UX50 Motorised Roller Range

From the UK's Largest Roller Manufacturer

Quality • Performance • Reliability

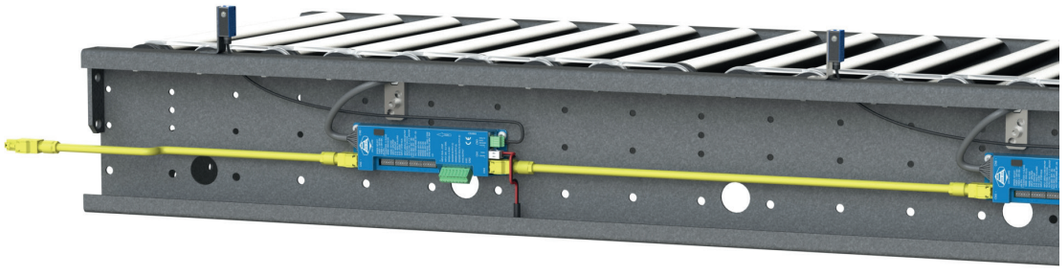
Index

Established in 1963, Conveyor Units Limited is now the largest materials handling conveyor and conveyor roller manufacturer in the UK, producing in excess of 1 million rollers and over 20Km of conveyors ever year. Over a third of these orders being shipped overseas.

During this period, we have gained a reputation for supplying high quality, competitively priced conveyor rollers, to all aspects of the materials handling industry, as well as many other industry sectors, from air-cargo and pharmaceutical to specialist machinery manufacturers.

We operate from 245,000 sq. feet. manufacturing facilities, over 10 acres and spread over 2 sites in the West Midlands. Sourcing and purchasing only the best raw materials, and in vast quantities, enables us to not only meet order commitments but to pass on considerable cost savings to our customers. Quality is of paramount importance to Conveyor Units.

With the capacity to produce over 20,000 rollers per week, all our manufacturing processes are controlled and undertaken in-house in strict accordance to our recently upgraded BS EN ISO 9001:2015 quality system.

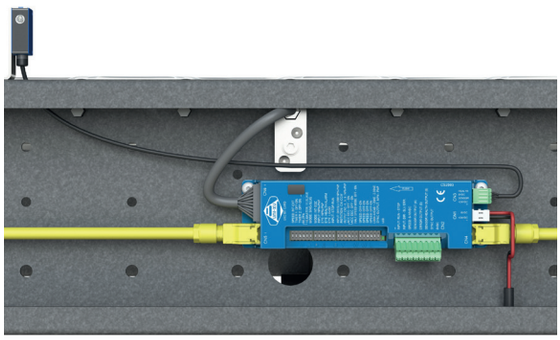


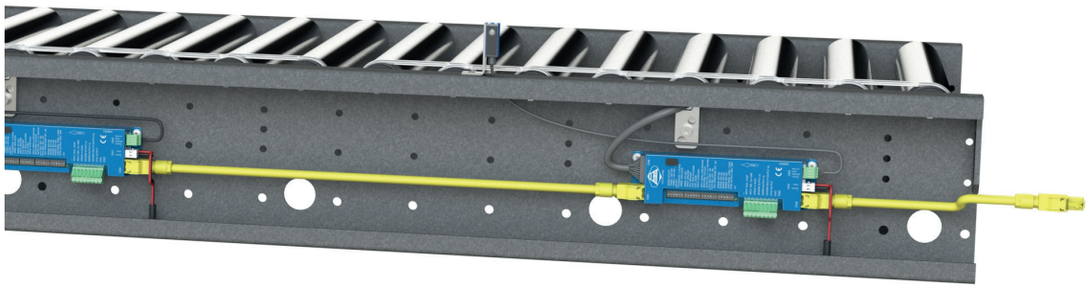
We have the capacity to produce over 20,000 rollers per week and all our manufacturing processes are controlled and undertaken in-house in strict accordance to our BS EN ISO 9001:2015 quality system.

Focus on Motorised Rollers

Conveyor Units is pleased to be able to offer our own UNI-XU® Motorised Roller as part of our extensive component range.

Made in adherence to our strict in-house quality system, this exciting addition allows all customers to now be able to source all their roller requirements direct from the UK's largest roller manufacturer.





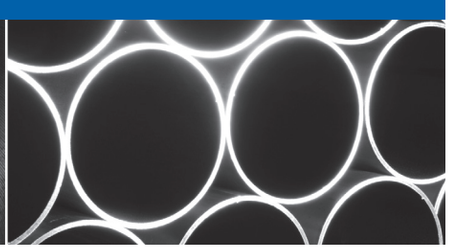
APPLICATION OF MDR

24V Brushless motorised rollers have enhanced the performance and functionality of logistics conveyor systems in an enormous way. With uses across a huge range of applications, their cost effectiveness, performance, lack of maintenance and low noise levels makes them extremely popular.

The UNI-XU® range of motor rollers comes with the high level of performance and build quality expected from the brand. The UNI-XU® control card, that powers the motorised roller, has exceptional levels of functionality and gives useful features to optimise the rollers performance in your application.

Applications for the product extend across all aspects of conveyors and across many industry sectors including logistics, warehousing, airports, pharmaceutical and post & parcel distribution. Along with the high volume used in zero line pressure accumulations systems, their use extends to sorters, transfers, lifts, packaging machines, special purpose machinery, advertising boards and many other devices.

Quality **Performance** **Reliability**



Features

1. **SAFETY:** Powered by 24VDC the motorised rollers are inherently electrically safe because of the low voltage, running no risk of electrical shock and can be safely incorporated in machinery and conveyors operated by non-professionals. Further protected by the circuit board with overload protection, jam detection with auto recovery and over temperature shut down makes this one of the very safest drive means.

2. **HIGH TORQUE:** Offering high torque compared to a similar power AC motor, these DC Brushless motor rollers offer more drive without the need for external gearing / drive transmission components.

3. **LONG LIFE:** The DC Brushless motors inside require no consumables and will give a life in excess of 20,000 hours of actual running. Giving them an exceptionally long life compared to alternative technologies.

4. **EASY CONTROL:** The roller is able to change speed, move clockwise or counter clockwise and brake electrically. When used in conveyor systems standard features such as single and slug release modes, long box detection, lost box detection, jam timers and 'half speed' functionality make them ideal to satisfy almost all demands.

5. **POWER SAVING:** With powers of just 20 and 28 Watts the motors draw very little power. Running only when required, and turning off within seconds of conveying a box, means power consumption is very low and life expectancy is further enhanced.

6. **BRAKED OPTION:** The option of an internal spring applied brake enables more accurate stopping and /or use on inclines / declines.

7. **CE AND RoHS COMPLIANT.**

To aid correct motor roller selection please refer to the calculations below.

A) Check the Static Load on the Motorised Roller:

Divide the load weight (in kg) by the minimum number of rollers under the load.

Table 1: Static load limit in kg for different lengths of rollers.
(Note any length is available - Table just shows convenient increments).

Conveyor Width (mm)	300	400	500	600	700	800	900	1000	1200
Load Limit per roller (kg)	65	55	45	35	30	25	20	20	15

The maximum load on the motorised roller should not exceed the static load limit as specified in the table above.

B) Then calculate the force required to move the load:

Necessary tangent direction force for goods in movement is:

$F = 9.8\mu W$

F: Necessary tangent direction force for goods in movement : F (N)
μ: Base friction coefficient of goods during movement (please refer to Table 2).
W: Weight of goods in movement (kg).

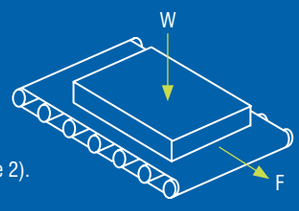


Table 2: Base Friction Coefficient of Different Materials

Metal	Plastic	Timber	Good Quality Cardboard	Poor Quality Cardboard	Rubber
0.015	0.03	0.05	0.065	0.09	0.2

Comparison between different motor technologies

	DC BRUSHLESS	DC BRUSHED MOTOR	AC INDUCTION MOTOR
Safety	Excellent	Excellent	Fair
High Torque	Excellent	Excellent	Poor
Long Life	Excellent	Poor	Fair
Easy Control	Excellent	Poor	Poor
Power Saving	Excellent	Fair	Poor
Low Maintenance	Excellent	Poor	Fair

C) Then calculate how much force is lost in your drive transmission:

Each jump belt from the motor roller takes some force and this needs to be added onto the required force to move the load.

Table 3: Losses in drive transmission.

Transmission Type	Loss Per Jump Belt (Newtons)
Round Belt	0.6 N
Poly V – 2 rib	0.8 N
Poly V – 3 rib	1.2 N

So the Tangential Force required from the Motorised Roller equals:
Force required to move the load + Force Lost in Drive Transmission
$= 9.8\,\mu W +$ (Loss per jump belt x No of belts).

Example:

Weight of product to be handled: 20kg.
Good Quality Cardboard Box: dimensions are 400mm x 350mm x 100mm.
Roller width: 400mm.
Roller pitch: 75mm.
Zone Length: 600mm – Round belt drive (7 jump belts in zone).

(1) Static load weight calculation: 20kg ÷ 5 rollers = 4kg / roller
From table 1: 400mm rollers maximum load weight: 55kg.
So the load is ok on the roller.

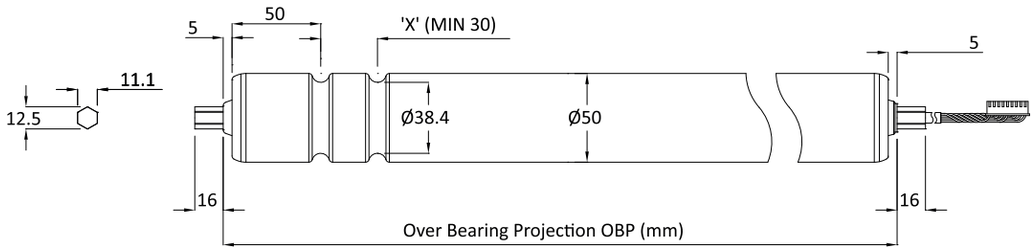
(2) Calculation of force required: $F = 9.8 \times \mu \times W = 9.8 \times 0.065 \times 20 = 12.74$ N

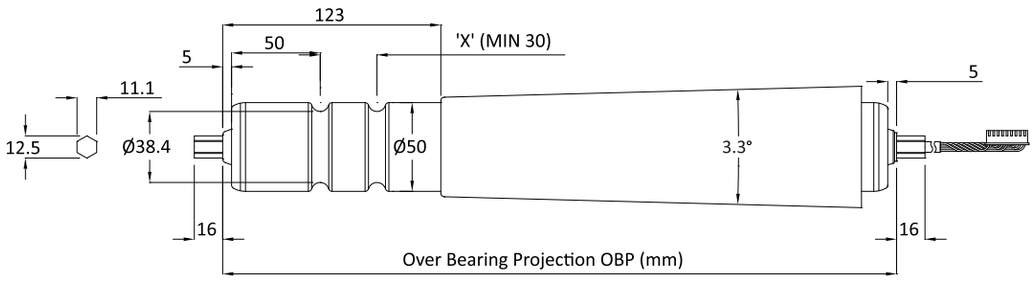
(3) Force lost in drive transmission = 7 x 0.6 = 4.2 N

(4) Hence 12.74 + 4.2 = **16.94 N** is the force required from the motorised roller.

**Refer to the following pages to select a suitable motorised roller.
From these we see, for this example, we can use a speed 60 m/min (with 20.7 N force available) or a speed 18 m/min (with 70.4 N available) or a speed 100 m/min (17.4 N available).**

Dimensions and Part Number Detail





UX50-MRS – U – 060 – Z – 0458 – G30 – SL-T

Roller Type:
MRS = Motorised Roller - Standard Torque
MRH = Motorised Roller - High Torque

Motor Type:
U = Un-braked
B = Braked

Speed:
018 = 18 m/min
060 = 60 m/min
100 = 100 m/min

Tube Finish:
Z = Zinc Plated Mild Steel
S = Stainless Steel

Over Bearing Projection in mm

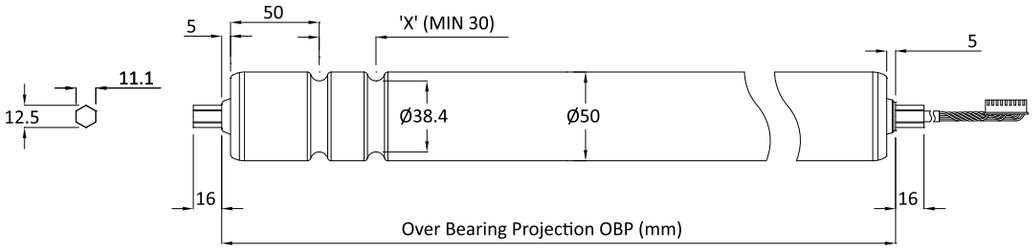
Drive Transmission:
NDT = No Drive Transmission
G-- = Double Grooved. 30 is dimension 'X'
POP = Poly O head (Polymer)
PVP = Poly V head (Polymer)
POA = Poly O head (Aluminium)
PVA = Poly V head (Aluminium)
AT5 = Timing Pulley Head (Suits 10 wide AT5 belts)

Shaft Type (Non Cable End):
SL = Spring Loaded 11.1mm A/F Hex Shaft
DT = Drilled and Tapped M8 x 1.25 x 18 Deep in the 11.1mm A/F Hex Shaft

(Optional)
T = Tapered
P = PVC Sleeved
R = Rubber (Nitrile) Sleeved

UNI-XU

Standard Torque Motorised Roller:
UX50 – MRS - - - 060



For Spring Loaded Shafts: OBP = Inside Track Width – 2 to 5mm typically.
For Drilled and Tapped Shafts: OBP = inside track width – 8mm.

Outer Diameter: Ø50mm
Power: 24VDC
Tube thickness: 1.5mm
Tube material: Bright Zinc Plated Mild Steel or Stainless Steel
Braked (Holding Torque of brake = 0.7 Nm) or Un-braked available

Specification:

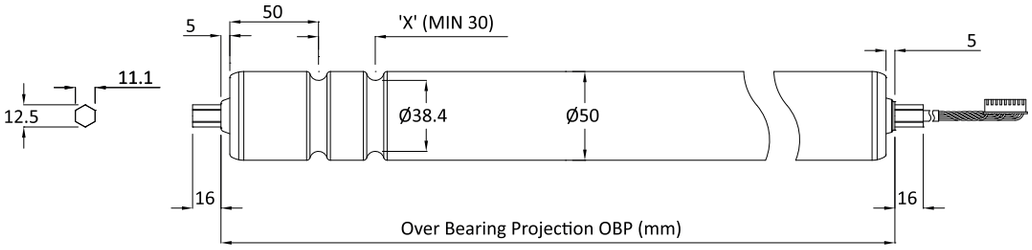
Velocity (m/min)		Tangential Force (N)		Torque (N.m)		Input Current (A)			Rated Output (W)	Over Bearing Projection (mm)
No Load	Rated	Rated	Starting	Rated	Starting	No Load	Rated	Starting		
60	60	20.7	82.8	0.5	2.0	0.6	1.8	4.0	20	see below for min – 1200 max

Shortest Over Bearing Projections Available:

Motor Roller Type	Minimum Over Bearing Projection (mm)	Minimum Over Bearing Projection (mm) – if BRAKED
Poly V Head	392	432
Poly O Head	392	432
Double Grooved	367	407
Timing Pulley Head	392	432
Non Grooved - Plain	347	387



High Torque Motorised Roller:
UX50 – MRH - - - 060



For Spring Loaded Shafts: OBP = Inside Track Width – 2 to 5mm typically.
For Drilled and Tapped Shafts: OBP = inside track width – 8mm.

Outer Diameter: Ø50mm
Power: 24VDC
Tube thickness: 1.5mm
Tube material: Bright Zinc Plated Mild Steel or Stainless Steel
Braked (Holding Torque of brake = 0.7 Nm) or Un-braked available

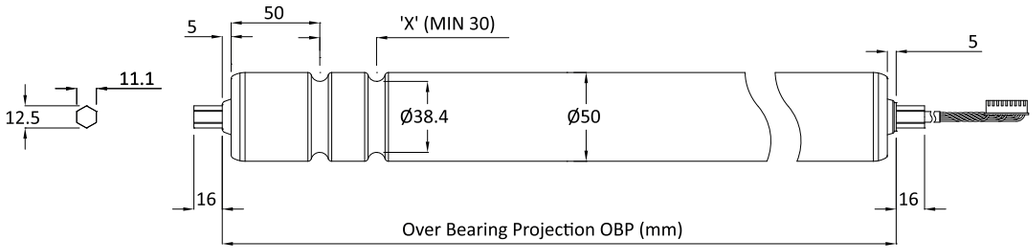
Specification:

Velocity (m/min)		Tangential Force (N)		Torque (N.m)		Input Current (A)			Rated Output (W)	Over Bearing Projection (mm)
No Load	Rated	Rated	Starting	Rated	Starting	No Load	Rated	Starting		
60	60	29.0	107.6	0.7	2.6	0.6	2.5	4.0	28	see below for min – 1200 max

Shortest Over Bearing Projections Available:

Motor Roller Type	Minimum Over Bearing Projection (mm)	Minimum Over Bearing Projection (mm) – if BRAKED
Poly V Head	422	462
Poly O Head	422	462
Double Grooved	397	437
Timing Pulley Head	422	462
Non Grooved - Plain	377	417

Low Speed Motorised Roller:
UX50 – MRS - - - 018



For Spring Loaded Shafts: OBP = Inside Track Width – 2 to 5mm typically.
For Drilled and Tapped Shafts: OBP = inside track width – 8mm.

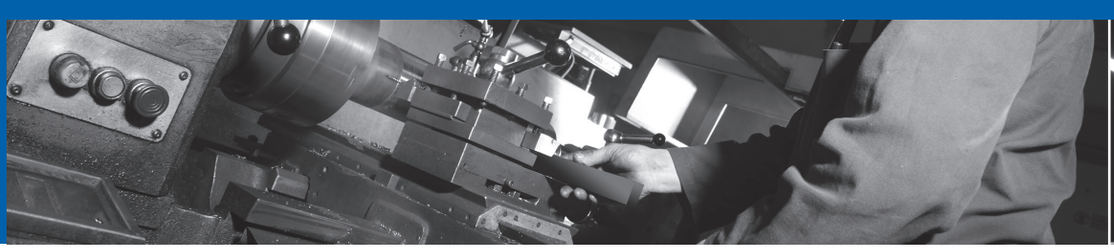
Outer Diameter: Ø50mm
Power: 24VDC
Tube thickness: 1.5mm
Tube material: Bright Zinc Plated Mild Steel or Stainless Steel
Braked (Holding Torque of brake = 0.7 Nm) or Un-braked available

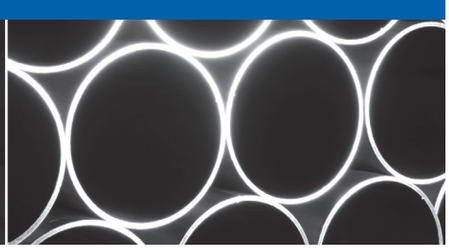
Specification:

Velocity (m/min)		Tangential Force (N)		Torque (N.m)		Input Current (A)			Rated Output (W)	Over Bearing Projection (mm)
No Load	Rated	Rated	Starting	Rated	Starting	No Load	Rated	Starting		
18	18	70.4	260.8	1.7	6.3	0.6	1.8	4.0	20	see below for min – 1200 max

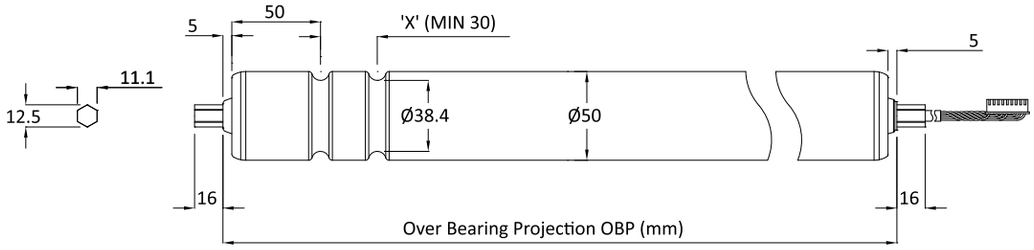
Shortest Over Bearing Projections Available:

Motor Roller Type	Minimum Over Bearing Projection (mm)	Minimum Over Bearing Projection (mm) – if BRAKED
Poly V Head	415	455
Poly O Head	415	455
Double Grooved	390	430
Timing Pulley Head	415	455
Non Grooved - Plain	370	410





High Speed Motorised Roller:
UX50 – MRS - - - 100



For Spring Loaded Shafts: OBP = Inside Track Width – 2 to 5mm typically.
For Drilled and Tapped Shafts: OBP = inside track width – 8mm.

Outer Diameter: Ø50mm
Power: 24VDC
Tube thickness: 1.5mm
Tube material: Bright Zinc Plated Mild Steel or Stainless Steel
Braked (Holding Torque of brake = 0.7 Nm) or Un-braked available

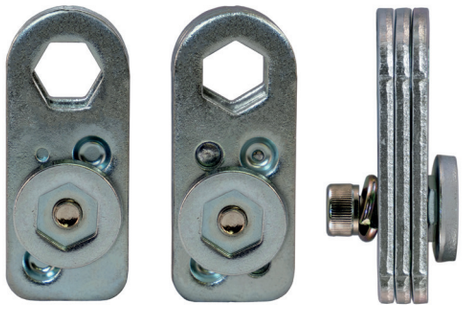
Specification:

Velocity (m/min)		Tangential Force (N)		Torque (N.m)		Input Current (A)			Rated Output (W)	Over Bearing Projection (mm)
No Load	Rated	Rated	Starting	Rated	Starting	No Load	Rated	Starting		
100	100	17.4	49.7	0.42	1.2	1.0	2.3	4.0	28	see below for min – 1200 max

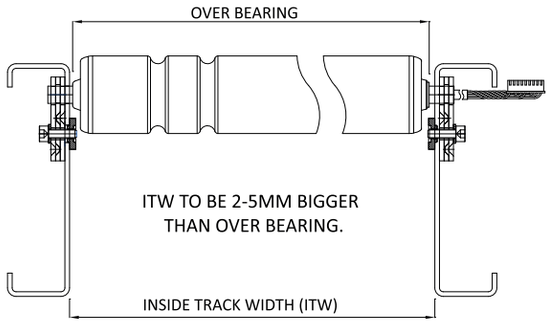
Shortest Over Bearing Projections Available:

Motor Roller Type	Minimum Over Bearing Projection (mm)	Minimum Over Bearing Projection (mm) – if BRAKED
Poly V Head	399	439
Poly O Head	399	439
Double Grooved	374	414
Timing Pulley Head	399	439
Non Grooved - Plain	354	394

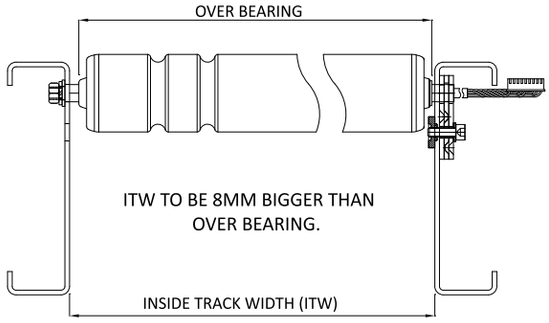
Motorised Roller Connection Brackets

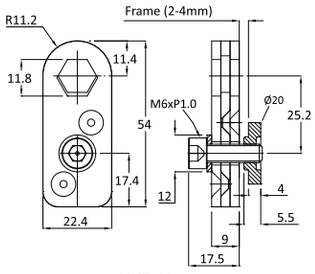


SPRING LOADED SHAFT

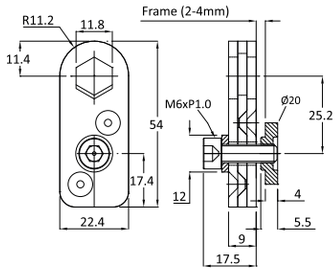


DRILLED AND TAPPED SHAFT





UXB-H



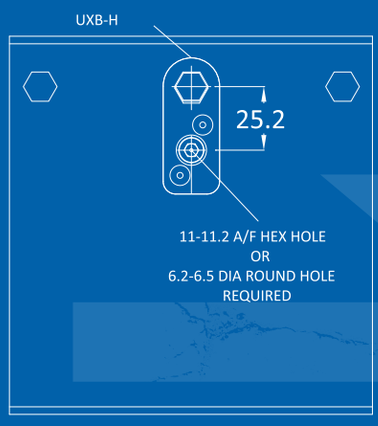
UXB-V

Two types of roller connection brackets are available – to suit the orientation of hex holes in your side channels.

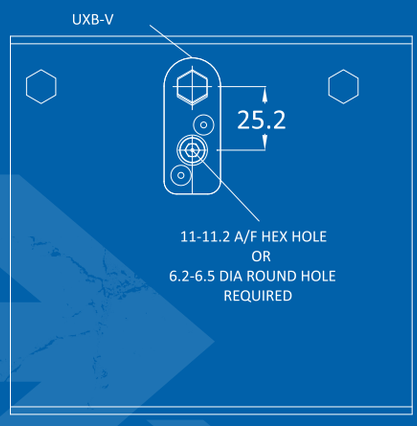
Both brackets can be fitted into either a hexagonal hole 11-11.2mm A/F (if using the supplied hex formed retaining nut) or a 6.2-6.5mm diameter hole if choosing to use a standard M6 nut (not supplied).

Connection Brackets suit a conveyor side channel material thickness of 2-4mm.

FOR HORIZONTAL TOP HEX HOLES



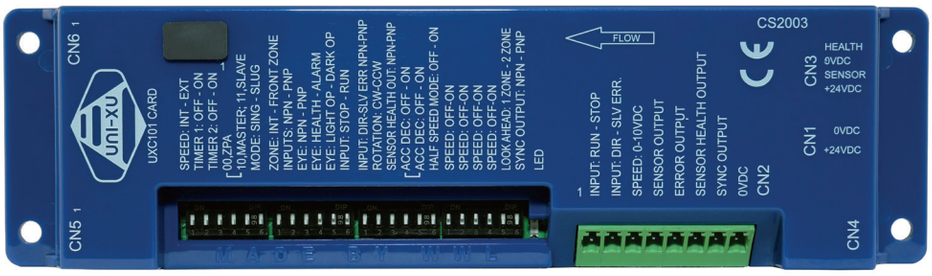
FOR VERTICAL SIDED HEX HOLES



All dimensions shown in mm.

Control Card

The UNI-XU® UXC101 control card has been developed to perfectly compliment the motor rollers and has a comprehensive list of features to optimise your conveyor control.



1. Built-in ZLP (Zero Line Pressure Accumulation), Master/Slave control logic or external PLC control.

- **ZLP:** Non-Contact Accumulation with Single or Train/Slug release, Long Box Detection (even in single release mode!), Back to back product separation, Lost Box Detection, Jam Timer and Run-Hold Timer applications.
- **Transport:** Equally capable of simply driving the motor rollers, at varying speeds and in either direction for simple transport applications.
- **Master/Slave:** Cards can be set as 'Masters' to enable them to activate a second card (set as a 'Slave'), and hence second motor roller. This enables having 2 motor rollers in a 'zone' for greater torque when handling heavier loads.

2. Configurable for:

- Controlling motor speed (0-100% speed in 16 increments)
- Changing direction.
- Soft starting / stopping and timer setting.
- Monitoring the status of photocells inputs/outputs.
- Configuring each signal input/output for NPN or PNP making the one card work with any external device.

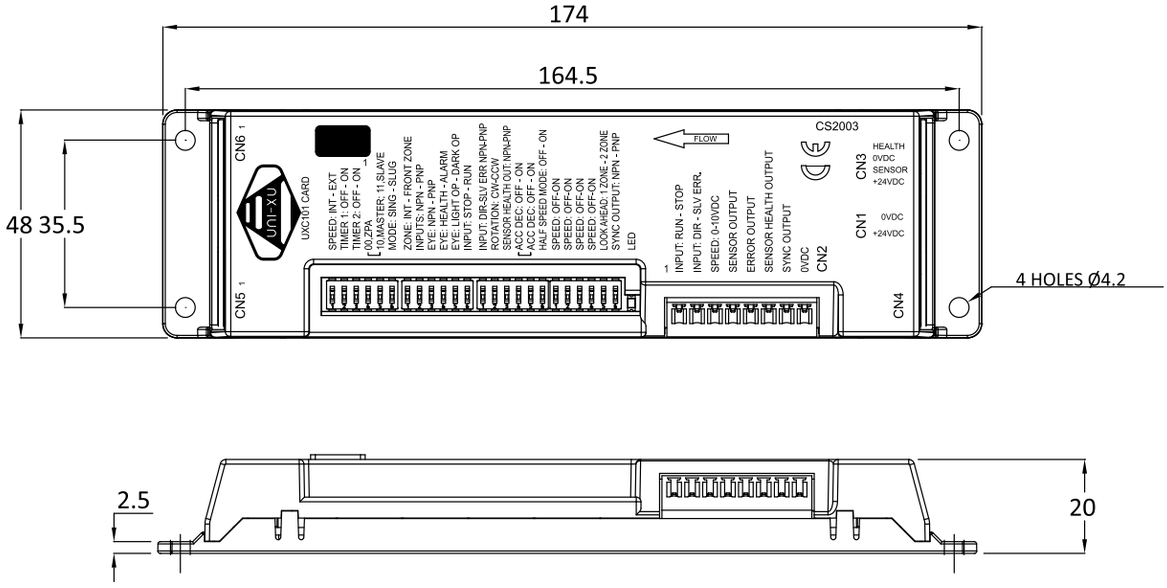
3. Output Communication:

- Four NPN or PNP output signals (20mA capacity) are available for communicating with external relays or PLC.

4. Built- in Protection Functions

- Card over-temperature, under-voltage, reverse polarity, over-current and short circuit protection.
- Motor stall and over-heating protection.
- Protection for outputs and photocell short circuits.
- LED Warning: LED lights to indicate any faults.

5. CE and RoHS Compliant.



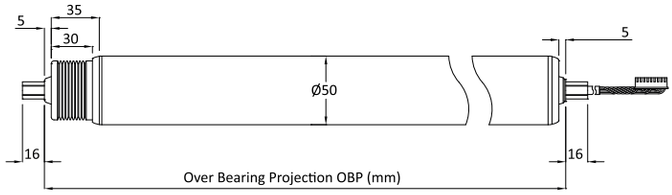
All dimensions shown in mm.

Control Card Specification

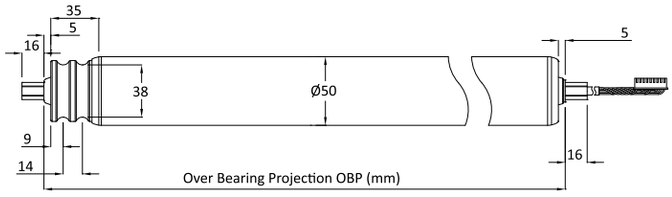
Power Voltage		24VDC +/– 10%
Static Current		70mA
Starting Current		4A
Operational Functions		a. With 20mA driving force, 4 sets of NPN or PNP output signals are able to drive external Relay, PLC or Remote I/O etc.
		b. Motor speed controlled by either by using the on board DIP switches for 16 increment speed selection, or by using external DC 0 – 10V voltage.
		c. Variable acceleration / deceleration settings (0.2 – 0.6 seconds).
		d. The ability to work with PNP or NPN devices using DIP switches to select.
LED Indication		Displays a solid green light when power on, and flashes for 7 kinds of fault notifications.
Power Protection		a. Built-in fuse.
		b. Built-in reverse polarity protection to prevent damage due to wiring errors.
Thermal Protection		a. If the control card gets above 75°C, the motor will shut down and will restart automatically when it cools down to 70°C
		b. Motor will shut down when the temperature is above 100°C; below 95°C will operate at half speed; below 90°C will operate at full speed
Braking System (on Un-braked Motor Rollers)		Uses the reverse torque produced by the back EMF to brake.
Mechanical Braking (on Braked Motor Rollers)	**Braking Start**	Spring applied electromagnetic brake applied 200mS after stop signal is applied
	Effect on Current Draw	An additional 250mA for the first 100mS after the motor roller is started. This then decreases to 125mA.
Environmental Conditions	**Temperature**	0°C - 40°C (32°F - 104°F)
	Humidity	<90% RH (non-condensing)
	Vibration	<0.5 G

Drive Transmission Options

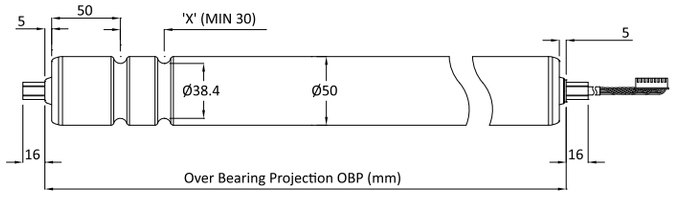
Poly-V: 9 Ribbed Poly V head (in Aluminium or Black Polymer).



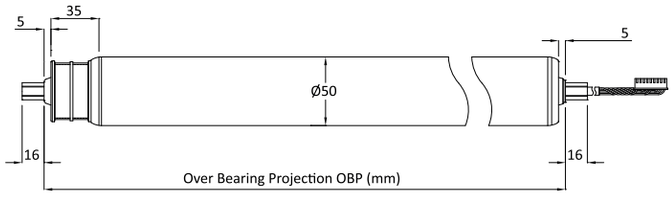
Poly O: Twin 'O' Ring Grooves (in Aluminium or Black Polymer)



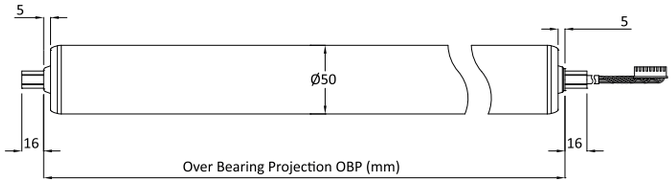
Double Grooved: For round drive and jump belts up to 5mm diameter.



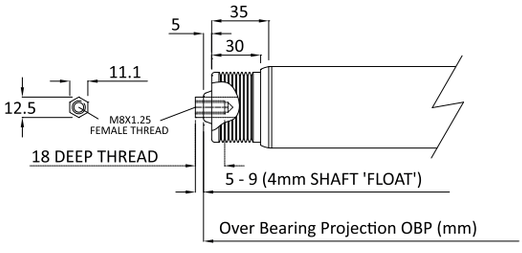
Timing Pulley Head: For 10mm wide AT5 belts.



No Drive Transmission (Plain Roller).



DRILLED AND TAPPED SHAFT DIMENSIONS
(Available with all drive transmission types)



All rollers also available fitted with taper segments for bend sections or PVC or Nitrile Rubber Sleeves in 2 and 3mm thicknesses.

Rollers and Spares

Optimise Your Operating Efficiency with our Rollers and Parts Service Guarantee

We have also gained a reputation for supplying high quality competitively priced rollers and spares to all aspects of the material handling industry. Our products are used by blue-chip companies in the UK and throughout Europe.

We have a high degree of standardisation in our systems which means we can guarantee a particularly rapid and reliable spare parts service to meet the end-users' needs with speed and ease.

Furthermore, by buying replacement parts from the original equipment manufacturer you are helping to ensure that the equipment stays in prime condition, optimizing the operating efficiency of your system.

Rollers

We are not only the largest conveyor manufacturer in the UK, but also the largest roller manufacturer, producing in excess of a million rollers every year.

We source and purchase only the best raw materials directly from the mills, and in vast quantities - in excess of 200km of 50mm diameter steel tubing every year. This means that not only does it allow us to constantly meet order commitments, but it also makes our pricing extremely competitive.

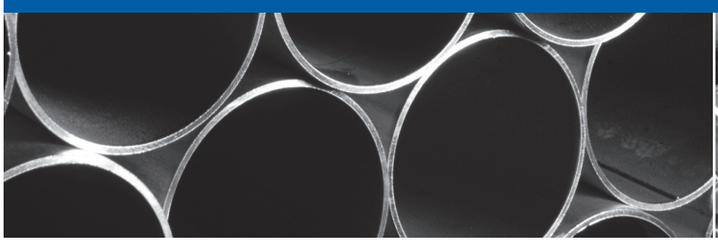
Our range of rollers includes: Gravity Rollers, Plastic Rollers, Stainless Steel Rollers, Grooved Rollers, Poly V Rollers, Tapered Rollers, Sprocketed Rollers, Belt Conveyor Rollers, as well as an extensive range of specialised rollers.

Spares

We also produce an extensive range of stock components, again competitively priced, for Powered Roller Conveyors, Motorised Roller Conveyors, Belt Under Roller Conveyors, Post & Parcel Conveyors, Belt Conveyors, Pallet Conveyors, Gravity Conveyors and Flexible Conveyors, with all plastic conveyor components injection moulded here on site.

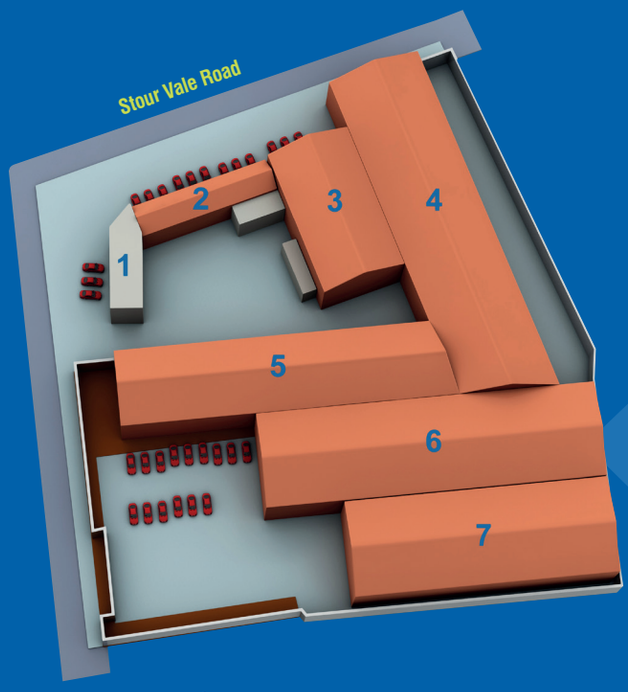
Please give us the opportunity to quote all your roller and spares requirements. We can guarantee:

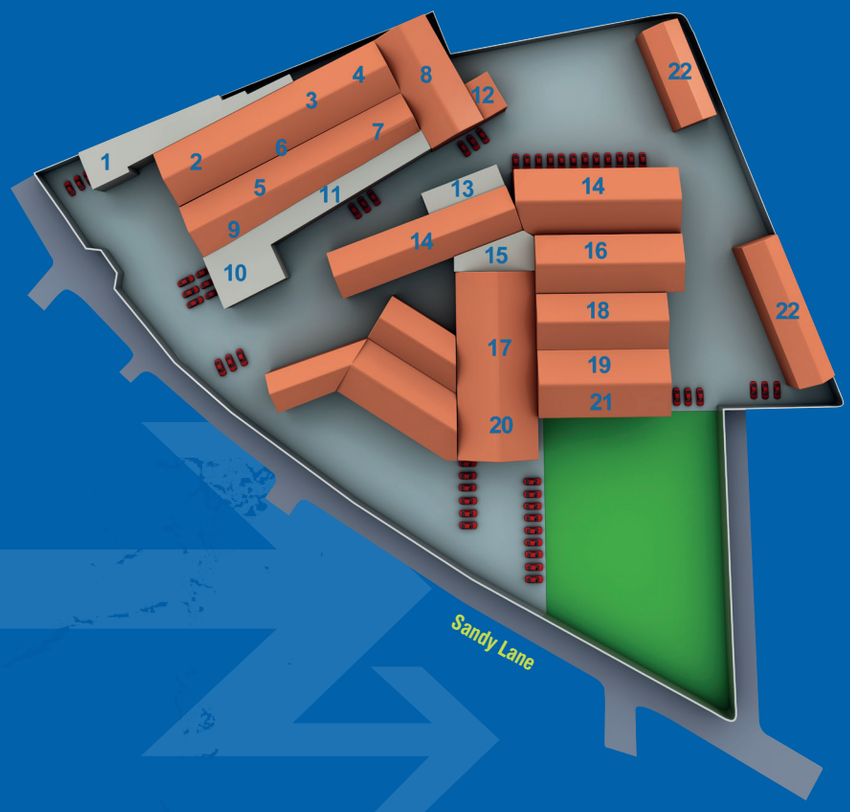
• Competitive price • Fast turnaround • Extensive product range • Excellent customer service



LYE SITE

1 Reception / Sales Office
2 Spray Area & Tool Room
3 Fabrication Area
4 Roller Department
5 Press Department / Component Manufacture
6 Flexible Conveyor Assembly
7 Bearing Assembly & Stores





STOURPORT SITE

1 Main Reception / Sales Office
2 Despatch
3 Ancillary Assembly
4 Press Brake
5 Powder Coating Plant / Curing Oven
6 Production Welding
7 Bend Fabrication
8 Press / Laser Processing
9 General Assembly
10 Belt Conveyor Assembly
11 Stores
12 Goods Inwards
13 Accounts / Purchasing Departments
14 Principal Roller Department
15 Tapered Roller Assembly
16 Pallet Conveyor & Special Product Assembly
17 Injection Moulding
18 Punch Press / Laser Department
19 Aluminium Conveyor Assembly
20 Product Development
21 Showroom / Demonstration Area
22 Storage Warehouse

conveyor solutions

Conveyor Units Limited, Lye Office, Bromley Street,
Lye, Stourbridge, West Midlands. DY9 8PT

UNI-XU
CONVEYOR UNITS
QUALITY • PERFORMANCE • RELIABILITY