

## PAR and Sheet Loads

The following formula can be used to calculate approximate sheet loads:

$$\text{SHEET LOAD (lb)} = \text{Sail Area} \times V^2 \times 0.00431$$

where sail area is measured in square feet and V is the apparent wind speed in knots.

To see how this relates to our WINCH GUIDE and PAR, let's look at the primary winch recommendation for a 27 to 29 foot boat which has a No. 1 genoa of 325 square feet. We recommend using a No. 18 or No. 21 winch for this size boat. The No. 18 has a PAR value of 1650, while the No. 21 has a PAR value of 2000.

Assuming that the No. 1 genoa can be carried in 20 knots of wind apparent, the sheet load would be:

$$325 \times (20)^2 \times 0.00431 = 560.3 \text{ lb.}$$

To calculate how much you must push or pull on the end of a 10-inch handle to pull in the sail, use the following formula:

$$\text{*Handle Load (lb)} = \frac{\text{Sheet Load (lb)}}{\text{PAR}} \times 100$$

$$\text{No. 18 Handle Load} = \frac{560 \text{ lb}}{1650} \times 100 = 33.9 \text{ lb}$$

$$\text{No. 21 Handle Load} = \frac{560 \text{ lb}}{2000} \times 100 = 28 \text{ lb}$$

Thus it will take 5.9 lb (17%) less force on a standard length winch handle to pull in the sail with a Barient No. 21 than with a Barient No. 18.

\*Actual handle load will depend on friction in turning blocks, etc.

—Excerpted from the book, "Designed to Win," by Roger Marshall, published by W.W. Norton.

### MODEL G.P. 36ST/37ST



Specs:	inch	mm	Ratios:	1st	2nd
Drum Dia.	5 3/4	146	Gear:		
Base Dia.	10 1/4	257	36ST	6.4:1	19.4:1
Height	12 1/4	316	37ST	6.4:1	25.1:1
Line Entry Ht.	6 1/4	156	Power:		
Line Size	1/2 - 3/4	13-19	36ST		
Weight	lbs.	kg.	12" Handle	27:1	81.8:1
Alum.	48	21.8	10" Handle	22.5:1	68.2:1
Chrome	70	31.8	8" Handle	18:1	54.6:1
St. Steel	70	31.8	37ST		
			12" Handle	27:1	104:1
			10" Handle	22.5:1	87:1
			8" Handle	18:1	69.6:1

Power Advantage Rating: 36ST-5700, 37ST-7350

### MODEL G.P. 736ST/737ST



Specs:	inch	mm	Ratios:	1st	2nd
Drum Dia.	7	178	Gear:		
Base Dia.	10 1/4	257	736ST	6.4:1	19.4:1
Height	12 1/4	316	737ST	6.4:1	25:1
Line Entry Ht.	6	152	Power:		
Line Size	1/2 - 3/4	13-19	736ST		
Weight	lbs.	kg.	12" Handle	21.6:1	67.2:1
Alum.	57	25.9	10" Handle	18:1	56:1
St. Steel	62	28.1	8" Handle	14.4:1	44.8:1
			737ST		
			12" Handle	21.6:1	86.4:1
			10" Handle	18:1	72:1
			8" Handle	14.4:1	57.6:1

Power Advantage Rating: 736ST-4950, 737ST-6400

### MODEL G.P. 36-3ST/37-3ST



Specs:	inch	mm	Ratios:	1st	2nd	3rd
Drum Dia.	5 3/4	146	Gear:			
Base Dia.	10 1/4	257	36-3	2.1	6.4:1	19.4:1
Height	12 1/4	316	37-3	2.0:1	7.2:1	25.1:1
Line Entry Ht.	6 1/4	156	Power: (3 Handle Lengths)			
Line Size	1/2 - 3/4	13-19	36-3ST			
Weight	lbs.	kg.	12" Handle	8.5:1	27.1:1	81.8:1
Alum.	50	22.7	10" Handle	7.1:1	22.5:1	68.2:1
Chrome	68	31	8" Handle	5.7:1	18.1:1	54.6:1
St. Steel	68	31	37-3ST			
			12" Handle	8.5:1	30:1	104:1
			10" Handle	7.1:1	25:1	87:1
			8" Handle	5.7:1	20:1	69.6:1

Power Advantage Rating: 36-3ST-5700, 37-3ST-7350

### MODEL G.P. 736-3ST/737-3ST



Specs:	inch	mm	Ratios:	1st	2nd	3rd
Drum Dia.	7	178	Gear:			
Base Dia.	10 1/4	257	736-3	2.1	6.4:1	19.4:1
Height	12 1/4	316	737-3	2.0:1	7.2:1	25.0:1
Line Entry Ht.	6	152	Power: (3 Handle Lengths)			
Line Size	1/2 - 3/4	13-19	736-3ST			
Weight	lbs.	kg.	12" Handle	6.8:1	21.6:1	67.2:1
Alum.	59	26.8	10" Handle	5.7:1	18.0:1	56.0:1
St. Steel	64	29.1	8" Handle	4.6:1	14.4:1	44.8:1
			737-3ST			
			12" Handle	6.8:1	24.7:1	66.4:1
			10" Handle	5.7:1	20.6:1	72.1:1
			8" Handle	4.6:1	16.5:1	57.6:1

Power Advantage Rating: 736ST-4950, 737ST-6400



### Mounting Information—Grand Prix Series

#### 36ST, 37ST, 36-3ST, 37-3ST, 736ST, 737ST, 736-3ST, 737-3ST

6 holes equally spaced on 8.5" (216mm) diameter bolt circle, for 1/2" (12mm) flathead machine screws. Note: 35ST has same bolt pattern as 36, but uses 3/4" (10mm) flathead fasteners.

#### Barient's Three-Speed Shift Mechanism

The three-speed winches in this catalog incorporate an improved shift mechanism that allows three-speed winches to be locked into 1st and 2nd range for spinnaker or light-air trimming. With a simple push of the shift lever, the winch is set for automatic shifting between 1st, 2nd and 3rd gears (not available in UK).