



# Jaw In-Shear

## In This Section:

- Jaw In-Shear 6 Pin
- Jaw In-Shear 6 Pin Spacer





# Jaw In-Shear



## Safety Warning

When using Lovejoy products, you must follow these instructions and take the following precautions. Failure to do so may cause the power transmission product to break and parts to be thrown with sufficient force to cause severe injury or death.

Refer to this Lovejoy Catalog for proper selection, sizing, horsepower, torque range, and speed range of power transmission products, including elastomeric elements for couplings. Follow the installation instructions included with the product, and in the individual product catalogs for proper installation of power transmission products. Do not exceed catalog ratings.

During start up and operation of power transmission product, avoid sudden shock loads. Coupling assembly should operate quietly and smoothly. If coupling assembly vibrates or makes beating sound, shut down immediately, and recheck alignment. Shortly after initial operation and periodically thereafter, where applicable, inspect coupling assembly for: alignment, wear of elastomeric element, bolt torques, and flexing elements for signs of fatigue. Do not operate coupling assembly if alignment is improper, or where applicable, if elastomeric element is damaged, or worn to less than 75% of its original thickness.

Do not use any of these power transmission products for elevators, man lifts, or other devices that carry people. If the power transmission product fails, the lift device could fall resulting in severe injury or death.

For all power transmission products, you must install suitable guards in accordance with OSHA and American Society of Mechanical Engineers Standards. Do not start power transmission product before suitable guards are in place. Failure to properly guard these products may result in severe injury or death from personnel contacting moving parts or from parts being thrown from assembly in the event the power transmission product fails.

If you have any questions, contact the Lovejoy Engineering Department at 1-630-852-0500.



# Jaw In-Shear

## Table of Contents

|                                       | Running<br>Page No. | Section<br>Page No. |
|---------------------------------------|---------------------|---------------------|
| Overview.....                         | 44                  | JIS-4               |
| Selection Process.....                | 45                  | JIS-5               |
| Torque Rating > Performance Data..... | 46                  | JIS-6               |
| 6 Pin > Dimensional Data.....         | 47                  | JIS-7               |
| 6 Pin Spacer > Dimensional Data ..... | 48                  | JIS-8               |

### Jaw In-Shear (JIS) 6 Pin Saves Time, Maintenance, and Inventory Costs

- Created through Lovejoy's commitment to continual product improvement
- Unique 6 pin locking system
- Utilizes the standard Lovejoy L and C Type hub design
- The spider is radially removable, so neither hub needs to be removed from their shaft and no tools are needed

#### Choose from 16 Jaw In-Shear 6 Pin Sizes and New Spacer design

- Available in bore sizes up to 9 inches
- Spacer version designed as a non-lubricates drop-in replacement for a grid spacer coupling
- The JIS 6 Pin spacer coupling is available in sizes LS090-CS350
- Spacer sizes cover BSE (between shaft end measurement) of 3.5, 5, 7, and 9 inches, depending on coupling size

### Jaw In-Shear 6 Pin Stainless Steel Option

For highly corrosive, heavy washdown environments, the JIS 6 Pin design combined with Lovejoy's stainless steel jaw hubs creates a totally stainless steel coupling.

#### Features

- 2° angular misalignment capability
- .030 -.094 of an inch parallel misalignment capability
- Torsional wind-up of 5° at full load
- 50D shore Urethane material – maximum temperature of 200° F (93° C)
- The retaining ring is made from #347 cast stainless steel
- Stainless steel hubs are available for sizes SS075-SS150 from stock. All other stainless steel hub sizes are available as made to order
- Can be used with AL Type aluminum jaw coupling hubs for AL090/095, AL099, 100 and AL110
- The Original JIS locking ring is interchangeable with the new JIS 6 Pin elastomer



Jaw In-Shear 6 Pin Assembled



Jaw In-Shear 6 Pin Element  
50D Shore Urethane Material



Jaw In-Shear 6 Pin Ring  
Stainless Steel



#### WARNING

You must refer to page JIS-2 (Page 42) for Important Safety Instructions and Precautions for the selection and use of these products. Failure to follow the instructions and precautions can result in severe injury or death.

## Jaw In-Shear Coupling Selection Process

The selection process for determining the proper Jaw In-Shear coupling size requires using the charts shown in this section. There are four components to be selected, two hubs, one elastomer spider, and one ring.

### Information necessary before a coupling can be selected:

- HP (or KW) and RPM or Torque of Driver
- Shaft sizes of Driver and Driven equipment and
- Corresponding keyways
- Application description, including operation details
- Environmental conditions (temperature, space limitations, or corrosive/chemicals)

### List of Charts provided for Selection:

- Chart 1 – Application Service Factor K1 (page JIS-5)
- Chart 2 – Service Factor for Operational Period K2 (page JIS-5)
- Chart 3 – Service Factor for Starts per Hour K3 (page JIS-5)
- Jaw In-Shear Torque Rating Data (page JIS-6)

## Steps In Selecting A Jaw In-Shear Coupling

**Step 1:** Determine the Nominal/Torque (T<sub>kn</sub>) of your application:

$$\text{in-lbs} = T_{kn} = \frac{(\text{HP} \times 63025)}{\text{RPM}}$$

$$\text{Nm} = T_{kn} = \frac{(\text{KW} \times 9550)}{\text{RPM}}$$

**Step 2:** Calculate your Application Service Factor using charts on this page.

The total Service Factor (K) will be:

$$K = K1 \times K2 \times K3$$

**Step 3:** Calculate the Design Torque (T<sub>kmax</sub>) of your application.

Design Torque = Nominal Torque x Service Factor:

$$T_{kmax} = T_{kn} \times K$$

**Step 4:** Use the Jaw In-Shear Torque Rating table on page JIS-6. Scan down this chart to the first entry where both the T<sub>kn</sub> and T<sub>kmax</sub> torque values for the coupling size are greater than your application. Once this coupling size is determined, ensure that your application does not exceed the maximum RPM or maximum Bore Size for that hub.

**Step 5:** Once the coupling size, maximum RPM and maximum Bore has been verified, refer to pages JIS-7 and JIS-8 for dimensional data.

### Application Service Factor (K1)

### Chart 1

| Driven Machine Examples                                                                                                                                                                                              | Prime Mover Electric Motor |             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------|
|                                                                                                                                                                                                                      | Standard Torque            | High Torque |
| (a) <b>Uniform operation, with small masses to be accelerated.</b> Hydraulic and centrifugal pumps, light generators, blowers, fans, ventilators, belt/screw conveyors                                               | 1.0                        | 1.4         |
| (b) <b>Uniform operation, with medium masses to be accelerated.</b> Sheet metal bending machines, wood working machines, mills, textile machines, mixers                                                             | 1.4                        | 1.8         |
| (c) <b>Medium masses to be accelerated &amp; irregular operation.</b> Rotating ovens, printing presses, generators, shredders, winders, spinning machines, pumps for viscous fluids                                  | 1.7                        | 2.0         |
| (d) <b>Medium masses to be accelerated, irregular operation &amp; shocks.</b> Concrete mixers, drop hammers, cable cars, paper mills, compression pumps, propeller pumps, rope winders, centrifuges                  | 2.0                        | 2.2         |
| (e) <b>Large masses to be accelerated, irregular operation &amp; heavy shocks.</b> Excavators, hammer mills, piston pumps, presses, rotary boring machines, shears, forge presses, stamping presses                  | 2.2                        | 2.4         |
| (f) <b>Very large masses to be accelerated, irregular operation &amp; heavy shocks.</b> Piston type compressors and pumps without speed variations, heavy roll sets, welding machines, brick presses, stone crushers | 2.3                        | 2.8         |

### Service Factor for Operation Period (K2)

### Chart 2

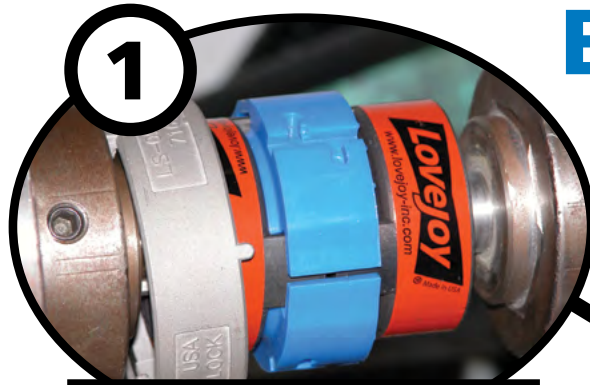
| Uninterrupted Time of Operation       | Factor |
|---------------------------------------|--------|
| Up to 8 hours per day                 | 1.00   |
| More than 8 hours, up to 16 hours/day | 1.10   |
| More than 16, up to 24 hours/day      | 1.15   |

### Service Factor for Starts per Hour (K3)

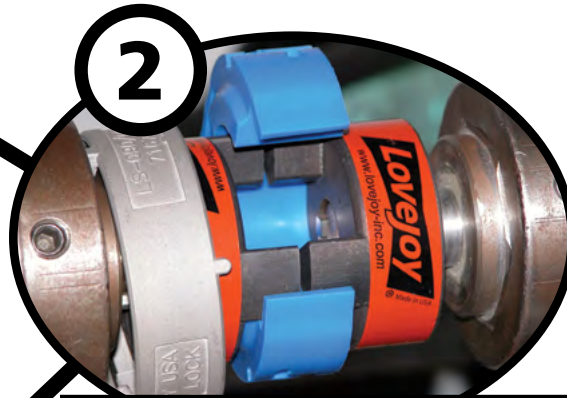
### Chart 3

|                                   | Operation, Per Table K1: |     |
|-----------------------------------|--------------------------|-----|
|                                   | a-c                      | d-f |
| Up to 10 starts/stops per hour    | 1.0                      | 1.0 |
| More than 10, up to 40 per hour   | 1.4                      | 1.5 |
| More than 40, up to 125 per hour  | 1.8                      | 2.0 |
| More than 125, up to 250 per hour | 2.2                      | 2.5 |

# Easy as 1 - 2 - 3



Slide off locking ring



Remove and replace element



Slide on locking ring -  
twist to secure

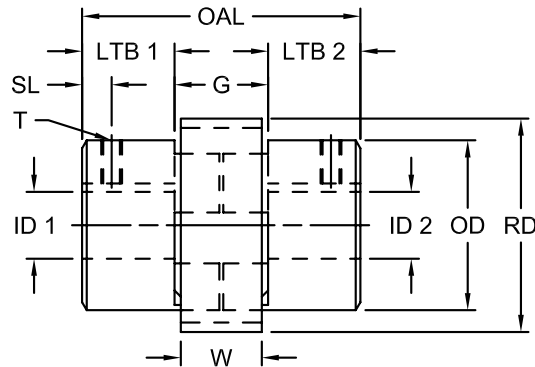
# You're Done!

## Jaw In-Shear Torque Rating Data

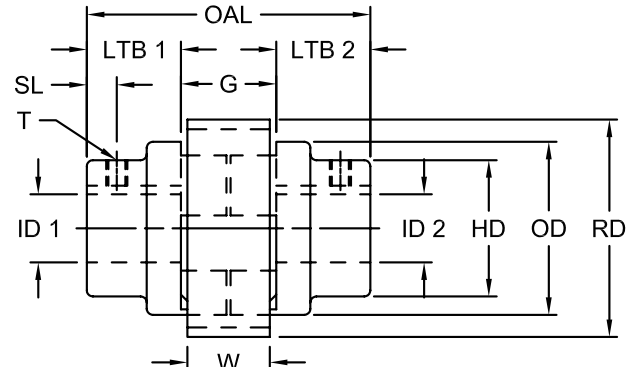
| Size  | Max Bore |     | Nominal Torque |        | Max Torque |        | Weight | Max Speed |
|-------|----------|-----|----------------|--------|------------|--------|--------|-----------|
|       | in       | mm  | in-lbs         | Nm     | in-lbs     | Nm     |        |           |
| LS090 | 1.000    | 25  | 335            | 38     | 670        | 76     | 1.50   | 9,200     |
| LS095 | 1.125    | 28  | 335            | 38     | 670        | 76     | 1.50   | 9,200     |
| LS099 | 1.188    | 30  | 560            | 63     | 1,110      | 125    | 2.60   | 7,700     |
| LS100 | 1.375    | 35  | 560            | 63     | 1,110      | 125    | 2.90   | 7,700     |
| LS110 | 1.625    | 42  | 1,090          | 123    | 2,180      | 246    | 5.90   | 5,900     |
| LS150 | 1.875    | 48  | 1,810          | 205    | 3,620      | 409    | 8.60   | 5,200     |
| LS190 | 2.125    | 55  | 2,920          | 330    | 5,830      | 659    | 14.60  | 4,300     |
| LS225 | 2.625    | 65  | 4,200          | 475    | 8,400      | 949    | 17.00  | 3,900     |
| LS276 | 2.875    | 73  | 7,460          | 843    | 14,920     | 1 686  | 37.70  | 3,100     |
| CS280 | 3.000    | 76  | 13,300         | 1 503  | 26,600     | 3 006  | 53.50  | 2,600     |
| CS285 | 4.000    | 102 | 18,760         | 2 120  | 37,500     | 4 237  | 80.60  | 2,300     |
| CS300 | 4.875    | 109 | 33,000         | 3 728  | 66,000     | 7 457  | 106.80 | 2,300     |
| CS310 | 5.625    | 143 | 50,000         | 5 649  | 100,000    | 11 298 | 139.30 | 2,100     |
| CS350 | 6.375    | 162 | 83,333         | 9 415  | 166,666    | 18 831 | 228.20 | 1,900     |
| CS400 | 7.375    | 187 | 126,667        | 14 311 | 256,334    | 28 623 | 345.10 | 1,800     |
| CS500 | 9.000    | 229 | 183,333        | 20 714 | 366,666    | 41 428 | 589.60 | 1,500     |

The Jaw In-Shear Coupling, sizes LS090 – CS285 consists of two hubs, one Jaw In-Shear spider, and one Jaw In-Shear ring.

The Jaw In-Shear Coupling, sizes CS300 – CS500 consists of two hubs, one Jaw In-Shear cushion (set of six) and one Jaw In-Shear ring.



Style 1



Style 2

**Jaw In-Shear 6 Pin Dimensional Data**

| Size  | Style | OAL<br>in | LTB1 - LTB2<br>in | SL<br>in | G<br>in | T       | ID1 - ID2 |    |          |     | W<br>in | RD<br>in | OD<br>in | HD<br>in |
|-------|-------|-----------|-------------------|----------|---------|---------|-----------|----|----------|-----|---------|----------|----------|----------|
|       |       |           |                   |          |         |         | Min Bore  |    | Max Bore |     |         |          |          |          |
|       |       |           |                   |          |         |         | in        | mm | in       | mm  |         |          |          |          |
| LS090 | 1     | 2.64      | 0.82              | 0.44     | 1.00    | 1/4-20  | 0.25      | 6  | 1.00     | 25  | 0.83    | 2.75     | 2.11     | 2.11     |
| LS095 | 1     | 3.00      | 1.00              | 0.44     | 1.00    | 5/16-18 | 0.44      | 11 | 1.13     | 29  | 0.83    | 2.75     | 2.11     | 2.11     |
| LS099 | 1     | 3.52      | 1.06              | 0.44     | 1.40    | 5/16-18 | 0.44      | 11 | 1.19     | 30  | 1.21    | 3.19     | 2.54     | 2.54     |
| LS100 | 1     | 4.16      | 1.38              | 0.44     | 1.40    | 5/16-18 | 0.44      | 11 | 1.38     | 35  | 1.21    | 3.19     | 2.54     | 2.54     |
| LS110 | 1     | 5.00      | 1.68              | 0.75     | 1.64    | 3/8-16  | 0.63      | 16 | 1.63     | 41  | 1.45    | 4.00     | 3.32     | 3.32     |
| LS150 | 1     | 5.44      | 1.75              | 0.75     | 1.94    | 3/8-16  | 0.63      | 16 | 1.88     | 48  | 1.71    | 4.69     | 3.75     | 3.75     |
| LS190 | 2     | 5.82      | 1.94              | 0.88     | 1.94    | 1/2-13  | 0.75      | 19 | 2.13     | 54  | 1.71    | 5.50     | 4.50     | 4.00     |
| LS225 | 2     | 6.30      | 2.18              | 1.00     | 1.94    | 1/2-13  | 0.75      | 19 | 2.63     | 67  | 1.71    | 6.13     | 5.00     | 4.25     |
| LS276 | 2     | 9.43      | 3.12              | 1.56     | 3.19    | 1/2-13  | 0.88      | 22 | 2.88     | 73  | 2.97    | 7.41     | 6.18     | 5.00     |
| CS280 | 2     | 9.43      | 3.12              | 1.56     | 3.19    | 1/2-13  | 1.25      | 32 | 3.00     | 76  | 2.97    | 8.94     | 7.50     | 5.50     |
| CS285 | 2     | 10.69     | 3.75              | 1.75     | 3.19    | 5/8-11  | 1.25      | 32 | 4.00     | 102 | 2.97    | 10.00    | 8.50     | 6.50     |
| CS300 | 2     | 12.25     | 4.00              | 2.00     | 4.25    | CSL     | 1.50      | 38 | 4.88     | 124 | 5.10    | 11.07    | 10.00    | 7.25     |
| CS310 | 2     | 13.25     | 4.50              | 2.25     | 4.25    | CSL     | 1.50      | 38 | 5.63     | 143 | 5.10    | 12.07    | 11.00    | 8.25     |
| CS350 | 2     | 17.64     | 6.38              | 3.19     | 4.88    | CSL     | 1.50      | 38 | 6.38     | 162 | 5.70    | 13.57    | 12.50    | 9.25     |
| CS400 | 2     | 20.14     | 7.38              | 3.69     | 5.38    | CSL     | 1.75      | 44 | 7.38     | 187 | 6.20    | 15.33    | 14.25    | 10.75    |
| CS500 | 2     | 24.38     | 9.00              | 4.50     | 6.38    | CSL     | 1.75      | 44 | 9.00     | 229 | 7.20    | 17.57    | 16.50    | 13.25    |

# Jaw In-Shear

## 6 Pin Spacer

### Dimensional Data

The Jaw In-Shear Spacer Coupling, sizes LS090 – CS285 consists of:

2 Grid shaft hubs

1 Jaw In-Shear spacer subassembly:

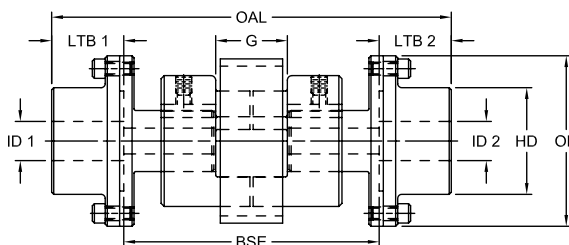
- 2 Jaw In-Shear spacer hubs
- 1 Jaw In-Shear spider
- 1 Jaw In-Shear ring

The Jaw In-Shear Spacer Coupling, sizes CS300 – CS350 consists of:

2 Grid shaft hubs

1 Jaw In-Shear spacer subassembly:

- 2 Jaw In-Shear spacer hubs
- 1 Jaw In-Shear cushion (set of six)
- 1 Jaw In-Shear ring



### Jaw In-Shear 6 Pin Spacer Dimensional Data

| Size  | OAL   | LTB1 - LTB2 | G     | ID1 - ID2 |       |          |     | BSE | OD     | HD   | Grid Hub |
|-------|-------|-------------|-------|-----------|-------|----------|-----|-----|--------|------|----------|
|       |       |             |       | Min Bore  |       | Max Bore |     |     |        |      |          |
| in    | in    | in          | in    | mm        | in    | mm       | in  | in  | in     | Size |          |
| LS090 | 6.26  | 1.375       | 1.000 | 0.50      | 12.7  | 1.375    | 35  | 3.5 | 4.00   | 2.06 | 1020     |
|       | 7.76  | 1.375       | 1.000 | 0.50      | 12.7  | 1.375    | 35  | 5.0 | 4.00   | 2.06 | 1020     |
|       | 9.76  | 1.375       | 1.000 | 0.50      | 12.7  | 1.375    | 35  | 7.0 | 4.00   | 2.06 | 1020     |
|       | 11.76 | 1.375       | 1.000 | 0.50      | 12.7  | 1.375    | 35  | 9.0 | 4.00   | 2.06 | 1020     |
| LS095 | 6.26  | 1.375       | 1.000 | 0.50      | 12.7  | 1.375    | 35  | 3.5 | 4.00   | 2.06 | 1020     |
|       | 7.76  | 1.375       | 1.000 | 0.50      | 12.7  | 1.375    | 35  | 5.0 | 4.00   | 2.06 | 1020     |
|       | 9.76  | 1.375       | 1.000 | 0.50      | 12.7  | 1.375    | 35  | 7.0 | 4.00   | 2.06 | 1020     |
|       | 11.76 | 1.375       | 1.000 | 0.50      | 12.7  | 1.375    | 35  | 9.0 | 4.00   | 2.06 | 1020     |
| LS099 | 6.26  | 1.375       | 1.400 | 0.50      | 12.7  | 1.375    | 35  | 3.5 | 4.00   | 2.06 | 1020     |
|       | 7.76  | 1.375       | 1.400 | 0.50      | 12.7  | 1.375    | 35  | 5.0 | 4.00   | 2.06 | 1020     |
|       | 9.76  | 1.375       | 1.400 | 0.50      | 12.7  | 1.375    | 35  | 7.0 | 4.00   | 2.06 | 1020     |
|       | 11.76 | 1.375       | 1.400 | 0.50      | 12.7  | 1.375    | 35  | 9.0 | 4.00   | 2.06 | 1020     |
| LS100 | 6.25  | 1.375       | 1.400 | 0.50      | 12.7  | 1.375    | 35  | 3.5 | 4.00   | 2.06 | 1020     |
|       | 7.75  | 1.375       | 1.400 | 0.50      | 12.7  | 1.375    | 35  | 5.0 | 4.00   | 2.06 | 1020     |
|       | 9.75  | 1.375       | 1.400 | 0.50      | 12.7  | 1.375    | 35  | 7.0 | 4.00   | 2.06 | 1020     |
|       | 11.75 | 1.375       | 1.400 | 0.50      | 12.7  | 1.375    | 35  | 9.0 | 4.00   | 2.06 | 1020     |
| LS110 | 8.25  | 1.625       | 1.640 | 0.50      | 12.7  | 1.625    | 41  | 5.0 | 4.38   | 2.34 | 1030     |
|       | 10.25 | 1.625       | 1.640 | 0.50      | 12.7  | 1.625    | 41  | 7.0 | 4.38   | 2.34 | 1030     |
|       | 12.24 | 1.625       | 1.640 | 0.50      | 12.7  | 1.625    | 41  | 9.0 | 4.38   | 2.34 | 1030     |
| LS150 | 9.26  | 2.125       | 1.940 | 0.50      | 12.7  | 2.125    | 54  | 5.0 | 4.62   | 3.09 | 1040     |
|       | 11.25 | 2.125       | 1.940 | 0.50      | 12.7  | 2.125    | 54  | 7.0 | 4.62   | 3.09 | 1040     |
|       | 13.25 | 2.125       | 1.940 | 0.50      | 12.7  | 2.125    | 54  | 9.0 | 4.62   | 3.09 | 1040     |
| LS190 | 11.75 | 2.375       | 1.940 | 0.50      | 12.7  | 2.375    | 60  | 7.0 | 5.44   | 2.38 | 1050     |
|       | 13.75 | 2.375       | 1.940 | 0.50      | 12.7  | 2.375    | 60  | 9.0 | 5.44   | 2.38 | 1050     |
| LS225 | 12.75 | 2.875       | 1.940 | 0.75      | 19.05 | 2.875    | 73  | 7.0 | 5.94   | 2.88 | 1060     |
|       | 14.75 | 2.875       | 1.940 | 0.75      | 19.05 | 2.875    | 73  | 9.0 | 5.94   | 2.88 | 1060     |
| LS276 | 21.76 | 3.125       | 3.190 | 0.75      | 19.05 | 3.125    | 79  | 9.0 | 6.38   | 4.31 | 1070     |
| CS280 | 24.24 | 3.500       | 3.190 | 1.06      | 26.97 | 3.500    | 89  | 9.0 | 7.62   | 4.81 | 1080     |
| CS285 | 16.00 | 3.500       | 3.190 | 1.06      | 26.97 | 3.500    | 89  | 9.0 | 7.62   | 4.81 | 1080     |
| CS300 | 17.00 | 4.000       | 4.250 | 1.06      | 26.97 | 4.000    | 102 | 9.0 | 11.07  | 5.62 | 1090     |
| CS310 | 16.12 | 3.560       | 4.898 | 1.50      | 38.10 | 4.750    | 121 | 9.0 | 12.07  | 6.75 | 1100     |
| CS350 | 17.20 | 4.100       | 5.380 | 2.00      | 50.80 | 5.500    | 140 | 9.0 | 13.57v | 7.75 | 1110     |