



# Winch and Hoist Solutions

LIFTSTAR® and PULLSTAR® Air Series  
World's first "lube free" air winches



# LIFTSTAR® and PULLSTAR® Air Series

## General description

The LIFTSTAR® / PULLSTAR® series from Ingersoll Rand are the world's first "lube free" air winches.

Designed for the demanding conditions found in tough environments with dirty air, these winches feature a rugged gear air motor made of strong composite material with only two moving parts. These low maintenance winches provide high torque, long life, and "lube free" operation.

### Standards:

The LS and PS air winches meet the requirements set by the FEM 9.511 standard which covers rating and classification, and the FEM 1001 standard for the calculation of lifting equipment (for LIFTSTAR®).

Compliance with these standards exceeds the requirements for DIN, NF and BSI and, of course, they meet ASME B30.7.

The European Directive concerning "Machines," the specific rules of the Norwegian Petroleum Directorate, and the standards set by classification societies such as DNV and LLOYDS have also been adhered to.

The winches can usually be supplied with traceability certificates according to DIN 50049, if requested at time of the order.

Special versions of LIFTSTAR® winches are also available for personnel lifting operations on offshore installations, SWL 150 to 1000 kg (330 to 2200 lbs). Please call for details.

### Test certificates:

Each winch is provided with a test certificate covering factory construction and performance. On request, these tests can be witnessed by an independent organization which will assess their conformity to agreed standards before they are dispatched.



All models delivered in countries where European Machinery Directive No. 89/392 and 91/368 applies can be ordered with a CE package (-E) which includes as standard:

- Drum guard • Emergency stop (main air shut-off) • Overload device (for LIFTSTAR® lifting series only) • Instruction and safety manual • Declaration of conformity

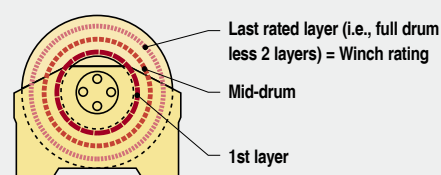


LS and PS air winches are particularly suitable for use in potentially explosive atmospheres, unlike electric winches.

In their standard design, they are classified as equipment category 2 for applications in zone 1 of group II (surface industry, as per ATEX 94/9/CE directive). For classification as equipment category M2, they can be fitted with a special "mining" package. Please call for details.

### LIFTSTAR® lifting series:

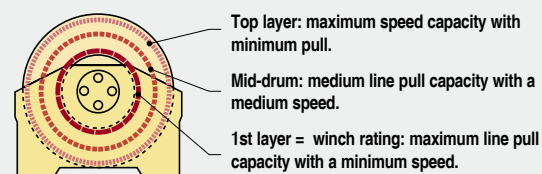
- LIFTSTAR® winches are designed with a 5:1 minimum safety factor at "rated load."
- The nominal lifting capacity of the LIFTSTAR® is calculated at the top rated layer which corresponds to the full drum rope capacity less two layers free at the top of the drum flange. A LIFTSTAR® winch always lifts its "rated load," no matter what layer of wire rope it is operating on.
- LIFTSTAR® winch is designed so that at its "rated load" capacity, the line speed remains constant at any layer.
- The drums are generously dimensioned to obtain a minimum  $D$  to  $d$  ratio (drum diameter / rope diameter) of 18:1 with a safety factor of 5 for standard ropes.
- The rated rope capacities are calculated for ropes conforming to the required safety factors and correspond to the working rope capacities, i.e., leaving two free layers below the top of the drum flanges (as per European lifting rules).



With rated load, the line speed is constant at all layers

### PULLSTAR® pulling series:

- PULLSTAR® winches are directly derived from the LIFTSTAR® series but with a 3:1 minimum safety factor at "rated line pull."
- PULLSTAR® winches are **first layer** rated pulling capacity. The nominal line pull stated corresponds to the maximum force required to start the initial pulling motion of the load (refer to detailed curves to get corresponding pulls / speeds at different layers).
- PULLSTAR® are fitted as standard with a drum free spool clutch for rapid manual unwinding.



## Air winch selection chart / performance at 6.3 bar (90 psi)

Series	Nom. load <sup>(1)</sup> capacity kg (lbs)	Nom. spd <sup>(2)</sup> m/min (ft/min)	Maximum rope storage capacity <sup>(3)</sup> m (ft)								Wrkg. press. range bar (psi)	Free air cons. (at rated load) m <sup>3</sup> /min (cfm)	Air inlet in.	Approx. weight (without rope) kg (lbs)	
			Recommended rope diameter mm (in.)												
			5 (3/16)	6.5 (1/4)	8 (5/16)	9 (3/8)	10 (3/8)	12 (7/16)	13 (1/2)	19 (3/4)					20
<b>LIFTING WINCHES</b>															
LS2-300R	300 (660)	40 (131)	150 (457)	89 (271)								4 - 7	0 - 4	3/4 BSP	34 (75)
LS2-300RGC			307 (936)	183 (558)									(58 - 100)		(0 - 141)
LS2-600R	600 (1320)	20 (66)		89 (271)	49 (149)							4 - 7	0 - 4	3/4 BSP	34 (75)
LS2-600RGC				183 (558)	102 (311)								(58 - 100)		(0 - 141)
LS1500R	1500 (3300)	7 (23)				79 (241)	57 (174)					4 - 7	0 - 5	3/4 BSP	60 (132)
LS1500RGC						163 (497)	120 (366)						(58 - 100)		(0 - 177)
LS2000R	2000 (4400)	20 (66)							236 (719)	186 (567)		4 - 7	0 - 12	1 1/4 BSP	220 (484)
LS2000RGC										899 (295)	695 (228)		(58 - 100)		(0 - 424)
LS5000R	5000 (11000)	10 (33)										4 - 7	0 - 12	1 1/4 BSP	623 (1371)
LS5000RGC													(58 - 100)		(0 - 424)
<b>PULLING WINCHES</b>															
PS2-1000R	1000 (2200)			89 (271)	49 (149)							4 - 7	0 - 4	3/4 BSP	35 (77)
PS2-1000RGC				183 (558)	102 (311)								(58 - 100)		(0 - 141)
PS2400R	2400 (5280)					79 (241)	57 (174)					4 - 7	0 - 5	3/4 BSP	58 (128)
PS2400RGC						163 (497)	120 (366)						(58 - 100)		(0 - 177)
PS4000R	4000 (8800)								236 (719)	186 (567)		4 - 7	0 - 12	1 1/4 BSP	221 (486)
PS4000RGC										899 (295)	695 (228)		(58 - 100)		(0 - 424)
PS10000R	10000 (22000)											4 - 7	0 - 12	1 1/4 BSP	622 (1368)
PS10000RGC													(58 - 100)		(0 - 424)

(1) Nominal load capacities are given at top rated layer for lifting winches (LIFTSTAR® series) and at 1st layer for pulling winches (PULLSTAR® series).

(2) Speed at nominal load (for pulling winches, see curves on following pages).

(3) The maximum rope storage capacity corresponds to the working rope capacity, plus 2 free layers. See specification tables on the following pages.

### Calculation of performance at various air pressures (only a guide)

To determine the performance of the winches in this catalog at operating pressures other than 6.3 bar (90 psi), select the load or speed rating required from the applicable curve and multiply that value by the factor corresponding to the pressure from the table.

**Warning: It is forbidden to use the winches shown in this catalog with heavier loads than their nominal load capacity.**

Air pressure		stall factor	Rope speed factor
bar	psi		
4.0	58	0.63	0.53
5.0	72	0.80	0.73
5.5	80	0.87	0.84
6.3	90	1.00	1.00
7.0	100	1.12	1.16

*Example: performance of the PULLSTAR® 4000R at 5 bar (72 psi):*

- Stall at mid-drum = 3000 kg (6600 lbs) x 0.80 = 2400 kg (5280 lbs)
- Speed at mid-drum with a 2 metric ton (4400 lbs) load = 20 m/min (61 ft/min) x 0.73 = 14.6 m/min (44.5 ft/min)



# LIFTSTAR® and PULLSTAR® Air Series

## Lifting and pulling air winches 300 to 2400 kg (660 to 5280 lbs) capacity

### Description

- “Lube free” operation\*
- Light weight and compact design, easy to carry
- Designed in conformity with the latest ASME B30.7 and European Standards (FEM classification 1 Bm)
- Robust steel construction, 5:1 design factor for lifting
- Reliable gear type air motor in composite material, high efficiency planetary gear box and automatic disc brake
- Explosion-proof motor
- Low noise level, quiet operation
- Variable speed and precise positioning through direct control lever or progressive remote pendent “PHS”
- Free spool clutch on pulling versions (PULLSTAR® series)
- Virtually maintenance free
- Numerous options (see details on page 8)
- CE package for European models includes as standard: drum guard, emergency stop valve on all units, overload device (LIFTSTAR® lifting series only)
- All units delivered with manufacturer’s test certificate.

\* Lubricating the LS and PS air winches has no detrimental effect on the operating performance. It is strongly recommended to use a filtration system on the compressed air line (near the winch). The compressed air temperature must not exceed 65°C at the motor air inlet. For higher temperatures (from 60 to 85°C), please use the high temp motor, **option H**.



With PHS pendent control

LS2-600R-L-E (lever control)



PS2-1000R-L-E

PS2-2400R-L-E

### Specifications

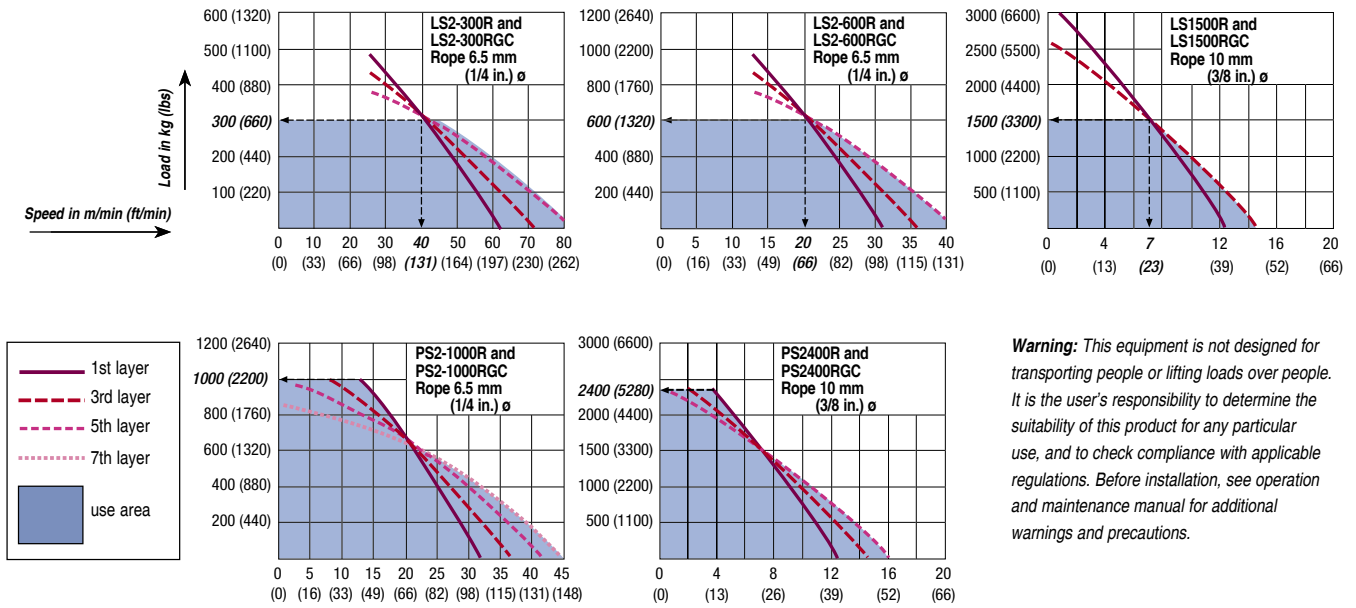
Series	Nom. load capacity <sup>(1)</sup> kg (lbs)	Nom. spd <sup>(1)</sup> m/min (ft/min)	Free air cons. @ nom. load m <sup>3</sup> /min (cfm)	Weight w/o rope <sup>(2)</sup> kg (lbs)	Rec'd rope dia. mm (in.)	Min. brking. load kg (lbs)	Cumulated rope capacity m (ft) / no. of layers <sup>(3)</sup>													
							1	2	3	4	5	6	7	8	9					
<b>LIFTING WINCHES</b>																				
LS2-300R	300 (660)	40 (131)	0 to 4 (0 to 141)	34 (75)	5 (3/16) 6.5 (1/4)	1500 (3300)	12 (39) 9 (30)	26 (85) 20 (66)	41 (135) 32 (105)	57 (187) 45 (148)	74 (243) 58 (190)	92 (302) 73 (240)	110 (361) 89 (292)	130 (427)	150 (492)	-	-			
LS2-300RGC	300 (660)	40 (131)	0 to 4 (0 to 141)	40 (88)	5 (3/16) 6.5 (1/4)	1500 (3300)	26 (85) 19 (62)	54 (177) 42 (138)	85 (279) 66 (217)	117 (384) 93 (305)	152 (499) 121 (397)	188 (617) 151 (495)	226 (741) 183 (600)	266 (873)	307 (1007)	-	-			
LS2-600R	600 (1320)	20 (66)	0 to 4 (0 to 141)	34 (75)	6.5 (1/4) 8 (5/16)	3000 (6600)	9 (30) 7 (23)	20 (66) 16 (52)	32 (105) 26 (85)	45 (148) 37 (121)	58 (190) 49 (161)	73 (240)	89 (292)	-	-	-	-			
LS2-600RGC	600 (1320)	20 (66)	0 to 4 (0 to 141)	40 (88)	6.5 (1/4) 8 (5/16)	3000 (6600)	19 (62) 16 (52)	42 (138) 34 (112)	66 (217) 55 (80)	93 (305) 77 (253)	121 (397) 102 (335)	151 (495)	183 (600)	-	-	-	-			
LS1500R	1500 (3300)	7 (23)	0 to 5 (0 to 177)	60 (132)	10 (3/8)	7500 (16500)	9 (30)	20 (66)	32 (105)	45 (148)	58 (190)	-	-	-	-	-	-			
LS1500RGC	1500 (3300)	7 (23)	0 to 5 (0 to 177)	74 (163)	10 (3/8)	7500 (16500)	20 (66)	42 (138)	66 (216)	92 (302)	121 (397)	-	-	-	-	-	-			
<b>PULLING WINCHES</b>																				
PS2-1000R	1000 (2200)	see curves on the following page	0 to 4 (0 to 141)	35 (77)	6.5 (1/4)	3500 (7700)	9 (30)	20 (66)	32 (105)	45 (148)	58 (190)	73 (240)	89 (292)	-	-	-	-			
					8 (5/16)		7 (23)	16 (53)	26 (85)	37 (121)	49 (161)	-	-	-	-	-	-	-	-	-
					10 (3/8)		6 (20)	13 (43)	22 (72)	31 (102)	-	-	-	-	-	-	-	-	-	-
PS2-1000RGC	1000 (2200)	see curves on the following page	0 to 4 (0 to 141)	41 (90)	6.5 (1/4)	3500 (7700)	19 (62)	42 (138)	66 (217)	93 (305)	121 (397)	151 (495)	183 (600)	-	-	-	-			
					8 (5/16)		16 (53)	34 (112)	55 (180)	77 (253)	102 (335)	-	-	-	-	-	-	-	-	-
					10 (3/8)		12 (39)	28 (92)	45 (148)	64 (210)	-	-	-	-	-	-	-	-	-	-
PS2400R	2400 (5280)	see curves on the following page	0 to 5 (0 to 177)	58 (128)	10 (3/8)	8400 (18480)	10 (33)	21 (69)	33 (108)	46 (151)	60 (197)	-	-	-	-	-	-			
PS2400RGC	2400 (5280)						see curves on the following page	0 to 5 (0 to 177)	72 (158)	10 (3/8)	8400 (18480)	20 (66)	42 (138)	67 (220)	94 (308)	123 (404)	-	-	-	-

(1) Performance at 6.3 bar (90 psi), working pressure range = 4 to 7 bar (60 to 100 psi)

(2) Weights are given for the CE versions

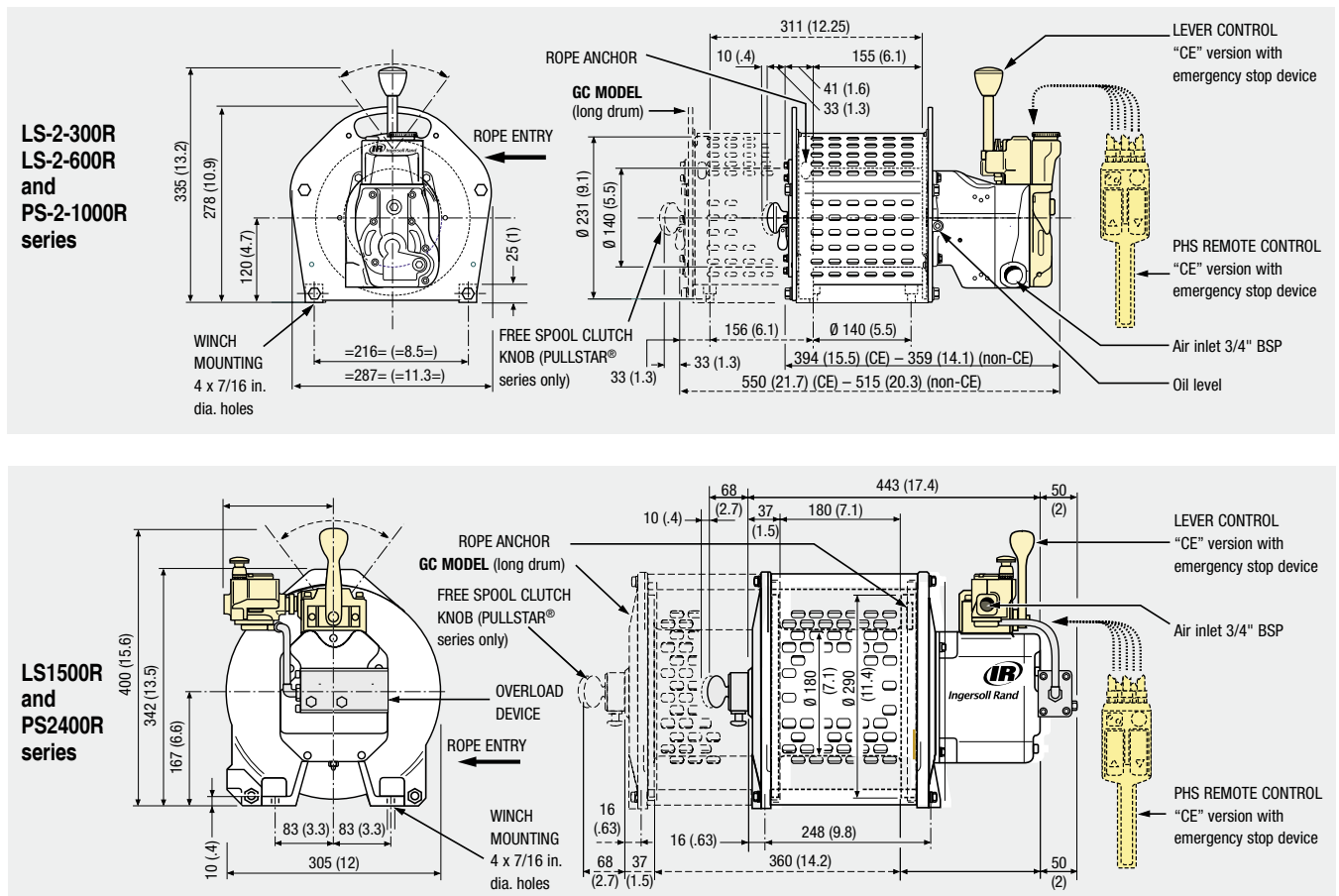
(3) Bold type = Working rope capacities

## Line pulls and speeds at 6.3 bar (90 psi)



**Warning:** This equipment is not designed for transporting people or lifting loads over people. It is the user's responsibility to determine the suitability of this product for any particular use, and to check compliance with applicable regulations. Before installation, see operation and maintenance manual for additional warnings and precautions.

## Dimensions in mm (in.)



Note: Dimensions are subject to change. Please contact technical sales for certified prints.

# LIFTSTAR® and PULLSTAR® Heavy Series

## Lifting and pulling air winches 2 to 10 metric ton (4400 to 22000 lbs) capacity

### Description

- “Lube free” operation\*
- Compact design
- Heavy duty steel construction, 5:1 design factor for lifting
- Designed in conformity with the latest ASME B30.7 and European Standards (FEM classification 1 Bm)
- Automatic disc brake
- Reliable gear type air motor in composite material
- Explosion-proof motor
- High efficiency planetary gear box
- Low noise level, quiet operation
- Variable speed and precise positioning through direct control lever or progressive remote pendant “PHS”
- Free spool clutch on pulling versions (PULLSTAR® series)
- Virtually maintenance free
- Numerous options: drum guard, emergency stop, overload device, marine paint, offshore paint, sandblast, press roller, skid frame (see details on page 8)
- CE package for European models includes as standard: drum guard, main air shut-off emergency stop, overload device (LIFTSTAR® lifting series only)
- All units delivered with manufacturer’s test certificate.

\* Lubricating the LS and PS air winches has no detrimental effect on the operating performance. It is strongly recommended to use a filtration system on the compressed air line (near the winch). The compressed air temperature must not exceed 65°C at the motor air inlet. For higher temperatures (from 60 to 85°C), please use the high temp motor, **option H**.



### Specifications

Series	Nom. load capacity <sup>(1) (2)</sup> metric ton (lbs)	Nom. spd <sup>(1)</sup> m/min (ft/min)	Free air cons. @ nom. load m <sup>3</sup> /m (cfm)	Weight w/o rope <sup>(3)</sup> kg (lbs)	Rec'd rope dia. mm (in.)	Min. braking load metric ton (lbs) <sup>(2)</sup>	Cumulated rope capacity m (ft) / no. of layers <sup>(4)</sup>							
							1	2	3	4	5	6	7	8
<b>LIFTING WINCHES</b>														
LS2000R	2 (4400)	20 (66)	0 to 12 (0 to 424)	220 (484)	13 (1/2)	10 (22000)	<b>17 (56)</b>	<b>36 (118)</b>	<b>57 (187)</b>	<b>80 (262)</b>	<b>104 (341)</b>	<b>130 (427)</b>	<b>158 (518)</b>	-
LS2000RGC	2 (4400)	20 (66)	0 to 12 (0 to 424)	260 (572)	13 (1/2)	10 (22000)	<b>31 (102)</b>	<b>65 (213)</b>	<b>102 (335)</b>	<b>142 (466)</b>	<b>185 (607)</b>	<b>231 (758)</b>	-	-
LS5000R	5 (11000)	10 (33)	0 to 12 (0 to 424)	623 (1371)	19 (3/4)	25 (55000)	<b>21 (69)</b>	<b>44 (144)</b>	<b>69 (226)</b>	<b>96 (315)</b>	<b>125 (410)</b>	<b>156 (512)</b>	<b>189 (620)</b>	<b>224 (735)</b>
LS5000RGC	5 (11000)	10 (33)	0 to 12 (0 to 424)	739 (1626)	19 (3/4)	25 (55000)	<b>44 (144)</b>	<b>92 (302)</b>	<b>145 (476)</b>	<b>202 (663)</b>	<b>263 (863)</b>	<b>329 (1079)</b>	<b>399 (1309)</b>	<b>474 (1555)</b>
<b>PULLING WINCHES</b>														
PS4000R	4 (8800)	see curves on the following page	0 to 12 (0 to 424)	221 (486)	13 (1/2)	14 (30800)	<b>17 (56)</b>	<b>36 (118)</b>	<b>57 (187)</b>	<b>79 (259)</b>	<b>104 (341)</b>	<b>130 (427)</b>	<b>158 (518)</b>	-
PS4000RGC	3.6 (7920)	see curves on the following page	0 to 12 (0 to 424)	259 (570)	13 (1/2)	13 (28600)	<b>31 (102)</b>	<b>65 (213)</b>	<b>102 (335)</b>	<b>142 (466)</b>	<b>185 (607)</b>	<b>231 (758)</b>	-	-
PS10000R	10 (22000)	see curves on the following page	0 to 12 (0 to 424)	622 (1368)	19 (3/4)	35 (77000)	<b>21 (69)</b>	<b>44 (144)</b>	<b>69 (226)</b>	<b>96 (315)</b>	<b>125 (410)</b>	<b>156 (512)</b>	<b>189 (620)</b>	<b>224 (735)</b>
PS10000RGC	10 (22000)	see curves on the following page	0 to 12 (0 to 424)	737 (1621)	19 (3/4)	35 (77000)	<b>44 (144)</b>	<b>92 (302)</b>	<b>145 (476)</b>	<b>202 (663)</b>	<b>263 (862)</b>	<b>329 (1079)</b>	<b>399 (1309)</b>	<b>474 (1555)</b>

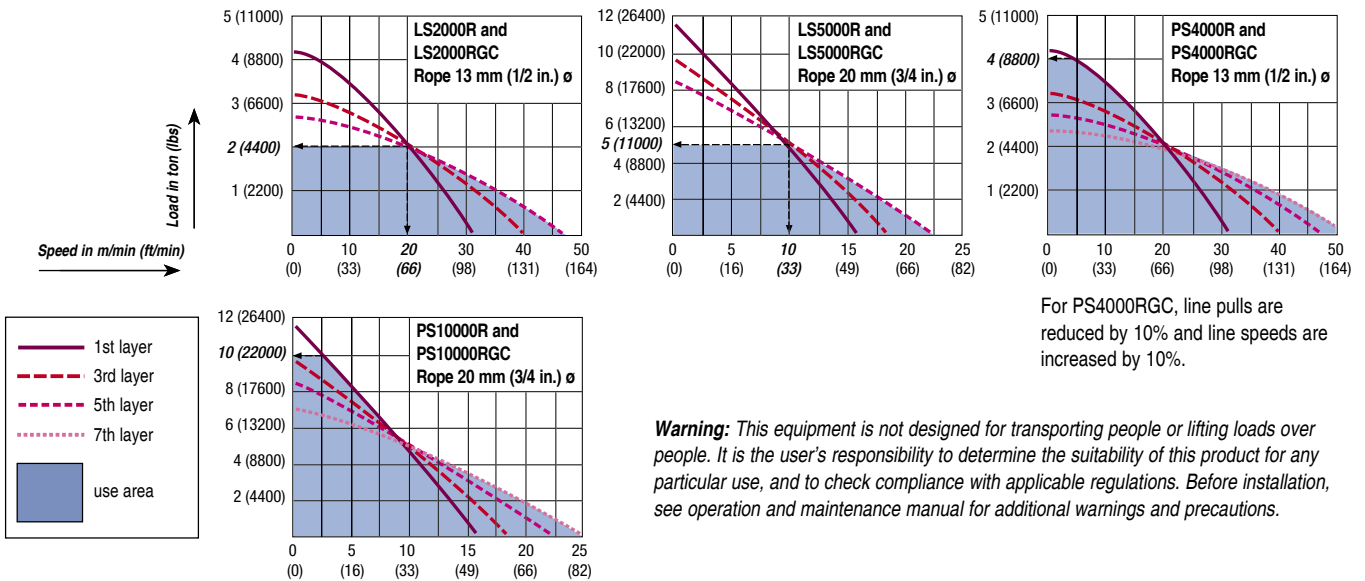
(1) Performance at 6.3 bar (90 psi) - working pressure range = 4 to 7 bar (60 to 100 psi)

(2) 1 metric ton = 2200 lbs

(3) Weights are given for the CE versions

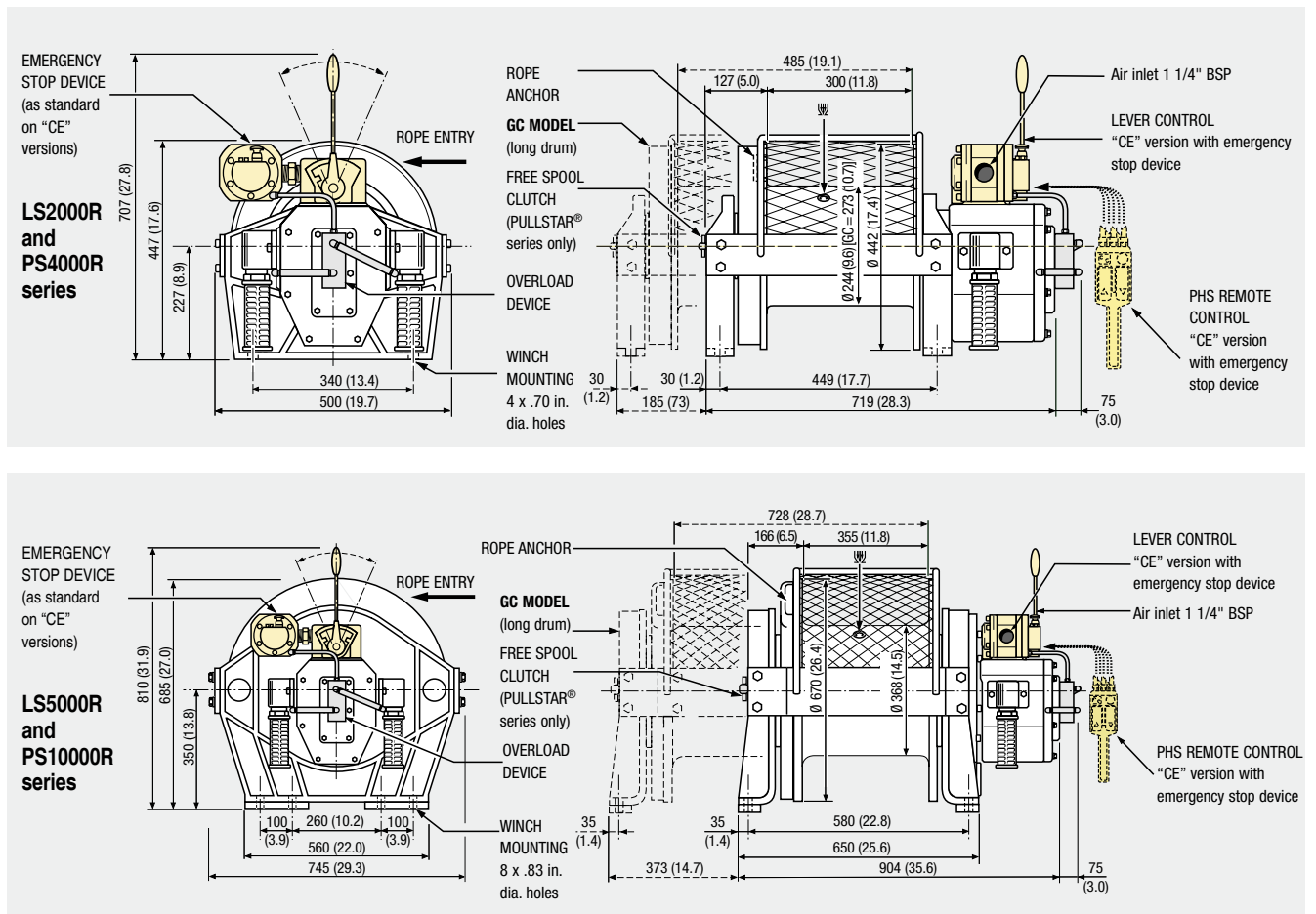
(4) Bold type = Working rope capacities

## Line pulls and speeds at 6.3 bar (90 psi)



**Warning:** This equipment is not designed for transporting people or lifting loads over people. It is the user's responsibility to determine the suitability of this product for any particular use, and to check compliance with applicable regulations. Before installation, see operation and maintenance manual for additional warnings and precautions.

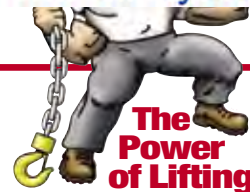
## Dimensions mm (in.)



Note: Dimensions are subject to change. Please contact technical sales for certified prints.

# LIFTSTAR® and PULLSTAR® Air Series

## Model driver



Please specify the required configuration for each order, according to the model codes below. These model codes include series, capacities, drum lengths, control types, options and EC conformity.

### Portable Series: Example: LS2-600RGC-PH5M-P-E

LS2	-	600R	GC	-	PH	5M	-	P-E
<b>Series</b> LS or LS2 = LIFTSTAR® (lifting series) PS or PS2 = PULLSTAR® (pulling series)		<b>Capacity</b> 300R = 300 kg (660 lbs) 600R = 600 kg (1320 lbs) 1500R = 1500 kg (3300 lbs) 1000R = 1000 kg (2200 lbs) 2400R = 2400 kg (5280 lbs)	<b>Drum</b> No letter = Standard drum GC = Long drum		<b>Control</b> L = Lever PH = PHS remote control pendent (alloy) PHR = PHS remote control pendent (cast iron)	<b>Length of Remote Control in Meters</b> (i.e., 5M = 5 meters)		<b>Options</b> G = Drum guard H = High temp motor (60 to 85° C) P = Marine 812 finish QZ = Marine 812-X paint system U = Emergency stop Z = Sandblast and carbozinc primer -E = Compliance with European Machinery Directive (insert at end of model code)

### Heavy Series: Example: PS4000R-L-QZR

PS	4000R	-	L	-	QZR	
<b>Series</b> LS = LIFTSTAR® (lifting series) PS = PULLSTAR® (pulling series)	<b>Capacity</b> 2000R = 2000 kg (4400 lbs) 5000R = 5000 kg (11000 lbs) 4000R = 4000 kg (8800 lbs) 10000R = 4000 kg (22000 lbs)	<b>Drum</b> No letter = Standard drum GC = Long drum	<b>Control</b> L = Lever PH = PHS remote control pendent (alloy) PHR = PHS remote control pendent (cast iron) DP = Remote control by 4-way valve		<b>Length of Remote Control in Meters</b>	<b>Options (1)</b> 13 = Drum grooving (2) FF = Drum brake, disc brake, and skid frame FK = Drum brake and skid frame G = Drum guard H = High temp motor (60 to 85° C) K = Skid frame P = Marine 812 finish QZ = Marine 812-X paint system R = Press roller S = Upper and lower limit switches U = Emergency stop Z = Sandblast and carbozinc primer -E = Compliance with European Machinery Directive (insert at end of model code) (3)
<p>(1) The drum guard (G) and emergency stop (U) options are delivered as standard for all products complying with the European Machinery Directive (i.e., with the -E suffix), and do not have to be indicated in this case. An overload device is also delivered as standard on the LIFTSTAR® series complying with the European Machinery Directive.</p> <p>(2) Indicate the rope diameter in mm (e.g., 13 for 13 mm dia. rope).</p> <p>(3) See the description on page 2 for the details of the extra equipment.</p>						

Authorized Distributor:

#### For Technical Support:

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[www.WinchandHoistSolutions.com](http://www.WinchandHoistSolutions.com)

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