



CALIFORNIA INSTITUTE OF TECHNOLOGY  
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY

**E0900061-v1**

DRWG NO. REV

SHEET SEE BOTTOM LEFT

ASSEMBLY NO.

**D0900293**

**MATERIAL LIST (or OVERALL BOM)**

TITLE: Advanced LIGO Output Mode Cleaner Overall Assembly and Assembly Fixtures

ITEM NO.	REQ.	SPARE	TOTAL	PART NO.	Revision	DESCRIPTION
	1	0	1	D0900293	v1	OUTPUT MODE CLEANER OVERALL ASSEMBLY AND ASSEMBLY FIXTURES
	1	0	1	D0900295	v1	OUTPUT MODE CLEANER OVERALL ASSEMBLY
	1	0	1	D0900655	v1	STRUCTURAL WELDMENT ASSEMBLY, OUTPUT MODE CLEANER
	1	0	1	D0900308	v1	Structural Weldment , OMC Suspension
	1	0	1	D0900346	v1	Base, OMC Structural Weldment
	1	0	1	D0900347	v1	Top Plate, OMC Structural Weldment
	4	0	4	D0900348	v1	Leg, OMC Structural Weldment
	4	0	4	D0900349	v1	7x7 Gusset, OMC Structural Weldment
	4	0	4	D0900350	v1	4x7 Gusset, OMC Structural Weldment
	8	0	8	D0900309	v1	Corner Brace, OMC Structural Weldment
	64	14	78	-		Countersunk Head Cap Screw, 1/4-20 X 0.625 Long
	56	12	68	-		Helicoil, #8-32 X 0.328 Long
	12	3	15	-		Helicoil, #8-32 X 0.246 Long
	2	0	2	D070145	v1 (B)	TOP BLADE GUARD ASSEMBLY
	1	0	1	D070146	v1 (A)	Blade Guard Crosspiece
	2	0	2	D070147	v1 (B)	Blade Guard Riser
	4	1	5	-		SHCS, #8-32 UNC-2A X 0.625 Long
	4	1	5	-		Helicoil, #8-32 X 0.328 Long
	1	0	1	D030021	B	SHCS, 1/4-20 X 2.5 Long, Rounded End
	1	0	1	-		Jam Nut, 1/4-20
	36	7	43	-		SHCS, #8-32 UNC-2A X 0.5 Long
	72	14	86	-		Flat Washer, #8 (NAS 620-C8 or equivalent)
	2	0	2	D070052	v2 (C)	CONNECTOR BRACKET, OMC
	26	5	31	-		SHCS, 1/4-20 UNC-2A X 0.75 Long
	26	5	31	-		Flat Washer, 1/4 (NAS 620-C416 or equivalent)
	2	0	2	D070028	v1 (A)	BLADE PLATFORM, OMC
	2	0	2	D030451	C	ROTATIONAL ADJUSTER ASSEMBLY
	1	0	1	D030448	v1 (B)	Base Plate
	1	0	1	D030447	v1 (C)	Rotating Plate
	1	1	2	D080018	C	Upper Blade
	1	0	1	D030450	v1 (B)	Pull Plate
	1	0	1	D030449	v1 (B)	Push Plate
	1	0	1	D030459	v1 (B)	RA Upper Blade Clamp Lower Side 0.0 Degree
	1	0	1	D020116	v1 (B)	Upper Blade Clamp Upper Side 0.0 Degree
	1	0	1	-		SHCS, 1/4-20 UNC-2A X 0.375 Long
	2	0	2	-		SHCS, 1/4-20 UNC-2A X 0.5 Long
	2	0	2	-		SHCS, #8-32 UNC-2A X 1 Long
	3	0	3	-		SHCS, #8-32 UNC-2A X 0.75 Long (Ag-Plated)
	1	0	1	-		SHCS, #8-32 UNC-2A X 1 Long (Ag-Plated)
	2	0	2	-		SHCS, 1/4-20 UNC-2A X 1.25 Long (Ag-Plated)
	2	0	2	-		Flat Washer, 1/4 (NAS 620-C416 or equivalent)
	4	1	5	-		Flat Washer, 1/4 (NAS 620-C416L or equivalent)
	1	0	1	D020680	v1	Upper Blade Clamp Lower Side Shim 2mm
	1	0	1	D020677	v1	Assembly Library of Clamps
	1	1	2	D020116	v1	Upper Blade Clamp, Upper Side, 0.0 Degree
	1	1	2	D020325	v1	Upper Blade Clamp, Upper Side, Angled 0.5 Degrees
	1	1	2	D020328	v1	Upper Blade Clamp, Upper Side, Angled 2.5 Degrees
	1	1	2	D020312	v1	Upper Blade Clamp, Upper Side, Angled 2.0 Degrees
	1	1	2	D020327	v1	Upper Blade Clamp, Upper Side, Angled 1.5 Degrees
	1	1	2	D020326	v1	Upper Blade Clamp, Upper Side, Angled 1.0 Degrees
	8	1	9	D020679	v1	Upper Blade Clamp, Lower Side Shim, 1mm
	4	1	5	D020680	v1	Upper Blade Clamp, Lower Side Shim, 2mm
	2	2	4	D020340	v1	Lower Blade Clamp, Upper Side, Angled 2.5 Degrees
	2	2	4	D020336	v1	Lower Blade Clamp, Lower Side, Angled 2.5 Degrees
	2	2	4	D020313	v1	Lower Blade Clamp, Lower Side, Angled 2.0 Degrees
	2	2	4	D020314	v1	Lower Blade Clamp, Upper Side, Angled 2.0 Degrees
	2	2	4	D020339	v1	Lower Blade Clamp, Upper Side, Angled 1.5 Degrees
	2	2	4	D020335	v1	Lower Blade Clamp, Lower Side, Angled 1.5 Degrees
	2	2	4	D020334	v1	Lower Blade Clamp, Lower Side, Angled 1.0 Degrees
	2	2	4	D020338	v1	Lower Blade Clamp, Upper Side, Angled 1.0 Degrees
	2	2	4	D020333	v1	Lower Blade Clamp, Lower Side, Angled 0.5 Degrees
	2	2	4	D020337	v1	Lower Blade Clamp, Upper Side, Angled 0.5 Degrees
	8	1	9	D020682	v1	Lower Blade Clamp, Shim, 1mm
	1	1	2	D020119	v1	Lower Blade Clamp, Upper Side, 0.0 Degrees
	1	1	2	D020308	v1	Lower Blade Clamp, Lower Side, 0.0 Degrees
	2	2	4	D020689	v1	Upper Blade Clamp, Upper Side, Angled 3.0 Degrees
	1	1	2	D020690	v1	Upper Blade Clamp, Upper Side, Angled 3.5 Degrees
	1	1	2	D030459	v1	RA Upper Blade Clamp Lower Side 0.0 Degree
	1	1	2	D030460	v1	RA Upper Blade Clamp Lower Side, Angled 0.5 Degrees
	1	1	2	D030461	v1	RA Upper Blade Clamp Lower Side, Angled 1.0 Degrees
	1	1	2	D030462	v1	RA Upper Blade Clamp Lower Side, Angled 1.5 Degrees



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TITLE: Advanced LIGO Output Mode Cleaner Overall Assembly and Assembly Fixtures

ITEM NO.	REQ.	SPARE	TOTAL	PART NO.	Revision	DESCRIPTION
	1	1	2	D030463	v1	RA Upper Blade Clamp Lower Side, Angled 2.0 Degrees
	1	1	2	D030464	v1	RA Upper Blade Clamp Lower Side, Angled 2.5 Degrees
	1	1	2	D030465	v1	RA Upper Blade Clamp Lower Side, Angled 3.0 Degrees
	1	1	2	D030466	v1	RA Upper Blade Clamp Lower Side, Angled 3.5 Degrees
	8	2	10	-		SHCS, #8-32 UNC-2A X 0.375 Long
	2	1	3	D060536	A	UPPER WIRE ASSEMBLY
	1	0	1	D070022	v1 (B)	Top Blade Wire Clamp
	1	0	1	D030042	v1 (B)	Upper Blade Wire Clamp Plate
	2	1	3	-		SHCS, #4-40 UNC-2A X 0.3125 Long (Ag-Plated)
	4	1	5	-		Flat Washer, #4 (NAS 620-C4L or equivalent)
	1	0	1	D070030	v1 (B)	C-Clamp 4 Top Wire
	1	0	1	D020309	v1 (B)	Upper Mass Wire Clamp Plate
	1	0	1	D020139	v1 (B)	Upper Mass Wire Clamp Plate
	2	1	3	-		SHCS, #4-40 UNC-2A X 0.5 Long (Ag-Plated)
	A/R			-		0.014 Dia Spring Steel Wire (CFW)
	4	1	5	-		SHCS, #4-40 UNC-2A X 0.25 Long (Ag-Plated)
	28	6	34	-		Flat Washer, #4 (NAS 620-C4L or equivalent)
	2	0	2	D060533-1	v1 (B)	MOUNTING BRACKET, COIL HOLDER, OMC
	2	0	2	-		Dowel Pin, 3/16" Diameter X 5/8" Long
	3	0	3	-		SHCS, #4-40 UNC-2A X 0.375 Long
	7	1	8	-		Helicoil, #8-32 X 0.25 Long
	2	0	2	D060533-2	v1 (B)	MOUNTING BRACKET, COIL HOLDER, OMC
	2	0	2	-		Dowel Pin, 3/16" Diameter X 5/8" Long
	3	0	3	-		SHCS, #4-40 UNC-2A X 0.375 Long
	7	1	8	-		Helicoil, #8-32 X 0.25 Long
	16	4	20	-		SHCS, #8-32 UNC-2A X 0.625 Long
	16	4	20	-		SHCS, #8-32 UNC-2A X 0.5 Long (Ag-Plated)
	1	0	1	D060530	v1 (A)	COIL HOLDER, OMC (TABLECLOTH)
	6	2	8	D060218	C	BOSEM ASSEMBLY
	1	1	2	D060106	C	Coilformer
	1	1	2	D060107	C	Coilformer Backplate
	1	1	2	D060108	C	Coilformer Clamp
	2	2	4	D060109	C	Adjuster Shaft
	2	2	4	D060110	C	Adjuster Nut
	1	1	2	-		Connector (GlenAir)
	1	1	2	D050435	C	Flexi-Circuit
	1	1	2	-		Coil Winding (MWS 32QML)
	1	1	2	D060217	C	PD ASSEMBLY
	1	1	2	D060112	C	PD Carrier
	1	1	2	D060117	C	PD Sleeve
	1	1	2	D060114	C	PD Retainer
	1	1	2	BPX65		PD
	1	1	2	D060216	C	IRLED ASSEMBLY
	1	1	2	D060111	C	IRLED Carrier
	1	1	2	D060113	C	IRLED Retainer
	1	1	2	D060115	C	IRLED Lens Retainer
	1	1	2	D060116	C	IRLED Sleeve
	1	1	2	08PQ06		Plano-Convex Lens
	1	1	2	OP232		IRLED
	4	4	8	-		SHCS, #2 UNC X 0.3125 Long
	4	4	8	-		SHCS, #2 UNC X 0.25 Long
	2	2	4	-		SHCS, #2 UNC X 0.5 Long
	24	6	30	-		SHCS, #4-40 UNC-2A X 1 Long (Ag-Plated)
	1	0	1	D060502	v1 (C)	UPPER MASS ASSEMBLY
	1	0	1	D060491	v1 (C)	Main Section, Upper Mass, OMC
	1	0	1	D060503	v1 (B)	Pitch Insert, T-Section
	1	0	1	-		Socket Set Screw, 1/2-20 X 2 Long (Ag-Plated)
	1	0	1	D070032	v1 (B)	T-Section, Upper Mass, OMC
	9	4	13	D060416	H	OSEM MAGNET SPACER AND FLAG CONCEPT
	1	0	1	-		10 mm Magnet
	1	0	1	D060418	H	Magnet Retainer
	2	0	2	D060401	G	Magnetic Plug
	1	1	2	D060400	G	OSEM Magnet Flag
	4	1	5	D020482	v1 (A)	Screwdrive System
	4	1	5	D070031	v1 (B)	Lower Blade Clamp Upper Side
	2	0	2	-		SHCS, 1/4-20 UNC-2A X 0.5 Long (Ag-Plated)
	26	5	31	-		Flat Washer, #4 (NAS 620-C4L or equivalent)
	2	0	2	-		Jam Hex Nut, 1/4-20
	2	0	2	-		Flange Hex Nut, 1/4-20
	4	1	5	-		SHCS, #4-40 UNC-2A X 0.75 Long (Ag-Plated)
	4	2	6	D080019	C	Lower Blade



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ITEM NO.	REQ.	SPARE	TOTAL	PART NO.	Revision	DESCRIPTION
	4	1	5	D020308	v1 (B)	Lower Blade Clamp Lower Side
	2	0	2	D070045	v1 (A)	Lower Blade Cover, OMC
	16	3	19	-		Flat Washer, #8 (NAS 620-C8L or equivalent)
	4	1	5	-		Hex Nut, #4-40
	8	2	10	-		SHCS, #8-32 UNC-2A X 0.75 Long
	2	0	2	-		Socket Set Screw, #8-32 X 0.375 Long (Ag-Plated)
	4	1	5	-		Flat Washer, #8 (NAS 620-C8 or equivalent)
	4	1	5	-		SHCS, #8-32 UNC-2A X 0.375 Long (Ag-Plated)
	20	4	24	-		SHCS, #4-40 UNC-2A X 0.5 Long (Ag-Plated)
	8	2	10	-		SHCS, #8-32 UNC-2A X 1 Long (Ag-Plated)
	2	0	2	-		SHCS, #4-40 UNC-3A X 0.5 Long, Vented (Ag-Plated)
	2	0	2	-		SHCS, 1/4-20 UNC-3A X 1.125 Long (Ag-Plated)
	9	2	11	D070020	v1 (A)	Magnet Holder, OMC
	4	1	5	-		SHCS, #4-40 UNC-2A X 0.625 Long
	4	1	5	-		SHCS, #8-32 UNC-2A X 0.75 Long (Ag-Plated)
	12	3	15	-		SHCS, #8-32 UNC-2A X 1 Long (Ag-Plated)
	24	6	30	-		Hex Nut, #8-32
	4	1	5	D060537	A	LOWER WIRE ASSEMBLY
	1	0	1	D020132	v1 (C)	Lower Blade Wire Clamp
	1	0	1	D020133	v1 (B)	Lower Blade Wire Clamp Plate
	2	1	3	-		SHCS, #2-56 UNC-2A X 0.25 Long (Ag-Plated)
	2	1	3	-		Flat Washer, #2 (NAS 620-C2 or equivalent)
	1	0	1	D070070	v1 (B)	Wire Clamp for Optical Bench
	1	0	1	D070213	v1 (A)	Wire Clamp for Optical Bench
	2	1	3	-		SHCS, #2-56 UNC-2A X 0.1875 Long (Ag-Plated)
A/R						0.008 Dia. Spring Steel Wire (CFW)
	4	1	5	D070068	v1 (C)	C SPACER LOCATED BETWEEN GLASS BENCH AND WIRE CLAMP
	8	2	10	-		SHCS, #2-56 UNC-2A X 0.25 Long (Ag-Plated)
	8	2	10	-		Flat Washer, #2 (NAS 620-C2 or equivalent)
	1	0	1	D060488		OPTICS BENCH ASSEMBLY
	2	0	2	D080163	A	OMC CROSSBAR ASSEMBLY
	1	1	2	D080164	v1 (A)	OMC Crossbar Base Plate
	2	1	3	D080165	v1 (A)	OMC Crossbar Side Plate
	4	1	5	-		SHCS, #8-32 UNC-2A X 0.5 Long
	4	1	5	-		Flat Washer, #8 (NAS 620-C8 or equivalent)
	1	0	1	D070049	v1 (B)	EARTHQUAKE BRACKET TOP
	12	3	15	-		SHCS, #4-40 UNC-2A X 0.375 Long
	16	4	20	D0900897	v1	EARTHQUAKE STOP ASSEMBLY
	1	0	1	D0900906	v1	Earthquake Stop Adjuster and Mount
	1	0	1	D0900702	v1	Fluoroelastomer Earthquake Stop Tip
	32	8	40	-		Jam Nut, 1/4-20
	4	2	6	D070484	v1 (B)	Earthquake Bracket Side Alternate
	1	0	1	D070050	v1 (B)	Earthquake Bracket Bottom
	1	0	1	D070035	C	METAL BENCH ASSEMBLY
	1	0	1	D070027	v1 (C)	Metal Dummy Optical Bench
	8	4	12	D020350	v1 (B)	Upper Mass 100g Add On Mass
	8	4	12	D020351	v1 (B)	Upper Mass 50g Add On Mass
	2	4	6	D030078	v1 (B)	Upper Mass 20g Add On Mass
	16	4	20	-		SHCS, 1/4-20 UNC-2A X 0.75 Long
	16	4	20	D030021	B	SHCS, 1/4-20 UNC-2A X 2.5 Long, Rounded End
	1	0	1	D070249	B	JIG ASSEMBLY, LOWER WIRES
	1	0	1	D070250	v1 (C)	OMC Lower Wire Jig Bar
	1	0	1	D020376	A	Wire Start Grooved Clamp
	1	0	1	D020380	A	Wire Start Clamp Upper
	2	1	3	-		SHCS, #4-40 UNC-2A X 0.5 Long
	2	1	3	-		SHCS, #8-32 UNC-2A X 0.375 Long
	14	0	14	D980184	v1	LOS Clamp, Long
	14	2	16	-		SHCS, 1/4-20 UNC-2A X 1.125 Long
	1	0	1	D020159	A	Lower Blade Wire Jig (Intermediate Wires)
	2	1	3	-		SHCS, #2-56 UNC-2A X 0.3125 Long (Ag-Plated)
	1	0	1	D070069	A	Interface to Wire Jig for D070067
	1	0	1	D070248	A	OMC Interface for Wire Jig
	1	0	1	D070139	v1 (C)	OMC UPPER WIRE JIG ASSEMBLY
	1	0	1	D080121	A	Bar Jig Plate, Upper Wires
	1	0	1	D020440	A	Upper Wire Height Balance
	1	0	1	D020540	A	Wire Start Matched Height (Grooved Clamp)
	1	0	1	D020380	A	Wire Start Clamp Upper
	2	0	2	-		SHCS, #8-32 UNC-2A X 1.125 Long
	4	1	5	-		SHCS, #8-32 UNC-2A X 0.625 Long
	2	0	2	-		SHCS, #4-40 UNC-2A X 1.25 Long
	2	0	2	-		SHCS, #8-32 UNC-2A X 0.75 Long (Ag-Plated)



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TITLE: Advanced LIGO Output Mode Cleaner Overall Assembly and Assembly Fixtures

ITEM NO.	REQ.	SPARE	TOTAL	PART NO.	Revision	DESCRIPTION
	14	0	14	D980184	v1	LOS Clamp Long
	14	2	16	-		SHCS, 1/4-20 UNC-2A X 1.125 Long
	2	0	2	-		Flat Washer, #4 (NAS 620-C4L or equivalent)
	2	1	3	-		SHCS, #4-40 UNC-2A X 0.3125 Long (Ag-Plated)
	1	0	1	D070023	A	Wire Jig Attachment, Upper Blade Wire Clamp
	2	0	2	-		SHCS, #4-40 UNC-2A X 0.5 Long (Ag-Plated)
	1	0	1	D070038	B	Bar Jig Step Plate
	2	0	2	-		SHCS, #4-40 UNC-2A X 0.75 Long (Ag-Plated)
	1	0	1	D070556	v1 (B)	UPPER BLADE BAKING FIXTURE
	1	0	1	D070557	A	Base Plate
	2	0	2	D070558	A	Side Support
	1	0	1	D070559	A	Top Bridge
	4	0	4	83685T16		Leveling Mount (McMaster Carr P/N)
	8	2	10	-		SHCS, #8-32 UNC-2A X 0.75 Long (Ag-Plated)
	4	1	5	-		Flat Washer, #8 (NAS 620-C8 or equivalent)
	4	1	5	-		SHCS, 1/4-20 UNC-2A X 1.5 Long (Ag-Plated)
	4	1	5	-		Flat Washer, 1/4 (NAS 620-C416 or equivalent)
	4	1	5	-		SHCS, 1/4-20 X 2.5 Long, Rounded End (Ag-Plated)
	8	2	10	-		Jam Nut, 1/4-20
	2	1	3	D080014	A	Glass OMC Counterbalance Mass
	11	5	16	D080015	A	Counterbalance Add On Mass, 20g, OMC
	2	1	3	-		SHCS, #4-40 UNC-2A X 1 Long (Ag-Plated)
	2	1	3	-		SHCS, #4-40 UNC-2A X 0.75 Long (Ag-Plated)
	2	1	3	-		Flat Washer, #4 (NAS 620-C4 or equivalent)
	26	5	31	-		Flat Washer, 1/4 (NAS 620-C416L or equivalent)
	26	5	31	-		SHCS, 1/4-20 UNC-3A X 1 Long, Vented (Ag-Plated)
	2	0	2	D0900643	v1	LIFTING JACK ASSEMBLY, OUTPUT MODE CLEANER
	1	0	1	281		Lab Jack (Newport P/N)
	1	0	1	443		Translation Stage (Newport P/N)
	1	0	1	SM-50		Micrometer (Newport P/N)
	1	0	1	D0900589	v1	Slide Plate, Lifting Jack
	2	1	3	D0900591	v1	Support Tab, Lifting Jack
	2	1	3	D0900593	v1	Stop Sleeve, Lifting Jack
	6	2	8	-		SHCS, 1/4-20 UNC-2A X 0.5 Long
	6	2	8	-		Flat Washer, 1/4 (NAS 620-C416L or equivalent)
	2	1	3	-		SHCS, 1/4-20 UNC-2A X 0.75 Long