



CALIFORNIA INSTITUTE OF TECHNOLOGY
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY

E080329-v3

DRWG NO. REV

SHEET SEE BOTTOM LEFT

ASSEMBLY NO.

D080718

MATERIAL LIST (or OVERALL BOM)

TITLE: HLTS Overall Assembly and Assembly Fixtures

ITEM NO.	REQ.	SPARE	TOTAL	PART NO.	DESCRIPTION
	1	0	1	D080718	HLTS OVERALL ASSEMBLY AND ASSEMBLY FIXTURES
	1	0	1	D070447	HLTS OVERALL ASSEMBLY
	1	0	1	D070442	STRUCTURAL WELDMENT, HLTS
	1	0	1	D070575	Base Plate, Structural Weldment, HLTS
	28	0	28	D070580	Top Gusset, Structural Weldment, HLTS
	8	0	8	D070579	Upper Front Gusset, Structural Weldment, HLTS
	4	0	4	D070576	Lower Front Gusset, Structural Weldment, HLTS
	2	0	2	D070578	Side Strut, Structural Weldment, HLTS
	8	0	8	D070577	Side Gusset, Structural Weldment, HLTS
	2	0	2	D0900626	MOUNTING PAD ASSEMBLY, HLTS
	1	0	1	D070374	Mounting Pad Body, HLTS
	4	2	6	1185-2EN246	Helicoil, #8-32 X 0.246 Long
	1	0	1	D0900628	Side Bracket, Mounting Pad, HLTS
	1	0	1	D0900627	Front Bracket, Mounting Pad, HLTS
	4	1	5	SHCS	SHCS, #8-32 X 0.5 Long
	4	1	5	WFV-08	Washer, Flat, Vented, #8
	18	4	22	SHCS	SHCS, #8-32 X 0.5 Long, Ag-Plated
	18	4	22	WFV-08	Washer, Flat, Vented, #8
	8	4	12	1185-2EN246	Helicoil, #8-32 X 0.246 Long
	1	0	1	D070332	HLTS SUSPENSION ASSEMBLY
	2	0	2	D070326	ROTATIONAL ADJUSTER, HLTS
	1	0	1	D070327	Base Plate, Rotational Adjuster, HLTS
	1	0	1	D070328	Rotating Plate, Rotational Adjuster, HLTS
	3	1	4	SHCS	SHCS, 1/4-20 X 0.625 Long
	3	1	4	WFV-25	Washer, Flat, Vented, 1/4
	ALT	0	ALT	D1003105	Shim, 0.0mm, Upper Blade, HLTS
	ALT	0	ALT	D1002973	Shim, 0.5mm, Upper Blade, HLTS
	1	0	1	D070331	Shim, 1.0mm, Upper Blade, HLTS
	ALT	0	ALT	D1003104	Shim, 1.5mm, Upper Blade, HLTS
	ALT	0	ALT	D1001914	Shim, 2.0mm, Upper Blade, HLTS
	1	0	1	D020622	Blade Clamp (0.0 Degree), Upper Blade, Inside, HLTS
	1	1	2	D020617	HLTS Upper Blade
	1	0	1	D020601	Blade Clamp (0.0 Degree), Upper Blade, Outside, HLTS
	3	1	4	WFV-31	Washer, Flat, Vented, 5/16
	3	1	4	SHCS	SHCS, 5/16-18 X 1.75 Long, Ag-Plated
	1	0	1	D070330	Push Plate, Rotational Adjuster, HLTS
	2	1	3	SHCS	SHCS, #8-32 X 1.25 Long
	2	1	3	1185-2EN410	Helicoil, #8-32 X 0.41 Long
	1	1	2	D0900990	SHCS, #8-32 X 1.5 Long, Fully Threaded, Rounded End
	1	0	1	D070329	Pull Plate, Rotational Adjuster, HLTS
	2	1	3	SHCS	SHCS, #8-32 X 1 Long, Ag-Plated
	1	1	2	WFV-08	Washer, Flat, Vented, #8
	1	1	2	SHCS	SHCS, #8-32 X 1.5 Long, Fully Threaded
	4	1	5	SHCS	SHCS, #8-32 X 0.5 Long, Ag-Plated
	2	0	2	D070340	UPPER WIRE ASSEMBLY, HLTS
	1	0	1	D020611	Upper Clamp, Upper Wire, Inside, HLTS
	6	4	10	1185-2EN246	Helicoil, #8-32 X 0.246 Long
	1	0	1	D070341	Upper Clamp, Upper Wire, Outside, HLTS
	2	1	3	SHCS	SHCS, #8-32 X 0.5 Long, Ag-Plated
	4	1	5	WFV-08	Washer, Flat, Vented, #8
	A/R	0	0	Wire	0.024" Diameter Steel Music Wire
	1	0	1	D020652	C-Clamp, Upper Mass, HLTS
	1	0	1	D020610	Lower Clamp, Upper Wire, Inside, HLTS
	1	0	1	D020624	Lower Clamp, Upper Wire, Outside, HLTS
	2	1	3	SHCS	SHCS, #8-32 X 0.5625 Long
	4	1	5	WFV-08	Washer, Flat, Vented, #8
	4	1	5	SHCS	SHCS, #8-32 X 1.125 Long
	1	0	1	D070335	UPPER MASS ASSEMBLY, HLTS
	1	0	1	D020605	Main Section, Upper Mass, HLTS
	3	1	4	3585-4EN625	Screw-Lock Helicoil, 1/4-20 X 0.625 Long
	2	0	2	D080221	Guard, Lower Blade, HLTS
	4	1	5	SHCS	SHCS, #8-32 X 0.75 Long, Ag-Plated
	12	3	15	WFV-08	Washer, Flat, Vented, #8
	4	2	6	D030025	SHCS, #8-32 X 1 Long, Fully Threaded, Rounded End, Ag-Plated
	8	2	10	Nut	Hex Nut, #8-32
	4	0	4	D020602	Blade Clamp (0.0 Degree), Lower Blade, Inside, HLTS
	4	0	4	D020615	HLTS Lower Blade
	4	0	4	D020623	Blade Clamp (0.0 Degree), Lower Blade, Outside, HLTS
	12	3	15	SHCS	SHCS, 1/4-20 X 1.25 Long, Ag-Plated
	10	2	12	WFV-25	Washer, Flat, Vented, 1/4
	1	0	1	D020607	T-Piece, Upper Mass, HLTS



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TITLE: HLTS Overall Assembly and Assembly Fixtures

ITEM NO.	REQ.	SPARE	TOTAL	PART NO.	DESCRIPTION
	1	1	2	3585-4EN250	Screw-Lock Helicoil, 1/4-20 X 0.25 Long
	1	0	1	D1001669	Pitch Insert, T-Piece, Upper Mass, HLTS
	1	1	2	Set Screw	Socket Set Screw, 1/2-20 X 3.5 Long, Ag-Plated
	2	1	3	Set Screw	Socket Set Screw, 1/4-20 X 1.5 Long, Ag-Plated
	1	0	1	D030139	Roll Offset, T-Piece, Upper Mass, HLTS
	2	1	3	Set Screw	Socket Set Screw, 1/4-20 X 0.5 Long, Ag-Plated
	4	0	4	D020653	Screwdrive System, Upper Mass, HLTS
	4	4	8	1185-2EN246	Helicoil, #8-32 X 0.246 Long
	8	2	10	SHCS	SHCS, #8-32 X 1 Long, Ag-Plated
	4	2	6	D0900990	SHCS, #8-32 X 1.5 Long, Fully Threaded, Rounded End
	9	1	10	D1001699	Magnet Holder, BOSEM, HLTS
	18	6	24	SHCS	SHCS, #4-40 X 0.625 Long, Ag-Plated
	9	1	10	D1001695	MAGNET AND FLAG ASSEMBLY, BOSEM
	1	0	1	D1001697	Magnet Retainer, BOSEM
	2	1	3	D1001534	Magnetic Plug, SUS
	1	0	1	D394394N35UHP	Sintered NdFeB Magnet, Ni-Plated, 10mm X 10mm, MMG-MagDev part number
	1	1	2	D1100574	BOSEM Flat Flag Disk
	1	1	2	D1100573	BOSEM Flag
	4	4	8	D1001698	Magnet Flag, BOSEM
	4	1	5	SHCS	SHCS, 1/4-20 X 2 Long, Fully Threaded
	4	1	5	Nut	Jam Nut, 1/4-20
A/R	0	0	0	D1001230	Additional Mass Disk, 10g
A/R	0	0	0	D1001229	Additional Mass Disk, 20g
A/R	0	0	0	D0901405	Additional Mass Disk, 50g
A/R	0	0	0	D070333	Additional Mass Disk, 100g
A/R	0	0	0	D080263	Additional Mass Disk, 150g
8	2	2	10	SHCS	SHCS, #4-40 X 0.25 Long, Ag-Plated
4	0	0	4	D070393	INTERMEDIATE WIRE ASSEMBLY, HLTS
1	0	0	1	D070585	Upper Clamp, Intermediate Wire, Inside, HLTS
2	2	2	4	1185-04EN224	Helicoil, #4-40 X 0.224 Long
1	0	0	1	D070394	Upper Clamp, Intermediate Wire, Outside, HLTS
2	1	1	3	SHCS	SHCS, #4-40 X 0.375 Long, Ag-Plated
2	1	1	3	WFV-04	Washer, Flat, Vented, #4
A/R	0	0	0	Wire	0.0134" Diameter Steel Music Wire
1	0	0	1	D030149	Intermediate Wire Breakoff, Intermediate Mass, HLTS
2	2	2	4	1185-2EN164	Helicoil, #8-32 X 0.164 Long
1	0	0	1	D070405	Lower Clamp, Intermediate Wire, Inside, HLTS
1	0	0	1	D070406	Lower Clamp, Intermediate Wire, Outside, HLTS
2	1	1	3	SHCS	SHCS, #8-32 X 0.625 Long
2	1	1	3	WFV-08	Washer, Flat, Vented, #8
12	3	3	15	SHCS	SHCS, #8-32 X 0.625 Long, Ag-Plated
1	0	0	1	D070334	INTERMEDIATE MASS ASSEMBLY, HLTS
1	0	0	1	D070336	Main Section, Intermediate Mass, HLTS
4	1	1	5	D970075	Dumbbell Standoff
4	1	1	5	D0901927	Sintered SmCo Magnet, 0.075" X 0.125"
A/R	0	0	0	Adhesive	UHV-Compatible Adhesive
1	0	0	1	D080181	INTERMEDIATE MASS CHANGER ASSEMBLY, HLTS
1	0	0	1	D030155	Center Offset, Intermediate Mass, HLTS
ALT	0	0	0	D080182	Collar, Upper, 100g, Intermediate Mass, HLTS
ALT	0	0	0	D080223	Collar, Upper, 300g, Intermediate Mass, HLTS
ALT	0	0	0	D080225	Collar, Upper, 500g, Intermediate Mass, HLTS
ALT	0	0	0	D080227	Collar, Upper, 700g, Intermediate Mass, HLTS
ALT	0	0	0	D080229	Collar, Upper, 900g, Intermediate Mass, HLTS
ALT	0	0	0	D080183	Collar, Lower, 100g, Intermediate Mass, HLTS
ALT	0	0	0	D080232	Collar, Lower, 300g, Intermediate Mass, HLTS
ALT	0	0	0	D080234	Collar, Lower, 500g, Intermediate Mass, HLTS
ALT	0	0	0	D080236	Collar, Lower, 700g, Intermediate Mass, HLTS
ALT	0	0	0	D080238	Collar, Lower, 900g, Intermediate Mass, HLTS
2	1	1	3	SHCS	SHCS, #8-32 X 0.75 Long
ALT	0	0	0	SHCS	SHCS, #8-32 X 0.75 Long, Ag-Plated
2	1	1	3	Set Screw	Socket Set Screw, 1/4-20 X 0.25 Long, Ag-Plated
2	0	0	2	D030156	Side Offset, Intermediate Mass, HLTS
4	2	2	6	3585-4EN250	Screw-Lock Helicoil, 1/4-20 X 0.25 Long
4	1	1	5	SHCS	SHCS, 1/4-20 X 1.5 Long, Fully Threaded
4	1	1	5	WFV-25	Washer, Flat, Vented, 1/4
4	1	1	5	Nut	Jam Nut, 1/4-20
4	1	1	5	Set Screw	Socket Set Screw, 1/4-20 X 0.5 Long, Ag-Plated
A/R	0	0	0	D1001230	Additional Mass Disk, 10g
A/R	0	0	0	D1001229	Additional Mass Disk, 20g
A/R	0	0	0	D0901405	Additional Mass Disk, 50g
A/R	0	0	0	D070333	Additional Mass Disk, 100g



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ITEM NO.	REQ.	SPARE	TOTAL	PART NO.	DESCRIPTION
	A/R	0	0	D080263	Additional Mass Disk, 150g
	6	1	7	SHCS	SHCS, #8-32 X 0.625 Long, Ag-Plated
	1	0	1	D070436	LOWER LOOP WIRE ASSEMBLY, HLTS
	2	0	2	D030148	Lower Wire Breakoff, Intermediate Mass, HLTS
	4	2	6	1185-2EN164	Helicoil, #8-32 X 0.164 Long
	4	0	4	D070438	Clamp, Lower Loop Wire, HLTS
	A/R	0	0	Wire	0.0106" Diameter Steel Music Wire
	4	1	5	SHCS	SHCS, #8-32 X 0.5625 Long
	4	1	5	WFV-08	Washer, Flat, Vented, #8
	1	0	1	D070337	BOTTOM MASS ASSEMBLY, HLTS
	1	0	1	D070338	Metal Test Mass, HLTS
	4	1	5	D0902432	MAGNET/STANDOFF ASSEMBLY
	1	0	1	D0902431	Magnet Standoff
	1	0	1	D0900040	Sintered SmCo Magnet, 2mm X 0.5 mm
	A/R	0	0	Adhesive	UHV-Compatible Adhesive
	A/R	0	0	Adhesive	UHV-Compatible Adhesive
	2	1	3	D080124	Prism Breakoff, Lower Wire, Bottom Mass, HLTS
	12	3	15	WFV-08	Washer, Flat, Vented, #8
	4	1	5	SHCS	SHCS, #8-32 X 0.75 Long
	2	0	2	D1100197	Spacer, Bottom Mass Optics, HLTS/HSTS
	2	1	3	033-0280	Metallized Mirror, Round
	8	2	10	WFV-04	Washer, Flat, Vented, #4
	8	2	10	SHCS	SHCS, #4-40 X 0.5 Long, Vented
	2	4	6	D0901286	Secondary Metal Prism Breakoff, HLTS
	8	2	10	SHCS	SHCS, #8-32 X 0.75 Long
	8	2	10	WFV-08	Washer, Flat, Vented, #8
	2	0	2	D070308	TOP BLADE GUARD ASSEMBLY, HLTS
	2	0	2	D070309	Top Blade Guard Riser, HLTS
	4	2	6	1185-4EN375	Helicoil, 1/4-20 X 0.375 Long
	4	1	5	WFV-25	Washer, Flat, Vented, 1/4
	4	1	5	SHCS	SHCS, 1/4-20 X 1 Long
	1	0	1	D070310	Top Blade Guard Bar, HLTS
	2	1	3	1185-4EN500	Helicoil, 1/4-20 X 0.5 Long
	2	1	3	Nut	Jam Nut, 1/4-20
	2	1	3	D0900999	SHCS, 1/4-20 X 2 Long, Fully Threaded, Rounded End
	16	4	20	SHCS	SHCS, #8-32 X 0.5 Long, Ag-Plated
	16	4	20	WFV-08	Washer, Flat, Vented, #8
	10	2	12	D080726	EARTHQUAKE STOP ASSEMBLY, LONG MOUNT, HLTS
	1	0	1	D070460	Earthquake Stop Mount, Long, HLTS
	1	1	2	1185-4EN375	Helicoil, 1/4-20 X 0.375 Long
	1	0	1	D080725	EARTHQUAKE STOP FOR METAL OR GLASS, 2.5 INCH
	1	0	1	D030021	SHCS, 1/4-20 X 2.5 Long, Fully Threaded, Rounded End
	1	1	2	1185-4EN250	Helicoil, 1/4-20 X 0.25 Long
	1	0	1	D080724	Mounting Cap, Earthquake Stop
	1	0	1	D060546	Impact Absorber for Glass Stops, Earthquake Stop
	1	0	1	D060548	Fused Silica Earthquake Stop
	1	1	2	Nut	Jam Nut, 1/4-20
	20	4	24	SHCS	SHCS, #8-32 X 0.5 Long, Ag-Plated
	20	4	24	WFV-08	Washer, Flat, Vented, #8
	8	2	10	D080727	EARTHQUAKE STOP ASSEMBLY, LONG BRACKET, HLTS
	1	0	1	D070322	Earthquake Stop Bracket, Long, HLTS
	1	1	2	1185-4EN375	Helicoil, 1/4-20 X 0.375 Long
	1	0	1	D030021	SHCS, 1/4-20 X 2.5 Long, Fully Threaded, Rounded End
	1	1	2	Nut	Jam Nut, 1/4-20
	16	4	20	SHCS	SHCS, #8-32 X 0.5 Long, Ag-Plated
	16	4	20	WFV-08	Washer, Flat, Vented, #8
	2	1	3	D1002821	EARTHQUAKE STOP ASSEMBLY, BOTTOM MASS, LOWER, HLTS
	1	0	1	D1002822	EARTHQUAKE STOP BRACKET ASSEMBLY, BOTTOM MASS, LOWER, HLTS
	1	0	1	D1002823	Earthquake Stop Bracket Back, Bottom Mass, Lower, HLTS
	1	0	1	D1002824	Earthquake Stop Bracket Side, Bottom Mass, Lower, HLTS
	1	1	2	1185-4EN375	Helicoil, 1/4-20 X 0.375 Long
	2	1	3	SHCS	SHCS, #8-32 X 1 Long
	2	1	3	WFV-08	Washer, Flat, Vented, #8
	1	0	1	D080725	EARTHQUAKE STOP FOR METAL OR GLASS, 2.5 INCH
	1	0	1	D030021	SHCS, 1/4-20 X 2.5 Long, Fully Threaded, Rounded End
	1	1	2	1185-4EN250	Helicoil, 1/4-20 X 0.25 Long
	1	0	1	D080724	Mounting Cap, Earthquake Stop
	1	0	1	D060546	Impact Absorber for Glass Stops, Earthquake Stop
	1	0	1	D060548	Fused Silica Earthquake Stop
	1	1	2	Nut	Jam Nut, 1/4-20
	4	1	5	SHCS	SHCS, #8-32 X 0.5 Long, Ag-Plated, Vented



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ITEM NO.	REQ.	SPARE	TOTAL	PART NO.	DESCRIPTION
	4	1	5	WFV-08	Washer, Flat, Vented, #8
	4	1	5	D070319	EARTHQUAKE STOP ASSEMBLY, BRIDGE, HLTS
	1	0	1	D070321	Earthquake Stop Bridge Crossbar, HLTS
	4	2	6	1185-4EN500	Helicoil, 1/4-20 X 0.5 Long
	2	0	2	D0901241	Earthquake Stop Mount, Bridge, HLTS
	2	1	3	SHCS	SHCS, 1/4-20 X 0.75 Long
	2	1	3	WFV-25	Washer, Flat, Vented, 1/4
	4	2	6	1185-2EN410	Helicoil, #8-32 X 0.41 Long
	2	0	2	D080725	EARTHQUAKE STOP FOR METAL OR GLASS, 2.5 INCH
	1	0	1	D030021	SHCS, 1/4-20 X 2.5 Long, Fully Threaded, Rounded End
	1	1	2	1185-4EN250	Helicoil, 1/4-20 X 0.25 Long
	1	0	1	D080724	Mounting Cap, Earthquake Stop
	1	0	1	D060546	Impact Absorber for Glass Stops, Earthquake Stop
	1	0	1	D060548	Fused Silica Earthquake Stop
	2	1	3	Nut	Jam Nut, 1/4-20
	16	4	20	SHCS	SHCS, #8-32 X 0.5 Long
	16	4	20	WFV-08	Washer, Flat, Vented, #8
	1	0	1	D080677	COIL HOLDER ASSEMBLY, HLTS
	1	0	1	D070449	Coil Holder, HLTS
	12	3	15	D030023	SHCS, 1/4-20 X 1 Long, Fully Threaded, Rounded End
	12	3	15	Nut	Jam Nut, 1/4-20
	12	6	18	1185-4EN250	Helicoil, 1/4-20 X 0.25 Long
	4	0	4	D1002133	MOUNTING BRACKET, COIL HOLDER, HLTS
	1	0	1	D1002134	Mounting Bracket Lateral Section, Coil Holder, HLTS
	1	0	1	D1002135	Mounting Bracket Longitudinal Section, Coil Holder, HLTS
	2	1	3	SHCS	SHCS, #4-40 X 0.75 Long
	2	1	3	WFV-04	Washer, Flat, Vented, #4
	12	3	15	SHCS	SHCS, #8-32 X 0.5 Long
	12	3	15	WFV-08	Washer, Flat, Vented, #8
	12	6	18	1185-2EN246	Helicoil, #8-32 X 0.246 Long
	6	3	9	D060218	BIRMINGHAM OSEM ASSEMBLY
	24	6	30	SHCS	SHCS, #4-40 X 1 Long
	24	6	30	WFV-04	Washer, Flat, Vented, #4
	12	3	15	SHCS	SHCS, #8-32 X 0.5 Long, Ag-Plated
	12	3	15	WFV-08	Washer, Flat, Vented, #8
	2	0	2	D0902024	UPPER AOSEM ALIGNMENT ASSEMBLY, INTERMEDIATE MASS, HLTS
	1	0	1	D0902025	Upper AOSEM Mounting Bracket, Intermediate Mass, HLTS
	1	0	1	D0901492	AOSEM Alignment Bracket, Intermediate Mass, HLTS
	2	1	3	SHCS	SHCS, #8-32 X 0.625 Long
	2	1	3	1185-2EN246	Helicoil, #8-32 X 0.246 Long
	2	1	3	WFV-08	Washer, Flat, Vented, #8
	1	0	1	D0901065	AOSEM ASSEMBLY
	1	0	1	D1002858	AOSEM Adjustment Collar (Reverse Side)
	1	1	2	SHCS	SHCS, #2-56 X 0.375 Long
	2	0	2	D1000659	AOSEM Adjuster Shaft
	2	0	2	D1002865	Adjustment Nut, Thick, AOSEM Alignment Assembly
	1	1	2	D030021	SHCS, 1/4-20 X 2.5 Long, Fully Threaded, Rounded End
	1	1	2	1185-4EN250	Helicoil, 1/4-20 X 0.25 Long
	1	1	2	Nut	Jam Nut, 1/4-20
	1	1	2	1185-04EN168	Helicoil, #4-40 X 0.168 Long
	1	1	2	Set Screw	Socket Set Screw, #4-40 X 0.25 Long
	4	1	5	SHCS	SHCS, #8-32 X 0.5 Long, Ag-Plated
	4	1	5	WFV-08	Washer, Flat, Vented, #8
	2	0	2	D0901551	LOWER AOSEM ALIGNMENT ASSEMBLY, INTERMEDIATE MASS, HLTS
	1	0	1	D0901493	Lower AOSEM Mounting Bracket, Intermediate Mass, HLTS
	1	0	1	D0901492	AOSEM Alignment Bracket, Intermediate Mass, HLTS
	2	1	3	SHCS	SHCS, #8-32 X 0.625 Long
	2	1	3	1185-2EN246	Helicoil, #8-32 X 0.246 Long
	2	1	3	WFV-08	Washer, Flat, Vented, #8
	1	0	1	D0901065	AOSEM ASSEMBLY
	1	0	1	D1002858	AOSEM Adjustment Collar (Reverse Side)
	1	1	2	SHCS	SHCS, #2-56 X 0.375 Long
	2	0	2	D1000659	AOSEM Adjuster Shaft
	2	0	2	D1002865	Adjustment Nut, Thick, AOSEM Alignment Assembly
	1	1	2	D030021	SHCS, 1/4-20 X 2.5 Long, Fully Threaded, Rounded End
	1	1	2	1185-4EN250	Helicoil, 1/4-20 X 0.25 Long
	1	1	2	Nut	Jam Nut, 1/4-20
	1	1	2	1185-04EN168	Helicoil, #4-40 X 0.168 Long
	1	1	2	Set Screw	Socket Set Screw, #4-40 X 0.25 Long
	4	1	5	SHCS	SHCS, #8-32 X 0.5 Long, Ag-Plated
	4	1	5	WFV-08	Washer, Flat, Vented, #8



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ITEM NO.	REQ.	SPARE	TOTAL	PART NO.	DESCRIPTION
	2	0	2	D0901552	UPPER AOSEM ALIGNMENT ASSEMBLY, BOTTOM MASS, HLTS
	1	0	1	D0901550	Upper AOSEM Mounting Bracket, Bottom Mass, HLTS
	1	0	1	D0901549	AOSEM Alignment Bracket, Bottom Mass, HLTS
	2	1	3	SHCS	SHCS, #8-32 X 0.625 Long
	2	1	3	1185-2EN246	Helicoil, #8-32 X 0.246 Long
	2	1	3	WFV-08	Washer, Flat, Vented, #8
	1	0	1	D0901065	AOSEM ASSEMBLY
	1	0	1	D1002858	AOSEM Adjustment Collar (Reverse Side)
	1	1	2	SHCS	SHCS, #2-56 X 0.375 Long
	2	0	2	D1000659	AOSEM Adjuster Shaft
	2	0	2	D1002865	Adjustment Nut, Thick, AOSEM Alignment Assembly
	1	0	1	D080725	EARTHQUAKE STOP FOR METAL OR GLASS, 2.5 INCH
	1	0	1	D030021	SHCS, 1/4-20 X 2.5 Long, Fully Threaded, Rounded End
	1	1	2	1185-4EN250	Helicoil, 1/4-20 X 0.25 Long
	1	0	1	D080724	Mounting Cap, Earthquake Stop
	1	0	1	D060546	Impact Absorber for Glass Stops, Earthquake Stop
	1	0	1	D060548	Fused Silica Earthquake Stop
	1	1	2	1185-4EN250	Helicoil, 1/4-20 X 0.25 Long
	1	1	2	Nut	Jam Nut, 1/4-20
	1	1	2	1185-04EN168	Helicoil, #4-40 X 0.168 Long
	1	1	2	Set Screw	Socket Set Screw, #4-40 X 0.25 Long
	4	1	5	SHCS	SHCS, #8-32 X 0.5 Long, Ag-Plated
	4	1	5	WFV-08	Washer, Flat, Vented, #8
	2	0	2	D0901553	LOWER AOSEM ALIGNMENT ASSEMBLY, BOTTOM MASS, HLTS
	1	0	1	D0900340	Lower AOSEM Mounting Bracket, Bottom Mass, HLTS
	1	0	1	D0901549	AOSEM Alignment Bracket, Bottom Mass, HLTS
	2	1	3	SHCS	SHCS, #8-32 X 0.625 Long
	2	1	3	1185-2EN246	Helicoil, #8-32 X 0.246 Long
	2	1	3	WFV-08	Washer, Flat, Vented, #8
	1	0	1	D0901065	AOSEM ASSEMBLY
	1	0	1	D1002858	AOSEM Adjustment Collar (Reverse Side)
	1	1	2	SHCS	SHCS, #2-56 X 0.375 Long
	2	0	2	D1000659	AOSEM Adjuster Shaft
	2	0	2	D1002865	Adjustment Nut, Thick, AOSEM Alignment Assembly
	1	0	1	D080725	EARTHQUAKE STOP FOR METAL OR GLASS, 2.5 INCH
	1	0	1	D030021	SHCS, 1/4-20 X 2.5 Long, Fully Threaded, Rounded End
	1	1	2	1185-4EN250	Helicoil, 1/4-20 X 0.25 Long
	1	0	1	D080724	Mounting Cap, Earthquake Stop
	1	0	1	D060546	Impact Absorber for Glass Stops, Earthquake Stop
	1	0	1	D060548	Fused Silica Earthquake Stop
	1	1	2	1185-4EN250	Helicoil, 1/4-20 X 0.25 Long
	1	1	2	Nut	Jam Nut, 1/4-20
	1	1	2	1185-04EN168	Helicoil, #4-40 X 0.168 Long
	1	1	2	Set Screw	Socket Set Screw, #4-40 X 0.25 Long
	4	1	5	SHCS	SHCS, #8-32 X 0.5 Long, Ag-Plated, Vented
	4	1	5	WFV-08	Washer, Flat, Vented, #8
	20	10	30	D0900004	UHV-Compatible Cable Clamp
	10	2	12	WFV-25	Washer, Flat, Vented, 1/4
	10	2	12	SHCS	SHCS, 1/4-20 X 3 Long
	10	2	12	Nut	Jam Nut, 1/4-20
	8	4	12	1185-2EN492	Helicoil, #8-32 X 0.492 Long
	1	0	1	D080265	UPPER BLADE BAKE FIXTURE, HLTS
	1	0	1	D080268	Base Plate, Upper Blade Bake Fixture, HLTS
	2	0	2	D1003305	Stop Block, Upper Blade Bake Fixture, HLTS
	10	2	12	WFV-25	Washer, Flat, Vented, 1/4
	4	1	5	SHCS	SHCS, 1/4-20 X 0.75 Long, Ag-Plated
	14	6	20	1185-4EN375	Helicoil, 1/4-20 X 0.375 Long
	4	1	5	SHCS	SHCS, 1/4-20 X 0.625 Long
	1	0	1	D1003307	Holddown Bar, Upper Blade Bake Fixture, HLTS
	2	1	3	SHCS	SHCS, 1/4-20 X 1 Long
	4	0	4	D1003306	Side Support, Upper Blade Bake Fixture, HLTS
	8	2	10	SHCS	SHCS, 1/4-20 X 2.5 Long
	2	0	2	D080267	Top Bridge, Upper Blade Bake Fixture, HLTS
	2	1	3	1185-4EN250	Helicoil, 1/4-20 X 0.25 Long
	2	1	3	D0900999	SHCS, 1/4-20 X 2 Long, Fully Threaded, Rounded End
	2	1	3	Nut	Jam Nut, 1/4-20
	1	0	1	D0900665	LIBRARY OF CLAMPS, UPPER BLADE, HLTS
	1	0	1	D0900666	Base Plate, Library of Clamps, Upper Blade, HLTS
	2	0	2	D020622	Blade Clamp (0.0 Degree), Upper Blade, Inside, HLTS
	2	0	2	D0900667	Blade Clamp (0.5 Degree), Upper Blade, Inside, HLTS
	2	0	2	D0900668	Blade Clamp (1.0 Degree), Upper Blade, Inside, HLTS



MATERIAL LIST (or OVERALL BOM)

TITLE: HLTS Overall Assembly and Assembly Fixtures

ITEM NO.	REQ.	SPARE	TOTAL	PART NO.	DESCRIPTION
	2	0	2	D0900669	Blade Clamp (1.5 Degree), Upper Blade, Inside, HLTS
	2	0	2	D0900670	Blade Clamp (2.0 Degree), Upper Blade, Inside, HLTS
	2	0	2	D0900671	Blade Clamp (2.5 Degree), Upper Blade, Inside, HLTS
	2	0	2	D0900672	Blade Clamp (3.0 Degree), Upper Blade, Inside, HLTS
	2	0	2	D0900673	Blade Clamp (3.5 Degree), Upper Blade, Inside, HLTS
	2	0	2	D020601	Blade Clamp (0.0 Degree), Upper Blade, Outside, HLTS
	2	0	2	D0900674	Blade Clamp (0.5 Degree), Upper Blade, Outside, HLTS
	2	0	2	D0900675	Blade Clamp (1.0 Degree), Upper Blade, Outside, HLTS
	2	0	2	D0900676	Blade Clamp (1.5 Degree), Upper Blade, Outside, HLTS
	2	0	2	D0900677	Blade Clamp (2.0 Degree), Upper Blade, Outside, HLTS
	2	0	2	D0900678	Blade Clamp (2.5 Degree), Upper Blade, Outside, HLTS
	2	0	2	D0900679	Blade Clamp (3.0 Degree), Upper Blade, Outside, HLTS
	2	0	2	D0900680	Blade Clamp (3.5 Degree), Upper Blade, Outside, HLTS
	32	8	40	SHCS	SHCS, 5/16-18 X 1.25 Long
	1	0	1	D020660	BLADE PULLDOWN DEVICE, HAM SUSPENSIONS
	1	0	1	D010266	Wire Clamp Cylinder, Blade Pulldown Device
	1	0	1	D010261	Lower Wire Clamp Plate, Blade Pulldown Device
	2	1	3	WFV-25	Washer, Flat, Vented, 1/4
	2	1	3	SHCS	SHCS, 1/4-20 X 1.5 Long
	2	0	2	D010268	Lower Wire Clamp, Blade Pulldown Device
	A/R	0	0	Wire	0.024" Diameter Steel Music Wire
	4	1	5	WFV-08	Washer, Flat, Vented, #8
	2	1	3	SHCS	SHCS, #8-32 X 0.75 Long, Ag-Plated
	1	1	2	HHB	Bolt, Hex Head, 3/8-16 X 4.5 Long
	1	1	2	D1003362	Base Plate, Blade Pulldown Device
	A/R	0	0	Weights	Interlocking Test Weights
	1	0	1	D0901814	Upper Clamp, Upper Wire, Inside, HLTS (Blade Characterization Stand)
	1	0	1	D070341	Upper Clamp, Upper Wire, Outside, HLTS
	4	1	5	SHCS	SHCS, #8-32 X 0.5 Long, Ag-Plated
	1	0	1	D0901815	Upper Clamp, Intermediate Wire, Inside, HLTS (Blade Characterization Stand)
	1	0	1	D0901813	Upper Clamp, Intermediate Wire, Outside, HLTS (Blade Characterization Stand)
	2	1	3	WFV-04	Washer, Flat, Vented, #4
	2	1	3	SHCS	SHCS, #4-40 X 0.375 Long, Ag-Plated
	2	1	3	SHCS	SHCS, #4-40 X 0.25 Long, Ag-Plated
	1	0	1	D020132	Lower Blade Wire Clamp, HSTS
	1	0	1	D0901855	Upper Clamp, Intermediate Wire, Outside, OMC/HSTS (Blade Characterization Stand)
	2	1	3	WFV-02	Washer, Flat, Vented, #2
	4	1	5	SHCS	SHCS, #2-56 X 0.25 Long, Ag-Plated
	1	0	1	D0900594	UPPER WIRE JIG ASSEMBLY, HLTS
	1	0	1	D0900595	Base Plate, Upper Wire Jig, HLTS
	1	0	1	D0900563	Pin Support, Wire Jig
	1	1	2	92735A230	Clevis Pin (McMaster-Carr P/N)
	1	1	2	98408A120	Retaining Ring (McMaster-Carr P/N)
	6	2	8	SHCS	SHCS, #4-40 X 0.5 Long
	6	2	8	WFV-04	Washer, Flat, Vented, #4
	1	0	1	D0900596	Blade Clamp Mount, Upper Wire Jig
	8	2	10	SHCS	SHCS, #8-32 X 0.625 Long
	4	1	5	WFV-08	Washer, Flat, Vented, #8
	1	0	1	D0900597	Wire Clamp Mount, Upper Wire Jig
	2	1	3	D0900603	Wire Start Clamp, Inside, Upper Wire Jig
	2	1	3	D020380	Wire Start Clamp, Outside
	4	1	5	SHCS	SHCS, #4-40 X 0.375 Long, Ag-Plated
	4	0	4	D980184	LOS Clamp, Long
	4	1	5	SHCS	SHCS, 1/4-20 X 1.5 Long
	4	1	5	WFV-25	Washer, Flat, Vented, 1/4
	1	0	1	D0900681	LIBRARY OF CLAMPS, LOWER BLADE, HLTS
	1	0	1	D0900689	Base Plate, Library of Clamps, Lower Blade, HLTS
	4	0	4	D020602	Blade Clamp (0.0 Degree), Lower Blade, Inside, HLTS
	4	0	4	D0900682	Blade Clamp (0.5 Degree), Lower Blade, Inside, HLTS
	4	0	4	D0900683	Blade Clamp (1.0 Degree), Lower Blade, Inside, HLTS
	4	0	4	D0900684	Blade Clamp (1.5 Degree), Lower Blade, Inside, HLTS
	4	0	4	D0900685	Blade Clamp (2.0 Degree), Lower Blade, Inside, HLTS
	4	0	4	D0900686	Blade Clamp (2.5 Degree), Lower Blade, Inside, HLTS
	4	0	4	D0900687	Blade Clamp (3.0 Degree), Lower Blade, Inside, HLTS
	4	0	4	D0900688	Blade Clamp (3.5 Degree), Lower Blade, Inside, HLTS
	4	0	4	D020623	Blade Clamp (0.0 Degree), Lower Blade, Outside, HLTS
	4	0	4	D0900690	Blade Clamp (0.5 Degree), Lower Blade, Outside, HLTS
	4	0	4	D0900691	Blade Clamp (1.0 Degree), Lower Blade, Outside, HLTS
	4	0	4	D0900692	Blade Clamp (1.5 Degree), Lower Blade, Outside, HLTS
	4	0	4	D0900693	Blade Clamp (2.0 Degree), Lower Blade, Outside, HLTS
	4	0	4	D0900694	Blade Clamp (2.5 Degree), Lower Blade, Outside, HLTS
	4	0	4	D0900695	Blade Clamp (3.0 Degree), Lower Blade, Outside, HLTS



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E080329-v3

DRWG NO. REV

SHEET SEE BOTTOM LEFT

ASSEMBLY NO.

D080718

MATERIAL LIST (or OVERALL BOM)

TITLE: HLTS Overall Assembly and Assembly Fixtures

ITEM NO.	REQ.	SPARE	TOTAL	PART NO.	DESCRIPTION
	4	0	4	D0900696	Blade Clamp (3.5 Degree), Lower Blade, Outside, HLTS
	64	14	78	SHCS	SHCS, 1/4-20 X 1 Long
	1	0	1	D1000244	Magnetic Plug Installation Fixture
	1	0	1	D0900630	INTERMEDIATE WIRE JIG ASSEMBLY, HLTS
	1	0	1	D0900633	Base Plate, Intermediate Wire Jig
	1	0	1	D0900563	Pin Support, Wire Jig
	1	1	2	92735A230	Clevis Pin (McMaster-Carr P/N)
	1	1	2	98408A120	Retaining Ring (McMaster-Carr P/N)
	8	2	10	SHCS	SHCS, #4-40 X 0.5 Long
	6	2	8	WFV-04	Washer, Flat, Vented, #4
	1	0	1	D0900631	Blade Clamp Mount, Intermediate Wire Jig
	7	2	9	SHCS	SHCS, #8-32 X 0.5 Long
	4	1	5	WFV-08	Washer, Flat, Vented, #8
	1	0	1	D0900632	Wire Clamp Mount, Intermediate Wire Jig
	3	2	5	1185-2EN246	Helicoil, #8-32 X 0.246 Long
	2	0	2	D0900634	Wire Start Clamp, Inside, Intermediate Wire Jig
	2	0	2	D020380	Wire Start Clamp, Outside
	4	1	5	SHCS	SHCS, #4-40 X 0.375 Long, Ag-Plated
	4	0	4	D980184	LOS Clamp, Long
	4	1	5	SHCS	SHCS, 1/4-20 X 1.5 Long
	4	1	5	WFV-25	Washer, Flat, Vented, 1/4
	1	0	1	D1002371	MAGNET GLUING FIXTURE ASSEMBLY
	1	0	1	D1002372	Magnet Gluing Holder
	2	0	2	D1002373	Magnet Gluing Clamping Block
	2	1	3	SHCS	SHCS, #8-32 X 1.5 Long, Ag-Plated
	4	1	5	WFV-08	Washer, Flat, Vented, #8
	2	1	3	Nut	Hex Nut, #8-32
	1	0	1	D0901461	MAGNET PLACEMENT FIXTURE, INTERMEDIATE MASS, HLTS
	1	0	1	D0902060	Base Plate, Magnet Placement Fixture, Intermediate Mass
	2	0	2	D0902062	Vertical Locating Block, Magnet Placement Fixture, Intermediate Mass
	8	2	10	Washer	Washer, Flat, Vented, 1/4
	4	1	5	SHCS	SHCS, 1/4-20 X 1 Long
	2	0	2	1726A31	Handle (McMaster-Carr P/N)
	4	1	5	SHCS	SHCS, #8-32 X 0.5 Long
	4	1	5	D980184	LOS Clamp, Long
	4	1	5	SHCS	SHCS, 1/4-20 X 1.5 Long
	1	0	1	D0902444	POSITIONING STANDOFF, MAGNET PLACEMENT FIXTURE, INTERMEDIATE MASS
	1	0	1	D0902445	Standoff Plate, Magnet Placement Fixture, Intermediate Mass, HLTS
	4	1	5	D1002342	Standoff Block for HSTS Ring Fixture
	4	1	5	SHCS	SHCS, #8-32 X 1 Long
	4	1	5	D0902452	Standoff Side Plate, Short, Magnet Placement Fixture, Intermediate Mass, HLTS
	8	2	10	Washer	Washer, Flat, Vented, #4
	8	2	10	SHCS	SHCS, #4-40 X 0.5 Long
	4	1	5	D0900999	SHCS, 1/4-20 X 2 Long, Fully Threaded, Rounded End
	4	1	5	D1002341	Magnet Bushing for HSTS Ring Fixture
	4	1	5	D1100043	Magnet Gluing Weight
	1	0	1	D0901419	LOWER LOOP WIRE JIG ASSEMBLY, HLTS
	1	0	1	D0901433	Base Plate, Lower Loop Wire Jig, HLTS
	2	0	2	D0900563	Pin Support, Wire Jig
	2	1	3	92735A230	Clevis Pin (McMaster-Carr P/N)
	2	1	3	98408A120	Retaining Ring (McMaster-Carr P/N)
	12	3	15	SHCS	SHCS, #4-40 X 0.5 Long
	12	3	15	WFV-04	Washer, Flat, Vented, #4
	4	1	5	D0901435	Wire Start Clamp, Inside, Lower Loop Wire Jig, HLTS
	4	1	5	D020380	Wire Start Clamp, Outside
	8	2	10	SHCS	SHCS, #4-40 X 0.375 Long, Ag-Plated
	2	0	2	D0901436	Wire Clamp Mount, Lower Loop Wire Jig, HLTS
	8	2	10	SHCS	SHCS, #8-32 X 1 Long
	6	4	10	1185-2EN410	Helicoil, #8-32 X 0.246 Long
	6	2	8	SHCS	SHCS, #8-32 X 0.5 Long
	4	0	4	D980184	LOS Clamp, Long
	4	1	5	WFV-25	Washer, Flat, Vented, 1/4
	4	1	5	SHCS	SHCS, 1/4-20 X 1.5 Long
	1	0	1	D0901460	MAGNET PLACEMENT FIXTURE, BOTTOM MASS, HLTS
	1	0	1	D1100356	OPTIC BASE ASSEMBLY, MAGNET PLACEMENT FIXTURE
	1	0	1	D0902064	Base Plate, Optic Base Assembly
	4	0	4	D1100360	Optic Base Riser, Magnet Placement Fixture
	8	2	10	D0902066	Optic Rest Block, Optic Base Assembly, Magnet Placement Fixture
	4	1	5	SHCS	SHCS, 1/4-20 X 0.5 Long
	8	2	10	SHCS	SHCS, 1/4-20 X 1 Long
	8	2	10	SHCS	SHCS, 1/4-20 X 1.5 Long
	2	1	3	1726A31	Handle (McMaster-Carr P/N)
	4	1	5	SHCS	SHCS, #8-32 X 0.5 Long
	4	0	4	D980184	LOS Clamp, Long



MATERIAL LIST (or OVERALL BOM)

TITLE: HLTS Overall Assembly and Assembly Fixtures

ITEM NO.	REQ.	SPARE	TOTAL	PART NO.	DESCRIPTION
	4	1	5	WFV-25	Washer, Flat, Vented, 1/4
	1	0	1	D0902087	POSITIONING STANDOFF, MAGNET PLACEMENT FIXTURE, BOTTOM MASS, HLTS
	1	0	1	D0902068	Standoff Ring, Magnet Placement Fixture, Bottom Mass, HLTS
	4	1	5	D1002342	Standoff Block for HSTS Ring Fixture
	4	1	5	SHCS	SHCS, #8-32 X 1 Long
	4	1	5	D1002405	Locating Stop, Magnet Fixture
	4	1	5	D990148	Fluorel Tip, 1/4-20
	4	1	5	D0900999	SHCS, 1/4-20 X 2 Long, Fully Threaded, Rounded End
	4	1	5	D1002341	Magnet Bushing for HSTS Ring Fixture
	4	1	5	D1100043	Magnet Gluing Weight
	1	0	1	D0902459	SAPPHIRE PRISM PLACEMENT FIXTURE, HLTS
	1	0	1	D0902658	OPTIC HOLDER, HAM TRIPLE SUSPENSIONS
	1	0	1	D0902460	Base Plate, Optic Holder
	2	0	2	D0902461	Optic Rest Wedge, Optic Holder
	6	2	8	SHCS	SHCS, 1/4-20 X 1 Long
	10	3	13	Washer	Washer, Flat, 1/4 (NAS 620-C416L or equivalent)
	2	0	2	D0902585	Optic Rest Plate, Optic Holder
	8	2	10	SHCS	SHCS, 1/4-20 X 0.75 Long
	4	0	4	D980184	LOS Clamp, Long
	4	1	5	SHCS	SHCS, 1/4-20 X 1.5 Long
	1	0	1	D0902661	SAPPHIRE PRISM BONDING JIG, HLTS
	1	0	1	D0902662	SAPPHIRE PRISM BONDING FIXTURE, HLTS
	1	0	1	D0902665	Bonding Template Front, Sapphire Prism, HLTS
	2	1	3	91585A018	Dowel Pin, 2mm Diameter X 10mm Long (McMaster Carr P/N)
	2	0	2	D0902666	Bonding Template Side, Sapphire Prism, HAM Triple Suspension
	10	2	12	Washer	Washer, Flat, 1/4 (NAS 620-C416L or equivalent)
	10	2	12	SHCS	SHCS, #4-40 X 0.5 Long
	2	1	3	D0902669	Support Cylinder, Sapphire Prism Bonding Fixture, HLTS
	2	0	2	D080409	Alignment Guide, Bonding Template
	8	2	10	SHCS	SHCS, #2-56 X 0.375 Long
	2	0	2	HR-13	Locking Micrometer (Newport Corp. P/N)
	1	1	2	8688A151	Spring Plunger, Round-Nose, 1/4-20 X 1 Long (McMaster-Carr P/N)
	1	1	2	Nut	Jam Nut, 1/4-20
	1	0	1	D0902721	Sapphire Prism Holder Guide, HAM Triple Suspension
	1	0	1	D0902663	SAPPHIRE PRISM HOLDER ASSEMBLY
	1	1	2	D0902664	Sapphire Prism Holder
	1	0	1	D0902722	Sapphire Prism Holder Extension
	2	1	3	SHCS	SHCS, #2-56 X 0.375 Long
	4	1	5	91585A018	Dowel Pin, 2mm Diameter X 10mm Long (McMaster Carr P/N)
	1	1	2	D080468	SHCS, #2-56 X 0.375 Long, Rounded End
	16	16	32	D080723	Cap, Resin, Earthquake Stop