

The Synchromesh Drive System represents an entirely new approach to synchronous drives. At the heart of the system is a drive cable, which replaces conventional timing belts as well as other means of transmitting synchronous motion. The cable consists of a core bundle of stranded stainless steel wires encapsulated in a nylon jacket. Wound spirally around the nylon jacket is another cable of similar construction. The spiral member is bonded to the core cable to provide functional stability under load. The pitch of the spiral winding is carefully controlled during the winding and bonding processes.



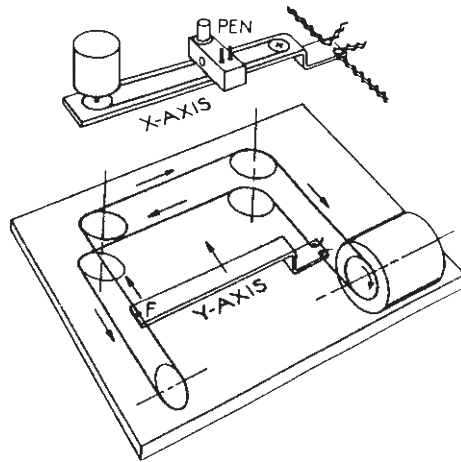
The use of stranded wire and nylon resin produces an extremely flexible cable that opens up new design possibilities, which were previously not possible with any other synchronous drives. The schematic diagram shown below illustrates the geometric features of the x-y plotter. Synchromesh cables are capable of changing operating planes, limited only by the size and proximity of adjacent pulleys. This unique characteristic makes it possible to produce this plotter design without employing expensive lead screw drive components. This is only one example of the countless possibilities offered with Synchromesh Drive Systems.

Complementing the Synchromesh cables are the drive pulleys which have helical grooves on their outside diameter to accurately engage the spiral convolutions on the drive cable. An additional radial groove of half round cross section supports the core cable and provides lateral stability. Synchromesh cables can be readily secured to other mechanism members in many different ways as well as those offered in the catalog pages.

Please note, however, that the Synchromesh Drive Systems are intended for reciprocating motion applications and cannot be made endless.

**➤ ADVANTAGES AND DESIGN FEATURES:**

- Synchronous motion
- Flexible in all directions
- Miniature in size
- High strength
- Small bending radius
- Lightweight
- Low inertia
- Low tension required
- Chemically resistant
- Electrically conductive & insulated
- Pulleys available machined or molded
- Easy to mount attachments & end fittings
- Cables available up to 200 feet long



# SYNCHROMESH DRIVE SELECTION TABLE

# SDP/SI

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| Catalog Number                       |                                      | IDLER PULLEY STYLES                               |  |   |   |
|--------------------------------------|--------------------------------------|---|--|---|---|
| CABLE                                | PULLEY                               | Steel /<br>Ball Bearing                           | All<br>Plastic   | Plastic /<br>Sintered Brg.  | Nylon /<br>Ball Bearing   |
| A 6J 9MAS0605<br>or<br>A 6J 9-AS0605 | A 6P 9M060...<br>or<br>A 6P 9-060... | A 6C 9-00804<br>(.441)                            | A 6M 9-00804<br>(.493)<br>A 6M 9-01004<br>(.611)<br>A 6M 9-01204<br>(.709)<br>A 6M 9-01606<br>(.861) | A 6T 9-00604<br>(.401)<br>A 6T 9-00804<br>(.517)<br>A 6T 9-01004<br>(.626)<br>A 6T 9-01204<br>(.711)                                | A 6Z 9-01004<br>(.623)<br>A 6Z9-01204<br>(.706)<br>A 6Z 9-01604<br>(.906)   |
| A 6J 9MAS0805<br>or<br>A 6J 9-AS0805 | A 6P 9M080...<br>or<br>A 6P 9-080... | A 6C 9-00804<br>(.489)                            | A 6M 9-01204<br>(.759)<br>A 6M 9-01606<br>(1.009)<br>A 6M 9-02006<br>(1.229)                         | A 6T 9-00804<br>(.544)<br>A 6T 9-01204<br>(.769)<br>A 6T 9-01706<br>(1.019)<br>A 6T 9-02006<br>(1.179)<br>A 6T 9-02008<br>(1.179)   | A 6Z 9-01204<br>(.767)<br>A 6Z 9-01604<br>(.992)<br>A 6Z 9-02006<br>(1.199)<br>A 6Z 9-01706<br>(1.029)<br>A 6Z 9-02008<br>(1.199)   |
| A 6J 9MAS1005<br>or<br>A 6J 9-AS1005 | A 6P 9M100...<br>or<br>A 6P 9-100... | —   | A 6M 9-02408<br>(1.348)  | A 6T 9-01706<br>(1.058)<br>A 6T 9-02006<br>(1.253)<br>A 6T 9-02008<br>(1.253)<br>A 6T 9-02408<br>(1.348)<br>A 6T 9-02412<br>(1.348) | A 6Z 9-02006<br>(1.258)<br>A 6Z 9-01706<br>(1.064)<br>A 6Z 9-02008<br>(1.258)<br>A 6Z 9-02408<br>(1.388)<br>A 6Z 9-02412<br>(1.388) |
| A 6J 9MAS1209<br>or<br>A 6J 9-AS1209 | A 6P 9M120...<br>or<br>A 6P 9-120... | A 6C 9-01606<br>(.866)<br>A 6C 9-01706<br>(1.000) | A 6M 9-02408<br>(1.426)<br>A 6M 9-02808<br>(1.476)   | A 6T 9-02408<br>(1.421)<br>A 6T 9-02808<br>(1.491)<br>A 6T 9-02412<br>(1.421)<br>A 6T 9-02812<br>(1.491)                            | A 6Z 9-02408<br>(1.476)<br>A 6Z 9-02808<br>(1.501)<br>A 6Z 9-02412<br>(1.476)<br>A 6Z 9-02812<br>(1.501)                            |

**NOTE:** Numbers shown in parentheses indicate pitch diameters of cable when wrapped around related pulley.  
Example: Cable **A 6J 9MAS1005** when used with pulley A 6M 9-02408 has a pitch diameter of 1.348.

**METRIC SIZE BORES ARE AVAILABLE ON REQUEST.**

PATENTED  
MINIATURE  
SYNCHRONOUS

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**> MATERIAL:**

**Cable Core** - Stainless Steel 304  
**Cable Casing** - Nylon

**> SPECIFICATIONS:**

**Life Data:**

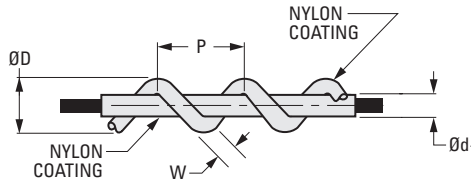
10<sup>6</sup> minimum flexing cycles where:  
Pulley Pitch Radius (R) = 13.9 x D<sub>2</sub>

**Accuracy:**

1. Pitch Error ± 0.05 mm
2. Cumulative Pitch Error ± 4.07 mm max. over 100 pitches.

**Ambient Factors:**

1. Temperature Range: -30°C to +80°C
2. Avoid strong acids, alkalis and organic solvents.



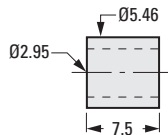
### METRIC COMPONENT

| Catalog Number       | P Pitch | D Outside Dia. mm | D <sub>1</sub> Dia. | W   | Breaking Load N |
|----------------------|---------|-------------------|---------------------|-----|-----------------|
| <b>A 6J 9MAS0605</b> | 3.048   | 1.6               | 0.6                 | 0.6 | 160             |
| <b>A 6J 9MAS0805</b> | 3.81    | 2.2               | 0.8                 | 0.8 | 323.4           |
| <b>A 6J 9MAS1005</b> | 5.08    | 2.8               | 1                   | 1   | 529.2           |
| <b>A 6J 9MAS1209</b> | 6.35    | 3.4               | 1.2                 | 1.2 | 784.5           |

**PLUGS** - Annealed Brass

### METRIC COMPONENT

| Catalog Number     |
|--------------------|
| <b>A 6J 9MB103</b> |

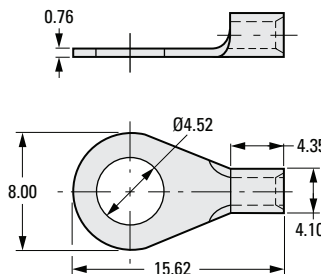


**EYES** - Steel, Nickel Plated

**NOTE:** Universal eyes fit all cable sizes and provide for convenient screw mounting.

### METRIC COMPONENT

| Catalog Number     |
|--------------------|
| <b>A 6J 9MAA39</b> |



The projections shown are per ISO convention.

# SYNCHROMESH CABLE PULLEYS

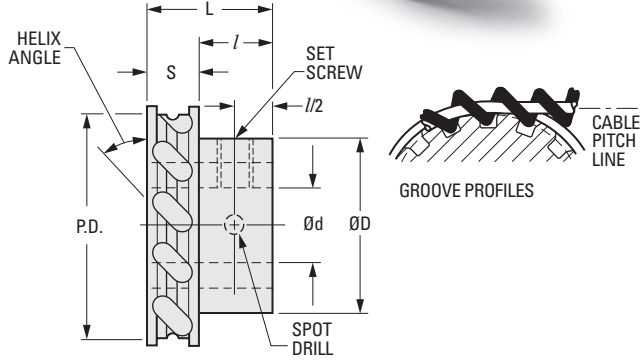
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## > MATERIAL:

Pulley - Acetal  
Insert - Brass

Aluminum inserts used on 6.35 pitch pulleys.

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## METRIC COMPONENT

| Catalog Number | Pitch | No. of Grooves | P.D.  | d Bore<br>+0.025<br>0 | S Face Width | L Length | D Hub Dia. | l Hub Proj. Ref. | Helix Angle | Set Screw |
|----------------|-------|----------------|-------|-----------------------|--------------|----------|------------|------------------|-------------|-----------|
| A 6P 9M0601502 | 3.048 | 15             | 14.55 | 2                     | 3.6          | 9.5      | 10.3       | 5.9              | 45°         | M2        |
| A 6P 9M0601503 |       |                |       | 3                     |              |          |            |                  |             | M2        |
| A 6P 9M0601504 |       |                |       | 4                     |              |          |            |                  |             | M2.5      |
| A 6P 9M0602003 |       | 20             | 19.4  | 3                     | 3.6          | 9.5      | 13.9       | 5.9              | 45°         | M2        |
| A 6P 9M0602004 |       |                |       | 4                     |              |          |            |                  |             | M2.5      |
| A 6P 9M0602005 | 5     |                |       | M3                    |              |          |            |                  |             |           |
| A 6P 9M0602503 | 25    | 24.26          | 3     | 3.6                   | 9.5          | 13.9     | 5.9        | 45°              | M2          |           |
| A 6P 9M0602504 |       |                | 4     |                       |              |          |            |                  | M2.5        |           |
| A 6P 9M0602505 |       |                | 5     |                       |              |          |            |                  | M3          |           |
| A 6P 9M0801503 | 3.81  | 15             | 18.19 | 3                     | 3.6          | 9.5      | 13.9       | 5.9              | 51°         | M2        |
| A 6P 9M0801504 |       |                |       | 4                     |              |          |            |                  |             | M2.5      |
| A 6P 9M0801505 |       |                |       | 5                     |              |          |            |                  |             | M3        |
| A 6P 9M0802403 |       | 24             | 29.11 | 3                     | 3.6          | 9.5      | 15.9       | 5.9              | 51°         | M2        |
| A 6P 9M0802404 |       |                |       | 4                     |              |          |            |                  |             | M2.5      |
| A 6P 9M0802405 | 5     | M3             |       |                       |              |          |            |                  |             |           |
| A 6P 9M1001506 | 5.08  | 15             | 24.26 | 6                     | 4.8          | 12.7     | 15.9       | 7.9              | 42°         | M4        |
| A 6P 9M1003008 |       | 30             | 48.51 | 8                     |              |          | 17.1       |                  |             | M5        |
| A 6P 9M1201510 | 6.35  | 15             | 30.3  | 10                    | 6.4          | 15.9     | 22.2       | 9.5              | 48°         | M5        |
| A 6P 9M1203010 |       | 30             | 60.63 |                       |              |          |            |                  |             |           |

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LOOP SLEEVES  
THIMBLES  
CRIMPING TOOL

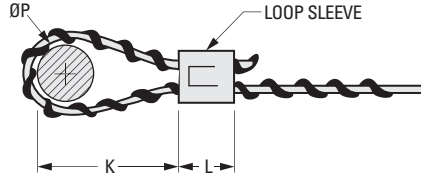
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**> MATERIAL:**

**Loop Sleeves** - Copper, Zinc Plated  
**Thimbles** - Stainless Steel

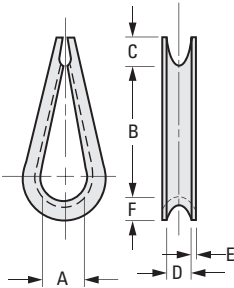
P = Pin Diameter  
K = Distance from bearing point to fitting

P should be at least five (5) times the cable diameter for guaranteed breaking strength and K should be at least 2.5 times P.



**METRIC COMPONENT**

| Catalog Number              | For Cable No.'s | L Length After Swaging |
|-----------------------------|-----------------|------------------------|
| <b>Priced Per 10 Pieces</b> |                 |                        |
| A 6B 9MS039                 | A 6J 9MAS0605   | 11.1                   |
| A 6B 9MS063                 | A 6J 9MAS0805   | 11.9                   |
| A 6B 9MS093                 | A 6J 9MAS1005   | 12.7                   |
| A 6B 9MS093                 | A 6J 9MAS1209   | 12.7                   |



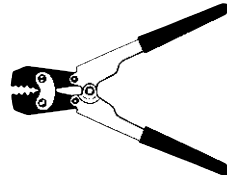
Thimbles provide loop support at higher loads & protect cables from wear when motion is present. Some thimbles may have open and/or uneven ends.



**METRIC COMPONENT**

| Catalog Number              | For Cable No.'s | A    | B     | C    | D    | E    | F    |
|-----------------------------|-----------------|------|-------|------|------|------|------|
| <b>Priced Per 10 Pieces</b> |                 |      |       |      |      |      |      |
| A 6C 9MT015                 | A 6J 9MAS0605   | 4.77 | 6.35  | 3.18 | 3.18 | 0.38 | 1.17 |
| A 6C 9MT047                 | A 6J 9MAS0805   | 8.61 | 17.06 | 4.75 | 2.38 | 0.81 | 1.98 |
| A 6C 9MT047                 | A 6J 9MAS1005   | 8.61 | 17.06 | 4.75 | 2.38 | 0.81 | 1.98 |
| A 6C 9MT094                 | A 6J 9MAS1209   | 8.61 | 17.86 | 5.54 | 3.57 | 0.81 | 1.98 |

This precision crimping tool gives compound leverage of at least 15-1. The scissor-action plier-type tool has jaws which are made of a tough chrome alloy steel. All component parts of the tool are hardened and tempered. The handles have nonslip plastic grips. Easy to use.



**METRIC COMPONENT**

| Catalog Number | For Cable No.'s             |
|----------------|-----------------------------|
| A 6O 9M00      | A 6J 9MAS0605 A 6J 9MAS0805 |
| A 6O 9M01      | A 6J 9MAS1005 A 6J 9MAS1209 |

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