

Ingersoll-Rand®



LIFTSTAR® & PULLSTAR® AIR SERIES

World's 1st "lube free" air winch range



IR Ingersoll-Rand®

LIFTSTAR® R & PULLSTAR® R series

General description

The LIFTSTAR® R / PULLSTAR® R series is the world's first "lube free" air winch range from Ingersoll-Rand:

- A modern range designed for harsh environments.
- Rugged gear air motor with only two moving parts in composite material - provides high torque, long life, low maintenance and "lube free" operation. Also extremely tolerant of dirty, wet air supply.

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 hoisting equipment (for LIFTSTAR®).

Compliance with these standards exceeds that which is required for DIN, NF and BSI and of course they meet ASME B30.7.

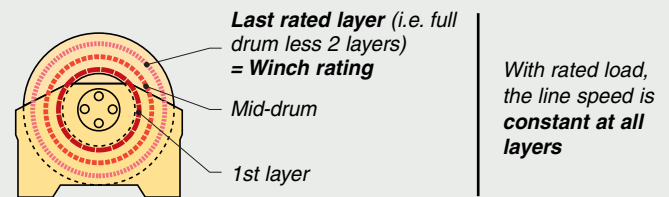
The European Directive concerning "Machines", the specific rules of the Norwegian Petroleum Directorate and the standards set by classification societies such as DNV and LLOYDS have also been adhered to.

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 (ask for details).

LIFTSTAR® R hoisting series :

- LIFTSTAR® winches are designed with a 5:1 minimum safety factor at "rated load".
- The lifting nominal capacity of the LIFTSTAR® is calculated at the last 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 lifting rules).



All models delivered in the countries where European Machinery Directive No. 89/392 and 91/368 applies, are fitted with a CE package which includes as standard:

- Drum guard
- Emergency stop (main air shut-off)
- Torque limiter (for LS lifting series only)
- Instruction & safety manual
- Declaration of conformity.



LS & 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 (consult us).

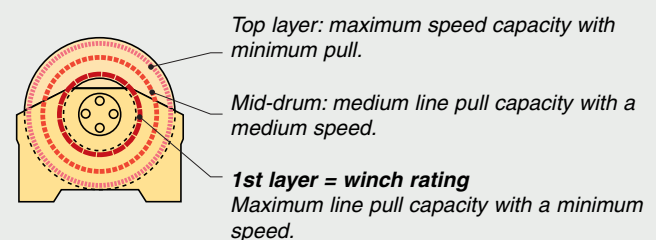
Test certificates :

All the winches are provided with test certificate covering factory construction and performance.

On request, tests can be witnessed by an independent organisation who will assess their conformity to agreed standards before they are dispatched.

PULLSTAR® R haulage 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 declutching device for rapid manual unwinding.



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

Series	Nominal load ⁽¹⁾ capacity (kg)	Nominal speed ⁽²⁾ (m/min)	Maximum rope storage capacity ⁽³⁾ (m)								Working pressure range (bar)	Free air consump. (at rated load) (m ³ /min)	Air inlet (in)	Approx. weight ⁽⁴⁾ (without rope) (Kg)	
			Recommended rope diameter (mm)												
LIFTING WINCHES															
LS2-300R	300	40	150	89								4 to 7	0 to 4	3/4 BSP	38
LS2-300RGC			307	183											
LS2-600R	600	20	89	49								4 to 7	0 to 4	3/4 BSP	38
LS2-600RGC			183	102											
LS1500R	1500	7			79	57						4 to 7	0 to 5	3/4 BSP	64
LS1500RGC					163	120									
LS2000R	2000	20					236	186				4 to 7	0 to 12	1.1/4 BSP	230
LS2000RGC							295	228							
LS5000R	5000	10							218	176		4 to 7	0 to 12	1.1/4 BSP	640
LS5000RGC										465	376				
HAULAGE WINCHES															
PS2-1000R	1000		89	49								4 to 7	0 to 4	3/4 BSP	39
PS2-1000RGC			183	102											
PS2400R	2400				79	57						4 to 7	0 to 5	3/4 BSP	64
PS2400RGC					163	120									
PS4000R	3600						236	186				4 to 7	0 to 12	1.1/4 BSP	230
PS4000RGC							295	228							
PS10000R	10000								218	176		4 to 7	0 to 12	1.1/4 BSP	640
PS10000RGC										465	376				

- (1) Nominal load capacities are given at last rated layer for lifting winches (LIFTSTAR® series) and at 1st layer for haulage winches (PULLSTAR® series).
 (2) Speed at nominal load (for haulage 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.
 (4) Weights are given for CE versions.

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

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

Warning: It is forbidden to use the winches shown in this catalogue 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:
- Stall at mid-drum = 3000 kg x 0.80 = 2400 kg
 - Speed at mid-drum with a 2 ton load = 20 m/min x 0.73 = 14,6 m/min.

LIFTSTAR® R & PULLSTAR® R portable series

Lifting and haulage air winches from 300 to 2400 kg capacity



Description

- Lube free operation*.
- Light weight and compact design - Easy to carry.
- Designed in conformity with the latest 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.
- Flameproof by nature.
- Low noise level, quiet operation.
- Variable speed and precise positioning through direct control lever or progressive remote pendent "PHS".
- Dec clutchable drum on PULLSTAR® haulage versions.
- Virtually maintenance free.
- Numerous options. See details pages 8.
- CE package for European models which includes as standard a drum guard, an emergency stop valve on all units – and a torque limiter on the LS lifting series only.
- All units delivered with manufacturer's test certificate.



When with PHS pendent control

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



PS2-1000R-L-E

PS2400R-L-E

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

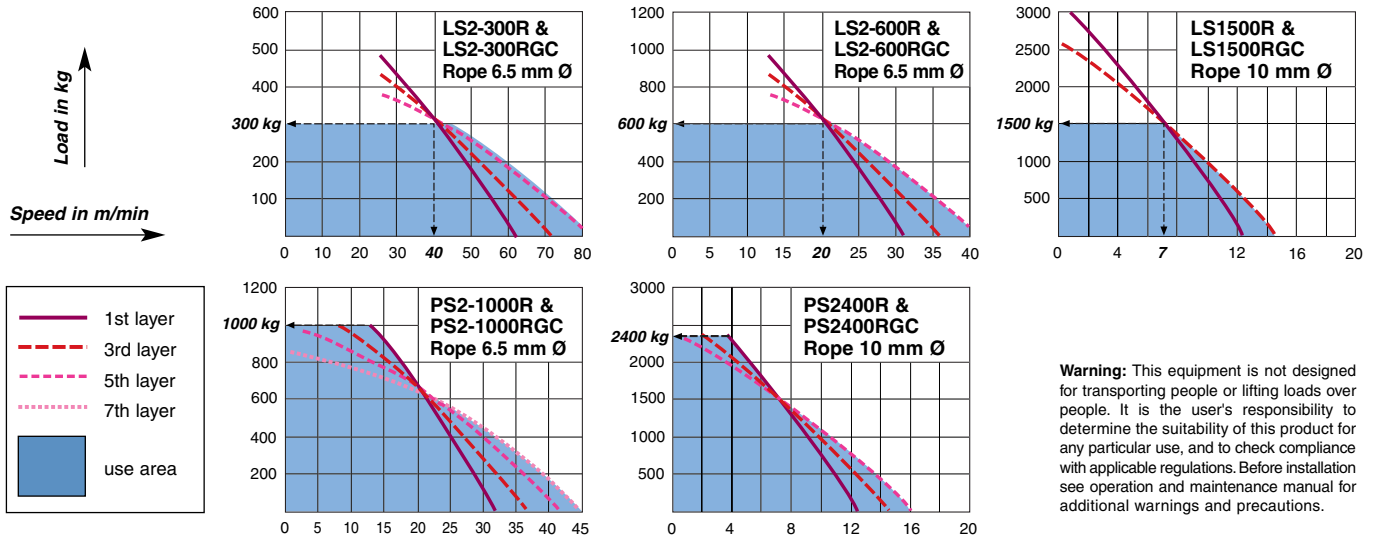
Specifications

Series	Nominal load capacity (1) (kg)	Nominal speed (1) (m/min)	Free air cons. @ nominal load (m³/min)	Weight (2) without rope (kg)	Recommended rope dia. (mm)	Minimum breaking load (kg)	Cumulated rope capacity (m) / number of layers (3)										
							1	2	3	4	5	6	7	8	9		
LIFTING WINCHES																	
LS2-300R	300	40	0 to 4	38	5 6.5	1500 1500	12 9	26 20	41 32	57 45	74 58	92 73	110 89	130 -	150 -		
LS2-300RGC	300	40	0 to 4	45	5 6.5	1500 1500	26 19	54 42	85 66	117 93	152 121	188 151	226 183	266 -	307 -		
LS2-600R	600	20	0 to 4	38	6.5 8	3000 3000	9 7	20 16	32 26	45 37	58 49	73 -	89 -	- -	- -		
LS2-600RGC	600	20	0 to 4	45	6.5 8	3000 3000	19 16	42 34	66 55	93 77	121 102	151 -	183 -	- -	- -		
LS1500R	1500	7	0 to 5	64	9 10	7500 7500	9 8	21 19	34 30	48 43	63 57	79 -	- -	- -	- -		
LS1500RGC	1500	7	0 to 5	80	9 10	7500 7500	20 18	45 40	71 65	100 91	131 120	163 -	- -	- -	- -		
HAULAGE WINCHES																	
PS2-1000R	1000	see curves on the following page	0 to 4	39	6.5	2500	9	20	32	45	58	73	89	-	-		
	8				2500	7	16	26	37	49	-	-	-	-	-	-	-
	9				2500	7	15	24	34	45	-	-	-	-	-	-	-
	10				2500	6	13	22	31	-	-	-	-	-	-	-	-
PS2-1000RGC	1000	see curves on the following page	0 to 4	46	6.5	2500	19	42	66	93	121	151	183	-	-		
	8				2500	16	34	55	77	102	-	-	-	-	-	-	
	9				2500	14	31	49	70	92	-	-	-	-	-	-	
	10				2500	12	28	45	64	-	-	-	-	-	-	-	
PS2400R	2400	see curves on the following page	0 to 5	64	9	7500	9	21	34	48	63	79	-	-	-		
	10				7500	8	19	30	43	57	-	-	-	-	-	-	
PS2400RGC	2400	see curves on the following page	0 to 5	80	9	7500	20	45	71	100	131	163	-	-	-		
	10				7500	18	40	65	91	120	-	-	-	-	-	-	

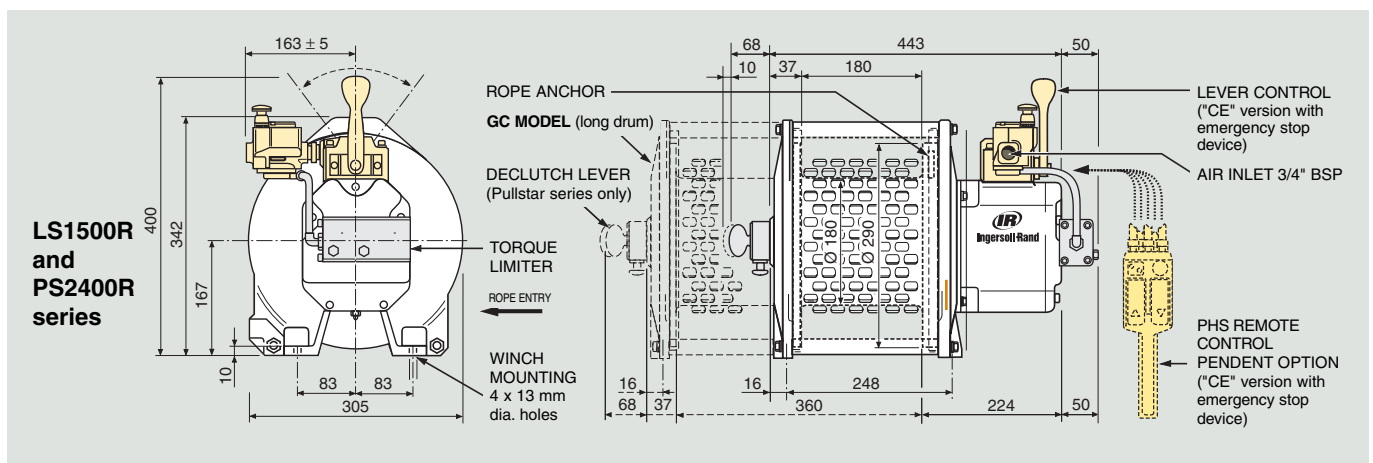
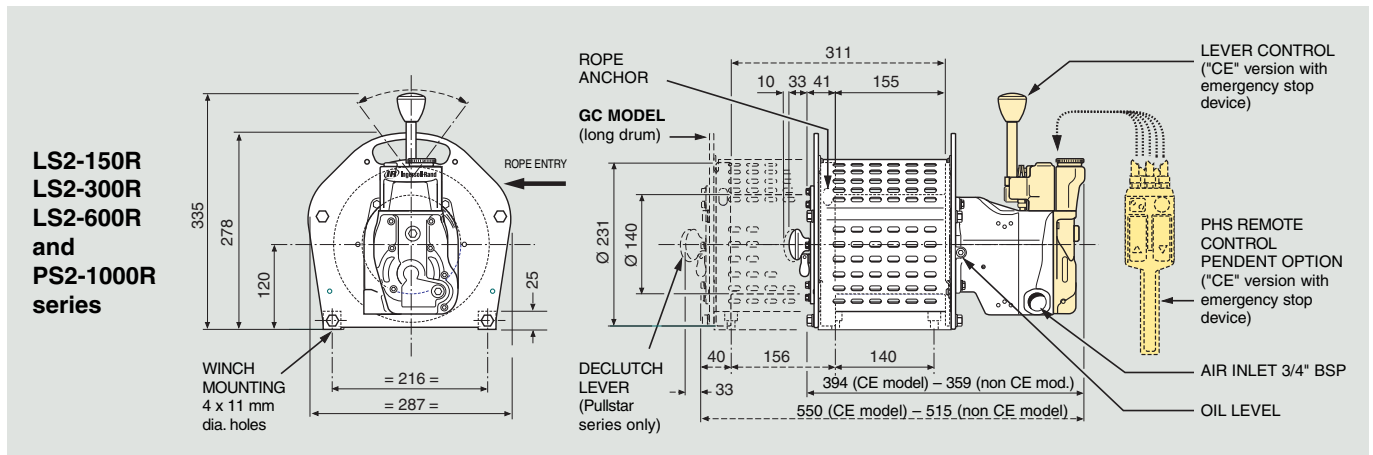
(1) Performance at 6.3 bar (90 psi) - Working pressure range = 4 to 7 bar (60 to 100 psi)

(2) Weights are given for the CE versions – (3) Bold type figures = Working rope capacities.

Line pulls and speeds at 6.3 bar (90 psi)



Dimensions (mm)



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

LIFTSTAR® R & PULLSTAR® R heavy series

Lifting and haulage air winches from 2 to 10 metric ton capacity

Description

- Lube free operation*.
- Compact design.
- Heavy duty steel construction, 5:1 design factor for lifting.
- Designed in conformity with the latest European Standards (FEM classification 1 Bm)
- Automatic disc brake.
- Reliable gear type air motor in composite material.
- Flameproof by nature.
- High efficiency planetary gear box.
- Low noise level, quiet operation.
- Variable speed and precise positioning through direct control lever or progressive remote pendent "PHS".
- Declutchable drum on haulage versions (PS series).
- Virtually maintenance free.
- Numerous options: drum guard, emergency stop, torque limiter, marine paint, offshore paint, sandblast, press roller, skid frame... See details page 8.
- CE package for European models which includes as standard :
 - drum guard
 - main air shut-off emergency stop
 - torque limiter (only on LIFTSTAR® lifting series)
- All units delivered with manufacturer's test certificate.

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

LS2000R-L-G



LS5000R-L-S-E



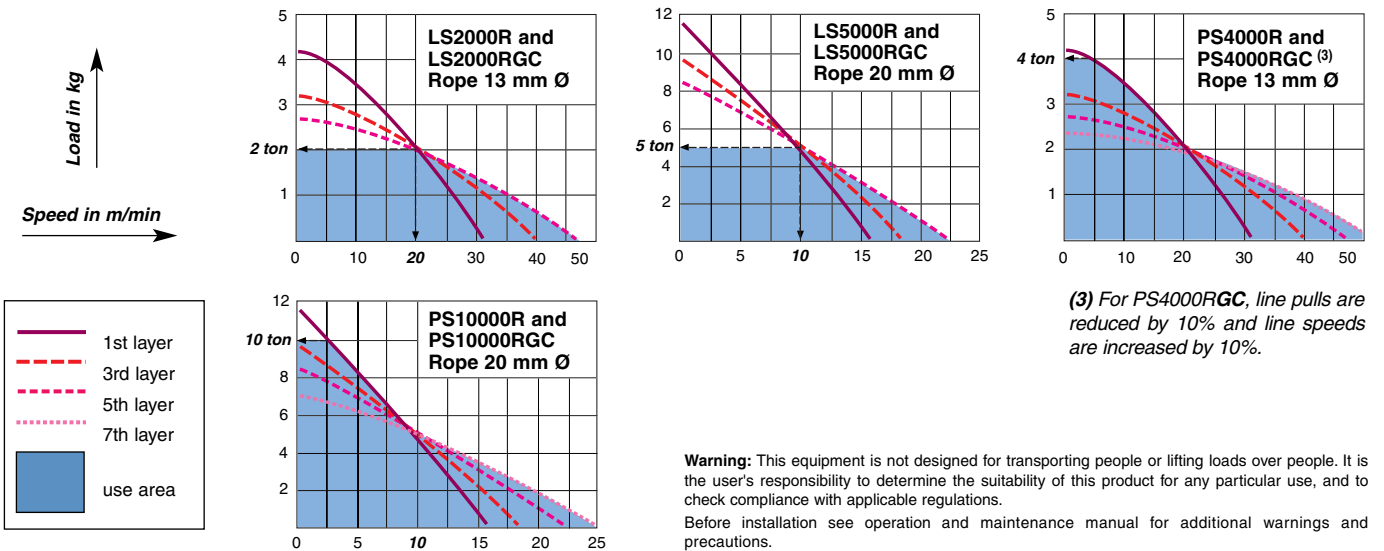
Specifications

Series	Nominal load capacity (1) (metric ton)	Nominal speed (1) (m/min)	Free air cons. @ nominal load (m³/min)	Weight (2) without rope (kg)	Recommended rope dia. (mm)	Minimum breaking load (metric ton)	Cumulated rope capacity (m) / number of layers (3)							
							1	2	3	4	5	6	7	8
LIFTING WINCHES														
LS2000R	2	20	0 to 12	230	12 13	10 10	20 18	44 41	71 66	100 93	131 122	163 153	198 186	236 -
LS2000RGC	2	20	0 to 12	270	12 13	10 10	31 29	68 63	108 100	150 140	195 182	244 228	295 -	- -
LS5000R	5	10	0 to 12	640	19 20	25 25	17 16	40 38	64 61	91 87	120 114	150 144	183 176	218 -
LS5000RGC	5	10	0 to 12	750	19 20	25 25	40 38	88 84	140 133	196 188	257 246	322 309	391 376	465 -
HAULAGE WINCHES														
PS4000R	4	see curves on the following page	0 to 12	230	12 13	10 10	20 18	44 41	71 66	100 93	131 122	163 153	198 186	236 -
PS4000RGC	3.6		0 to 12	270	12 13	10 10	31 29	68 63	108 100	150 140	195 182	244 228	295 -	- -
PS10000R	10	see curves on the following page	0 to 12	640	19 20	25 25	17 16	40 38	64 61	91 87	120 114	150 144	183 176	218 -
PS10000RGC	10		0 to 12	750	19 20	25 25	40 38	88 84	140 133	196 188	257 246	322 309	391 376	465 -

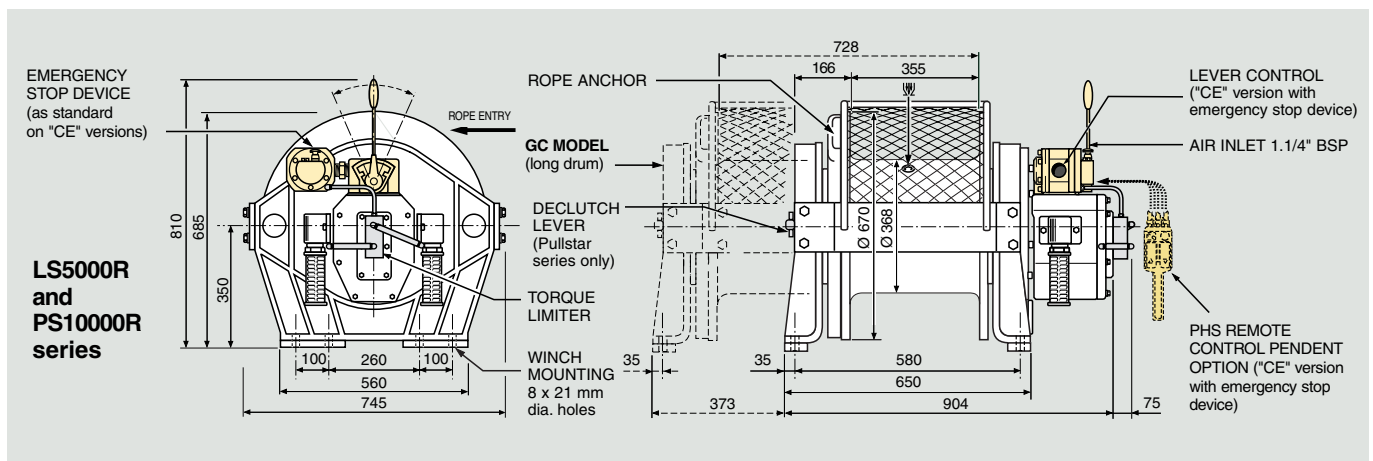
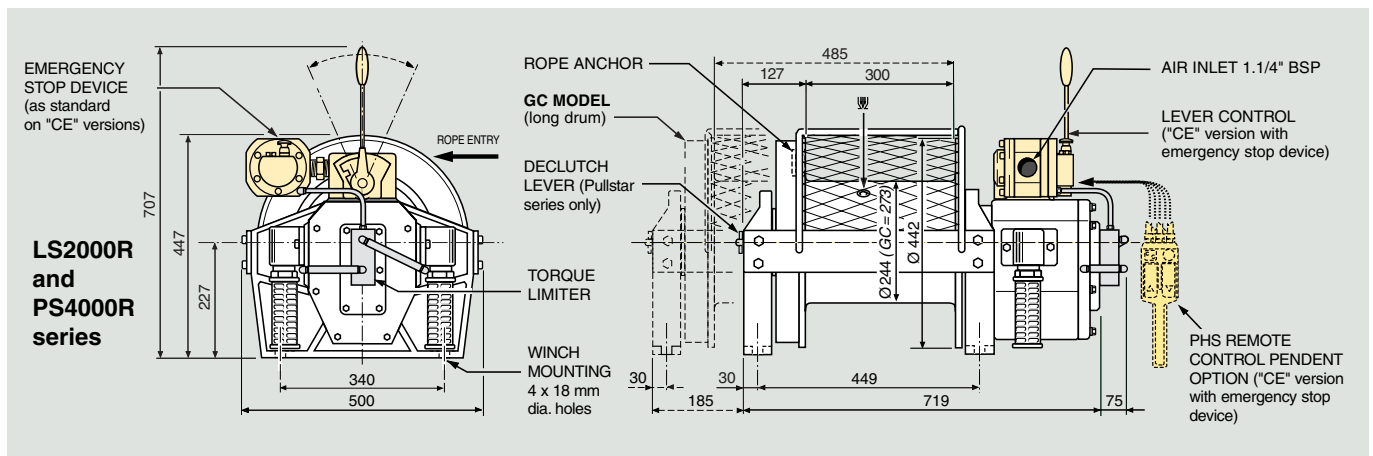
(1) Performance at 6.3 bar (90 psi) - Working pressure range = 4 to 7 bar (60 to 100 psi)

(2) Weights are given for the CE versions – (3) Bold type figures = Working rope capacities.

Line pulls and speeds at 6.3 bar (90 psi)



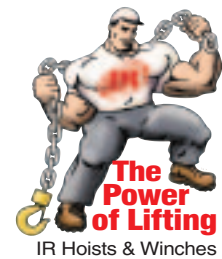
Dimensions (mm)



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

LIFTSTAR® R & PULLSTAR® R 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
SERIES LS or LS2- = LIFTSTAR (lifting series)	CAPACITY 300R = 300 kg 600R = 600 kg 1500R = 1500 kg	DRUM No = Standard letter = drum GC = Long drum	CONTROL L = Lever PH = PHS remote control pendent (alloy) PHR = PHS remote control pendent (brass)	LENGTH OF REMOTE CONTROL IN METRES (i.e. 5M = 5m)	OPTIONS⁽¹⁾ G = Drum guard H = High temp motor (60 to 85° C) P = Marine paint Q = Offshore paint U = Emergency stop Z = Sandblast preparation and special primer	EUROPEAN UNION CONFORMITY⁽³⁾ E = Conforms with the European Machinery Directive No letter = Non EEC version
PS or PS2- = PULLSTAR (haulage series)	1000R = 1000 kg 2400R = 2400kg					

Heavy Series : Example: PS4000R-L-QRZ

PS	4000R	L	QRZ
SERIES LS = LIFTSTAR (lifting series)	CAPACITY 2000R = 2000 kg 5000R = 5000 kg	DRUM No = Standard letter = drum GC = Long drum	CONTROL L = Lever PH = PHS remote control pendent (alloy) PHR = PHS remote control pendent (brass) DP = Remote control by 4 way valve
PS = PULLSTAR (haulage series)	4000R = 4000 kg 10000R = 10000kg		
			LENGTH OF REMOTE CONTROL IN METRES
			OPTIONS⁽¹⁾ FF = Drum brake & disc brake together with skid frame FK = Drum brake + skid frame G = Drum guard H = High temp motor (60 to 85° C) K = Skid frame P = Marine paint Q = Offshore paint R = Press roller S = Top & bottom limit switches U = Emergency stop Z = Sandblast preparation and special primer 16 = Drum grooving ⁽²⁾
			EUROPEAN UNION CONFORMITY⁽³⁾ E = Conforms with the European Machinery Directive No letter = Non EEC version

(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 have not to be indicated in this case. An overload protection is also delivered as standard on the LIFTSTAR® series complying with the European Machinery Directive.

(2) Indicate the rope diameter in mm (e.g. 16 for 16 mm dia. rope).

(3) See the description on page 2 for the details of the extra equipment.

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