



Attuatore LA35  
Scheda tecnica

# LA35

LA35 è un attuatore potente, silenzioso e rappresenta un sistema pratico ed economico con bassi consumi energetici. E' progettato per un'ampia gamma di applicazioni industriali sia per ambienti interni che esterni.



Questo attuatore **TECHLINE**® è disponibile con tecnologia IC - Integrated control.  
Per maggiori informazioni sulle opzioni IC, consultare [www.linak.it/techline](http://www.linak.it/techline)

## Caratteristiche:

- Motore a magneti permanenti a 12/24V DC
- Spinta: max. 6000 N e 4000 in tiro
- Velocità: max. 19.5 mm/sec. in funzione del carico e del passo pistone
- Corsa: da 100 a 600 mm
- Fine corsa interni
- Tubo interno in acciaio inox
- Classe di protezione: IP66 dinamico and IP69K statico

## Opzioni

- Differenti attacchi posteriori e occhielli pistone disponibili
- Occhiello pistone anti-rotazione
- Madrevite guidata: solo con passo 2 mm
- Freno integrato per una maggior autofrenanza dell'attuatore
- Cavi intercambiabili disponibili in diverse lunghezze
- Feedback assoluto
- Madrevite di sicurezza in spinta
- Robusta struttura in alluminio anodizzato
- Segnali di fine corsa
- Opzioni IC:
  - IC, Integrated Controller
  - Sensore di Hall
  - Feedback analogico o digitale
  - Segnali di fine corsa
  - Diagnostica

## Utilizzo:

- Ciclo di lavoro: versione 6000 N e passo pistone 3mm, max. 10%
- Temperatura d'esercizio: da -25° a +60°C, massime prestazioni comprese tra +5°C e +40°C

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## Capitolo 1

### Specifiche

Motore:	Motore a magneti permanenti 12 o 24V DC *
Cavo:	Cavo motore: 2 x 14 AWG PVC Cavo segnale: 6 x 20 AWG PVC **
Carcassa:	Struttura in alluminio trattata e verniciata per utilizzo in ambienti esterni (harsh conditions)
Pistone:	Tubo esterno in acciaio verniciato a polvere Tubo interno in acciaio inox AISI304/SS2333 Vite pistone filettata ad alta efficienza
Temperatura d'esercizio:	Da - 25° C a +60° C Da - 13° F a +140° F Massime prestazioni: da +5° C a +40° C
Protezione IP:	IP66 per uso esterno. L'attuatore può essere lavato con idropulitrice ad alta pressione (IP69K)
Livello di rumorosità:	48dB (A) metodo di misurazione in accordo con DS/EN ISO 3743-1 attuatore a vuoto
Compatibilità:	Compatibile con SMPS-T160 (per le possibili combinazioni, consultare il manuale d'uso SMPS-T160)

\* Attuatori Modbus solo a 24V:

**Guida d'installazione Modbus <https://www.linak.it/divisioni/techline/tech-trends/attuatori-ic-e-bus/>**

\*\* Cavi segnale per attuatori Modbus:

**Guida d'installazione Modbus <https://www.linak.it/divisioni/techline/tech-trends/attuatori-ic-e-bus/>**

Simboli riportati all'interno della scheda tecnica:



#### Attenzione

L'inosservanza di queste istruzioni potrebbe causare eventuali danni o malfunzionamenti dell'attuatore.



#### Informazioni supplementari

Suggerimenti e consigli da tenere in considerazione durante il normale utilizzo.

## Specifiche tecniche

### LA35 motore a 12V

Tipo	Max. spinta (N)	Max. tiro (N)	Autofrenanza min. (N) spinta	Autofrenanza min. (N) tiro	Passo (mm/ giro)	* Velocità (mm/s)		Lunghezza corsa (mm) in passi di 50mm	* Assorbimento (A)	
						No carico	Pieno carico		No carico	Pieno carico
3510xx.	6000	4000	6000	4000	3	4.7	3.3	100-300	1.6	7.5
3520xx.	4000	4000	1500	1500	5	7.7	5.3	100-400	1.7	7.7
3521xx. freno in spinta	4000	4000	2500	1500	5	7.2	5.4	100-400	3.2	7.8
3522xx. freno in tiro	4000	4000	1500	2500	5	6.9	5.9	100-400	4.2	8.4
3530xx.	1500	1500	750	750	9	14.0	12.3	100-500	1.7	5.9
3531xx. freno in spinta	1500	1500	1000	750	9	14.2	12.6	100-500	2.9	5.5
3532xx. freno in tiro	1500	1500	750	1000	9	14.4	11.2	100-500	3.0	5.4
3540xx.	1000	1000	750	750	12	19.0	17.0	100-600	1.9	5.3
3541xx. freno in spinta	1000	1000	1000	750	12	17.9	16.9	100-600	5.5	5.5
3542xx. freno in tiro	1000	1000	750	900	12	16.9	15.4	100-600	5.6	5.6

### LA35 motore a 24V

Tipo	Max. spinta (N)	Max. tiro (N)	Autofrenanza min. (N) spinta	Autofrenanza min. (N) tiro	Passo (mm/ giro)	* Velocità (mm/s)		Lunghezza corsa (mm) in passi di 50mm	* Typical amp. (A)	
						No carico	Pieno carico		No carico	Pieno carico
3510xx.	6000	4000	6000	4000	3	5.1	4.0	100-300	0.9	4.2
3520xx.	4000	4000	1500	1500	5	8.3	6.6	100-400	0.8	4.8
3521xx. freno in spinta	4000	4000	2500	1500	5	8.0	6.7	100-400	1.4	4.3
3522xx. freno in tiro	4000	4000	1500	2500	5	8.0	7.0	100-400	2.1	4.6
3530xx.	1500	1500	750	750	9	15.0	13.9	100-500	0.6	2.6
3531xx. freno in spinta	1500	1500	1000	750	9	14.5	14.1	100-500	1.2	2.9
3532xx. freno in tiro	1500	1500	750	1000	9	14.7	13.9	100-500	1.5	3.0
3540xx.	1000	1000	750	750	12	19.5	18.9	100-600	0.9	2.8
3541xx. freno in spinta	1000	1000	1000	750	12	18.9	17.8	100-600	1.3	2.8
3542xx. freno in tiro	1000	1000	750	900	12	18.7	18	100-600	1.5	2.9

\* I dati riportati possono subire una variazione di  $\pm 20\%$  sui valori di corrente e  $\pm 10\%$  sui valori di velocità.  
Misurazioni effettuate con alimentatore stabilizzato a una temperatura ambiente di 20°C.

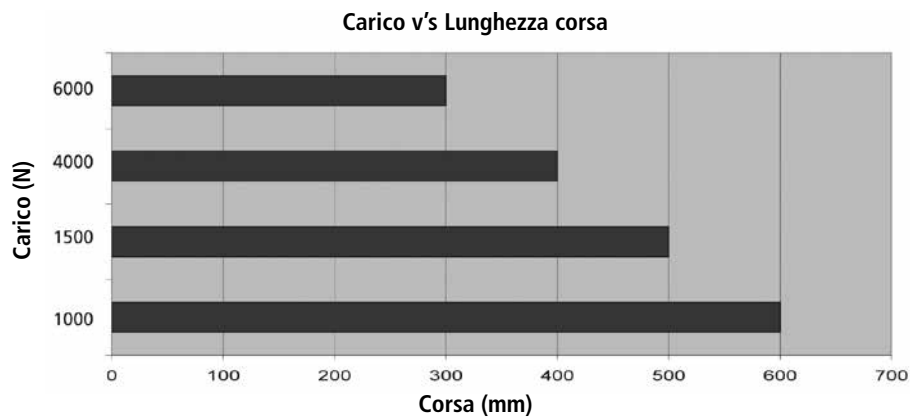


- Autofrenanza**

Al fine di garantire la massima capacità di autofrenanza, assicurarsi che il motore sia cortocircuitato quando fermo. Gli attuatori IC con Controllo Integrato, presentano questa caratteristica come standard.

- Quando si utilizza la funzione 'soft stop' con motore a corrente continua, un breve picco di voltaggio sarà inviato verso l'alimentatore di corrente. È importante considerare questo effetto nella scelta dell'alimentatore.

## Grafico Carico v's Lunghezza corsa



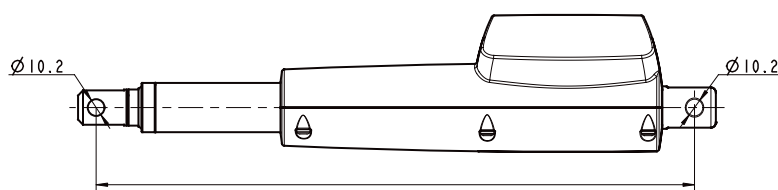
- Fattore di sicurezza 2.

## Tolleranze corsa e dimensioni d'installazione

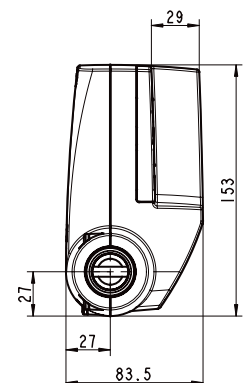
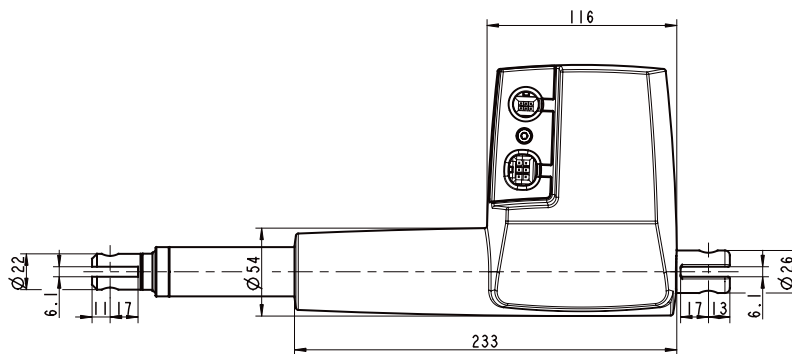
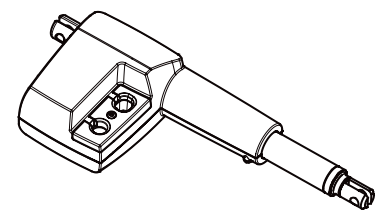
Opzioni	Descrizione	Tolleranza corsa	Esempio per corsa 150 mm	Tolleranza BID	Esempio per BID 350 mm
35XXXXXXXXXXXXXX	tutte le versioni	+2/-2 mm	da 148 a 152 mm	+2/-2 mm	da 348 a 352 mm

BID= dimensioni d'installazione (Built-in dimensions)

## Dimensioni

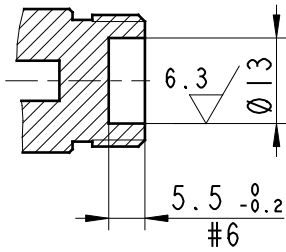
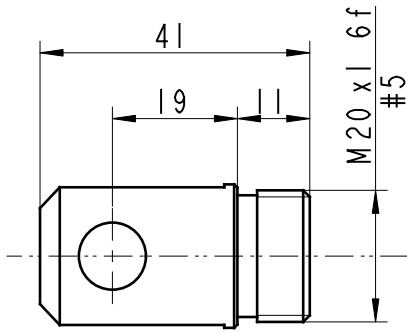


Dimensione d'installazione  
 Corsa  $\leq 300 = 200 + \text{corsa}$   
 Corsa  $> 300 = 250 + \text{corsa}$   
 Dimensione d'installazione minima = 300 mm

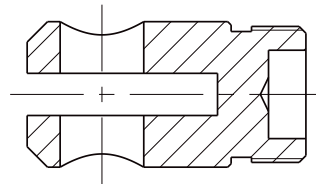
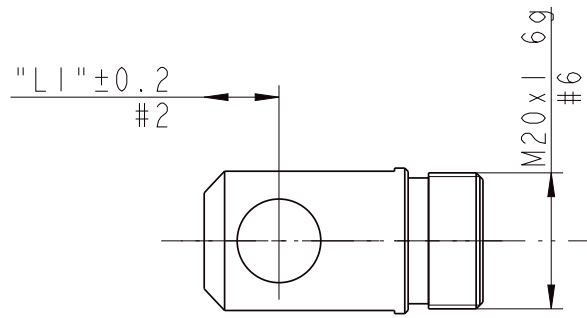


# Occhielli pistone

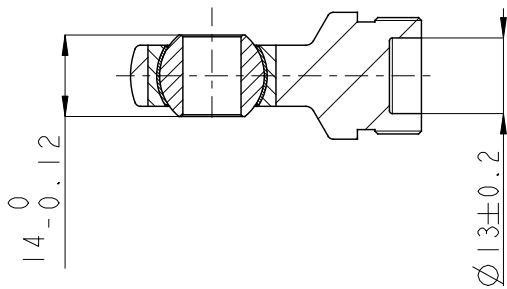
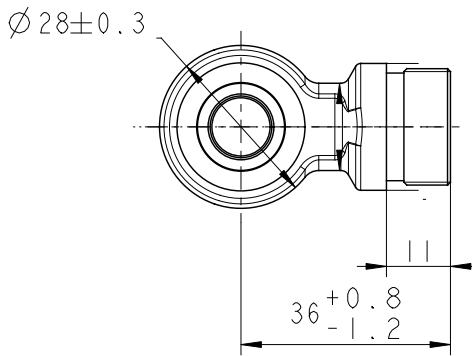
Opzione "0" e "2"



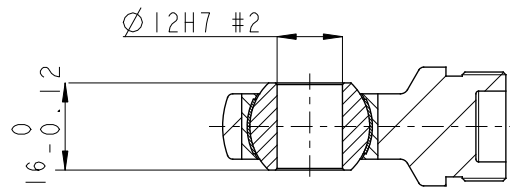
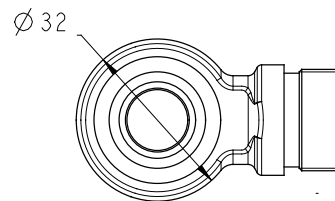
Opzione "1"  
AISI 303



Opzione "3"  
AISI 304



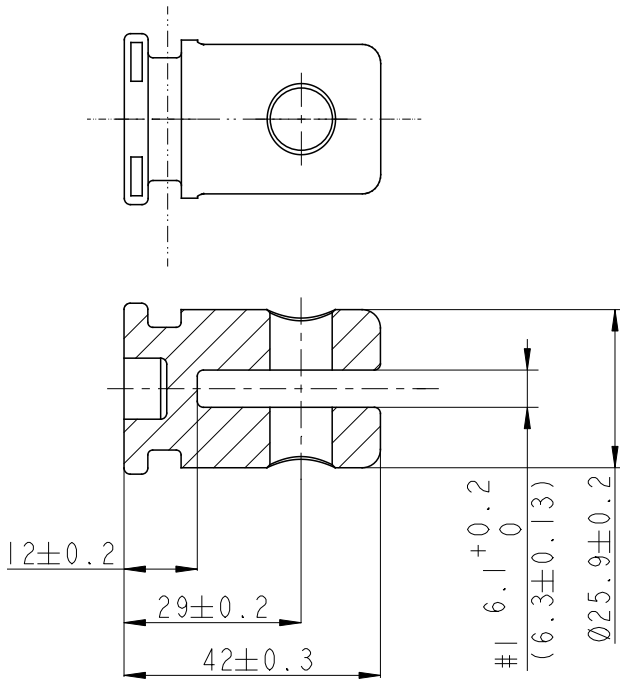
Opzione "4"  
AISI 304



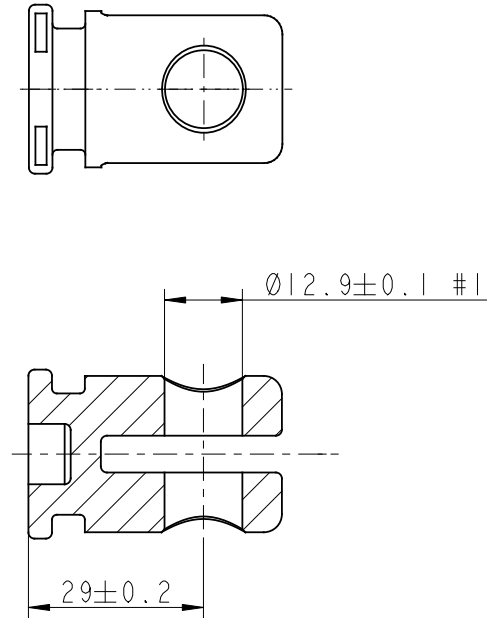
Rotazione occhio pistone: 0 - 90°.

## Attacchi posteriori

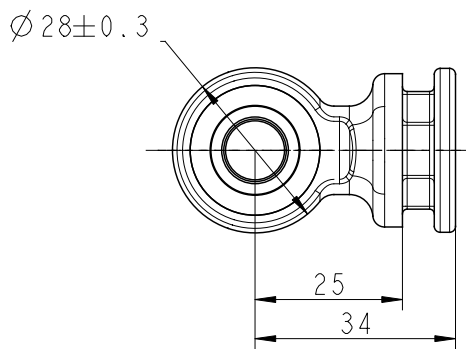
Opzione "A" e "B"  
AISI 304



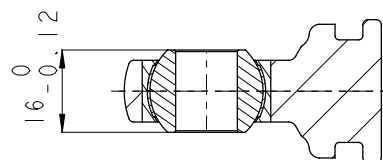
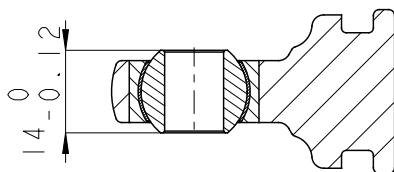
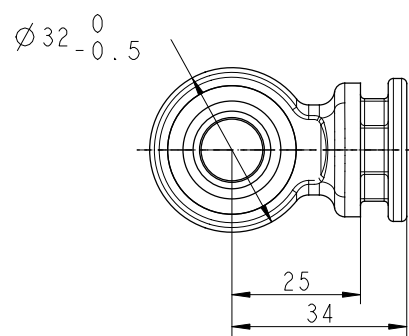
Opzione "C" e "D"  
AISI 304



Opzione "E" e "F"  
acciaio inox

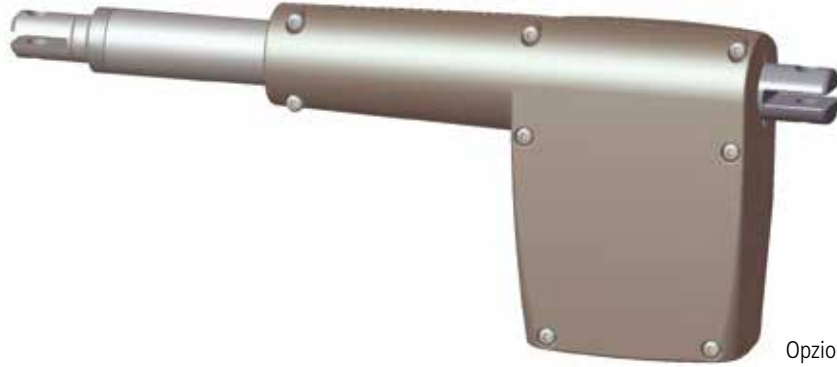


Opzione "G" e "H"  
acciaio inox

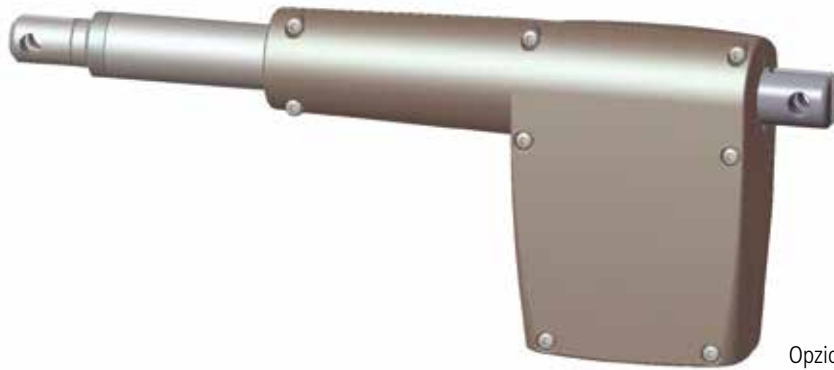




**Orientamento attacco posteriore**



Opzione A = 0°



Opzione B = 90°

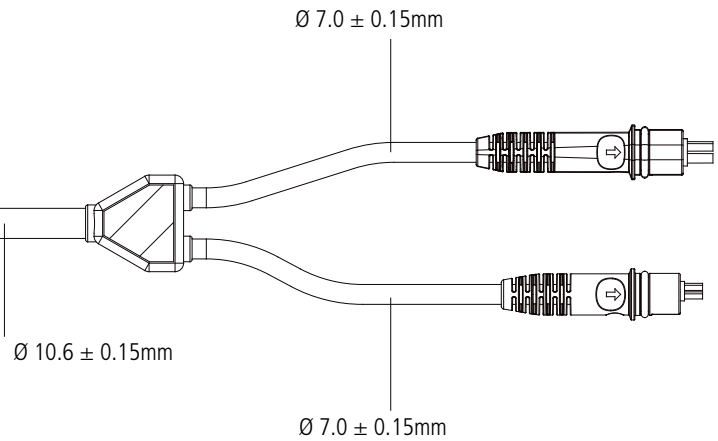
## Dimensioni cavo

dimensioni cavo a Y:

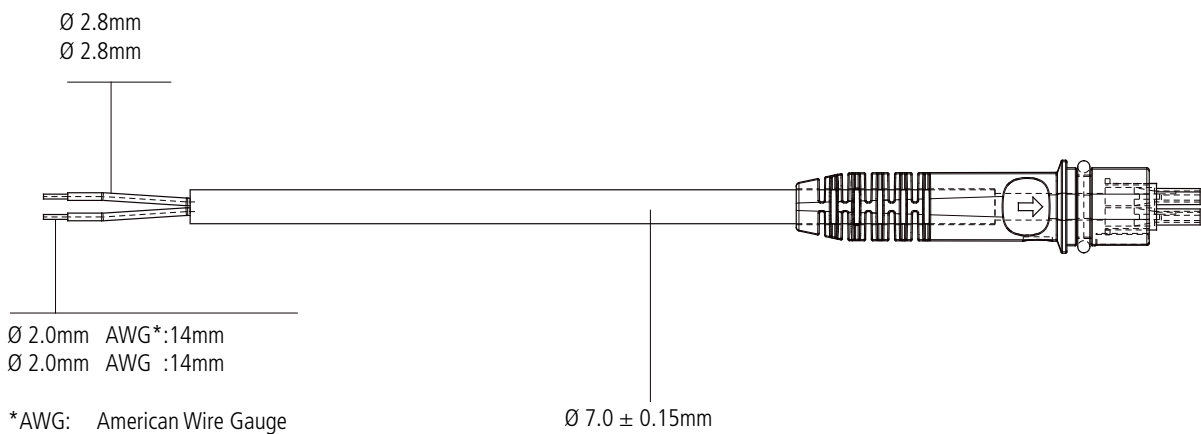
Marrone: Ø 2.8mm  
 Blu: Ø 2.8mm  
 Viola: Ø 1.5mm  
 Nero: Ø 1.5mm  
 Rosso: Ø 1.5mm  
 Giallo: Ø 1.5mm  
 Verde: Ø 1.5mm  
 Bianco: Ø 1.5mm

Marrone: Ø 2.0mm AWG\*: 14mm  
 Blu: Ø 2.0mm AWG : 14mm  
 Viola: Ø 0.5mm AWG : 20mm  
 Nero: Ø 0.5mm AWG : 20mm  
 Rosso: Ø 0.5mm AWG : 20mm  
 Giallo: Ø 0.5mm AWG : 20mm  
 Verde: Ø 0.5mm AWG : 20mm  
 Bianco: Ø 0.5mm AWG : 20mm

\*AWG: American Wire Gauge



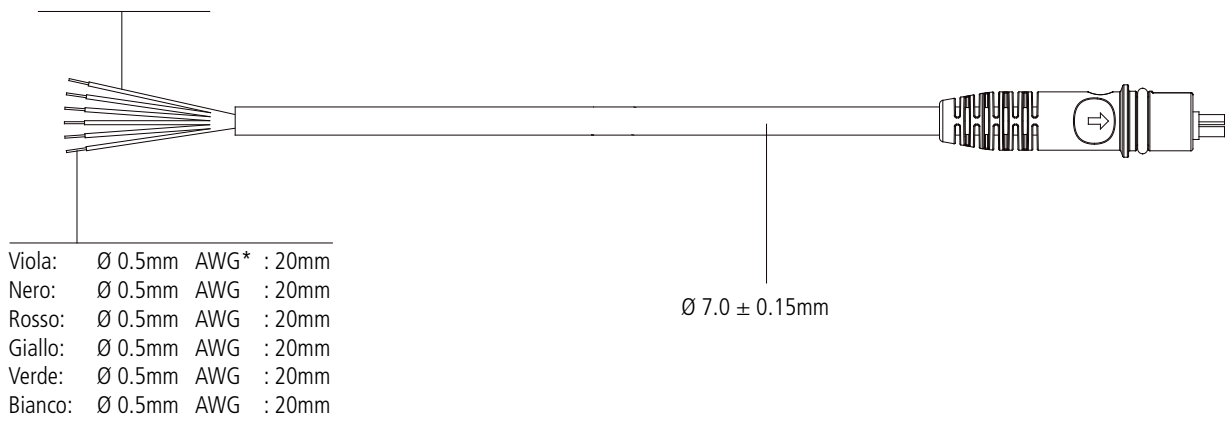
dimensioni cavo motore:



## Dimensioni cavo

dimensioni cavo segnale:

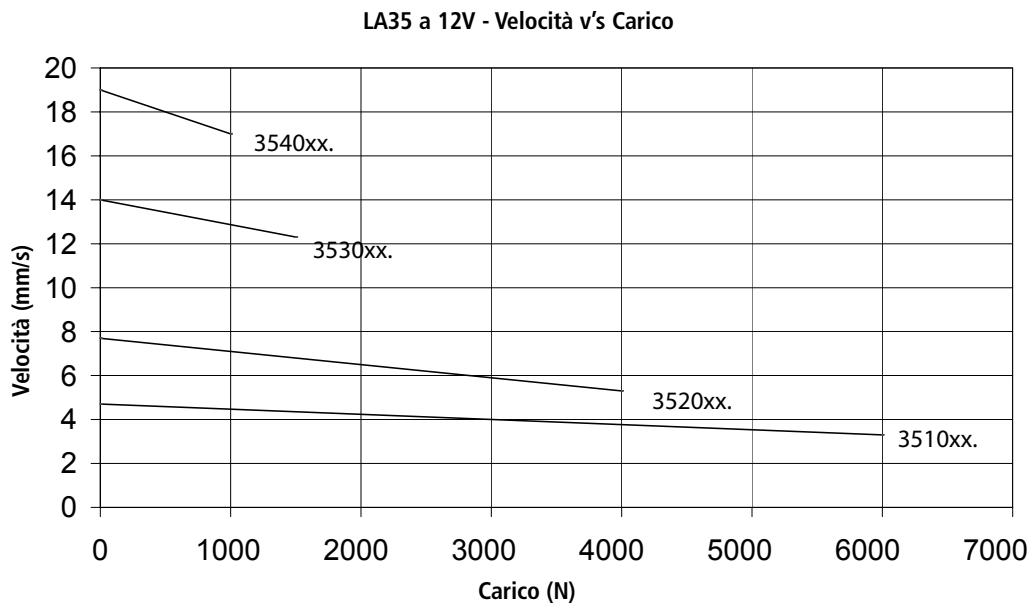
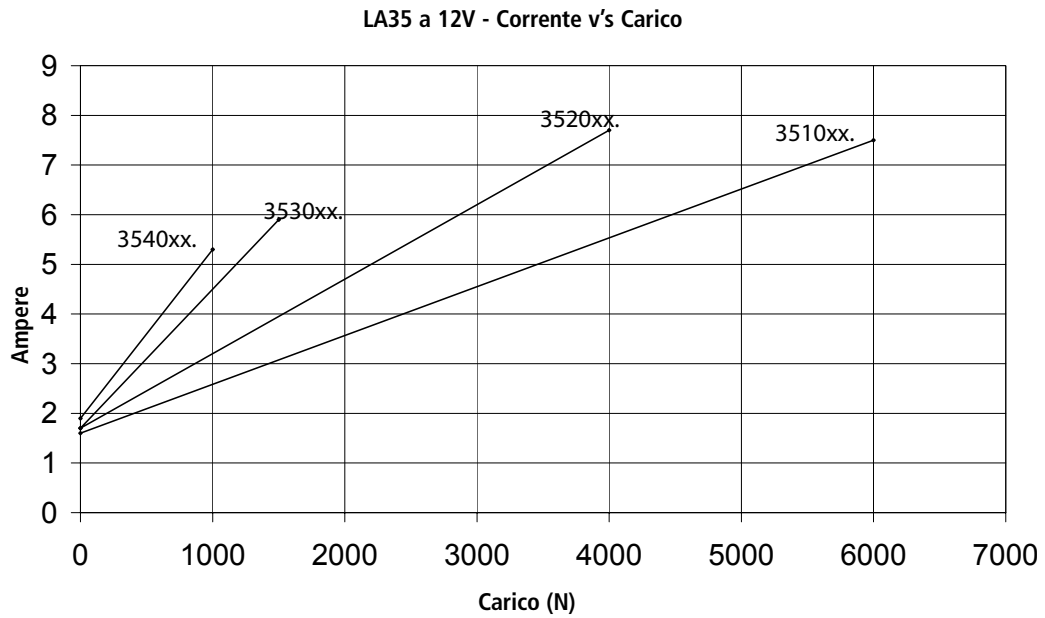
Viola: Ø 1.5mm  
Nero: Ø 1.5mm  
Rosso: Ø 1.5mm  
Giallo: Ø 1.5mm  
Verde: Ø 1.5mm  
Bianco: Ø 1.5mm



\*AWG: American Wire Gauge

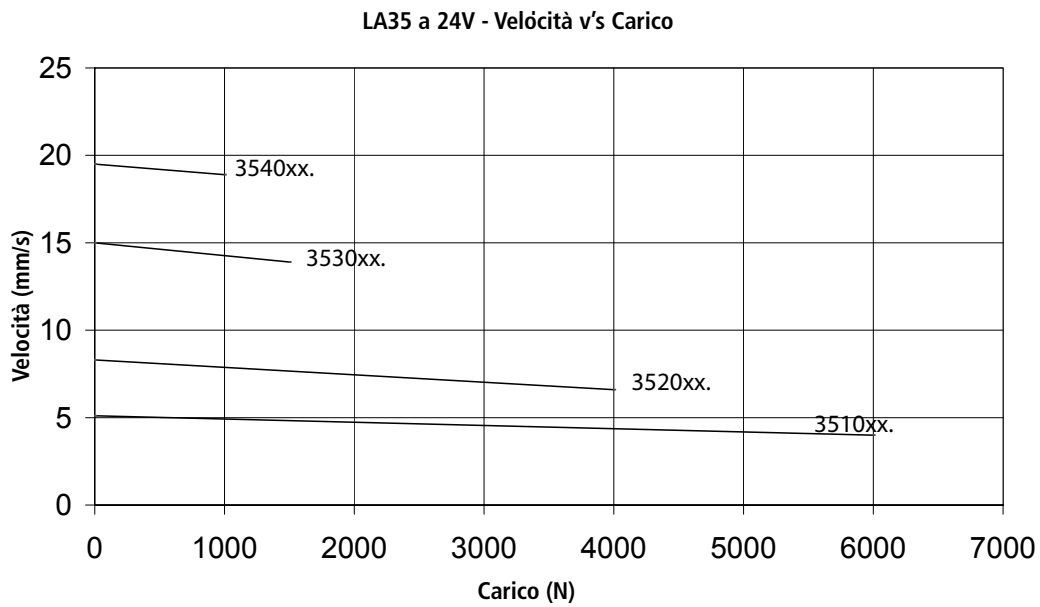
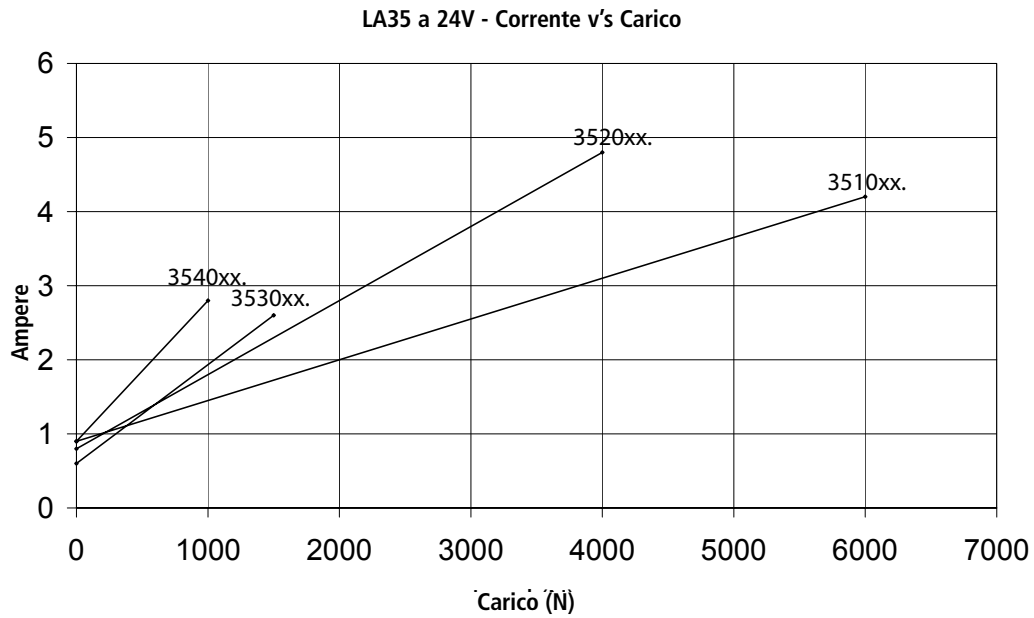
## Grafici - motore a 12V

I valori indicati sono da considerarsi valori medi e misurati con alimentatore stabilizzato ad una temperatura ambiente di 20°C.




## Grafici - motore a 24V

I valori indicati sono da considerarsi valori medi e misurati con alimentatore stabilizzato ad una temperatura ambiente di 20°C.




## Capitolo 2


### Specifiche I/O: attuatore senza feedback

Input/Output	Specification	Comments
Description	Permanent magnetic DC motor.	
Brown	12 or 24VDC (+/-) 12V $\pm$ 20% 24V $\pm$ 10%	To extend actuator: Connect Brown to positive  To retract actuator: Connect Brown to negative
Blue	Under normal conditions: 12V, max. 10A depending on load 24V, max. 5A depending on load	To extend actuator: Connect Blue to negative  To retract actuator: Connect Blue to positive
Red	Not to be connected	
Black	Not to be connected	
Green	Not to be connected	
Yellow	Not to be connected	
Violet	Not to be connected	
White	Not to be connected	

**Specifiche I/O: attuatore con segnali di finecorsa**


Input/Output	Specification	Comments
Description	The actuator is equipped with potential free endstop signals out. The micro switches are normally open.	
Brown	12 or 24VDC (+/-) 12V ± 20% 24V ± 10%  Under normal conditions:	To extend actuator: Connect Brown to positive  To retract actuator: Connect Brown to negative
Blue	12V, max. 10A depending on load 24V, max. 5A depending on load	To extend actuator: Connect Blue to negative  To retract actuator: Connect Blue to positive
Red	Potential free signal power supply (+) 10-28VDC	Switching capacity: Minimum 10mA Maximum 1A
Black	Not to be connected	
Green	Endstop signal out	Output voltage is the same as the input voltage
Yellow	Endstop signal in	
Violet	Not to be connected	
White	Not to be connected	

**Specifiche I/O: attuatore con segnali di finecorsa e posizionamento relativo - Hall singolo**

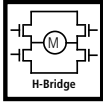
Input/Output	Specification	Comments
Description	The actuator is equipped with potential free endstop signals and Single Hall that gives a relative positioning feedback signal when the actuator moves.	
Brown	12 or 24VDC (+/-) 12V ± 20% 24V ± 10%	To extend actuator: Connect Brown to positive  To retract actuator: Connect Brown to negative
Blue	Under normal conditions: 12V, max. 10A depending on load 24V, max. 5A depending on load	To extend actuator: Connect Blue to negative  To retract actuator: Connect Blue to positive
White	Signal power supply (+) 10-28VDC	Current consumption: Max. 40mA, also when the actuator is not running
Black	Signal power supply GND (-)	
Green	Endstop signal out	Output voltage is the same as the input voltage
Yellow	Endstop signal in	
Violet	Single Hall output (PNP)  Movement per Single Hall pulse: 3mm pitch = 0.38mm per pulse 5mm pitch = 0.63mm per pulse 9mm pitch = 1.13mm per pulse 12mm pitch = 1.5mm per pulse  Frequency: Frequency is 30-125 Hz on Single Hall output depending on load and spindle. Overvoltage on the motor can result in shorter pulses.	Output voltage min. $V_{IN} - 2V$ Max. current output: 12mA Max. 680nF  N.B. For more precise measurements, please contact LINAK A/S.  Low frequency with a high load. Higher frequency with no load.
Red	Potential free signal power supply (+) 10-28VDC	Switching capacity: Minimum 10mA Maximum 1A



**Specifiche I/O: attuatore con segnali di finecorsa e posizionamento assoluto - feedback analogico**

Input/Output	Specification	Comments
Description	The actuator is equipped with potential free endstop signals and an electronic circuit that gives an analogue feedback signal when the actuator moves.	
Brown	12 or 24VDC (+/-) 12V ± 20% 24V ± 10%  Under normal conditions:	To extend actuator: Connect Brown to positive  To retract actuator: Connect Brown to negative
Blue	12V, max. 10A depending on load 24V, max. 5A depending on load	To extend actuator: Connect Blue to negative  To retract actuator: Connect Blue to positive
White	Signal power supply (+) 10-28VDC	Current consumption: Max. 40mA, also when the actuator is not running
Black	Signal power supply GND (-)	
Green	Endstop signal out	Output voltage is the same as the input voltage
Yellow	Endstop signal in	
Violet	Analogue feedback 0-10V (Option A) 0.5-4.5V (Option B)	Tolerances +/- 0.5V Max. current output: 1mA Ripple max. 200mV Transaction delay 100ms Linear feedback 0.5%  It is recommendable to have the actuator to activate its limit switches on a regular basis, to ensure more precise positioning
Red	Potential free signal power supply (+) 10-28VDC	Switching capacity: Minimum 10mA Maximum 1A

## Specifiche I/O: attuatore con IC

Input/Output	Specification	Comments
Description	<p>Easy to use interface with integrated power electronics (H-bridge).</p> <p>The actuator can also be equipped with electronic circuit that gives an absolute or relative feedback signal.</p> <p>The version with "IC option" cannot be operated with PWM (power supply).</p>	
Brown	<p>12-24VDC + (VCC) Connect Brown to positive</p> <p>12V ± 20% 24V ± 10%</p> <p>12V, current limit 18A 24V, current limit 9A</p>	<p>Note: Do not change the power supply polarity on the brown and blue wires!</p> <p>Power supply GND (-) is electrically connected to the housing</p> <p>If the temperature drops below 0°C, all current limits will automatically increase to maximum (no limits)</p>
Blue	<p>12-24VDC - (GND) Connect Blue to negative</p> <p>12V ± 20% 24V ± 10%</p> <p>12V, current limit 18A 24V, current limit 9A</p>	
Red	Extends the actuator	<p>On/off voltages: &gt; 67% of <math>V_{IN}</math> = ON &lt; 33% of <math>V_{IN}</math> = OFF</p> <p>Input current: 10mA</p>
Black	Retracts the actuator	
Green	Endstop signal out	<p>Output voltage min. <math>V_{IN} - 2V</math> Source current max. 100mA</p>
Yellow	Endstop signal in	Endstop signals are NOT potential free
Violet	<p>Analogue feedback: Configure any high/low combination between 0-10V or 0.5-4.5V</p> <p>0-10V (Option A) 0.5-4.5V (Option B)</p>	<p>Tolerances +/- 0.5V Max. current output: 1mA Ripple max. 200mV Transaction delay 100ms Linear feedback 0.5%</p> <p>It is recommendable to have the actuator to activate its limit switches on a regular basis, to ensure more precise positioning</p>
	<p>Single Hall output (PNP)</p> <p>Movement per Single Hall pulse: 3mm pitch = 0.38mm per pulse 5mm pitch = 0.63mm per pulse 9mm pitch = 1.13mm per pulse 12mm pitch = 1.5mm per pulse</p> <p>Frequency: Frequency is 30-125 Hz on Single Hall output depending on load and spindle. Overvoltage on the motor can result in shorter pulses.</p>	<p>Output voltage min. <math>V_{IN} - 2V</math> Max. current output: 12mA Max. 680nF</p> <p>N.B. For more precise measurements, please contact LINAK A/S.</p> <p>Low frequency with a high load. Higher frequency with no load.</p>
White	Ready	<p>The signal is constantly high when the actuator is in ready mode.</p> <p>Failure modes: The signal goes low when:</p> <ul style="list-style-type: none"> <li>- The current cuts off</li> <li>- The temperature is out of range (high duty cycle protection)</li> </ul>

## Capitolo 3

### Prove ambientali - Climatiche

Test	Specification	Comment
Cold test	EN60068-2-1 (Ab)	<u>Storage at low temperature:</u> Temperature: -40°C Duration: 72h Not connected Tested at room temperature.
	EN60068-2-1 (Ad)	<u>Storage at low temperature:</u> Temperature: -25°C Duration: 12h Tested at low temperature.
Dry Heat	EN60068-2-2 (Bb)	<u>Storage at high temperature:</u> Temperature: +90°C Duration: 72h Actuator is not powered during test Tested at room temperature.  <u>Storage at high temperature:</u> Temperature: +70°C Duration: 1,000h Actuator is not powered during test Tested at high temperature.
	EN60068-2-2 (Bd)	<u>Operating at high temperature:</u> Temperature: +60°C Int. max. 17% Duration: 700h Actuator is activated Tested at high temperature.
Change of temperature	EN60068-2-14 (Na)	<u>Rapid change of temperature:</u> High temperature: +100°C in 60 minutes Low temperature: -30°C in 60 minutes Transition time: <10 seconds Duration: 100 cycles Actuator is not powered during test Tested at room temperature.
	EN60068-2-14 (Nb)	<u>Controlled change of temperature:</u> Temperature change 5°C pr. minute High temperature: +70°C in 60 minutes Low temperature: -30°C in 30 minutes 130 minutes pr. cycle Duration: 1,000 cycles (90 days) Actuator is not powered during test.  Tested at 250, 500 and 1,000 cycles at low and high temperatures.
Damp heat	EN60068-2-30 (Db)	<u>Damp heat, Cyclic:</u> Relative humidity: 93-98% High temperature: +55°C in 12 hours Low temperature: +25°C in 12 hours Duration: 21 cycles * 24 hours Actuator is not powered during test Tested within 1 hour after condensation That means after the upper temperature has been reached.
	EN60068-2-3 (Ca)	<u>Damp heat, Steady state:</u> Relative humidity: 93-95% Temperature: +40 ±2°C Duration: 56 days Actuator is not powered during test Tested within one hour after exposure.
Salt mist.	EN60068-2-52 (Kb)	<u>Salt spray test:</u> Salt solution: 5% sodium chloride (NaCl) 4 spraying periods, each of 2 hours Humidity storage 7 days after each Actuator not powered during test Exposure time: 500 hours



## Prove ambientali - Meccaniche

Test	Specification	Comment
Free fall		<u>Free fall from all sides:</u> Height of fall: 0.8 meter onto linoleum covered concrete Actuator not powered during test.
Vibration	EN60068-2-64  EN 60068-2-6 (Fc)	<u>Random vibration:</u> Short time test: 6.29g RMS Actuator is not connected Long time test: 7.21g RMS Actuator is not powered during test Duration: 2 hours in each direction  <u>Sinus vibration:</u> Frequency 5-200Hz Displacement: 3.3mm pp, B 25Hz Acceleration 4g Number of directions: 3 (X-Z-Y) Duration: 2 hours in each direction Actuator is not powered during test.
Bump	EN60068-2-29 (Eb)	<u>Bump test:</u> Level: 25g Duration: 6 milliseconds x 1000 times in each direction pr. axis Actuator is not powered during test.
Shock	EN60068-2-27 (Ea)	<u>Shock test:</u> Level: Half sinus 100g Duration: 6 milliseconds Number of bumps: 3 shocks in each of 6 directions Actuator is not powered during test.

## Prove ambientali - Elettriche

Test	Specification	Comment
Power supply		Operating voltages +7V - +27V Over voltage +29(V) / 5min. Reverse polarity +7 and +27(V) / 5min.
Electromagnetic fields	EN61000-4-3	30 V/m, 80%AM, 1 kHz 20 - 2.700 Mhz 10 V/m, 80% AM, 1kHz 80 - 1000 Mh 3 V/m, 80% AM, 1 kHz 1.4 - 2.0 GHz 1 V/m, 80% AM 2.0 - 2.7 GHz
Fast transients	EN61000-4-4	± 2 kV
Surge transients	EN61000-4-5	± 2 kV (42Ω output)
Radio frequency	EN61000-4-6	10 Vrms, 80% AM 0.15 - 80 MHz



### Direttiva EMC per la Compatibilità Elettromagnetica

Lo scopo dei test di compatibilità elettromagnetica (EMC) è valutare il livello di emissioni elettromagnetiche generate da un dispositivo per determinare il suo potenziale di interferenza, e valutare la sua immunità da interferenze generate da altri dispositivi elettrici ed elettronici.

#### Termini d'uso

LINAK si riserva il diritto di apportare modifiche senza preavviso.  
E' responsabilità dell'utilizzatore di verificare la compatibilità dei prodotti LINAK con l'applicazione prevista.  
LINAK provvederà a sostituire/riparare i prodotti difettosi coperti da garanzia se prontamente resi.  
Non si assumono ulteriori responsabilità.

**LINAK ITALIA S.r.l.**  
Via del Commercio, 27  
20090 Buccinasco (MI)  
T. 02 48 46 33 66  
F. 02 48 46 82 52  
info@linak.it  
www.linak.it