

IMCO SCX SERIES INFORMATION, OPERATION & MAINTAINANCE

Warning!

1. SCX & SCX4 Drives will not fit on a standard gimbal helmet, IMCO HELMET: #05-8025 Black or #05-8027 Silver or #05-8028 ITS Black is required.

Warning!

2. Maximum engine idle speed is 800 RPM. Shift drive with a positive move, do not let clutch sit between neutral and in gear position.

Warning!

3. Do Not install propeller until the drive shift linkage has been properly installed and tested with the engine running!

Danger!

4. When using SCX or SCX4 drives it is necessary to have full hydraulic steering for your safety.

Warning!

5. When tuning engine remove propeller and shift drive into forward gear!

6. Do not run your boat with a worn or loose gimble ring or helmet, worn clevis pins, or clevis bushings.

7. Every hull is different and requires a different setup: Many different things contribute to performance: water pickup location, cavitation plates, gear ratio, drive height, prop, weight distribution, water conditions, weather conditions.

8. If you are installing the drive on a new application, consult the manufacture or a dealer with experience with the hull to determine the proper drive height.

9. SCX Drive is 19 7/8" from crankshaft center line to prop shaft center line (2" shorter than standard Bravo). SCX4 Drive is 17 7/8" from crankshaft center line to propshaft center line (4" shorter than standard Bravo).

10. The bolt pattern is different from the SCX to the SCX4, lowers cannot be interchanged.

Warning!

11. Max propeller diameter on the SCX is 16 3/4", SCX4 is 17" (always check that there is at least 1/2" clearance between the propeller blades and the drive case.

12. Large diameter propellers installed on a #6 prop shaft will require a torque tab on single engine boats.

13. SCX and SCX4 drives require a drive oil reservoir with a minimum capacity of 1 1/2 quarts.

14. When installing drive to gimbal or lower to upper always use anti-seize on all threads

15. When installing lower to upper, inspect all "O" rings, replace as necessary, pressure check to insure proper seal.

16. If you do your own maintenance and repairs on your IMCO drive, you will need a service manual and the proper tools. Service manuals and tools are available at www.imcomarine.com/cal_store.

Before Running!

17. Always wear proper safety equipment when operating your boat, testing or running at high speeds.

18. Inspect for: oil level in drive and reservoir, leaks, loose fasteners, worn parts.

Recommended oil: Torco RTF GL-6 (Torco Part #A220015CE (unit) Part # S220015C (case) IMCO Part # 09-2600 (unit) Part # 09-2605 (5 Gal.) Part # 09-2610 (case) (100% Synthetic Racing Transmission Fluid) Replaces SAE 75W90.

To drain oil: remove drain screws from bearing carrier (right below the prop shaft) and on port side of upper.

To replace oil: pump oil in from lower drain screw until it comes out of upper drain screw hole. Replace drain screws and add oil to drive oil reservoir.

When changing oil, run the used oil through a strainer to check for metal particles, if there are metal particles in the oil it is time for inspection of the gears and bearings. If oil appears milky or off colored check for leaks.

SCX, SCX4 capacity: 5 qts + reservoir - SCX Upper with SC Lower 4 1/2 qts + reservoir.

SCX Upper & SCX Lower	New Break in 20 hours	After Break In 80 hours
SCX4 Upper & SCX4 Lower	New Break in 20 hours	After Break In 80 hours
SCX Upper & SC Lower	New Break in 20 hours	Check Drain Plug Magnet Every 20 Hours

Warning!

19. Drive must be turning before shifting.

Warning!

20. Do not run engine when drive is trimmed extremely high, or in trailer tow mode.

Caution!

21. Do not use solvents or chemical cleaners to clean painted surfaces on the drive.

Danger!

22. When installing or changing propeller use extreme caution, propeller blades can be very sharp.

23. SCX upper vertical shaft is 17 tooth spline, SC, Merc lowers are 15 tooth spline. A 17-15 tooth coupler is available 01-2150 (cannot be used with a spacer).

Caution!

24. Use extreme caution if modifying lower, case can be weakened or handling can be adversely affected.

25. Break in: Do not use full throttle until drive is fully warmed up, do not hold drive at wide open throttle for more than 2 minutes for the first 3 hours of use.

26. Inspect anode (located on front of cavitation plate) for corrosion or debris; if necessary clean or replace.

Caution!

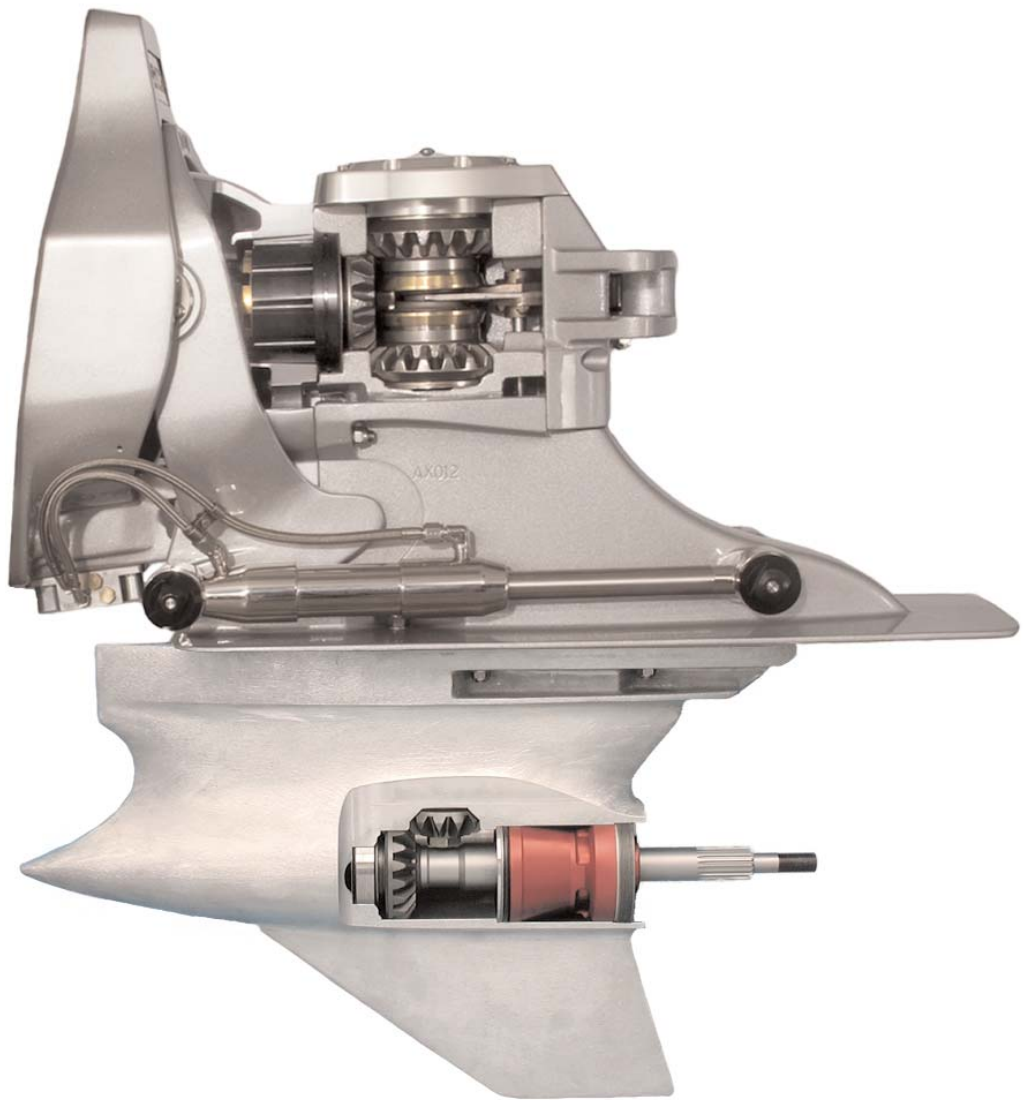
27. Do not shift drive while running on hose with propeller installed.

28. Rotation: shift linkage pushed in - right hand rotation, shift linkage pulled out - left hand rotation.

29. Serial # location: Port side below SCX, SCX4 sticker



XXTREME ADVANTAGE **scX-sc** Parts and Service Manual



IMCO

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Check Oil Before Running

First break in oil change 5-8 hours.
Oil is filled to upper drain screw [Fig 1-33]
Pump oil from bottom drain screw [Fig 6-32]

Recommended oil change intervals 20-30 hours.
Heavy use or high HP change more often.

Serial Number _____

Date of Purchase _____

Purchased From _____

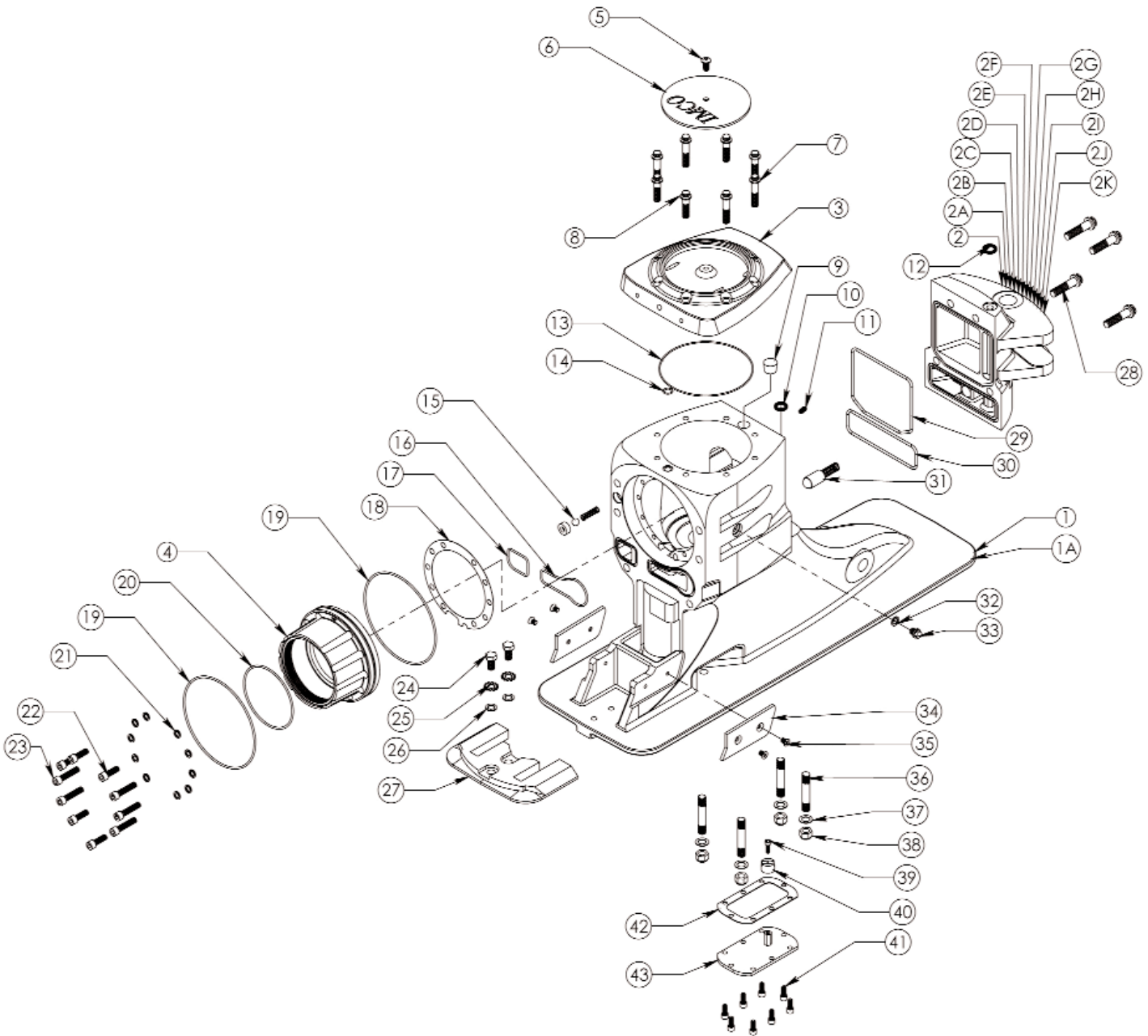
UPPER GEAR CASE-DISASSEMBLY

NOTE; The following instructions assume that the drive has been removed from the transom assembly and is shifted to the “neutral” position. The lower unit has also been removed, along with the yoke coupler end, center socket, and cross and bearings. Steps followed by asterisk (**) are required only if inspection indicates component replacement. Brackets following the part name represent the drawing figure # and item #.

1. Remove upper cap screws [1-7,8], remove upper cap [1-3].
2. Remove steering cap screws [1-28], remove steering cap [1-2]
3. Remove detent kit from steering cap [1-31].
4. Remove cotter key [2-23].
5. Remove shift link [2-24], shift cable retainer [2-21], shift arm [2-22]. (Shift link removes out front of gear case).**
6. Remove shift shaft screws [2-27].
7. Remove shift shaft plug [1-9], shift shaft [2-26], yoke & cam [2-28].
8. Remove pinion hub screws [1-(22,23)].
9. Remove pinion hub assembly [2-(31-45)].
10. Disassemble pinion hub assembly.
11. Remove yoke nut [2-36], and washer [2-37].
12. Remove yoke [2-32].
13. Remove retainer nut [2-31].
14. Remove Yoke gear end shims [2-42], pinion shoulder washer [2-43], and pinion seal carrier [2-45].
15. Remove bearings [2-(38,41)], bearing cups [2-(39,40)], and pinion gear [2-12].
Note; be sure to maintain correct assembly position of the upper & lower thrust bearings & races.
16. Remove upper thrust race [2-6], and upper thrust bearing [2-7].
17. Remove gear assembly [2-(7-17)].
18. Disassemble gear assembly, press down on upper clutch gear to release the clutch shaft retainer keepers and remove all components from the clutch shaft.
19. Remove lower thrust race [2-6], lower thrust bearing [2-7].
20. Remove oil tank cover [1-43], inspect magnet [1-40].

Upper Case Hardware & Seals

Fig-1



Item	Description	Qty	Part Number
1	Upper Case Black	1	01-1550
1A	Upper Case Silver	1	01-1557
2	Steering Cap CA Black	1	01-1551
2A	Steering Cap NV Black	1	01-1552
2B	Steering Cap Generic Black	1	01-1553
2C	Steering Cap ITS Black	1	01-1554
2D	Steering Cap Tie Bar Starboard Black	1	01-1555
2E	Steering Cap Tie Bar Port Black	1	01-1556

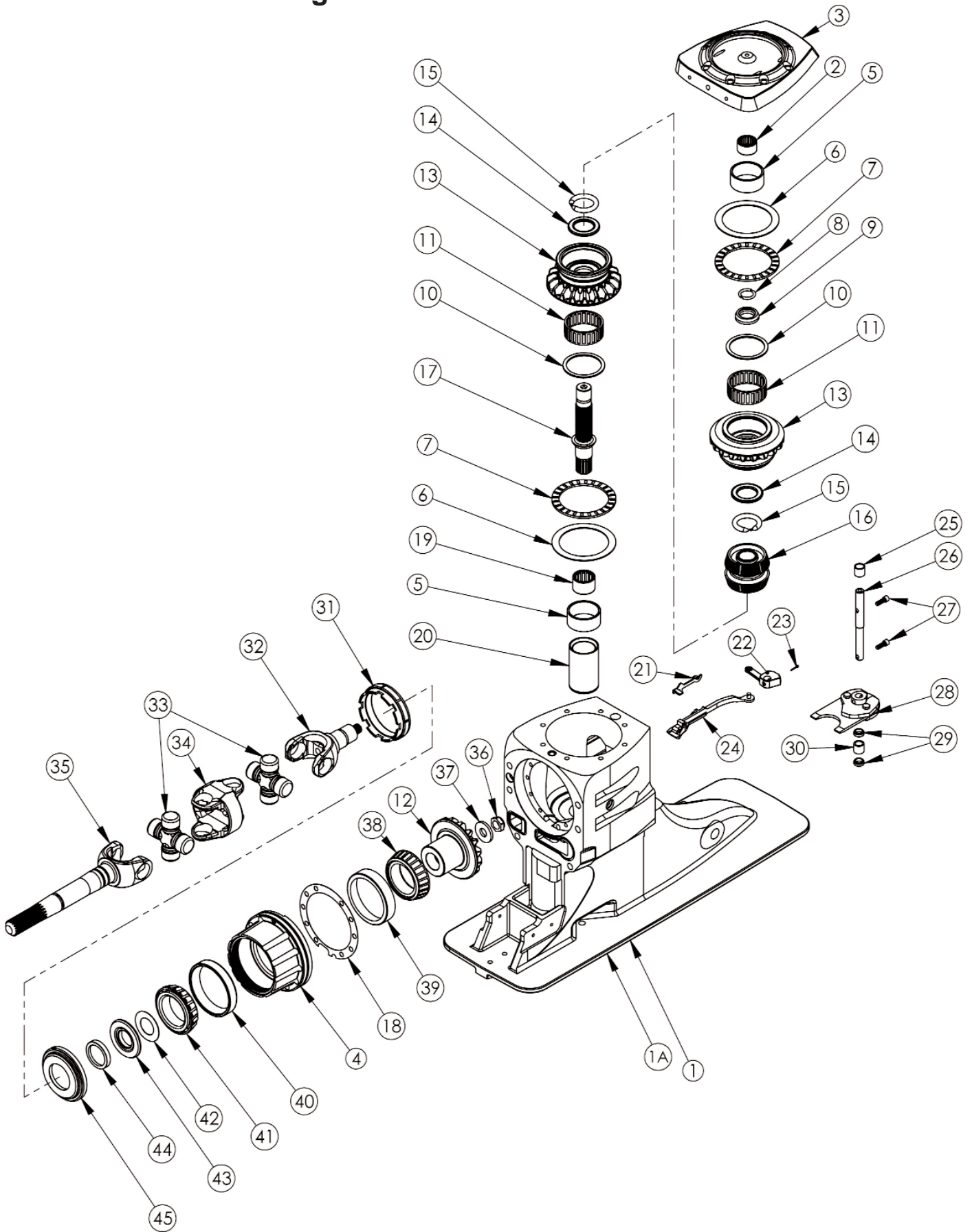
Upper Case Hardware & Seals

Fig-1

Item	Description	Qty	Part Number
2F	Steering Cap CA Silver	1	01-1558
2G	Steering Cap NV Silver	1	01-1559
2H	Steering Cap Generic Silver	1	01-1560
2I	Steering Cap ITS Silver	1	01-1561
2J	Steering Cap Tie Bar Starboard Silver	1	01-1562
2K	Steering Cap Tie Bar Port Silver	1	01-1563
3	Upper Cap	1	01-2555
4	Pinion Hub	1	01-2560
5	Screw (5/16-18 x 1/2" Button Head)	1	08-040705041
6	Top Cap Lid	1	01-2071
7	Screw (3/8-16 x 1 3/4" S/S 12 Point)	4	08-070806111
8	Screw (3/8-16 x 1 1/2" S/S 12 Point)	4	08-070806101
9	Shift Shaft Plug	1	11-1024
10	Quad Ring (Cooling Water, Bottom)	1	11-4024
11	Screw (5/16-18 x 1/2" Allen Set)(Tower Retainer)	1	08-050705041
12	Quad Ring (Cooling Water, Top)	1	11-4025
13	"O" Ring (Top Cap)	1	11-2049
14	"O" Ring (Top Cap Oil Pressure)	1	11-2013
15	Spring Kit (Seal,Ball & Spring)	Kit	01-2045
16	"O" Ring (Water Passage-Upper to Gimbal)	1	11-2148
17	"O" Ring (Shift Linkage)	1	11-2129
18	Pinion Hub Shims	Kit	01-2548
19	"O" Ring (Pinion Hub)	2	11-2161
20	"O" Ring (Pinion Retainer Nut)	1	11-2154
21	Pinion Hub (5/16" Copper Sealing Washers)	10	08-120700004
22	Screw (5/16-18 x 1" Socket Cap)	4	08-060705082
23	Screw (5/16-18 x 1 1/2" Socket Cap)	6	08-060705102
24	Screw (3/8-16 x 3/4" HH)	2	08-010806061
25	Washer (3/8" Star)	2	08-110800001
26	Washer (3/8" AN)	2	08-100800001
27	Anode	1	01-2067
28	Screw (7/16-14 x 1 3/4" S/S 12 Point)	4	08-070907111
29	"O" Ring (Steering Cap, Oil)	1	11-2250
30	"O" Ring (Steering Cap, Shift Cavity)	1	11-2242
31	Detent Kit (Spring & Ball Cylinder)	Kit	01-2044
32	Drain Screw Sealing Washer	1	11-1017
33	Drain Screw	1	01-2504
34	Guide Pads (Port & Starboard)	2	01-2471
35	Screw (1/4-20 x 1/2" Flat Head Undercut)	4	08-020604041
36	Stud (7/16 x 2 1/2")	4	08-130904141
37	Washer (7/16" AN S/S)	4	08-100900001
38	Nut (7/16-20 Nylock S/S)	4	08-080904001
39	Screw (10-24 x 5/8" Socket Cap)	1	08-060403052
40	Magnet	1	01-9587
41	Screw (1/4-20x 5/8" Socket Cap)	8	08-060604051
42	Oil Tank Gasket	1	11-1030
43	Oil Tank Cover	1	01-2574

Upper Case Gear & Components

Fig-2



Upper Case Gear & Components

Fig-2

Item	Description	Qty	Part Number
1	Upper Case Black	1	01-1550
1A	Upper Case Silver	1	01-1557
2	Roller Bearing (Clutch Shaft Cap)	1	10-3042
3	Upper Cap	1	01-2555
4	Pinion Hub	1	01-2560
5	Tower Race	2	10-6041
6	Thrust Race	2	10-5045-X
7	Thrust Bearing (Gear)	2	10-4044
8	Keepers (Clutch Shaft)	2	01-2047
9	Clutch Shaft Retainer (Thrust Collar)	1	01-2189
10	Spirol Retainer Ring	2	01-2055
11	Roller Bearing (Internal Gear)	2	10-3046
12	SCX Pinion Gear	1	01-4538
13	SCX Clutch Gear	2	01-4539
14	Thrust Bearing (Clutch Spring)	2	10-4020
15	Clutch Spring	2	01-2056
16	SCX Clutch	1	01-2562
17	SCX Clutch Shaft	1	01-3556
18	Pinion Hub Shims	Kit	01-2548-X
19	Roller Bearing (Clutch Shaft Tower)	1	10-3043
20	SCX Tower	1	01-2561
21	SCX Shift Cable Retainer	1	01-2573
22	SCX Shift Arm	1	01-1578
23	Cotter Key	1	08-150200141
24	SCX Shift Link	1	01-1577
25	Shift Shaft Bushing	1	10-7018
26	SCX Shift Shaft	1	01-3559
27	Screw (1/4-28 x 3/4" Socket Cap)	2	08-060602062
28	Yoke & Cam	1	01-8095
29	Seal, Shift Shaft	2	11-3030
30	Shift Shaft Bushing	1	10-7019
31	Retainer Nut	1	01-2239
32	Yoke Gear End	1	01-2085
33	Cross & Bearing	2	01-2086
34	Center Socket	1	01-2087
35	Yoke Coupler End	1	01-2088
36	Nut (Yoke Gear End)(5/8-18 Thin Nylock Steel)	1	08-091105002
37	Washer (Yoke Gear End)	1	08-121100002
38	Bearing Cone (Pinion Bearing)	1	10-1021
39	Bearing Cup (Pinion Bearing)	1	10-2022
40	Bearing Cup (Pinion Bearing)	1	10-2024
41	Bearing Cone (Pinion Bearing)	1	10-1023
42	Yoke Gear End Shims	Kit	01-2020-X
43	Pinion Shoulder Washer	1	01-2241
44	Yoke Gear End Seal	1	11-3029
45	Pinion Seal Carrier	1	01-2240

UPPER GEAR CASE-ASSEMBLY

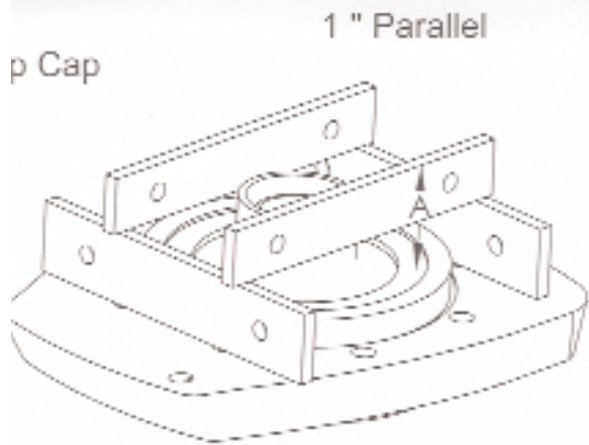
NOTE; Optimum performance of the upper gear case requires “setting up” the pinion & clutch gears with IMCO procedure as follows.

1. Take all measurements using the “SCX Setup Diagrams” (Fig 3) and the “SCX Work Sheet” (Fig 4).
2. After all measurements are taken and proper race thickness has been determined, place lower race [2-6] and thrust bearing [2-7] in case.
3. Place lower clutch gear [2-13] with attached tool (backlash tower 01-5579) into case.
4. Adjust rolling preload (8-10 in/lbs) on pinion gear by changing Yoke Gear End Shims [2-42]. Tighten nut [2-36] to 75 ft/lbs.
5. After proper rolling preload is determined, assemble pinion pack with pinion retainer nut “O” ring [1-20] between pinion seal carrier [2-45] and retainer nut [2-31].
6. Torque retainer nut to 200 ft/lbs. ((Tool: Pinion Retainer Nut Driver 01-5590) (torque wrench centered on retainer nut or if using longer tool be sure to compensate on torque value). Use new lock nut [2-36] and torque to 75 ft/lbs.
7. Install pinion pack using 4 screws [1-23] for testing.
8. Install dial indicator (indicator bracket 01-5588) and pinion gear locking tool (pinion gear lock 01-5587) Fig-5.
9. Check backlash, adjust backlash with pinion hub shims [2-18] (average backlash should be .006-.008.
10. Once backlash is determined check upper clutch gear by placing gear in lower position with lower thrust race and backlash tower. This will insure backlash is .006 -.008 is correct on upper gear.
11. Assemble drive shaft gear assembly [2-(8-17)].
12. Place the lower clutch gear [2-13] onto the clutch shaft [2-17], allowing it to rest on the thrust collar.
13. Place the lower clutch spring thrust bearing [2-14] (silver side “up), lower clutch spring [2-15], clutch cone [2-16], upper clutch spring [2-15], upper clutch spring thrust bearing [2-14], (Note; use a thin layer of grease between the bearing and the gear to keep bearing in place during assembly), (silver side “down”), upper clutch gear [2-13], clutch shaft retainer [2-9] onto the upper clutch shaft [2-17].
14. Compress the upper clutch gear and install the upper drive shaft retainer keepers [2-8].
15. Install complete clutch shaft assembly into gear case.
16. Align the clutch gear timing marks (“+” over “-“, or “-“ over “+”) with the center of the rear face of the gear case.
17. Install pinion pack with “O” ring [1-19] and shims [2-18] (shims must be properly aligned).
18. Torque pinion pack screws [1-(22-23)] (important: make sure copper sealing washers [1-21] are in place, short screws in 2 top holes & 2 bottom holes [1-22] longer screws in 3 port & 3 starboard holes [1-23] to 20 ft/lbs. Use “Loctite 242” on all screws. Note: make sure that the clutch gear timing marks align to case timing marks, roll pinion to check.

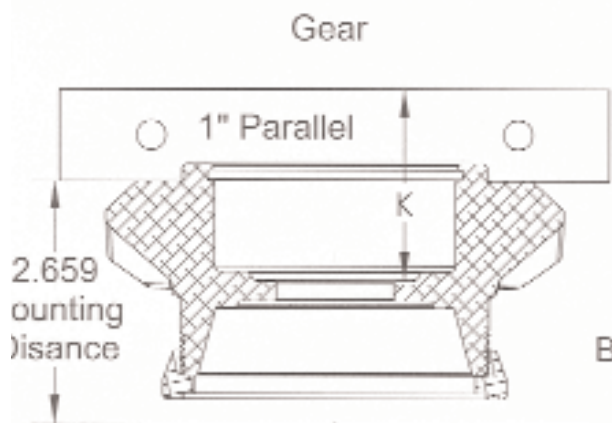
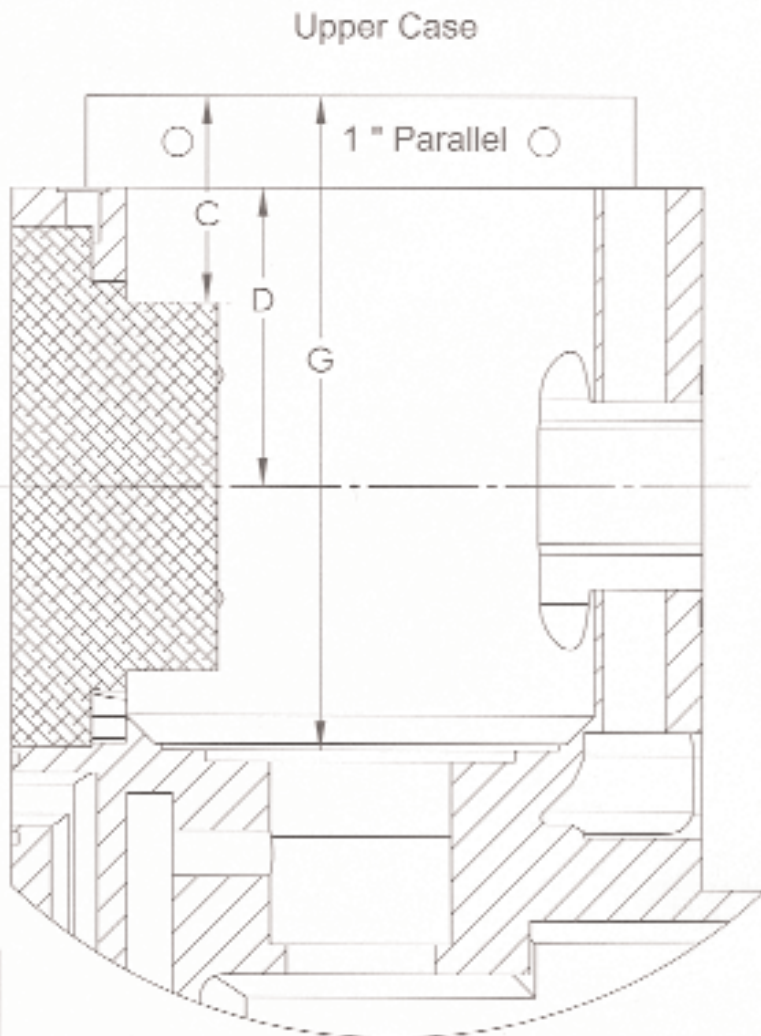
UPPER GEAR CASE-ASSEMBLY

19. Place the shift yoke & cam assembly [2-28] into the clutch cone groove with the nuts facing down.
20. Insert the shift link [2-24] with shift cable retainer [2-21] through front of gear case.
21. From the rear of gear case, place the small hole of the shift arm [2-22] onto the "pin" of the shift link and secure with cotter pin [2-23]. (Be sure that the shift arm is positioned to except the detent kit [1-31]
22. Install shift shaft [2-26] through the yoke & cam (note; use caution while installing to avoid cutting seals) and shift arm [2-22].
23. Torque the 2 shift shaft screws [2-27] to 100 in/lbs. Use "Loctite 262" on screws.
24. Install quad ring [1-10] steering cap [1-2] including detent kit [1-31], insure "O" rings [1-29 & 1-30] are in place.
25. Torque steering cap screws to 35 ft/lbs. Use "Perfect Seal" on threads.
26. Install quad ring [1-12] in steering cap, shift shaft plug [1-9], top cap "O" ring [1-13] top cap oil pressure "O" ring [1-14]
27. Install top cap.
28. Torque top cap screws [1-8] (important: short screws in 2 front & 2 rear holes [1-7] longer screws in 2 port and 2 starboard holes) to 25 ft/lbs. Use "Perfect Seal" on threads.
29. Install oil tank cover [1-43], oil tank gasket [1-42] with "Permatex Form-Gasket 2" (note; use a very thin layer on gasket), oil tank cover screws [1-41] with "Loctite 242", torque to 10 ft/lbs.

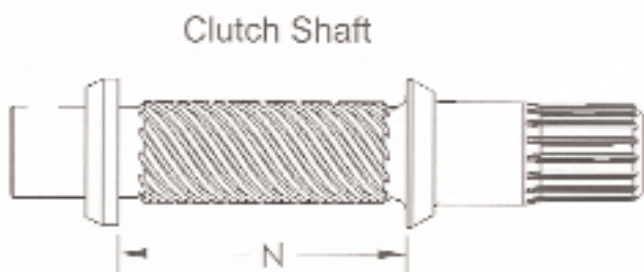
SCX SETUP DIAGRAMS



1.25" Parallel



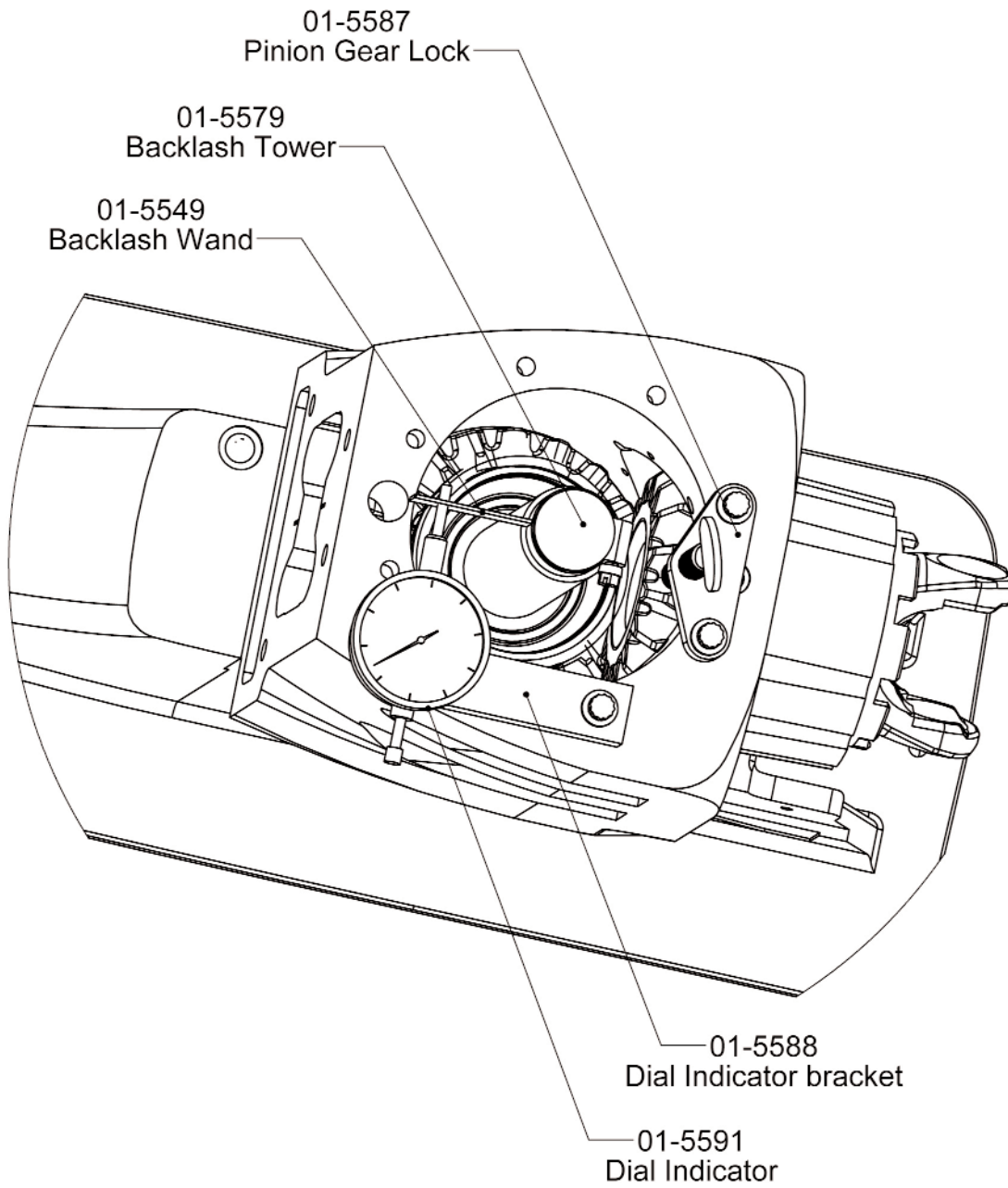
Pinion \varnothing



Retainer Spacing

SCX WORK SHEET			Serial #		
			UPPER CAP		
	Parallels			2.250	
	Measurement	A	-		Norm 1.862
Cap Deck to Thrust Seat	Total	B	=		Norm 0.388
			DECK TO PINION CENTERLINE		
Deck to Tool	Measurement	C			Norm 2.252
	Less Parallel		-	1.000	
	Total				Norm 1.252
	Plus 1/2 tool		+	2.012	
Deck to Pinion CL	Total	D	=		Norm 3.264
			UPPER THRUST SEAT		
Deck to Pinion CL		D			Norm 3.264
		B	-		Norm 0.388
Pinion CL to Upper Thrust Seat	Total	E	=		Norm 2.876
	Bearing Thickness		-	0.157	
	Mounting Distance		-	2.659	
	Race Thickness	F	=		Norm 0.060
			LOWER THRUST SEAT		
	Measurement	G			Norm 7.138
	Parallel		-	1.000	
Deck to Lower Thrust Seat	Total		=		Norm 6.138
Deck to Pinion CL		D	-		Norm 3.262
Pinion CL to Lower Thrust Seat	Total	H	=		Norm 2.876
	Bearing Thickness		-	0.157	
	Mounting Distance		-	2.659	
	Race Thickness	J	=		Norm 0.060
			GEAR MEASUREMENTS		
Gear One	Measurement	K1			Norm 2.091
	Less Parallel		-	1.000	
Gear Depth One	Total	L			Norm 1.091
Gear Two	Measurement	K2			Norm 2.091
	Less Parallel			1.000	
Gear Depth Two	Total	M	=		Norm 1.091
			GEAR ASSEMBLY		
Gear Depth One		L			Norm 1.091
Gear Depth Two		M	+		Norm 1.091
	Race Thickness	F	+		Norm 0.060
	Race Thickness	J	+		Norm 0.060
	2 x Bearing Thickness		+	0.314	
Retainer Spacing	Measurement	N	+		Norm 3.162
Gear Assembly	Total	O	=		5.778
			CAP CRUSH		
Pinion CL to Upper Thrust Seat		E	+		Norm 2.876
Pinion CL to Lower Thrust Seat		H	+		Norm 2.876
Upper Thrust Seat to Lower Thrust Seat	Total	P	=		Norm 5.752
Gear Assembly	Total	O	=		Norm 5.778
Cap Crush			=		Norm .020-.030

Backlash Assembly Fig-5

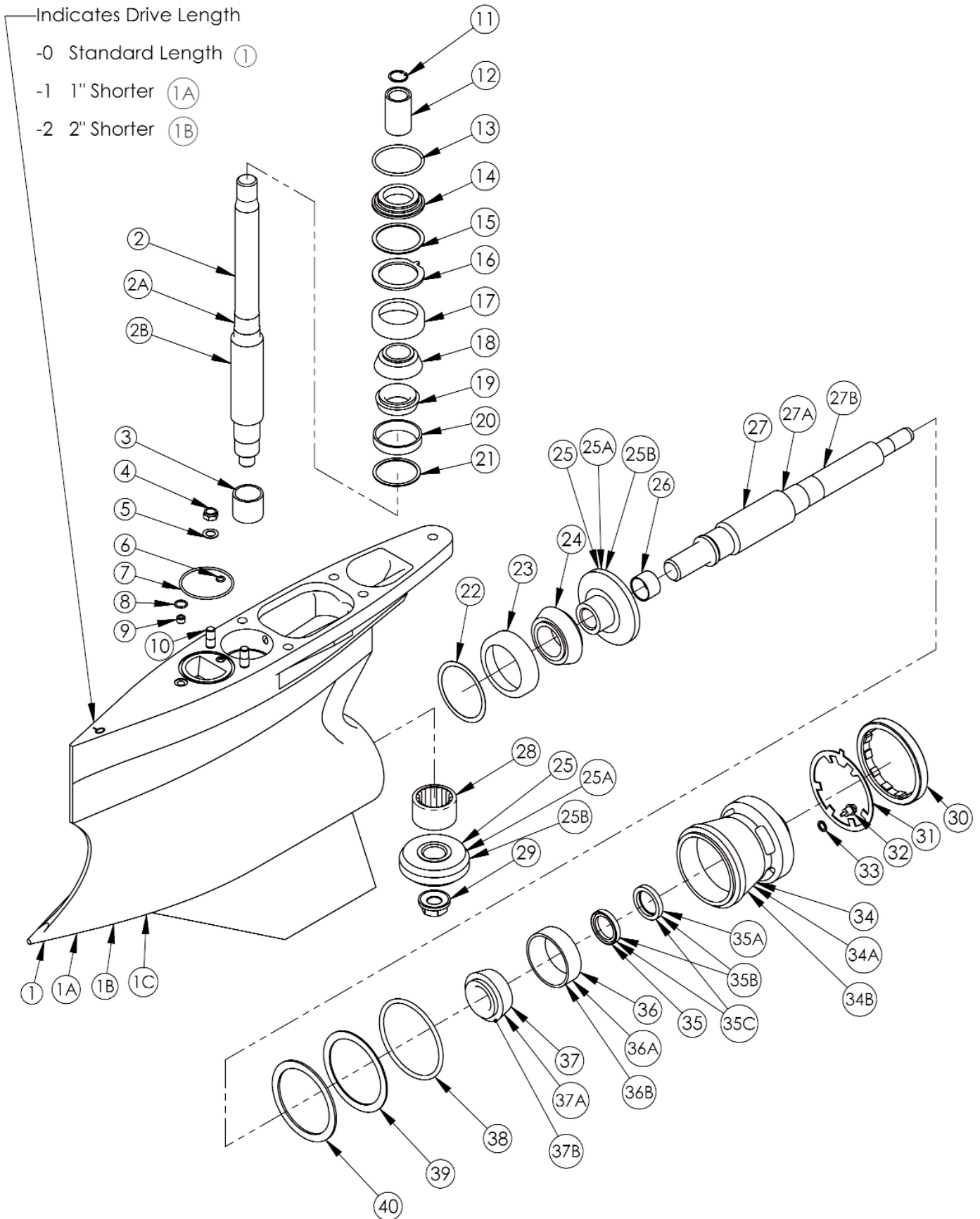


LOWER GEAR CASE – DISASSEMBLY

Note; The following instructions assume that the lower unit has already been separated from the upper gearhead. Steps followed by asterisks (**) are required only if inspection indicates component replacement. Brackets following the part name represent the drawing figure # and item #.

1. Bend the tabs of the bearing carrier tab washer [6-31] away from the bearing carrier retainer nut [6-30].
2. Remove the bearing carrier retainer nut [6-30].
3. Remove the bearing carrier [6-34].
4. Remove the prop shaft [6-27]. (The prop shaft bushing [6-26], used only with the 01-8244 & 01-8248 gear sets, may come out with the prop shaft).
5. Remove the bearing carrier “O” ring [6-38], shims [6-39], & thrust washer [6-40].
6. Remove the vertical shaft flange nut [6-29].
7. Remove “O” ring [6-13], & alignment spacer [6-14], shims [6-15], & tab washer [6-16].
8. Remove the vertical shaft [6-2] (with bearings) & pinion gear [6-25].
9. Remove the prop gear [6-25], (with bearing). (The prop shaft bushing [6-26] may be removed from the gear at this time, if it was not removed in step #4).
10. Remove the lower vertical shaft bearing cup [6-20], & shims [6-21].
11. Remove the vertical shaft roller bearing [6-28]. **
12. Remove the upper [6-18], & lower [6-19] bearing cones from the vertical shaft. **
13. Remove the roller bearing race [6-3] from the vertical shaft. **
14. Remove the bearing cup [6-36] from the bearing carrier. **
15. Remove the prop shaft seals [6-35] from the bearing carrier. **
16. Remove the prop gear bearing cone [6-24] from the prop gear. **
17. Remove the prop gear bearing cup [6-23], & shims [6-22]. **
18. Remove the bearing cone [6-37] from the prop shaft. **
19. Remove the “O” ring [6-6]. “O” ring [6-7], & “O” ring [6-8]. **

Lower Gear Case Fig-6



Lower Gear Case Fig-6

	Description	Qty	Part Number
1	Lower Case (-0) Standard Length	1	01-1120
1A	Lower Case (-1") Shorter	1	01-1121
1B	Lower Case (-2") Shorter	1	01-1122
2	Vertical Shaft-Standard Length (17 Tooth)	1	01-3265
2A	Vertical Shaft-1" Shorter (17 Tooth)	1	01-3266
2B	Vertical Shaft-2" Shorter (17 Tooth)	1	01-3267
3	Bearing Race	1	10-6005
4	Nut (7/16-20 Nylock S/S Thin)	2	08-090904001
5	Washer ((7/16" AN S/S Thin)	2	08-160900001
6	"O" Ring (Oil Passage)	1	11-4011
7	"O" Ring (Water Passage)	1	11-2143
8	"O" Ring (Cooling Water Passage)	1	11-2014
9	Pipe Plug - 1/8 NPT S/S	1	09-2007
10	Stud (7/16 x 2" S/S)	2	08-130904121
11	Retainer Ring (Vertical Shaft Coupler)	1	08-121500001
12	Vertical Shaft Coupler (17 Tooth)	1	01-2140
13	"O" Ring (Alignment Spacer)	1	11-2228
14	Alignment Spacer	1	01-2015
15	Shim (Vertical Shaft Upper)	Kit	01-2012
16	Tab Washer (Vertical Shaft)	1	01-2043
17	Bearing Cup (Vertical Shaft Upper)	1	10-2012
18	Bearing Cone (Vertical Shaft Upper)	1	10-1011
19	Bearing Cone (Vertical Shaft Lower)	1	10-1010
20	Bearing Cup (Vertical Shaft Lower)	1	10-2009
21	Shim (Vertical Shaft Lower)	1	01-2013
22	Shim (Prop Gear)	Kit	01-2014
23	Bearing Cup (Prop Gear)	1	10-2007
24	Bearing Cone (Prop Gear)	1	10-1008
25	Prop & Pinion Gear 1:50	Set	01-8240
25A	Prop & Pinion Gear 1:34	Set	01-8244
25B	Prop & Pinion Gear 1:25	Set	01-8248
26	Bushing - Prop Shaft, -X	1	01-2178
27	Prop Shaft, 1"	1	01-3009
27A	Prop Shaft, 1 1/4"	1	01-3010
27B	Prop Shaft, 1 7/16"	1	01-3570
28	Bearing (Roller)	1	10-3006
29	Nut (Pinion Gear)	1	01-2251
30	Cover Nut	1	01-2065
31	Tab Washer (Bearing Carrier)	1	01-2042
32	Drain Screw	1	01-2504
33	Drain Screw Sealing Washer	1	11-1017
34	Bearing Carrier (1" Prop Shaft)	1	01-2130
34A	Bearing Carrier (1 1/4" Prop Shaft)	1	01-2131
34B	Bearing Carrier (1 7/16" Prop Shaft)	1	01-2575
35	Seal (Prop Shaft 1")	1	11-3035
35A	Seal (Prop Shaft 1" Line Cut)	1	11-3032
35B	Seal (Prop Shaft 1 1/4")	2	11-3033
35C	Seal (Prop Shaft 1 7/16")	2	11-3034
36	Bearing Cup (1" Prop Shaft)	1	10-2014
36A	Bearing Cup (1 1/4" Prop Shaft)	1	10-2016
36B	Bearing Cup (1 7/16" Prop Shaft)	1	10-2018
37	Bearing Cone (1" Prop Shaft)	1	10-1013
37A	Bearing Cone (1 1/4" Prop Shaft)	1	10-1015
37B	Bearing Cone (1 7/16" Prop Shaft)	1	10-1017
38	"O" Ring (Bearing Carrier)	1	11-2344
39	Shim (Bearing Carrier)	Kit	01-2011
40	Thrust Washer (.109 Thick)	1	01-2042

LOWER GEAR CASE - ASSEMBLY

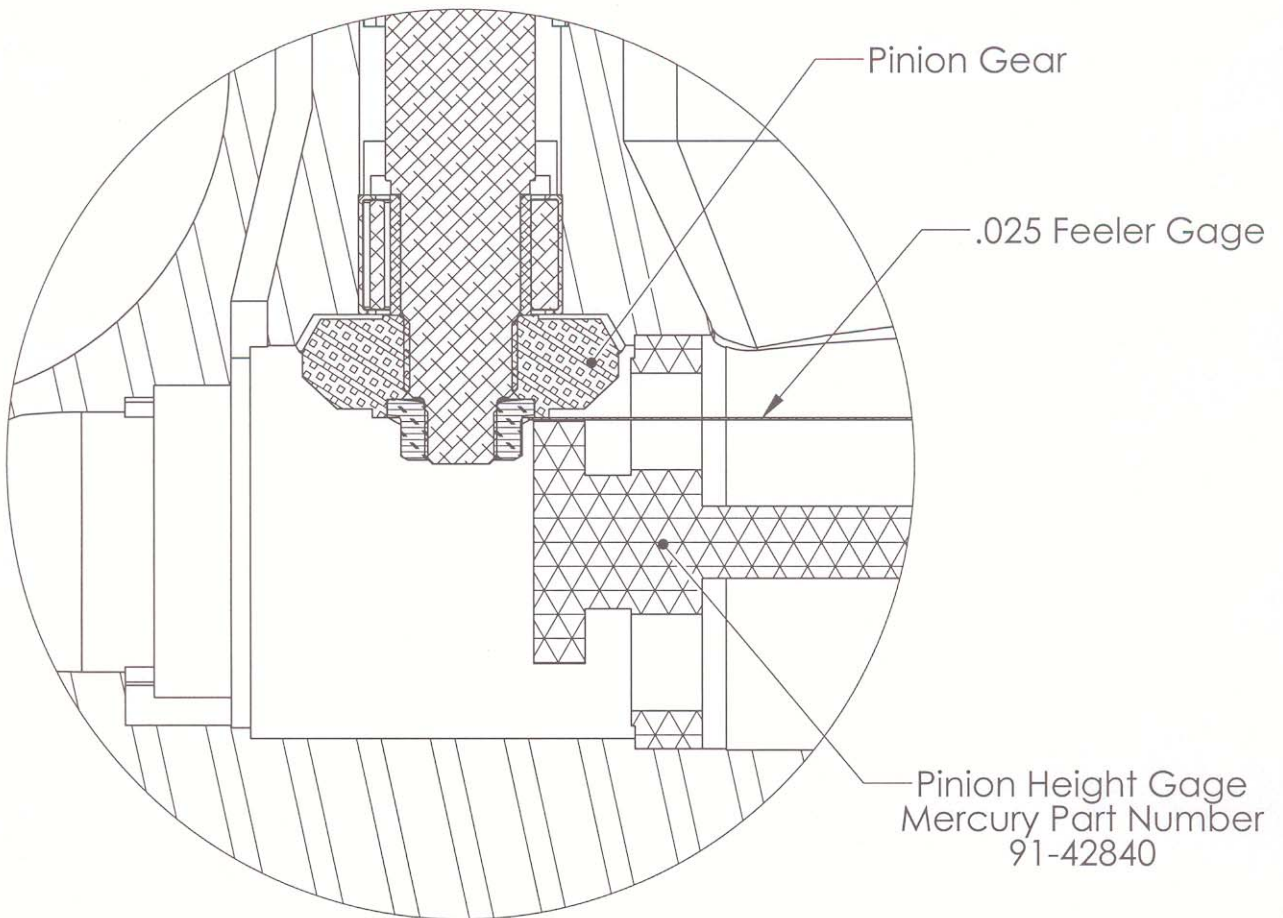
Note; Optimum performance of lower gears requires pinion height setup, use “ Lower Pinion Gear Height Measurement” (Fig. 7) sheet to set pinion gear.

1. Install the vertical shaft roller bearing [6-28] into the gear case.
2. Install the vertical shaft lower bearing cup [6-20], & shims [6-21].
3. Install the lower [6-19], upper [6-18] bearing cones, and roller bearing race [6-3] onto the vertical shaft [6-2].
4. Install the vertical shaft into the gear case.
5. Install the upper bearing cup [6-17]. Tab washer [6-16], shims [6-15], & alignment spacer [6-14] onto the vertical shaft.
6. Install the vertical shaft clamp plate onto the gear case. (Mercury Part # 43559T)
7. Check the rolling torque of the vertical shaft (optimum 3 to 5 lb/in).
8. Adjust the thickness of the upper shim to obtain the correct rolling torque.
9. Temporarily install the pinion gear [6-25], & flange nut [6-29].
10. Check the pinion gear height (optimum .025) (see “Lower Pinion Height Measurement” (Fig. 7)
11. If pinion gear height requires correction remove all associated components and adjust the lower bearing shims. Any adjustment here requires that the upper bearing shims be compensated by the same amount.
12. Remove the vertical shaft & pinion.
13. Install the prop gear bearing shims [6-22], & bearing cup [6-23] into the gear case.
14. Install the prop gear bearing cone [6-24] onto the prop gear [6-25].
15. Install the prop gear with bearing into the gear case. (The prop shaft bushing [6-26], used only with the 01-8244 and 01-8248 gear sets, must be installed into the prop gear at this time).
16. Re-install the vertical shaft components described above, and install the vertical shaft clamp plate.
17. Install the bearing carrier bearing cone [6-37] onto the prop shaft.
18. Install the prop shaft with bearing into the gear case.
19. Install the prop shaft seals [6-35], & bearing carrier bearing cup [6-36] into the bearing carrier [6-34].
20. Temporarily install the bearing carrier into the gear housing.
21. Install the bearing carrier tab washer [6-31], & retainer nut [6-30], and torque the retainer nut to 150 lb/ft.
22. Rotate the vertical shaft at least 3 turns and check the prop gear backlash (optimum .012 to .015).
23. Adjust the thickness of the prop gear bearing cup shims [6-22] to obtain the correct backlash readings.
24. During final assembly be sure to clean & loctite the vertical shaft flange nut [6-29]. Torque the nut to 100 lb/ft.
25. Temporarily install the bearing carrier thrust washer [6-40], & shims [6-39] prior to prop shaft & bearing carrier installation.
26. Torque the bearing carrier retainer nut to 150 lb/ft.
27. Check overall rolling torque at the vertical shaft (optimum 11 to 17 lb/in).

LOWER GEAR CASE – ASSEMBLY CONT.

28. Adjust the thickness of the bearing carrier shims [6-39] to obtain the correct rolling torque readings.
29. Upon final assembly be sure to install the bearing carrier “O” ring [6-38] prior to installation of the bearing carrier.
30. After applying final torque of the bearing carrier retainer nut [6-30], bend one tab of the tab washer [6-31] to engage with one of the slots in the retainer nut.

Lower Pinion Height Measurement
Fig-7



Disassembly-Assembly Tools

SCX Upper

	IMCO	Mercury
1. Tower & Cap Race Puller Kit	01-5443	
2. Tower Internal Bearing Puller Kit	01-5445	
3. Tower Removal Tool Kit	01-5448	
4. Pinion Retainer Nut Driver	01-5590	
5. Pinion Center Measuring Slug	01-5583	
6. Pinion Bearing Cup Installer (Front)	01-5580	
7. Pinion Bearing Cup Installer (Back)	01-5581	
8. Bearing & Race Installer (Cap)	01-5581	
9. Bearing & Race Installer (Tower)	01-5582	
10. Backlash Tool Kit	01-8017	
A. Backlash Tower	01-5579	
B. Indicator Bracket	01-5588	
C. Pinion Gear Lock	01-5587	
D. Backlash Wand	01-5449	
E. Dial Indicator	01-5591	

SC Lower

1. Cover Nut Wrench (1" Prop Shaft)		91-61069T
2. Cover Nut Wrench (1 ¼" Prop Shaft)		91-840393
3. Lower Pinion Height Gauge		91-42840
4. Prop Gear Cup Installer		91-31106
5. Vertical Shaft Roller Bearing Driver		
A. Pilot		91-813653
B. Driver rod		91-37323
C. Bearing Remover		91-638T
6. Vertical Shaft Roller Bearing Installer		
A. Pilot		91-813653
B. Threaded Rod		91-31229
C. Bearing Installer		91-89867
7. Clamp Plate		91-43559T
8. Dial Indicator		91-58222A1
9. Vertical Shaft Bearing Cup Puller	01-5409	
10. Prop Gear Cup Puller	01-5410	
11. Bearing Carrier Cup & Seal Installer (1 ¼")	01-5411	