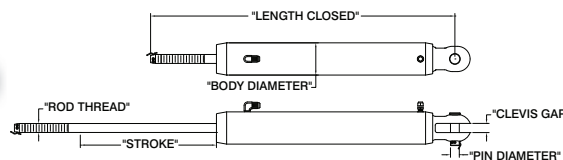


## Hydraulic Cylinders

Minimal weight. Minimal windage. Maximum reliability. Navtec standard cylinder rods are made from 316 stainless steel. Tubes, lower clevis and caps are made of black hard-coated aluminum. Cylinder bores are specially polished for longer seal life. Navtec stainless steel cylinders represent the highest standard of performance worldwide, with 316 stainless construction throughout. Standard, Long, and Flattening Reef versions are available. Titanium componentry optional.

### A250 HP Hydraulic Cylinder



CYLINDER SIZE	MAX PULL FORCE @ RELIEF		BODY DIAMETER		ROD THREAD unf 2a	CLEVIS PIN & GAP	
	lbs	kg	in	mm		in	mm
-6	3,200	1,450	1.32	33.5	7/16-20	7/16	11.1
-10	5,800	2,630	1.66	42.2	1/2-20	1/2	12.7
-12	7,600	3,450	2.00	50.8	5/8-18	5/8	15.9
-17	10,900	4,940	2.25	57.2	5/8-18	5/8	15.9
-22	13,900	6,300	2.50	63.5	3/4-16	3/4	19.1
-30	22,100	10,020	3.25	82.6	7/8-14	7/8	22.2
-40	32,200	14,610	4.00	101.6	1-12	1	25.4
-48	32,200	14,610	4.00	101.6	1-12	1 1/8	28.6
-60	42,900	19,460	4.50	114.3	1 1/4-12	1 1/4	31.8
-76	42,900	19,460	4.50	114.3	1 1/4-12	SEE NOTE *	
-90	57,700	26,170	5.50	139.7	1 1/4-12	1 3/8	34.9
-110	73,200	33,200	6.00	152.4	1 3/8-12	1 1/2	38.1
-150	90,600	41,100	7.00	177.8	1 1/2-12	1 3/4	44.5

Max relief setting is 5,000 psi.

### A250 Cylinders

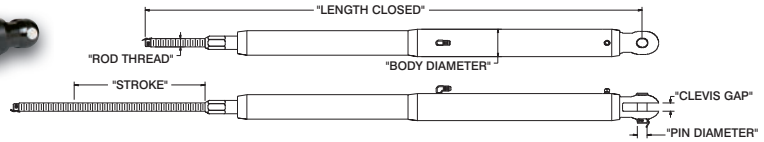
PART NUMBER	STROKE		LENGTH CLOSED		WEIGHT STD ALUMINUM	
	in	mm	in	mm	lbs	kg
A250-SE-006	9.0	229	18.7	474	1.9	0.86
A250-LE-006	13.5	343	23.2	589	2.3	1.04
A250-FE-006	20.2	513	29.9	759	3.2	1.44
A250-SE-010	9.0	229	19.5	495	2.7	1.24
A250-LE-010	13.5	343	24.0	609	3.3	1.49
A250-FE-010	20.0	509	31.1	789	5.0	2.27
A250-SE-012	9.5	241	21.1	536	4.4	2.01
A250-LE-012	14.2	361	25.8	656	5.6	2.54
A250-FE-012	24.1	611	36.1	916	8.6	3.92
A250-SE-017	9.5	241	21.2	539	5.1	2.31
A250-LE-017	14.2	361	25.9	659	6.3	2.84
A250-FE-017	30.0	763	42.9	1090	10.7	4.87
A250-SE-022	10.0	254	23.2	589	7.2	3.26
A250-LE-022	15.0	381	28.2	717	8.6	3.89
A250-FE-022	35.0	890	49.4	1255	15.4	6.99
A250-SE-030	11.0	279	26.6	675	12.6	5.71
A250-LE-030	16.5	419	32.1	814	15.4	6.98
A250-FE-030	40.0	1016	56.4	1433	30.0	13.61
A250-SE-040	12.0	305	28.6	726	20.3	9.22
A250-LE-040	18.0	457	34.6	879	24.8	11.26
A250-FE-040	45.2	1148	63.2	1606	44.0	19.96
A250-SE-048	12.0	305	28.8	733	20.9	9.48
A250-LE-048	18.0	457	34.8	885	25.4	11.52
A250-SE-060	13.9	353	32.5	827	33.0	14.97
A250-LE-060	21.0	533	39.7	1007	38.0	17.24
A250-SE-076	15.0	381	34.0	863	35.8	16.24
A250-LE-076	22.5	572	41.5	1054	42.9	19.46
A250-SE-090	16.0	406	36.1	917	50.0	22.68
A250-LE-090	24.0	609	44.1	1120	61.4	27.85
A250-SE-110	18.0	457	40.2	1022	67.5	30.62
A250-LE-110	27.0	686	49.2	1250	82.0	37.19
A250-SE-150	18.0	457	41.7	1060	97.5	44.23
A250-LE-150	27.0	686	50.7	1288	117.0	53.07

SE = standard cylinder, LE = long cylinder, FE = flattening reef cylinder. For stainless steel option, add (S) to end of any above part number. Example: A250SSE-010. Nuted pins standard -60 and above, nuted pins available on smaller sizes. Other custom cylinder configurations available. \* PIN = 1 1/4 (31.8mm), GAP = 1 5/16 (33.3mm).

## 5. Hydraulics

### A260 Mechanical Lock Hydraulic Cylinder Specifications

The Mechanical Lock allows the release of hydraulic pressure on the backstay cylinder while maintaining tension. However, there is no relief valve protection, as backstay tension is mechanically locked, not hydraulically controlled. This is useful for extended passages.



CYLINDER SIZE	LENGTH CLOSED		WEIGHT STD ALUMINUM	
	in	mm	lbs	kg
A260-SE-006	32.2	818	3.6	1.63
A260-LE-006	41.2	1046	4.1	1.84
A260-SE-010	32.9	836	5.0	2.27
A260-LE-010	41.9	1065	6.4	2.88
A260-SE-012	35.6	904	8.2	3.74
A260-LE-012	44.8	1138	10.5	4.76
A260-SE-017	35.7	907	8.9	4.04
A260-LE-017	45.1	1146	11.1	5.03
A260-SE-022	37.7	957	12.4	5.62
A260-LE-022	47.7	1211	15.2	6.89
A260-SE-030	42.9	1089	21.4	9.71
A260-LE-030	53.4	1357	26.6	12.07
A260-SE-040	47.0	1194	32.6	14.79
A260-LE-040	59.0	1499	40.4	18.33
A260-SE-048	47.2	1200	33.2	15.06
A260-LE-048	59.2	1505	41.0	18.60
A260-SE-060	54.4	1381	51.4	23.31
A260-LE-060	68.4	1737	64.0	29.03
A260-SE-076	57.3	1454	54.9	24.90
A260-LE-076	72.4	1838	67.5	30.62
A260-SE-090	60.8	1544	81.0	36.74
A260-LE-090	76.4	1941	97.0	44.00
A260-SE-110	66.9	1698	119.8	54.33
A260-LE-110	84.9	2155	145.0	65.77
A260-SE-150	70.6	1792	158.9	72.06

See HP cylinder information for all other technical data.  
Nutted pins standard -60 and above, nutted pins available on smaller sizes.  
For stainless steel option, add (S) to any above part number. Example: A260SSE-010.

### Cylinder Terminals

#### H120 Fixed Clevis

The H120 screws onto the cylinder piston rod, but does not provide length adjustment.



J100 Eye/Jaw Toggle



H120 Fixed Clevis

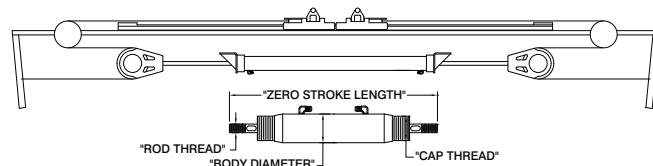
#### J100 Eye/Jaw Toggle

Used at the lower end of the cylinder to prevent excessive side loads. Frequently used on backstay and inner forestay cylinders.

CYLINDER SIZE	PISTON ROD SIZE		PIN DIAMETER		FIXED CLEVIS PART NUMBER	FIXED CLEVIS LENGTH		EYE JAW TOGGLE PART NUMBER	EYE JAW TOGGLE LENGTH	
	in	mm	in	mm		in	mm		in	mm
-6	7/16	11	7/16	11	H120-141414	1.00	25	J100-1414	2.00	51
-10	1/2	13	1/2	13	H120-161616	1.25	32	J100-1616	2.20	56
-12/-17	5/8	16	5/8	16	H120-202020	1.31	33	J100-2020	2.50	64
-22	3/4	19	3/4	19	H120-242424	1.38	35	J100-2424	2.90	74
-30	7/8	22	7/8	22	H120-282828	1.50	38	J100-2828	3.30	84
-40	1	25	1	25	H120-323232	1.50	38	J100-3232	3.69	94
-48	1	25	1 1/8	29	H120-323636	1.75	44	J100-3636	4.10	104
-60	1 1/4	32	1 1/4	32	H120-404040	2.50	64	J100-4040	4.50	114
-76	1 1/4	32	1 1/4	32	H120-404040	2.50	64	J100-4040	4.50	114
-90	1 1/4	32	1 3/8	35	H120-404444	2.50	64	J100-4444	5.60	142
-110	1 3/8	35	1 1/2	38	H120-444848	3.04	77	J100-4848	6.20	157
-150	1 1/2	38	1 3/4	44	H120-485656	3.43	87	J100-5656	7.50	191

## A254 Hydraulic Traveler Cylinders

Navtec double rod cylinders were engineered and designed by Navtec for use in dual pull application, usually with a block and tackle incorporated. Navtec originally engineered these cylinders as a solution to operate main sheet travellers. They are also commonly used to operate genoa lead systems as well as many custom applications. Navtec will work with any marine hardware manufacturer to provide a cylinder that interfaces with their hardware to operate any double acting needs.



CYLINDER SIZE	CAP THREAD unf 2a	ZERO STROKE LENGTH		WEIGHT STD ALUMINUM	
		in	mm	lbs + lbs/in stroke	kg + kg/cm stroke
-6	1 1/8-16	11.9	301	1.2 + .1	.55 + .02
-10	1 7/16-16	13.4	341	2.2 + .1	.97 + .02
-12	1 5/8-16	14.8	377	3.5 + .2	1.58 + .04
-17	1 7/8-16	15.1	384	4.3 + .2	1.93 + .04
-22	2 1/8-16	18.1	461	6.7 + .3	3.02 + .05
-30	2 5/8-16	18.9	481	11.1 + .5	5.02 + .09
-40	3 1/4-16	20.6	522	18.2 + .8	8.22 + .13
-48	3 1/4-16	20.6	522	18.1 + .8	8.22 + .13
-60	3 3/4-16	22.9	582	27.3 + 1.0	12.37 + .17
-76	3 3/4-16	22.9	582	27.2 + 1.0	12.36 + .17
-90	4 3/8-8	32.7	830	44.3 + 1.5	20.10 + .27
-110	4 7/8-8	33.2	843	64.8 + 1.7	29.39 + .30
-150	5 3/8-8	35.2	895	89.6 + 2.6	40.65 + .47

Max relief setting is 5,000 psi. See HP cylinder information for all other technical data. Cylinders are designed on an individual basis. Specify desired stroke when ordering. Overall cylinder length equals zero stroke length plus two times the desired stroke.

Lewmar blocks are the ideal choice for the control lines leading from your A254 Cylinder to the traveler car. The chart below lists the adapters that allow you to connect Lewmar blocks directly to the Navtec cylinder rods on your A254 Cylinder. Please contact Navtec or Lewmar for help picking the exact blocks needed to drive your traveler car.

LEWMAR ADAPTOR PART NUMBER	RAM SIZE	ROD THD	BLOCK SIZE	LEWMAR BLOCK PART NUMBER	MAX SYSTEM PRESSURE	LEWMAR ADAPTOR PART NUMBER	RAM SIZE	ROD THD	BLOCK SIZE	LEWMAR BLOCK PART NUMBER	MAX SYSTEM PRESSURE
29914080	-6	7/16 RH	60mm	29942601	5000PSI / 350 Bar	29914091	-6	7/16 LH	60mm	29942601	5000PSI / 350 Bar
29914081	-10	1/2 RH	80mm	29942801 / 29902808	5000PSI / 350 Bar	29914092	-10	1/2 LH	80mm	29942801 / 29902808	5000PSI / 350 Bar
29914082	-12	5/8 RH	105mm	29902108	5000PSI / 350 Bar	29914093	-12	5/8 LH	105mm	29902108	5000PSI / 350 Bar
29914083	-17	5/8 RH	130mm	29902138	5000PSI / 350 Bar	29914094	-17	5/8 LH	130mm	29902138	5000PSI / 350 Bar
29914084	-22	3/4 RH	130mm	29902138	5000PSI / 350 Bar	29914095	-22	3/4 LH	130mm	29902138	5000PSI / 350 Bar
29914085	-30	7/8 RH	130mmHL	29912101	5000PSI / 350 Bar	29914096	-30	7/8 LH	130mmHL	29912101	5000PSI / 350 Bar
29914086	-10	1/2 RH	60mm	29942601	3000PSI / 250Bar	29914097	-10	1/2 LH	60mm	29942601	3000PSI / 250Bar
29914087	-12	5/8 RH	80mm	29942801 / 29902808	3000PSI / 250Bar	29914098	-12	5/8 LH	80mm	29942801 / 29902808	3000PSI / 250Bar
29914088	-17	5/8 RH	105mm	29902108	3000PSI / 250Bar	29914099	-17	5/8 LH	105mm	29902108	3000PSI / 250Bar
29914089	-22	3/4 RH	130mm	29902138	3000PSI / 250Bar	29914100	-22	3/4 LH	130mm	29902138	3000PSI / 250Bar
29914090	-30	7/8 RH	130mm	29902138	3000PSI / 250Bar	29914101	-30	7/8 LH	130mm	29902138	3000PSI / 250Bar

## A270 Hydraulic Mast Jack Cylinders

The lightweight, compact A270 Mast Jack is the ultimate tool for achieving the high rigging tension preloads in today's yacht. The jack may be permanently installed or used on a removable basis for additional weight savings. The jack may be used at 5,000 psi / 7,500 psi with a Navtec panel, or at 10,000 psi with an industrial pump.

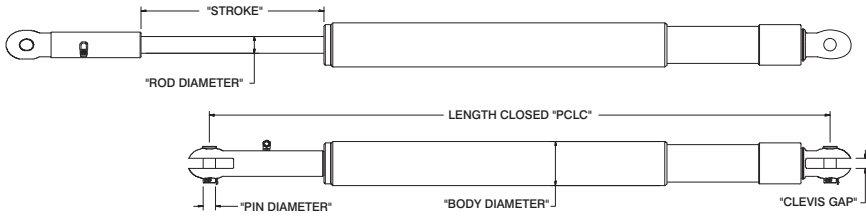


CYLINDER SIZE	MAX LOAD @ 5,000 PSI		MAX LOAD @ 10,000 PSI		STROKE		LENGTH CLOSED		BODY DIAMETER		WEIGHT	
	lbs	kg	lbs	kg	in	mm	in	mm	in	mm	lbs	kg
-12	9,200	4,170	18,400	8,350	3.0	76	6.7	170	2.8	70	3.0	1.4
-40	20,000	9,070	40,000	18,140	3.0	76	8.2	208	4.0	102	10.0	4.5
-70	35,000	15,880	70,000	31,750	3.5	89	9.6	244	5.3	135	17.0	7.7
-125	62,500	28,350	125,000	56,700	4.0	102	11.4	290	7.0	178	29.0	13.2

## 5. Hydraulics

### A850 Hydraulic Vang Cylinder

Navtec's Series 850 Vang features an extra-large piston rod to resist buckling with no tackle to clutter the deck layout. It also provides boom lift in light airs and acts as a topping lift when the sail is flaked. The A850 can be integrated with an A440 Push Button Quick Release Valve, proving the ability to instantaneously dump the vang when required.



VANG SIZE	MAX PULL FORCE @ RELIEF		RETURN FORCE		ROD DIAMETER		CLEVIS PIN & GAP	
	lbs	kg	lbs	kg	in	mm	in	mm
-6	1,935	880	475	220	5/8	15.9	7/16	11.1
-10	3,785	1,720	815	370	3/4	19.1	1/2	12.7
-12	5,100	2,310	1,100	500	7/8	22.2	5/8	15.9
-17	7,010	3,180	1,490	680	1	25.4	5/8	15.9
-22	10,265	4,660	1,935	880	1	25.4	5/8	15.9
-30	15,890	7,210	3,010	1,370	1 1/4	31.8	3/4	19.1
-40	25,670	11,640	4,330	1,960	1 1/4	31.8	7/8	22.2
-60	34,320	15,570	5,880	2,670	1 1/2	38.1	1	25.4
-90	42,340	19,210	7,660	3,470	1 7/8	47.6	1 1/4	31.8
-110	53,220	24,140	9,680	4,390	2 1/8	54.0	1 3/8	34.9
-150	65,370	29,650	11,930	5,410	2 3/8	60.3	1 1/2	38.1
-195	84,520	38,340	15,580	7,070	2 3/4	69.9	1 3/4	44.5
-260	109,090	49,480	20,110	9,120	3 1/8	79.4	2	50.8
-400	168,400	76,380	30,400	13,790	3 3/4	95.3	2 5/8	66.7

STANDARD VANG	PART NUMBER POSITION-INDICATING	STROKE		AVAILABLE PCLC		AVAILABLE PCLC	
		in	mm	MIN in	mm	MAX in	mm
A850-VC-006	N/A	9.00	228.6	46	1168	60	1524
A850-VC-010	N/A	9.00	228.6	55	1397	72	1829
A850-VC-012	N/A	9.50	241.3	55	1397	89	2261
A850-VC-017	A850-PI-017	9.50	241.3	56	1422	100	2540
A850-VC-022	A850-PI-022	10.00	254.0	58	1473	104	2642
A850-VC-030	A850-PI-030	11.00	279.4	61	1549	107	2718
A850-VC-040A	A850-PI-040A	12.00	304.8	70	1778	150	3810
A850-VC-060C	A850-PI-060A	14.00	355.6	78	1981	175	4445
A850-VC-090C	A850-PI-090A	16.00	406.4	85	2159	185	4699
A850-VC-110B	A850-PI-110	18.00	457.2	90	2286	190	4826
A850-VC-150A	A850-PI-150	18.00	457.2	99	2515	195	4953
A850-VC-195	A850-PI-195	18.00	457.2	110	2794	360	9144
A850-VC-260	A850-PI-260	18.00	457.2	98	2489	360	9144

### Position-Indicating Vang Electrical

Originally developed for super yachts, this unique feature is now available on all Navtec vangs down to -22. The position indicating unit is essential for achieving the correct angle for the new furling booms that have become common on boats from 50 feet and up. The Position Indicating Vang can be interfaced with most marine electronics.

	in	cm	
CABLE LENGTH	78.74	200	
RESISTANCE (KΩ)	44	total span	
RESISTIVE TOLERANCE	+/-20%		
ACCURACY	STD	BEST	
	mm	+/- .38	+/- .75
	in	+/- .015	+/- .030
POWER RATING (watts)	5.5 @ 70°C	0 @ 125°C	
OPERATING RANGE	MIN	MAX	
	°C	-40	125
	°F	-40	257

## A950 Hydraulic Super Yacht Vang (Carbon)

The Navtec Carbon Fiber Superyacht Vang delivers the same performance, reliability, and quality that owners and designers have come to rely on from the Aluminum and Stainless Steel models, but with a substantial weight saving. The longer the vang, the larger the weight saving, resulting in an easier vang to install and maintain.

PART NUMBER	STROKE		AVAILABLE PCLC		AVAILABLE PCLC	
	Carbon P/P PI		MIN		MAX	
	in	mm	in	mm	in	mm
A950-PI-PP-090	16.00	406.4	88	2235	192	4877
A950-PI-PP-110	18.00	457.2	94	2388	198	5029
A950-PI-PP-150	18.00	457.2	100	2540	220	5588
A950-PI-PP-195	18.00	457.2	100	2540	220	5588
A950-PI-PP-260	20.67	525.0	105	2667	284	7214
A950-PI-PP-400	20.67	525.0	114	2896	300	7620



- Substantial weight saving over Aluminum and Stainless Steel models
- Seamless, tapered, one-piece tube
- Smaller overall diameter than Aluminum and Stainless Steel models
- Carbon fiber weave or bespoke painted finish
- Available with push/pull or gas return options
- Position indicating feature available on request
- Both hydraulic connections for push/pull vang in oil jaw
- Custom clevis designs available for streamline connections

## A850 Hydraulic Super Yacht Vang (Alloy)

The Navtec Alloy Hydraulic Superyacht Vang features a coaxial feed through the rod so both the push and pull hydraulic connections are located on the oil jaw. In addition, the A850 Vang can be equipped with the position indication function, to ensure that the correct angle for the furling boom is achieved.



PART NUMBER	STROKE		AVAILABLE PCLC		AVAILABLE PCLC	
	Alloy P/P PI		MIN		MAX	
	in	mm	in	mm	in	mm
A850-PI-PP-090	16.00	406.4	88	2235	185	4699
A850-PI-PP-110	18.00	457.2	94	2388	190	4826
A850-PI-PP-150	18.00	457.2	96	2438	195	4953
A850-PI-PP-195	18.00	457.2	98	2489	360	9144
A850-PI-PP-260	18.00	457.2	105	2667	360	9144
A850-PI-PP-400	19.00	482.6	99	2515	360	9144

## Carbon Wrap Cylinders

The Navtec Carbon Wrap Cylinder complements the style aesthetic of the A950 Carbon Fiber Superyacht Vang. A thin carbon veneer tube is applied to an A250 Cylinder resulting in the same carbon finish as the larger superyacht vang. For the specification of the A250 Cylinder, including the pull force, pin size, and rod size, please see page 79.



Navtec carbon wrap cylinders - A complimentary style aesthetic