



## THAC Hydraulic Winches



Meet Machinery Directive 2006/42/EC, Harmonized  
14492-1 , ASME/ANSI 30.7 or SAE J706 Standards.

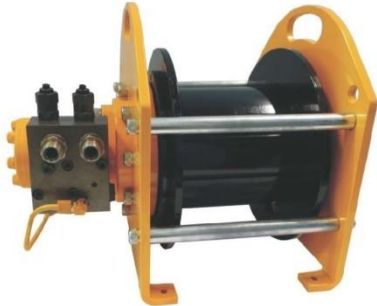




## Hydraulic Hoisting Winch

Lifting Force: 800 ~ 2,700 kgf

1,760 ~ 5,940 lbf



Powered by a PTO (power take-off) driven pump with variable speeds and adjustable line pull output functions. Rugged cast iron gear box and planetary gear trains -in-drum design reduces size and helps the winch fit in compact dimension. The extra tie bars prevent rope from becoming trapped. Dependable orbital hydraulic motor offer high torque and high efficiency at low speed.

Dual counterbalance valves mounted to the winch motor and a multi disc, spring applied, hydraulically released brake lived in an oil bath provide fail-safe load lifting and prevent momentary downward load drifting.

**Meet Machinery Directive 2006/42/EC, harmonized EN 14492-1 Power Driven Winches or ASME/ANSI B30.7 Base-Mounted Drum Hoists.**

Minimum 18:1 drum dia. to wire rope dia. reduces rope wear.

Minimum 5:1 rope breaking strength factor.

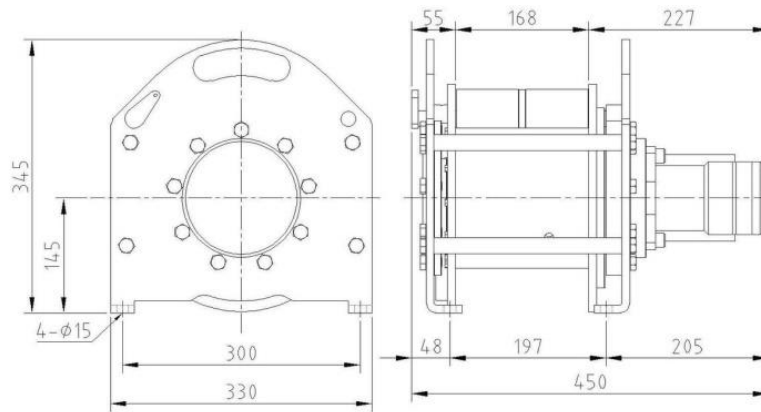
A given amount of freeboard prevents rope from inadvertently coming off the drum during use.

A Hydraulic Hoisting Winch is a robust and reliable device to be used in a variety of industrial applications for integration in mobile, erection and loading cranes, stationary crane systems, construction machinery and drilling rigs.



## TE800EN 14492-1 Ratings 800 kgf

## ASME/ANSI B30.7 Ratings 1,760 lbf

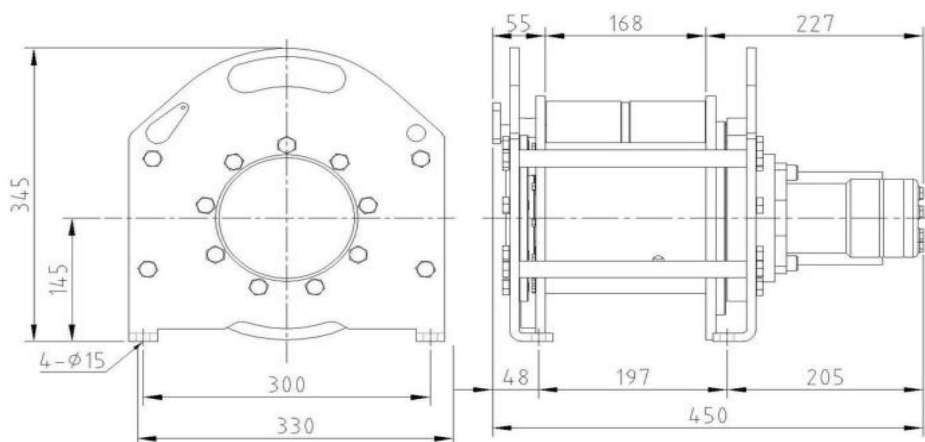


Specification		Comply with EN 14492-1	Comply with ASME/ANSI 30.7
Line Lift	at wire rope top layer	800 kgf	1,760 lbf
	at wire rope first layer	1,077 kgf	2,374 lbf
Hydraulic Motor		Orbital, 125 cm <sup>3</sup> /rev	Orbital, 7.6 in <sup>3</sup> /rev
Maximum Oil Flow		60 l/min	15.9 g/min
Minimum Oil Flow		10 l/min	2.64 g/min
Operation Pressure		125 bar	1,813 psi
Gear Train		1 stage planetary gear with a gear ratio of 5.4:1	
Brake		Negative multi-disc brake and dual counterbalance valves	
Drum Size (Barrel x Flange x Width)		177 x 287 x 168 mm	7.0" x 11.3"
Recommended Wire Rope		8 mm x 72 m ,1960, minimum breaking strength of 44.77 kN	5/16" x 235 ft, EIPS, minimum breaking strength of 10,049 lbf
Standard Accessories		Dual counterbalance valves and pressure roller	
Winch Weight: 84 kg / 186 lb		Gross Weight: 104 kg / 230 lb	

Rope layer			1	2	3	4	5
Lift by layer	at 125 bar	kgf	1,077	991	918	855	800
	at 1,813 psi	lbf	2,374	2,185	2,024	1,885	1,760
Speed by layer	at 60 l/min	m/min	51	56	60	65	69
	at 15.9 g/min	ft/min	169	183	198	212	227
Cumulating rope winding length		m	12	25	40	55	72
		ft	40	84	131	181	235

# TE1000

## EN 14492-1 Ratings 1,000 kgf ASME/ANSI B30.7 Ratings 2,200 lbf



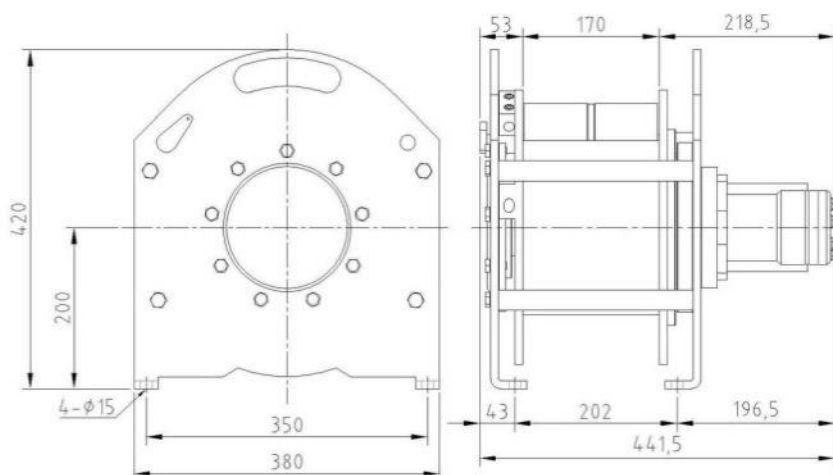
Specification		Comply with EN 14492-1	Comply with ASME/ANSI 30.7
Line Lift	at wire rope top layer	1,000 kgf	2,200 lbf
	at wire rope first layer	1,290 kgf	2,845 lbf
Hydraulic Motor		Orbital, 125 cm <sup>3</sup> /rev	Orbital, 7.6 in <sup>3</sup> /rev
Maximum Oil Flow		60 l/min	15.9 g/min
Minimum Oil Flow		10 l/min	2.64 g/min
Operation Pressure		175 bar	2,538 psi
Gear Train		1 stage planetary gear with a gear ratio of 5.4:1	
Brake		Negative multi-disc brake and dual counterbalance valves	
Drum Size (Barrel x Flange x Width)		177 x 287 x 168 mm	7.0 x 11.3 x 6.6"
Recommended Wire Rope		9 mm x 48 m ,1960, minimum breaking strength of 56.5 kN	11/32" x 158 ft, EIPS, minimum breaking strength of 12,702 lbf
Standard Accessories		Dual counterbalance valves and pressure roller	
Winch Weight: 86 kg / 189 lb			Gross Weight: 106 kg / 233 lb

Rope layer			1	2	3	4
Lift by layer	at 175 bar	kgf	1,290	1,176	1,081	1,000
	at 2,538 psi	lbf	2,845	2,594	2,383	2,200
Speed by layer	at 60 l/min	m/min	52	57	62	67
	at 15.9 g/min	ft/min	169	186	202	219
Cumulating rope winding length		m	11	22	35	48
		ft	35	72	114	158



# TE1300

## EN 14492-1 Ratings 1,300 kgf ASME/ANSI B30.7 Ratings 2,860 lbf

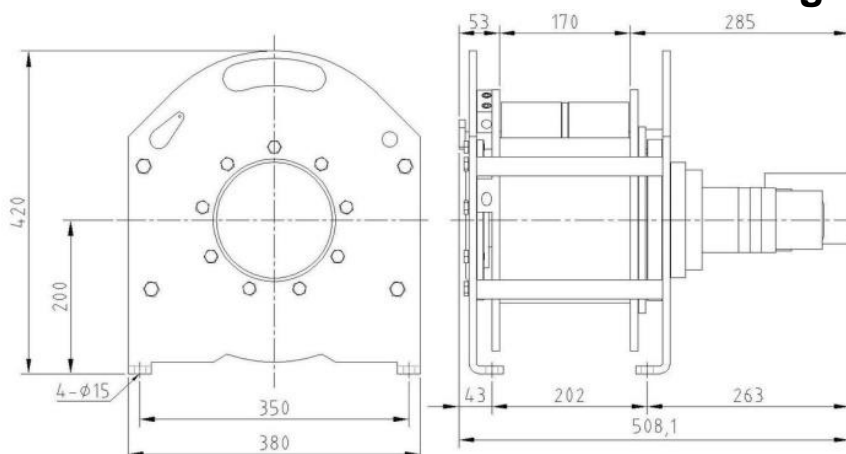


Specification		Comply with EN 14492-1	Comply with ASME/ANSI 30.7
Line Lift	at wire rope top layer	1,300 kgf	2,860 lbf
	at wire rope first layer	1,647 kgf	3630 lbf
Hydraulic Motor		Orbital, 80 cm³/rev	Orbital, 4.9 in³/rev
Maximum Oil Flow		60 l/min	15.9 g/min
Minimum Oil Flow		10 l/min	2.64 g/min
Operation Pressure		175 bar	2,538 psi
Gear Train		2 stage planetary gear with a gear ratio of 15.9:1	
Brake		Negative multi-disc brake and dual counterbalance valves	
Drum Size (Barrel x Flange x Width)		215 x 340 x 170 mm	8.5" x 13.4 x 6.7"
Recommended Wire Rope		10mm x 54 m ,1960, minimum breaking strength of 69.8 kN	3/8" x 179 ft, EIPS, minimum breaking strength of 15,714 lbf
Standard Accessories		Dual counterbalance valves and pressure roller	
Winch Weight: 112 kg / 247 lb			Gross Weight: 137 kg / 302 lb

Rope layer			1	2	3	4
Lift by layer	at 175 bar	kgf	1,647	1,512	1,398	1,300
	at 2,538 psi	lbf	3,630	3,334	3,082	2,860
Speed by layer	at 60 l/min	m/min	33	36	39	42
	at 15.9 g/min	ft/min	110	120	129	139
Cumulating rope winding length		m	12	25	39	54
		ft	39	82	129	179

# TE1600

## EN 14492-1 Ratings 1,600 kgf ASME/ANSI B30.7 Ratings 3,520 lbf

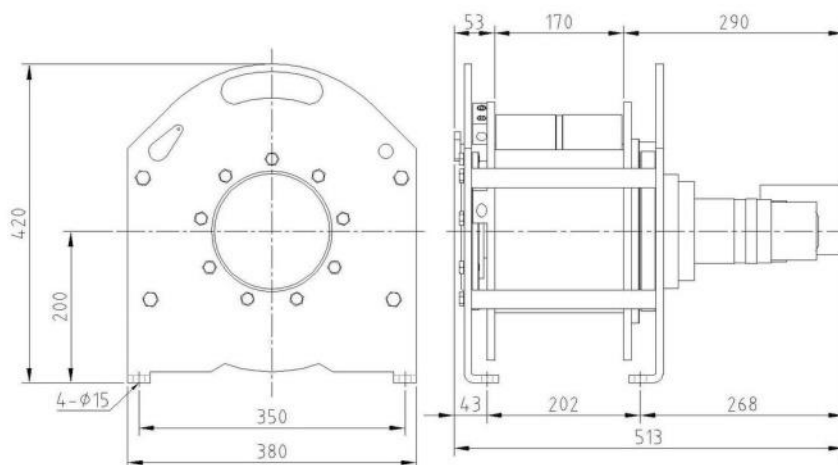


Specification		Comply with EN 14492-1	Comply with ASME/ANSI 30.7
Line Lift	at wire rope top layer	1,600 kgf	3,520 lbf
	at wire rope first layer	2,067 kgf	4,558 lbf
Hydraulic Motor		Orbital, 80 cm³/rev	Orbital, 4.9 in³/rev
Maximum Oil Flow		75 l/min	19.8 g/min
Minimum Oil Flow		10 l/min	2.64 g/min
Operation Pressure		210 bar	3,046 psi
Gear Train		2 stage planetary gear with a gear ratio of 15.9:1	
Brake		Negative multi-disc brake and dual counterbalance valves	
Drum Size (Barrel x Flange x Width)		215 x 340 x 170 mm	8.5 x 13.4 x 6.7"
Recommended Wire Rope		11 mm x 49 m, 1960, minimum breaking strength of 84.5 kN	7/16" x 160 ft, EIPS, minimum breaking strength of 18,996 lbf
Standard Accessories		Dual counterbalance valves and pressure roller	
Winch Weight: 114 kg / 250 lb			Gross Weight: 139 kg / 305 lb

Rope layer			1	2	3	4
Lift by layer	at 210 bar	kgf	2,067	1,884	1,730	1,600
	at 3,046 psi	lbf	4,558	4,153	3,815	3,520
Speed by layer	at 75 l/min	m/min	36	39	43	46
	at 19.8 g/min	ft/min	117	129	140	152
Cumulating rope winding length		m	11	22	35	49
		ft	35	73	115	160

# TE2000

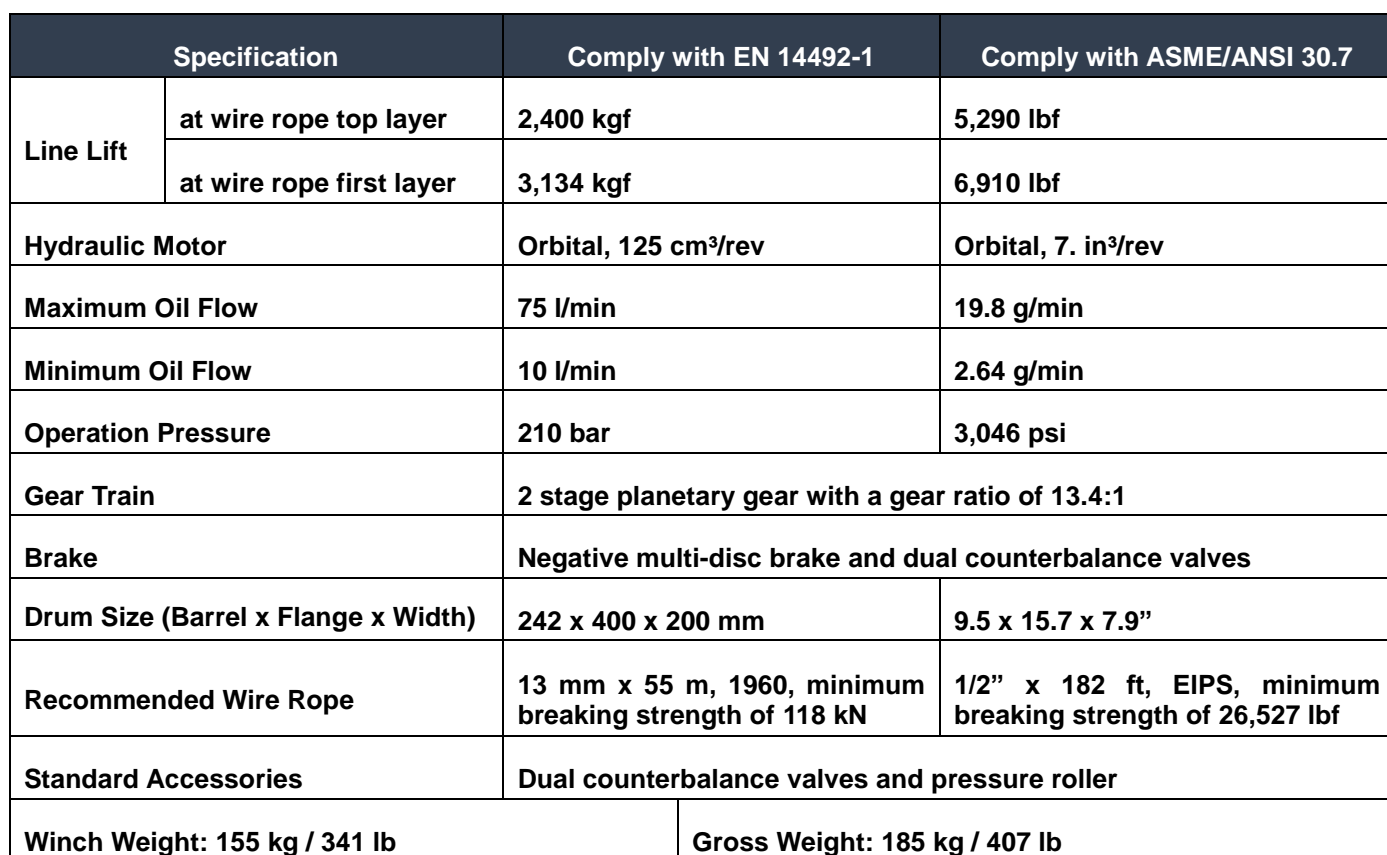
## EN 14492-1 Ratings 2,000 kgf ASME/ANSI B30.7 Ratings 4,400 lbf



Specification		Comply with EN 14492-1	Comply with ASME/ANSI 30.7
Line Lift	at wire rope top layer	2,000 kgf	4,400 lbf
	at wire rope first layer	2,634 kgf	5,808 lbf
Hydraulic Motor		Orbital, 100 cm <sup>3</sup> /rev	Orbital, 6.1 in <sup>3</sup> /rev
Maximum Oil Flow		75 l/min	19.8 g/min
Minimum Oil Flow		10 l/min	2.64 g/min
Operation Pressure		210 bar	3,046 psi
Gear Train		2 stage planetary gear with a gear ratio of 15.9:1	
Brake		Negative multi-disc brake and dual counterbalance valves	
Drum Size (Barrel x Flange x Width)		215 x 340 x 170 mm	8.5 x 13.4 x 6.7"
Recommended Wire Rope		12 mm x 46 m, 1960, minimum breaking strength of 101 kN	15/32" x 152 ft, EIPS, minimum breaking strength of 22,706 lbf
Standard Accessories		Dual counterbalance valves and pressure roller	
Winch Weight: 114 kg / 250 lb		Gross Weight: 130 kg / 305 lb	

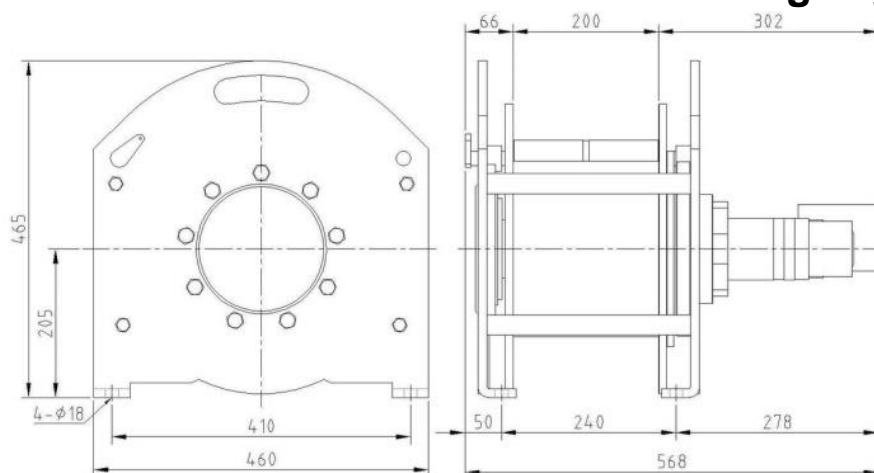
Rope layer			1	2	3	4
Lift by layer	at 210 bar	kgf	2,634	2,382	2,175	2,000
	at 3,046 psi	lbf	5,808	5,252	4,794	4,400
Speed by layer	at 75 l/min	m/min	33	37	40	44
	at 19.8 g/min	ft/min	110	121	133	144
Cumulating rope winding length		m	10	21	33	46
		ft	33	69	109	152

**EN 14492-1 Ratings 2,400 kgf**  
**ASME/ANSI B30.7 Ratings 5,290 lbf**



Rope layer			1	2	3	4
Lift by layer	at 210 bar	kgf	3,134	2,844	2,603	2,400
	at 3,046 psi	lbf	6,910	6,270	5,739	5,290
Speed by layer	at 75 l/min	m/min	35	38	42	45
	at 19.8 g/min	ft/min	113	125	136	148
Cumulating rope winding length		m	12	25	40	55
		ft	39	83	130	182



**TE2700****EN 14492-1 Ratings 2,700 kgf  
ASME/ANSI B30.7 Ratings 5,950 lbf**

Specification		Comply with EN 14492-1	Comply with ASME/ANSI 30.7
Line Lift	at wire rope top layer	2,700 kgf	5,950 lbf
	at wire rope first layer	3,586 kgf	7,906 lbf
Hydraulic Motor		Orbital, 160 cm <sup>3</sup> /rev	Orbital, 9.76. in <sup>3</sup> /rev
Maximum Oil Flow		75 l/min	19.8 g/min
Minimum Oil Flow		10 l/min	2.64 g/min
Operation Pressure		210 bar	3,046 psi
Gear Train		2 stage planetary gear with a gear ratio of 13.4:1	
Brake		Negative multi-disc brake and dual counterbalance valves	
Drum Size (Barrel x Flange x Width)		242 x 400 x 200 mm	9.5 x 15.7 x 7.9"
Recommended Wire Rope		14 mm x 52 m, 1960, minimum breaking strength of 137 kN	9/16" x 172 ft, EIPS, minimum breaking strength of 30,799 lbf
Standard Accessories		Dual counterbalance valves and pressure roller	
Winch Weight: 155 kg / 341 lb			Gross Weight: 185 kg / 407 lb

Rope layer			1	2	3	4
Lift by layer	at 210 bar	kgf	3,586	3,232	2,942	2,700
	at 3,046 psi	lbf	7,906	7,126	6,487	5,950
Speed by layer	at 75 l/min	m/min	28	31	34	37
	at 19.8 g/min	ft/min	91	101	111	121
Cumulating rope winding length		m	11	24	37	52
		ft	37	78	123	172



## Hydraulic Planetary Winch

Pulling Force: 6,000 ~ 30,000 lbf

2,700 ~ 13,600 kgf



Powered by a PTO (power take-off) driven pump with variable speeds and adjustable line pull output functions. Rugged cast iron gear box and planetary gear trains design reduces size and helps the winch fit in compact dimension. Enclosed drum flanges prevent rope from becoming trapped. Dependable orbital hydraulic motor offer high torque and high efficiency at low speed.

Dual counterbalance valves mounted to the winch motor and a multi disc, spring applied, hydraulically released brake lived in an oil bath provide fail-safe load pulling and prevent momentary downward load drifting. Both braking components are designed to operate in either direction, which allows flexibility in the rope winding direction.

Meet Machinery Directive 2006/42/EC, harmonized EN 14492-1 Power Driven Winches and SAE J706\_2003.08 Rating of Winches for intermittent duty winches.

Minimum 10:1 drum diameter to wire rope diameter.

Minimum 2:1 rope breaking strength factor for EN ratings.

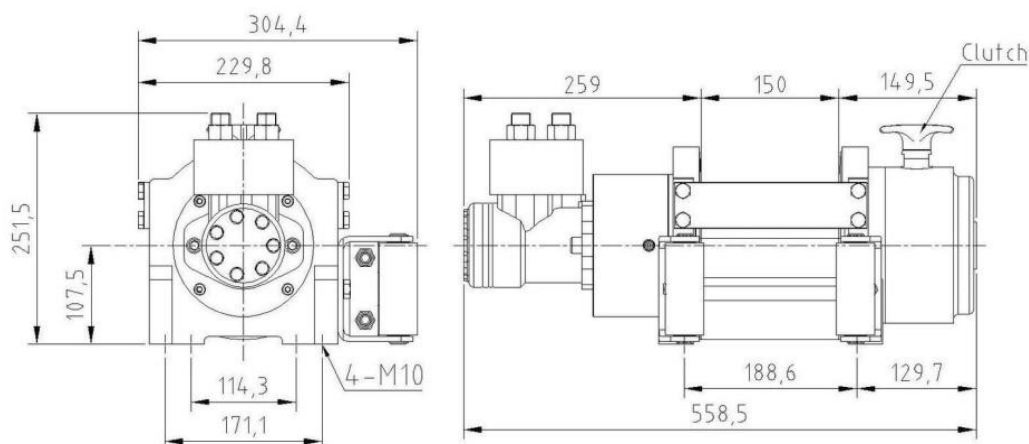
A given amount of freeboard prevents rope from inadvertently coming off the drum during use.

An industrial winch is a robust and reliable device to be used in a variety of industrial applications for example fire engine, towing and recovery, heavy hauling etc.



## TD60

## EN 14492-1 Ratings 2,700 kgf SAE J706 Ratings 6.000 lbf

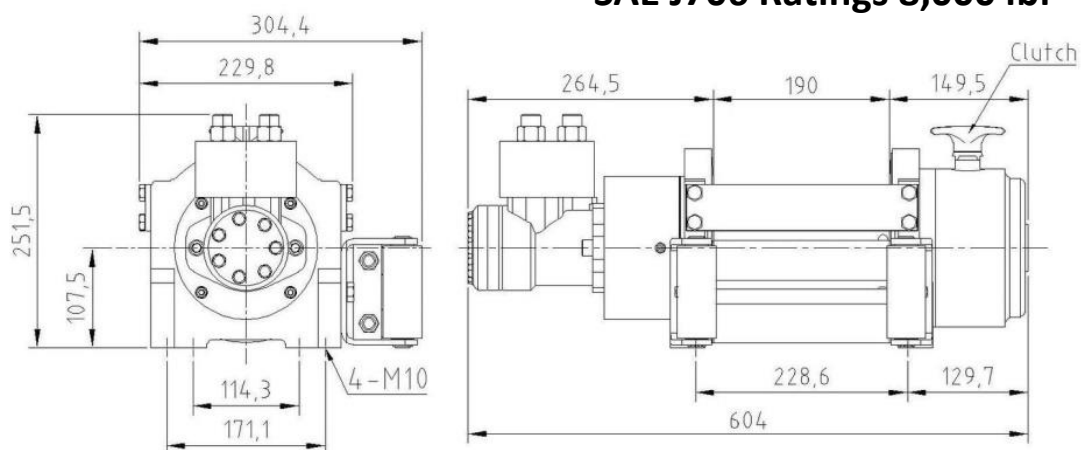


Specification	Comply with EN 14492-1	Comply with SAE J706
Rated Pulling Force	2,700 kgf	6,000 lbf
Hydraulic Motor	Orbital, 156 cm³/rev	Orbital, 3.1 in³/rev
Maximum oil flow	40 l/min	10.6 g/min
Minimum oil flow	10 l/min	2.64 g/min
Operation pressure	150 bar	2,175 psi
Gear Train	2 stage planetary gear with a gear ratio of 16:1	
Brake	Negative multi-disc brake and dual counterbalance valves	
Clutch	Rotating ring gear, Manual	
Wire Rope Pay-out	Two directions	
Drum Size (Barrel x Flange x Width)	90 x 205 x 150 mm	3.5 x 8.1 x 5.9"
Recommended Wire Rope	9 mm x 25 m, 1960, minimum breaking strength of 56.5 kN	11/32" x 108 ft, EIPS, minimum breaking strength of 12,700 lbf
Standard Accessories	Roller fairlead and dual counterbalance valves	
Winch Weight: 32 kg / 70 lb		Gross Weight: 43 kg / 95 lb

Rope layer			1	2	3	4	5
Pull by layer	at 150 bar	kgf	2,700	2,298	1,989	1,754	
	at 2,175 psi	lbf	6,000	5,068	4,387	3,867	3,457
Speed by layer	at 40 l/min	m/min	15	18	20	23	
	at 10.6 g/min	ft/min	48	57	66	74	83
Cumulating rope winding length		m	5	11	17	25	
		ft	16	35	56	81	108

## TD80

## EN 14492-1 Ratings 3,500 kgf SAE J706 Ratings 8,000 lbf

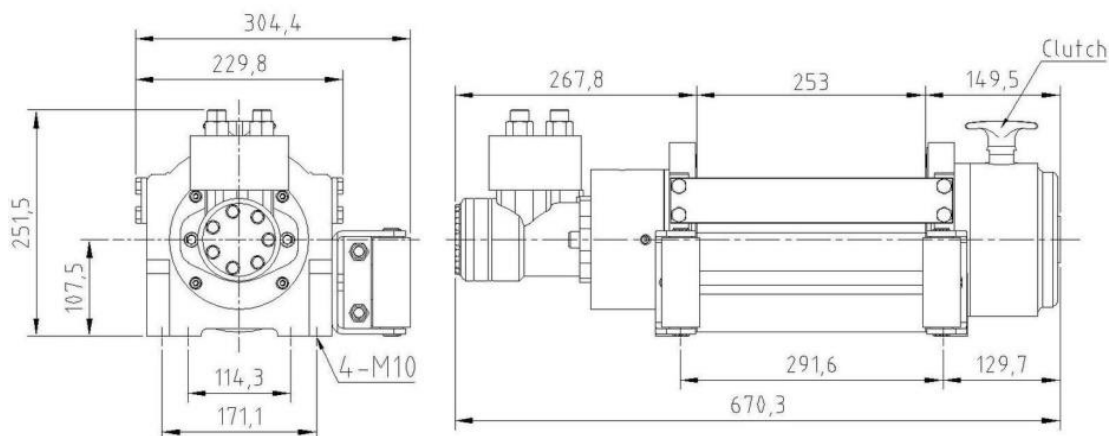


Specification	Comply with EN 14492-1		Comply with SAE J706
Rated Pulling Force	3,500 kgf		8,000 lbf
Hydraulic Motor	Orbital, 78 cm³/rev		Orbital, 4.7 in³/rev
Maximum oil flow	60 l/min		15.9 g/min
Minimum oil flow	10 l/min		2.64 g/min
Operation pressure	150 bar		2,175 psi
Gear Train	2 stage planetary gear with a gear ratio of 16:1		
Brake	Negative multi-disc brake and dual counterbalance valves		
Clutch	Rotating ring gear, Manual		
Wire Rope Pay-out	Two directions		
Drum Size (Barrel x Flange x Width)	90 x 205 x 190 mm		3.5 x 8.1 7.5"
Recommended Wire Rope	10 mm x 30 m, 1960, minimum breaking strength of 69.8 kN		3/8" x 133 ft, EIPS, minimum breaking strength of 15,663 lbf
Standard Accessories	Roller fairlead and dual counterbalance valves		
Winch Weight: 34 kg / 74 lb		Gross Weight: 45 kg / 99 lb	

Rope layer			1	2	3	4	5
Pull by layer	at 150 bar	kgf	3,500	3,018	2,583	2,258	
	at 2,175 psi	lbf	8,000	6,654	5,696	4,979	4,423
Speed by layer	at 60 l/min	m/min	15	18	21	24	
	at 15.9 g/min	ft/min	48	58	68	77	87
Cumulating rope winding length		m	6	13	21	30	
		ft	19	42	68	99	133

## TD100

**EN 14492-1 Ratings 4,300 kgf**  
**SAE J706 Ratings 10,000 lbf**



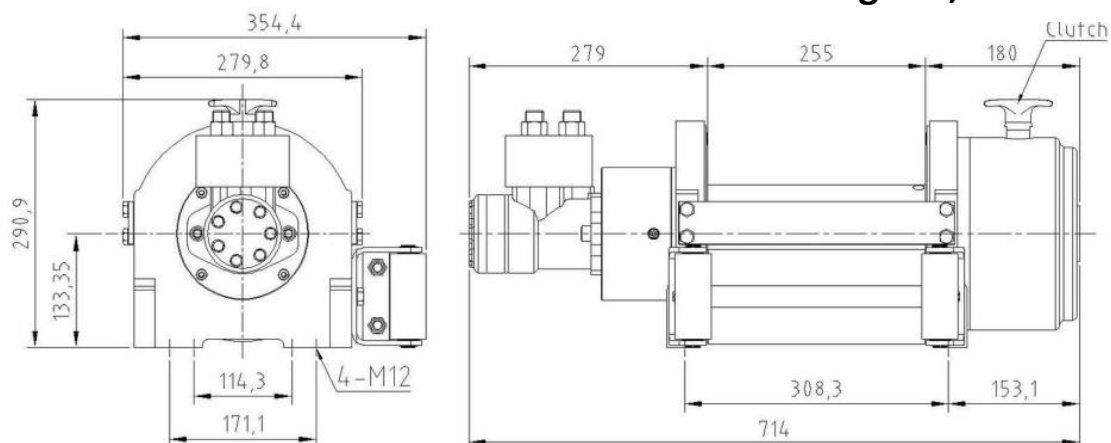
Specification	Comply with EN 14492-1		Comply with SAE J706
Rated Pulling Force	4,300 kgf		10,000 lbf
Hydraulic Motor	Orbital, 97.3 cm³/rev		Orbital, 5.9 in³/rev
Maximum oil flow	60 l/min		15.9 g/min
Minimum oil flow	10 l/min		2.64 g/min
Operation pressure	150 bar		2,175 psi
Gear Train	2 stage planetary gear with a gear ratio of 16:1		
Brake	Negative multi-disc brake and dual counterbalance valves		
Clutch	Rotating ring gear, Manual		
Wire Rope Pay-out	Two directions		
Drum Size (Barrel x Flange x Width)	102 x 205 x 253 mm		4 x 8.1 x 10"
Recommended Wire Rope	11 mm x 29 m, 1960, minimum breaking strength of 84.4 kN		7/16" x 135 ft, EIPS, minimum breaking strength of 18,939 lbf
Standard Accessories	Roller fairlead and dual counterbalance valves		
Winch Weight: 36 kg / 79 lb		Gross Weight: 47 kg /103 lb	

Rope layer			1	2	3	4
Pull by layer	at 150 bar	kgf	4,300	3,794	3,261	
	at 2,175 psi	lbf	10,000	8,366	7,190	6,305
Speed by layer	at 60 l/min	m/min	14	16	19	
	at 15.9 g/min	ft/min	44	52	61	69
Cumulating rope winding length		m	8	18	29	
		ft	26	57	94	135



## TD120

**EN 14492-1 Ratings 5,100 kgf**  
**SAE J706 Ratings 12,000 lbf**

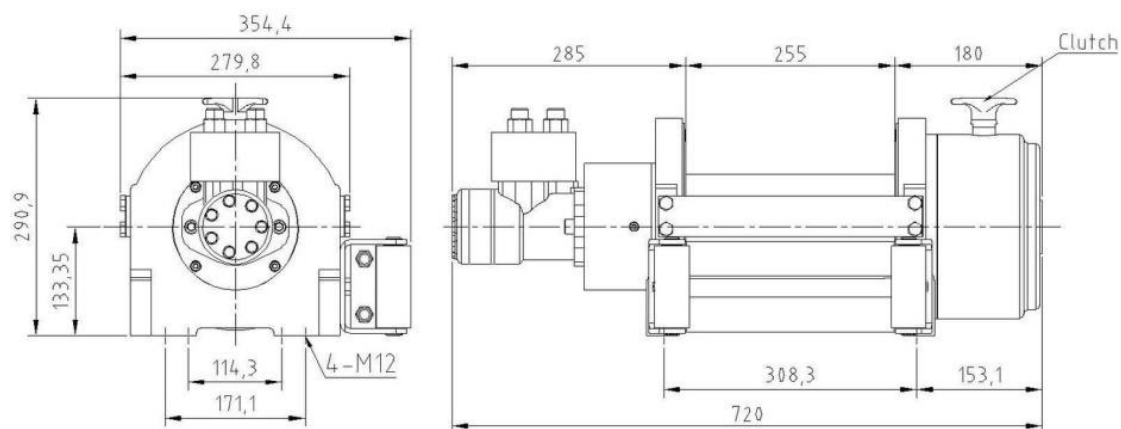


Specification	Comply with EN 14492-1		Comply with SAE J706
Rated Pulling Force	5,100 kgf		12,000 lbf
Hydraulic Motor	Orbital, 125 cm³/rev		Orbital, 7.6 in³/rev
Maximum oil flow	60 l/min		15.9 g/min
Minimum oil flow	10 l/min		2.64 g/min
Operation pressure	150 bar		2,175 psi
Gear Train	2 stage planetary gear with a gear ratio of 19:1		
Brake	Negative multi-disc brake and dual counterbalance valves		
Clutch	Rotating ring gear, Manual		
Wire Rope Pay-out	Two directions		
Drum Size (Barrel x Flange x Width)	114 x 253 mm		4.5 x 10 x 10"
Recommended Wire Rope	12 mm x 42 m, 1960, minimum breaking strength of 100.5 kN		15/32" x 185 ft, EIPS, minimum breaking strength of 22,552 lbf
Standard Accessories	Roller fairlead and dual counterbalance valves		
Winch Weight: 60 kg / 132 lb		Gross Weight: 75 kg / 165 lb	

Rope layer			1	2	3	4	5
Pull by layer	at 150 bar	kgf	5,100	4,573	3,944	3,466	
	at 2,175 psi	lbf	12,000	10,084	8,695	7,643	6,818
Speed by layer	at 60 l/min	m/min	10	12	14	16	
	at 15.9 g/min	ft/min	33	39	45	51	58
Cumulating rope winding length		m	8	18	29	42	
		ft	27	59	96	138	185

# TD150

**EN 14492-1 Ratings 6,000 kgf**  
**SAE J706 Ratings 15,000 lbf**

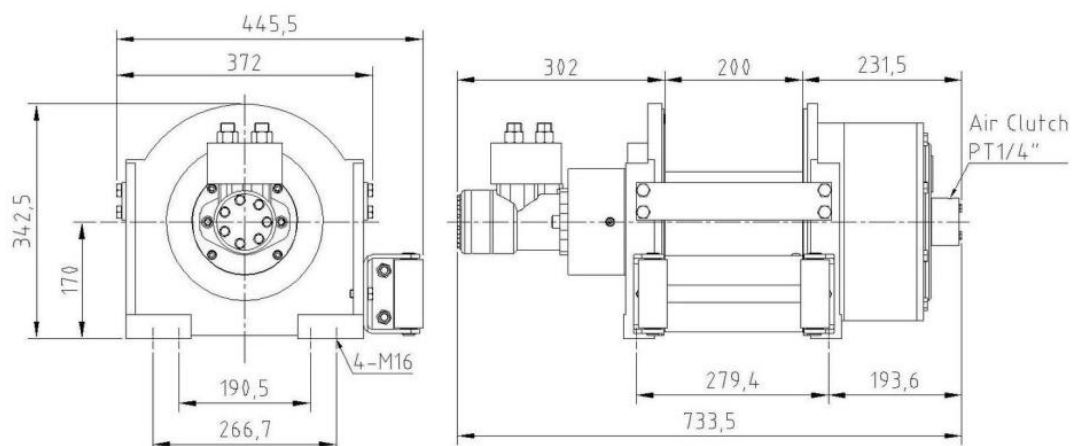


Specification	Comply with EN 14492-1		Comply with SAE J706
Rated Pulling Force	6,000 kgf		15,000 lbf
Hydraulic Motor	Orbital, 156 cm³/rev		Orbital, 9.5 in³/rev
Maximum oil flow	60 l/min		15.9 g/min
Minimum oil flow	10 l/min		2.64 g/min
Operation pressure	150 bar		2,175 psi
Gear Train	2 stage planetary gear with a gear ratio of 19:1		
Brake	Negative multi-disc brake and dual counterbalance valves		
Clutch	Rotating ring gear, Manual		
Wire Rope Pay-out	Two directions		
Drum Size (Barrel x Flange x Width)	127 x 253 x 255 mm		5 x 10 x 10"
Recommended Wire Rope	13 mm x 29 m, 1960, minimum breaking strength of 118 kN		1/2" x 137 ft, EIPS, minimum breaking strength of 26,500 lbf
Standard Accessories	Roller fairlead and dual counterbalance valves		
Winch Weight: 70 kg / 154 lb		Gross Weight: 85 kg / 187 lb	

Rope layer			1	2	3	4
Pull by layer	at 150 bar	kgf	6,000	5,738	4,961	
	at 2,175 psi	lbf	15,000	12,651	10,938	9,633
Speed by layer	at 60 l/min	m/min	9	11	12	
	at 15.9 g/min	ft/min	29	34	39	45
Cumulating rope winding length		m	8	18	29	
		ft	27	59	96	137

# TD200

**EN 14492-1 Ratings 9,000 kgf**  
**SAE J706 Ratings 20,000 lbf**



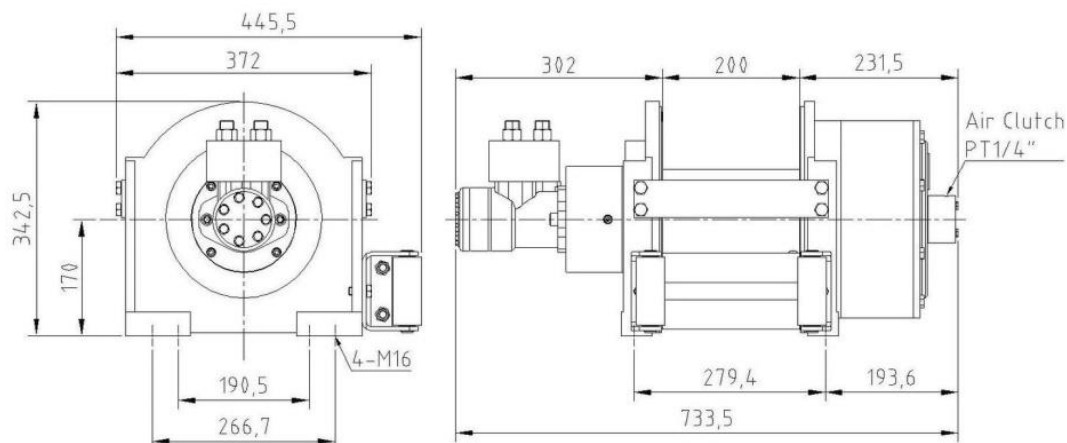
Specification	Comply with EN 14492-1		Comply with SAE J706
Rated Pulling Force	9,000 kgf		20,000 lbf
Hydraulic Motor	Orbital, 156 cm³/rev		Orbital, 9.5 in³/rev
Maximum oil flow	60 l/min		15.9 g/min
Minimum oil flow	10 l/min		2.64 g/min
Operation pressure	150 bar		2,175 psi
Gear Train	2 stage planetary gear with a gear ratio of 30:1		
Brake	Negative multi-disc brake and dual counterbalance valves		
Clutch	Rotating ring gear, Air		
Wire Rope Pay-out	Two direction		
Drum Size (Barrel x Flange x Width)	146 x 330 x 200 mm		5.8 x 13 x 7.9"
Recommended Wire Rope	16 mm x 31 m, 1960, minimum breaking strength of 179 kN		5/8" x 137 ft, EIPS, minimum breaking strength of 40,200 lbf
Standard Accessories	Roller fairlead, dual counterbalance valves and air clutch		
Winch Weight: 120 kg / 264 lb		Gross Weight: 140 kg / 308 lb	

Rope layer			1	2	3	4	5
Pull by layer	at 150 bar	kgf	9,000	7,575	6,502	5,696	
	at 2,175 psi	lbf	20,000	16,701	14,336	12,558	11,172
Speed by layer	at 60 l/min	m/min	7	8	9	10	
	at 15.9 g/min	ft/min	21	25	29	33	38
Cumulating rope winding length		m	6	13	22	31	
		ft	20	43	71	102	137

## TD300

**SAE J706 Ratings 13,600 kgf**

**SAE J706 Ratings 30,000 lbf**



Specification	Comply with EN 14492-1	Comply with SAE J706
Rated Pulling Force	13,600 kgf	30,000 lbf
Hydraulic Motor	Orbital, 9.5 in <sup>3</sup> /rev	Orbital, 156 cm <sup>3</sup> /rev
Maximum oil flow	60 l/min	15.9 g/min
Minimum oil flow	10 l/min	2.64 g/min
Operation pressure	150 bar	2,175 psi
Gear Train	2 stage planetary gear with a gear ratio of 42:1	
Brake	Negative multi-disc brake and dual counterbalance valves	
Clutch	Air clutch	
Wire Rope Pay-out	Two directions	
Drum Size (Barrel x Flange x Width)	152 x 335 x 200 mm	6 x 13.2 x 7.9"
Recommended Wire Rope	16 mm x 31 m, 1960, minimum breaking strength of 179 kN	5/8" x 141 ft, EIPS, minimum breaking strength of 40,200 lbf
Standard Accessories	Roller fairlead, dual counterbalance valves and air clutch	
Winch Weight: 150 kg / 330 lb		Gross Weight: 175 kg / 385 lb

Rope layer			1	2	3	4	5
Pull by layer	at 150 bar	kgf	13,600	11,435	9,860	8,666	7,731
	at 2,175 psi	lbf	30,000	25,210	21,738	19,107	17,045
Speed by layer	at 60 l/min	m/min	5	6	7	8	9
	at 15.9 g/min	ft/min	16	19	22	25	28
Cumulating rope winding length		ft	20	45	73	105	141
		m	6	14	22	32	43

## Custom Made Winch

THAC concept is based on what our customers want: the best quality, proven designs, short delivery time, low maintenance and after-sales service.

- **The best price-quality ratio**  
We offer our customers well-proven and thoroughly tested design and technology, competitively priced and innovative custom made winch by listening carefully to client specific requirements and feedback.
- **Short delivery time and independent advice**  
To reduce delivery times substantially, we build a wide variety of standard gear train and drum configurations on our own account and keep them in stock. However, the various options can be configured so they are tailor-made to suit customer demands. We can deliver our winches with this wide variety of options and we are able to give independent advice.
- **Innovation**  
THAC thinks innovation is the key to success and to stay at the top. The research and development (R&D) teams at THAC are continuously improving our winches, making them more effective in their operations, more cost-efficient and more environmentally friendly. We not only create new designs, but also keep improving our existing products and parts by listening closely to our customers and by taking current technological trends into account.



## Different Drum Configurations

1. **Winch with plain drum**  
This is the most commonly used configuration.  
The rope is anchored at the drum and travels the barrel.
2. **Winch with Extended drum (fig1)**  
The winch with extended drum to suit a wide variety of application.
3. **Winch with Grooved drum (fig2)**  
Parallel grooving evenly distributes the load between and show to increases the life of the wire rope. Reduction of rope damage benefits the safety operation.
4. **Winch with two ropes in opposite winding (fig 3)**  
For example, it can be used as a traversing winch to move a carriage forwards and backwards in two direction on a level. The drum is grooved for one rope, with a second rope fastening attachment on the drum.
5. **Winch with several ropes (fig 4)**  
The winch is grooved for two or several ropes with additional wire rope fastening attachment. Rope pays in and out together.

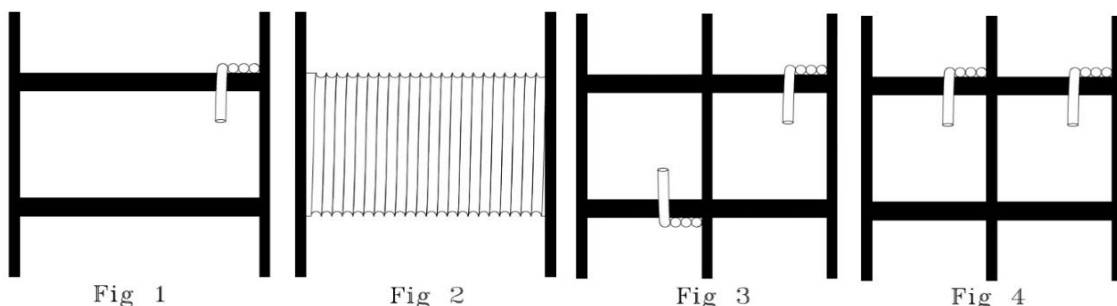


Fig 1

Fig 2

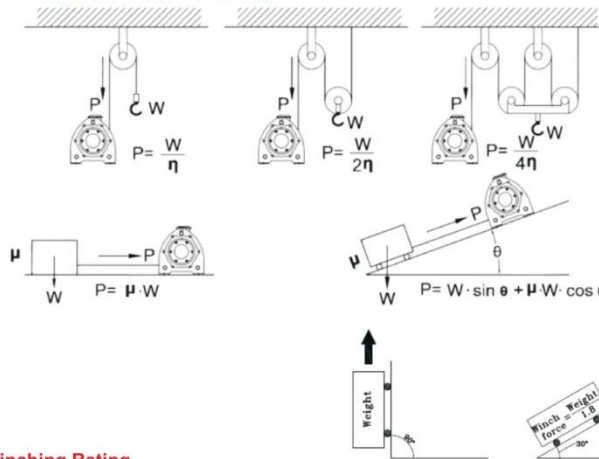
Fig 3

Fig 4



# Winch Principles

## Winching vs Pulling vs Rolling



Pulling application:  $P = \mu \times W$

Rolling application:  $P = \mu \times W + \theta \times W$

The rolling force is calculated from the mass of the load to be load multiplied by the surface friction factor and gradient resistance. The rolling resistance is around 0.15 for rubber wheels on the concrete surface and around 0.01 for a cart with steel wheels on the steel tracks.

$P$  = Rope Tension,  $W$  = Load,  $\eta$  = Sheave Efficiency

$\mu$  = Friction Factor,  $\theta$  = Angle

## Example of rolling forces



## Winching Rating

As a general guide, increasing the drum core diameter will increase line speed with a proportionately equal decrease in line pull. The first layer of wire rope on the drum delivers the slowest speed and the maximum line pull, but a full drum delivers the maximum speed and minimum line pull

## Fleet Angle

In order to promote proper spooling of the wire rope it is recommended a fleet angle 1.5° for smooth drums and 2° for grooved drums to be maintained. Exceeding these recommendations may cause poor spooling from rope piling up, and possible damage to the wire rope through crushing and abrasion.

Experience shows the correct distance between the centers of winch drum and sheave for are the equivalents of approximately 19 times drum width in meter for 1.5° and 15 times drum width for 2° fleet angle

## D/d ratio and rope working

The drum is generously dimensioned to obtain a minimum D/d ratio (first layer pitch diameter/rope diameter) of 15:1 with a rope safety factor of 5 times for lifting and lowering applications. For any hauling of pulling applications, it requires a minimum D/d ratio of 12:1 and 3 times of rope safety factor

Wire rope fatigue and times irregular wear caused by using a smaller than recommended D/d ratio. For this reason "THAC" winch conform to EN 14492-1 standards which recommends a minimum of 15:1 (D/d) ratio for lifting and lowering applications

## Freeboard

The lifting capacity is rated at the top layer of wire rope, which corresponds to the full drum rope capacity less 1.5 layers at the top of drum flange.

Freeboard is the amount of space from the top layer of the wire rope to the outside of the drum flange.

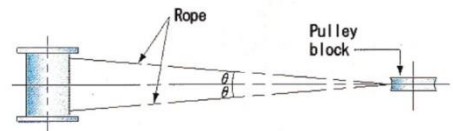
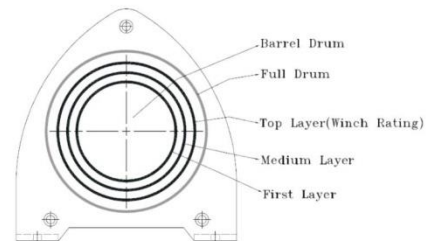
"THAC" follows EN 14492-1 which recommend a minimum of 1.5 times wire rope diameter of freeboard to be maintained.

## Warning:

- A minimum of five (5) wraps of wire rope around the drum is necessary to support the rated load.
- The winch is not to be used to lift, support or otherwise transport personnel
- For lifting or lowering application, it is absolutely necessary for the user to install an Up and Down limits devices to meet CE Safety Machinery Standard.
- Technical features may change without previous notice from the manufacturer

## Warranty:

- Each new winch is guaranteed against defects in workmanship and material defects for a period of twelve (12) months from date of purchase
- Wire rope are not included under warranty



$\theta = 1.5^\circ$  on smooth drum

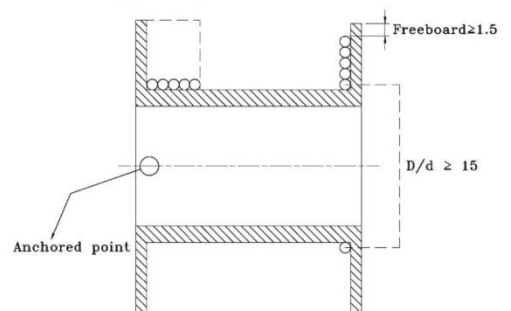
$\theta = 2.0^\circ$  on grooved drum

Correct distance between the centers of winch drum and sheave

When  $\theta = 1.5$  approximately 19 times drum width in meter

$\theta = 2.0^\circ$  approximately 15 times drum width in meter

at least 5 wraps





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