	12104-Z080110-0000
6-08	GUIDE-SEAL	1	45-0242	12101-Z080110-0000
6-09	VALVE-TAPPET	2	45-0429	14081-Z080110-0000
6-10	VALVE LIFTER SUBASSY	2	45-0430	14070-Z100110-0000

FIG.6 TRAIN VALVE / CAMSHAFT SUBASSEMBLY CONTINUED

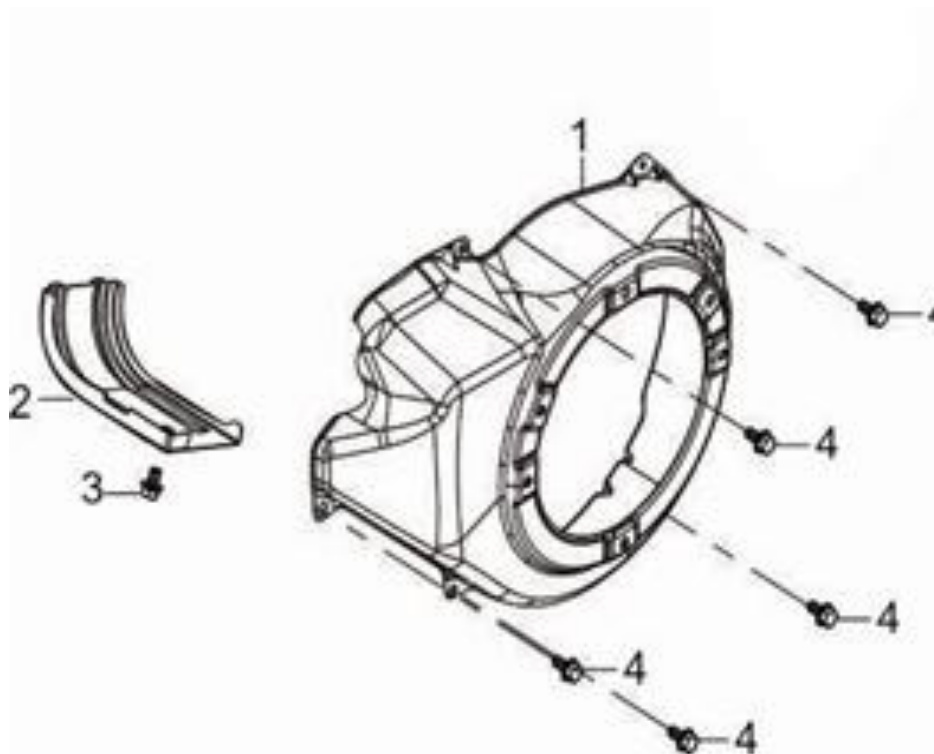
Ref #	Description	Qty	MiTM	RATO
6-11	LIFTER STOPPER PLATE SUBASSY	1	45-0266	14090-Z080110-0000
6-12	BOLT-VALVE ADJUSTING	2	45-0270	14313-Z010110-0000
6-13	VALVE-ROCKER	2	45-0268	14311-Z080110-0000
6-14	NUT-VALVE ADJUSTING	2	45-0271	14314-Z010110-0000
6-15	NUT-VALVE LOCK	2	45-0269	14312-Z010110-0000
6-16	VALVE-SPRING	2	45-0243	12103-Z080110-0000
6-17	RETAINER-VALVE SRPING	1	45-0245	12105-Z080110-0000

FIG.7 RECOIL STARTER



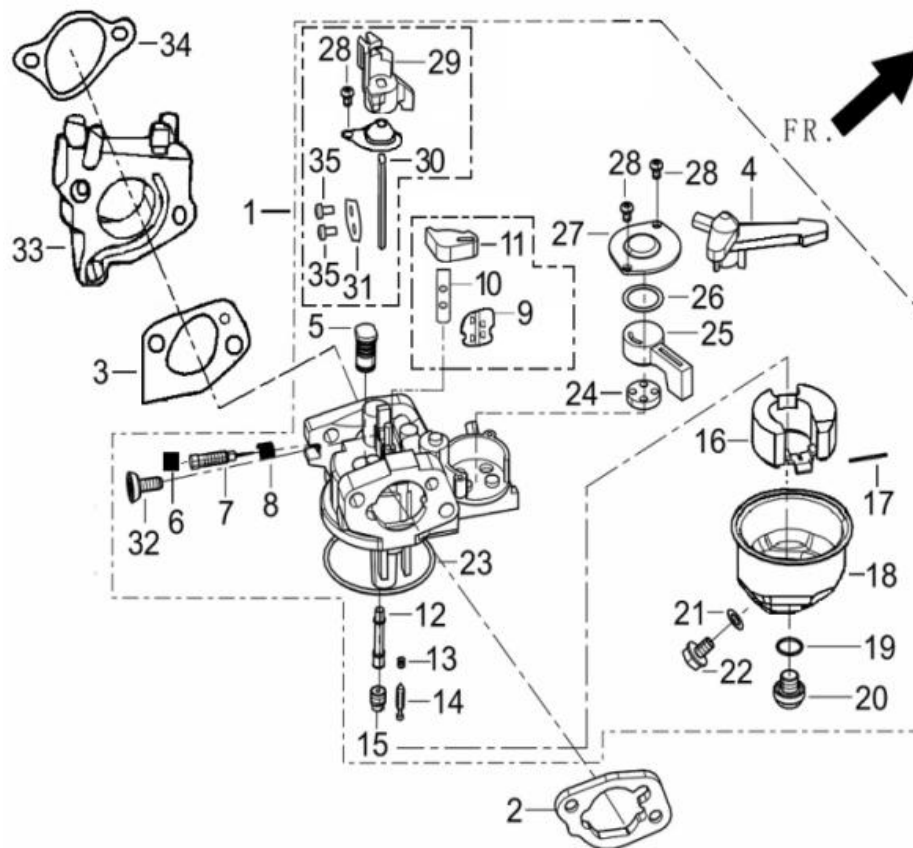
Ref #	Description	Qty	MiTM	RATO
7-01	RECOIL STARTER ASSY	1	45-0579	28200-Z100220-Q200
7-02	BOLT-RECOIL STARTER	3	45-0315	90001-0612-01

FIG.8 SHROUDS



Ref #	Description	Qty	MiTM	RATO
8-01	SHROUD-IMPELLER	1	45-0308	28110-Z100310-H600
8-02	SHROUD-CYLINDER BODY	1	45-0431	19304-Z100210-0000
8-03	BOLT	1	45-0315	90001-0612-01
8-04	BOLT	5	45-0315	90001-0612-01
8-05	ENGINE SWITCH/STOP	41	45-0312	35540-Z060120-QG00

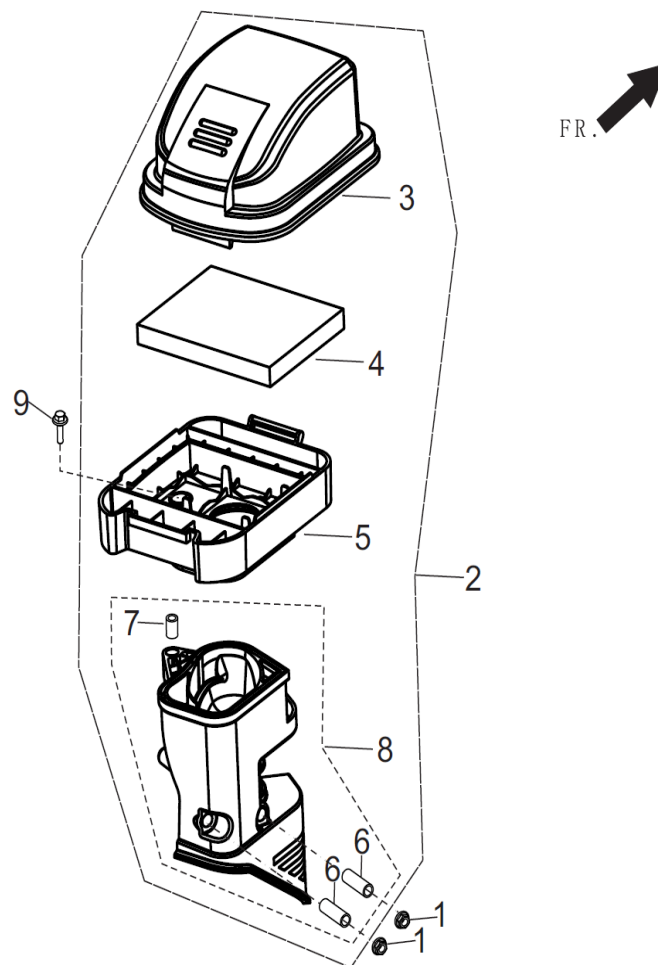
FIG.9 CARBURETOR ASSEMBLY



Ref #	Description	Qty	MiTM	RATO
9-01	CARBURETOR ASSY. (BEFORE SERIAL NUMBER: A2108004200)	1	45-0432	16100-Z190910-0099
9-01	CARBURETOR ASSY. (AFTER SERIAL NUMBER: A2108004200)	1	45-0894	16100-Z190810-00M0
9-02	GASKET-AIR CLEANER	2	45-0295	17001-Z080210-0000
9-03	GASKET-CARBURETOR	1	45-0275	16001-Z100110-0000
9-33	PLATE-CARBURETOR INSULATOR	1	45-0276	16003-Z100110-0000
9-34	GASKET-CARBURETOR INSULATOR	1	45-0296	17002-Z100110-0000
-	ALTITUDE KIT 3000-6000 (ft)	1	70-0711	93140-Z191410-0000
-	ALTITUDE KIT 6000-8000 (ft)	1	70-0719	93141-Z191410-0000

FIG.10 AIR CLEANER (BEFORE SERIAL NUMBER A2108004200)

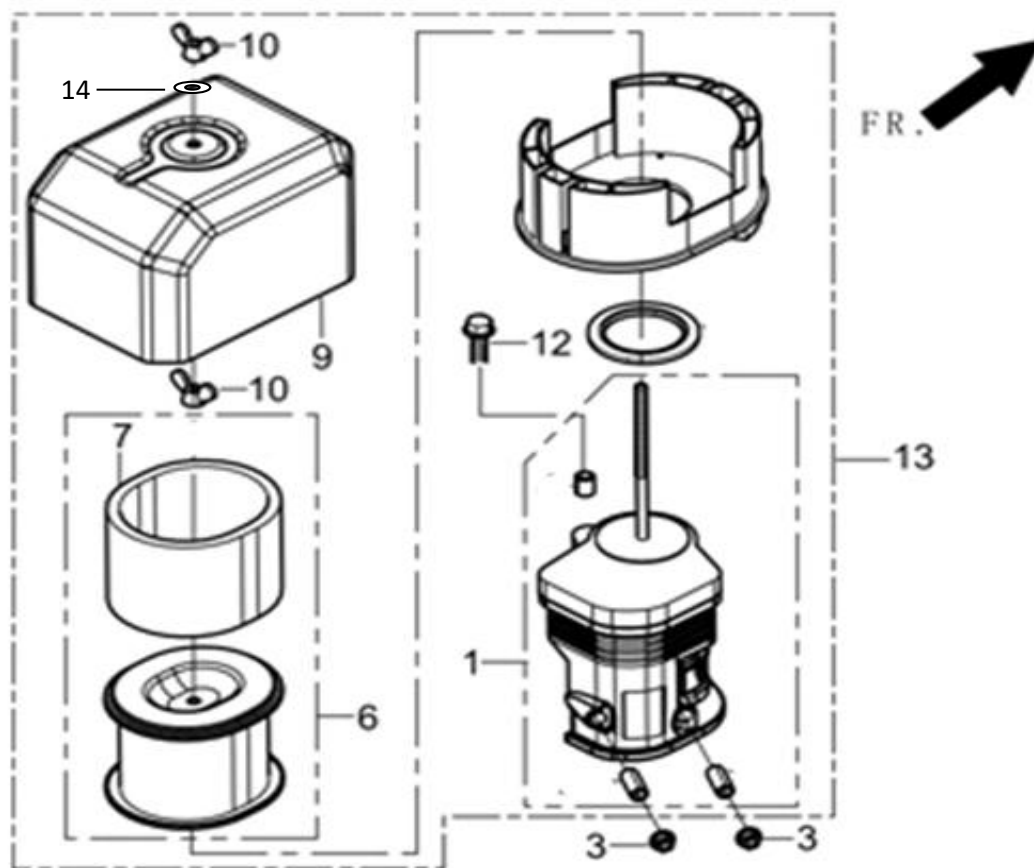
**BEFORE SERIAL NUMBER:
A2108004200**



Ref #	Description	Qty	MiTM	RATO
10-01	NUT	2	45-0324	90305-0600-31
10-02	AIR CLEANER	1	45-0433	17100-Z570120-0000
10-04	AIR CLEANER-PAD	1	45-0388	17151-Z570110-0000
10-09	BOLT	1	45-0319	90001-0630-01

FIG.10 AIR CLEANER (AFTER SERIAL NUMBER A2108004200)

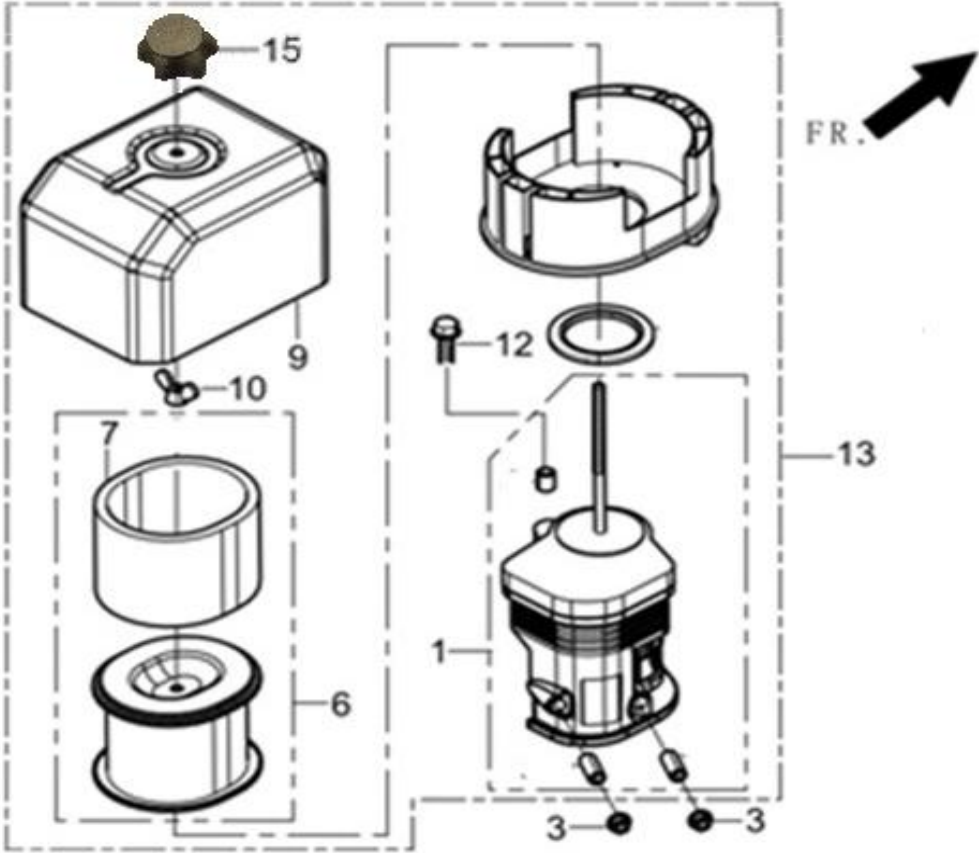
**AFTER SERIAL NUMBER:
A2108004200**



Ref #	Description	Qty	MiTM	RATO
10-03	HEXAGON NUT WITH FLANGE	2	80-0469	90305-0600-31A0
10-06	AIR CLEANER ELEMENT ASSEMBLY	1	45-0895	17150-Z100110-0000
10-09	COVER, AIR CLEANER CASE	1	45-0899	17104-Z100120-0000
10-10	BUTTERFLY NUT - STAMPED	2	45-0900	90312-0600-00
10-12	BOLT	1	45-0896	90007-0620-A1A0
10-13	AIR CLEANER	1	45-0893	17100-Z100110-0000
10-14	SEALING WASHER - 1/4" NEOPRENE	1	28-1072	N/A

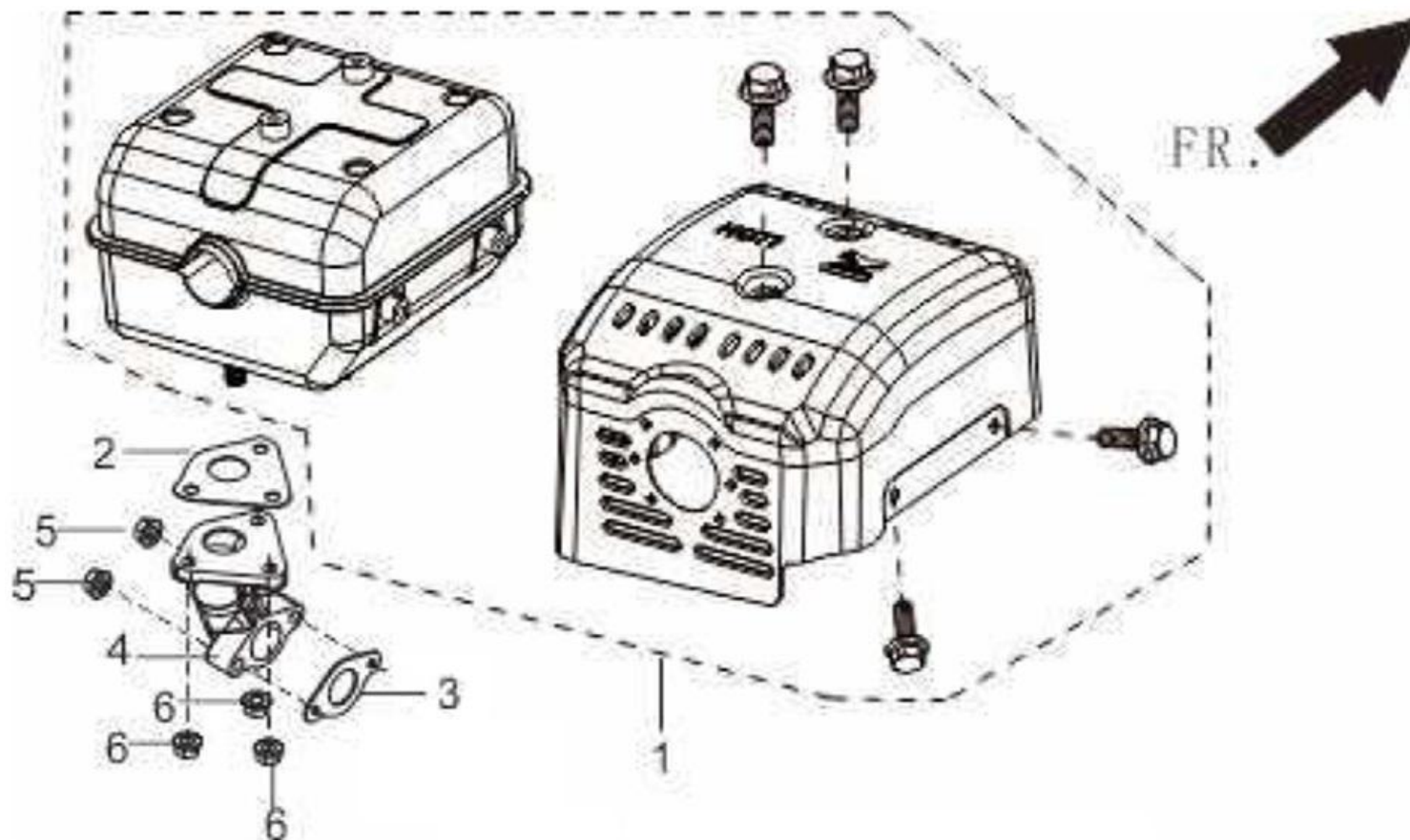
FIG.10 AIR CLEANER (AFTER SERIAL NUMBER ????????)

AFTER 4/14/25



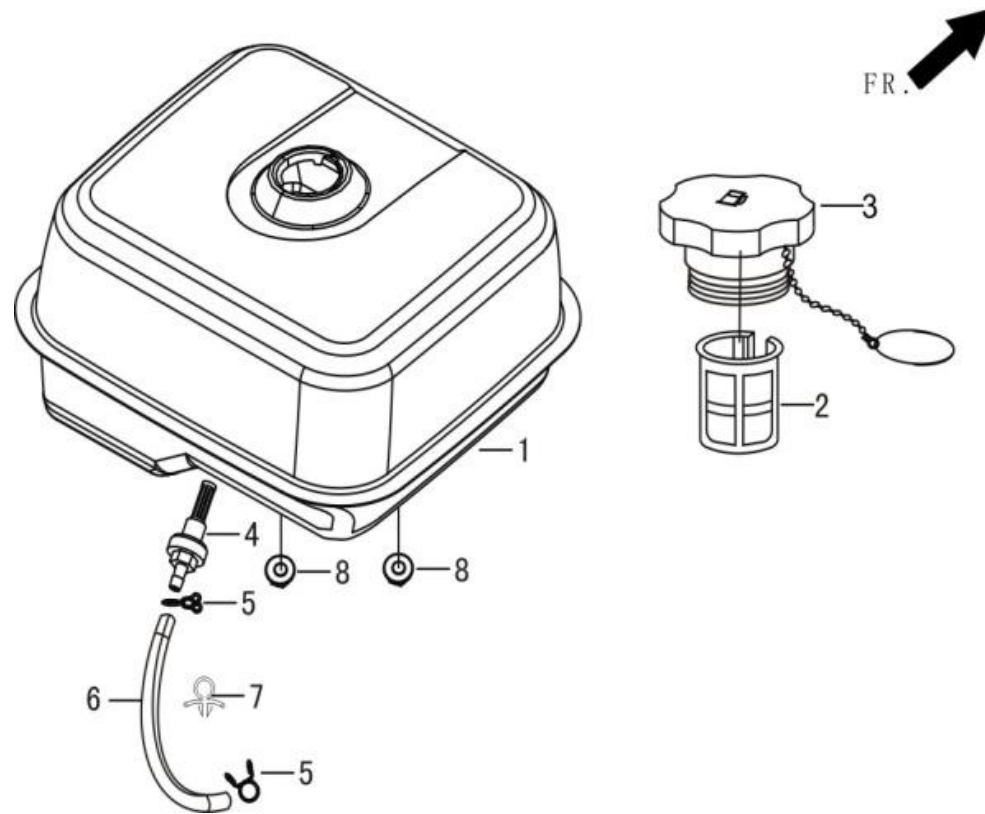
Ref #	Description	Qty	MiTM	RATO
10-03	HEXAGON NUT WITH FLANGE	2	80-0469	90305-0600-31A0
10-06	AIR FILTER	1	45-0895	17150-Z100110-0000
10-09	AIR FILTER COVER - 420CC	1	45-0899	17104-Z100120-0000
10-10	BUTTERFLY NUT - STAMPED	1	45-0900	90312-0600-00
10-12	BOLT	1	45-0896	90007-0620-A1A0
10-13	AIR FILTER ASSEMBLY	1	45-1157	17100-Z102910-0000
10-14	SEALING WASHER - 1/4" NEOPRENE	1	28-1072	N/A
10-15	SIX ARM KNOB, M6	1	45-1158	17198-Z0D0110

FIG.11 MUFFLER ASSEMBLY



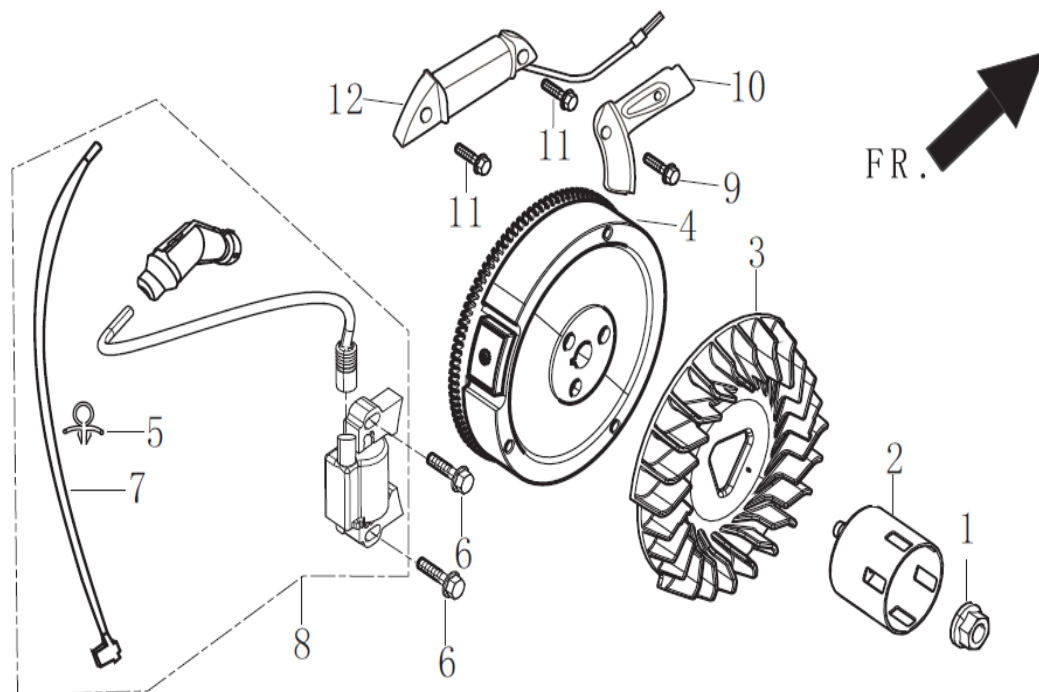
Ref #	Description	Qty	MiTM	RATO
-	MUFFLER ASSY-420CC (INC. #1-6)	1	45-0883	-
11-01	MUFFLER ASSY-420CC	1	45-0434	18100-Z100510-0000
11-02	GASKET-MUFFLER	1	45-0371	18101-Z080110-0000
11-03	GASKET-EXHAUST OUTLET	1	45-0435	18001-Z190110-00A0
11-04	EXHAUST-OUTLET	1	45-0439	18150-Z080210-QA00
11-05	LOCKNUT	2	45-1114	90332-Z1F0110-00A0
11-06	LOCKNUT	3	45-1114	90332-Z1F0110-00A0

FIG.12 FUEL TANK ASSEMBLY



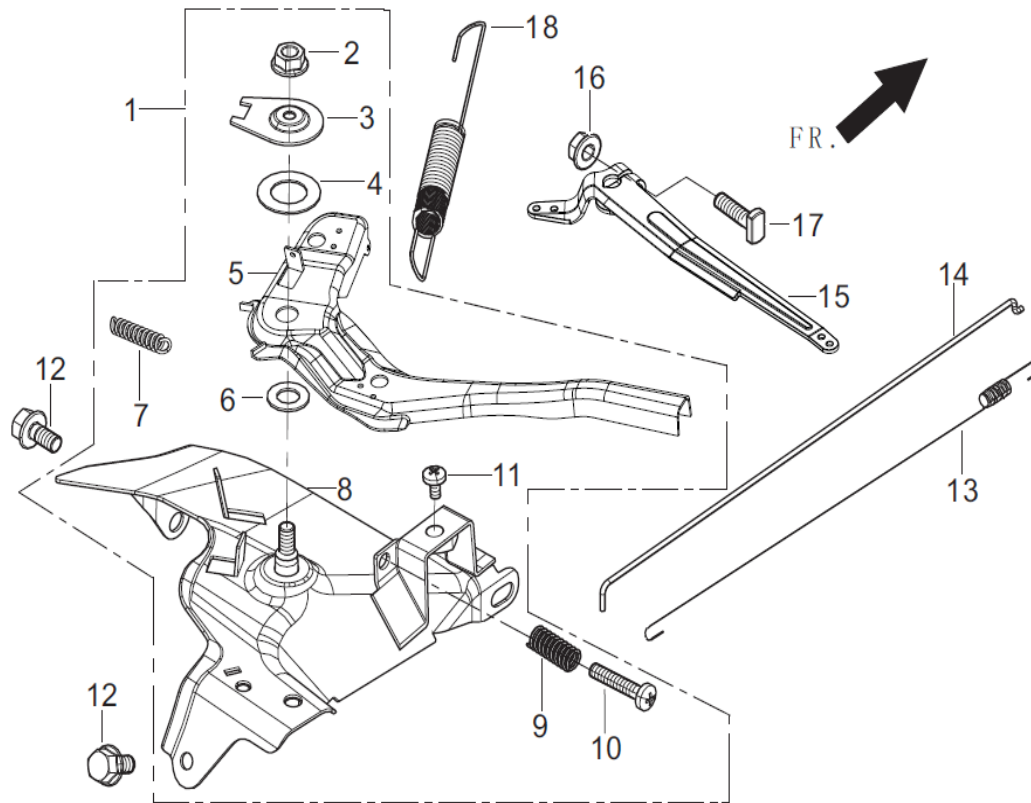
Ref #	Description	Qty	MiTM	RATO
12-01	FUEL TANK 420CC	1	45-0413	16620-Z310410-H600
12-02	STRAINER-FUEL	1	45-0411	16652-Z010710-0000
12-03	CAP-FUEL TANK	1	45-0412	16730-Z310110-0000
12-04	FUEL TANK- OIL SUBASSY	1	45-0289	16680-Z010110-0000
12-05	CLAMP	2	45-0337	90685-Z020110-0000
12-06	HOSE-FUEL SUPPLY	1	45-0339	90686-Z520110-0000
12-07	CLIP	1	45-0336	90684-Z080110-0000
12-08	NUT-FUEL TANK	2	45-0436	90305-0800-31

FIG.13 FLYWHEEL / IMPELLER / STARTER PULLEY / IGNITION COIL



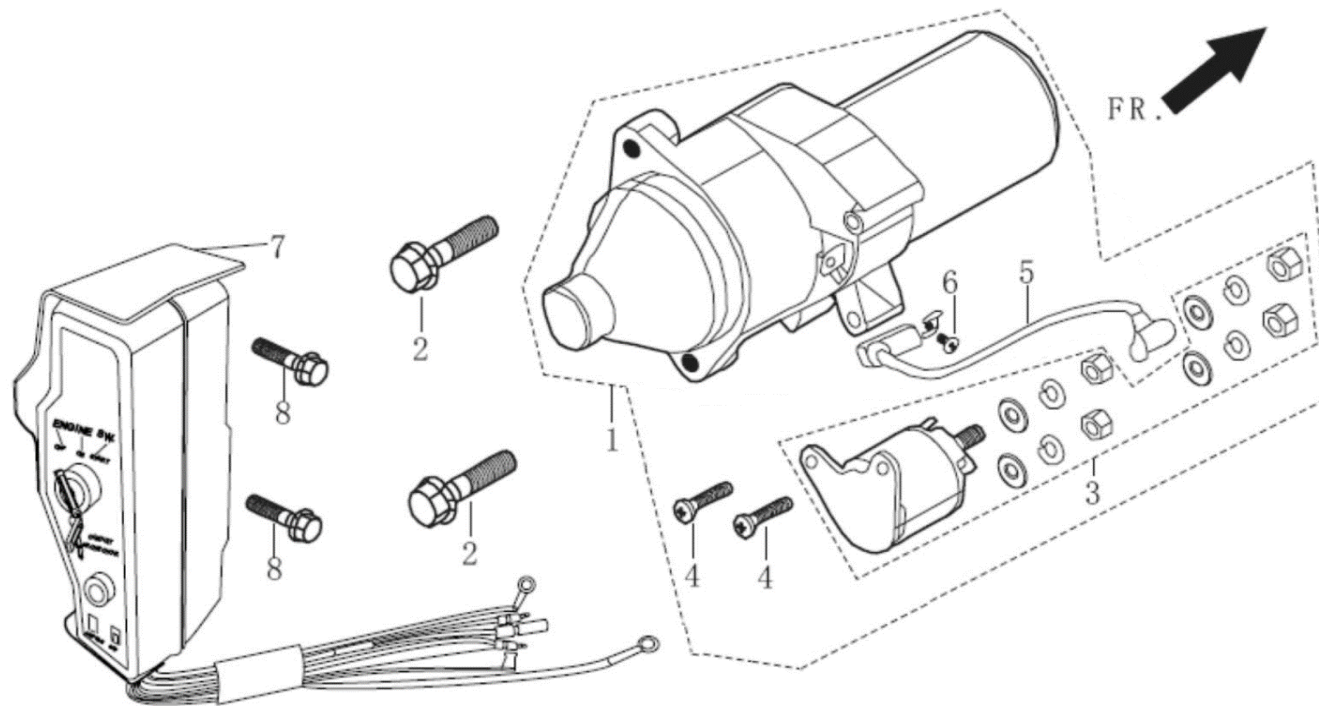
Ref #	Description	Qty	MiTM	RATO
13-01	NUT-FLYWHEEL	1	45-0262	13501-Z080110-0000
13-02	PULLEY-STARTER	1	45-0305	28002-Z100210-0000
13-03	IMPELLER	1	45-0437	19352-Z100210-0000
13-04	FLYWHEEL SUBASSY	1	45-0595	13510-Z170120-0000
13-05	COIL-IGNITION	1	45-0311	30400-Z190110-0000
13-06	BOLT	2	45-0596	90001-0632-01
13-08	IGNITION COIL SUBASSY	1	45-0311	30400-Z190110-0000
13-09	BOLT-COIL CLAMP	1	45-0318	90001-0628-01
13-10	CLAMP-CHARGE COIL	1	45-0440	30001-Z170110-0000
13-11	BOLT-CHARGE COIL	2	45-0318	90001-0628-01
13-12	CHARGE COIL SUBASSY	1	45-0441	30140-Z160130-0000

FIG.14 THROTTLE CONTROL ASSEMBLY



Ref #	Description	Qty	MiTM	RATO
14-01	THROTTLE CONTROL ASSY	1	45-0285	16520-Z100310-0000
14-12	BOLT	2	45-0315	90001-0612-01
14-13	SPRING-THROTTLE VALVE RETURN	1	45-0277	16012-Z080110-0000
14-14	ROD-GOVERNEOR	1	45-0279	16062-Z100110-0000
14-15	GOVERNOR SUPPORT SUBASSY	1	45-0281	16070-Z100110-0000
14-16	NUT	1	45-0324	90305-0600-31
14-17	BOLT-GOVERNOR SUPPORT	1	45-0282	16072-Z010110-0000
14-18	SPRING-GOVERNOR	1	45-0280	16063-Z100110-0000

FIG.15 MOTOR STARTER ASSEMBLY



Ref #	Description	Qty	MiTM	RATO
15-01	MOTOR STARTING ASSY	1	45-1111	09100-Z170510-0000
15-02	BOLT-MOTOR STARTER	2	45-0389	90001-0835-01
15-03	STARING RELAY	1	45-0443	30500-Z160110-0000
15-04	BOLT-STARTING RELAY	2	45-0445	90001-0516-01
15-07	CONTROL SWITCH	1	45-0444	35000-Z160120-H300
15-08	BOLT-CONTROL SWITCH	2	45-0315	90001-0612-01
-	ENGINE STARTING KEY	2	45-1149	35302-Z160110-0000