

6239
BILLET 4-LINK 2x4 FRAME MOUNT

| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|--------------------------------------|
| 1 | 1 | 300-2000 | Billet 4-link 3" axle bracket set |
| 2 | 1 | 300-2001 | Billet 4-link chassis mount brackets |
| 3 | 1 | 300-2002 | Control arm set 20" assembly |
| 4 | 1 | 300-2004 | Swivel link set 16" assembly |
| 5 | 1 | 300-2005 | Swivel eyebolt assembly |

Verify each part's components against the Parts List enclosed in each box.

MAINTANCE: Pivot-swivel-ball assemblies must be inspected frequently. The ends should be greased, with multipurpose grease every 6 months. There is a grease zerk included in your kit. Remove the tension ring set screw, insert the grease zerk, and apply the grease with a grease gun. You will need only a very small amount. Remove the grease and reinstall the set screw before use. **DO NOT LEAVE THE GREASE ZERK IN THE TENSION RING.**

INSTALLATION: Refer to the frame drawing for the location of the components of the rear suspension.

1. Level your chassis front to rear and right to left.
2. Position one of the spacer plates #2834 inside on both of the 2x4 frame rails. The space will be even with the inside radius of the frame rail and even with the bottom on the frame rail. Tack weld the spacers in place.
3. We suggest you make four spacers 2.140" long out of a piece of tubing with a 1/2 inch center hole. These will be used to space the 4-link brackets during the fitting and welding process. You can also use the ball-pivot-eye bolts #3753 to space the brackets.
4. Place two 2.140" spacers between a pair of front brackets (nos. #2171 & 2172), making sure #2171 is the inside bracket. Bolt the brackets together with the spacers in the second hole on top set of holes and the center hole of bottom set of holes. Tack weld the front mount under the frame rail. It must be even with #2172 bracket; even with the outside edge of the frame rail; and straight. The forward side of the bracket should be tight against the frame as shown in the drawing. The forward edge of the bracket is 22" forward of the axle centerline. The inside bracket #2172 will go over the spacer you previously tack welded in place. There is room to weld two beads on the inside of the front bracket assembly; one on the spacer to the frame rail, the other on the spacer and the bracket. Tack the inner bracket to the spacer. Both frame brackets will hang 1" below the 2x4 frame rail as shown on the drawing. Repeat this for the other side.
5. Assemble the ball-pivot-eye bolt #3753 and 16" upper swivel link #3752. Apply a small amount of Anti-seize to the threads of the ball-pivot-eye bolt. Thread one 1-14 right hand jam nut onto the ball pivot so there is 1-1/4" of threads showing past the jam nut.

6. Use an air hose to blow any debris out the threads of the upper link assembly. Apply a small amount of Anti-seize to the threads inside the upper link assembly. Thread the ball pivot eye bolt into the link up to the jam nut. Repeat this for the other upper link assembly.

7. Use jack stands to position your rear axle housing at the correct height and rearward location according to your assembly drawing. The axle housing must also be centered in the car. The ends of the housing must be an equal distances from the side of the frame rails.

8. Slide the axle brackets #2173 over the axle housing positioning them as wide as the outside frame. If your axle housing is larger than 3"-OD, the brackets will have to be enlarged to keep the holes in their correct location. Use the link bars to get the correct rotation of the brackets. Install the lower links first in the holes shown on the drawing, securing them with the 1/2-20 x 3-1/2" hex cap screws and lock nuts. Now, install the upper links you previously assembled, as shown on the drawing, with the ball-pivot-eye bolt toward the front. Use the ball-pivot-eye bolt to rotate the axle brackets so they are 90° to the axle centerline; and with the lower hole centered on the axle centerline. Once the brackets are the correct position tack weld them to the housing.

9. Now install the #6249 track locator per the instructions enclosed in the track locator kit.

10. Check all brackets for squareness and to be sure there is no binding in pivot-ball assemblies or jam nuts. Also, check the rearend housing to make sure it is in the correct location.

Use the following method to verify your housing location:

Set the axle centerline 22" behind the 4-link front mount crossmember. Drop a plumb bob from the center of the frame in the front and the rear of the chassis. Mark the garage floor where the plumb bob point touches the floor. Place a string centerline under the car between the points. A 20' piece of string tied to two bricks will work fine. This string will represent the center of the chassis. Next, attach a plumb bob to the center of each axle tube. To adjust the rearend to be centered in the chassis, lengthen or shorten the track locator until each plumb bob is an equal distance from the string centerline. Next, adjust the rear end to be exactly 90° to the string centerline. Measure forward from the rear axle 6' and draw an "X" on the floor where 6' and the centerline meet. This is just to establish an arbitrary reference for the next step. Now, measure from the plumb bobs attached to each axle tube up to the "X" on the floor. These measurements should be within 1/8" side to side. If everything checks out, remove the links.

11. Place two of the 2.140" spacers in each axle bracket. Tack weld the #2060 axle bracket gussets to the back of the axle brackets. Once these are in place, you can final weld the axle brackets to the housing.

12. Place two 2.140" spacers in each frame bracket. The lower frame cap #2389 caps the bottom of the 2x4 frame rail and gussets the frame brackets that hang below the rail. Tack weld the #2389 in place. You can now final weld the front brackets.

4-LINK ADJUSTMENTS

Adjusting your 4-link is not difficult but, it must be done carefully. You must adjust for three separate things, rearend location in the chassis, preload, and intersection point. I will explain each one in detail.

ADJUSTING THE PINION ANGLE: Remove the rear tires and place jack stands under the axle housing this will hold it at the correct ride height and level right to left. At this point the pinion angle should be set to 1° to 2° negative and the rearend should be in the correct location for the wheel base.

ADJUSTING PRELOAD: The best method to adjust preload is to adjust your chassis for no preload then add preload if necessary. This can only be determined by test launching the car for 60 to 100 foot passes. With no preload in the chassis, it should be very easy to twist the top right (passenger side) link bar. With the jam nut loose you should be able to feel it rotate in the threads and a 1/2 turn in either direction should make the link bar tighter. (NOTE: Raising or lowering an adjustable coil spring seat will also preload the chassis. This is not the preferred method.) To determine if you need preload, test launch the car. If it does not initially drive straight off the line, you can add preload in the top right (passenger side) bar. If your car continually drives to the right, shorten the upper right link bar. If it continually drives to the left, lengthen the upper right link bar. If you need over 1-1/2 turns of preload, it's a good indicator that something is probably wrong.

ADJUSTING INTERSECTION POINTS: This is one of the most misunderstood adjustments. The first thing to do is to map all possible intersection point locations. We have provided a map that lists all intersection points, length in front of the axle centerline, and heights above the ground (minus numbers are below the ground). The map is drawn with the front 4-link mount 6-1/2" off the ground. This would normally be the case in a back-half subframe chassis like part #7153. Drawing #926239 (provided) shows one location drawn out to clarify the map.

Unfortunately there is no way to tell exactly what intersect point your chassis will like without experimenting. There are no rules of thumb that apply because there are lots of things that affect the ideal intersect point. A brief list would include gear ratio, converter, ignition timing, cam shaft, tire size, track condition, shock absorbers, torque curve, vehicle weight, weight distribution, center of gravity, height, plus many more. Therefore, any attempt to over simplify the determination of the intersection point is not going to be valid. The racer must test to determine the correct intersection point. By providing you with a map and some guidelines to help you select locations, we hope to get you started in the right direction. The amount of time and energy you are willing to put into testing will definitely determine your success. To help you get going, we suggest you start at location B-1 (bottom bar) D-5 (top bar). This will provide an intersection point of 48.51" (length) 6.65" height above the ground. To adjust from there you need to know that as the intersection gets shorter and higher, the chassis will tend to shock the tire slower. As the intersection gets longer and lower, the chassis will tend to shock the tire faster. You need to move slowly from the start point. Large changes will just get you lost. The object is to shock the tires as hard and as fast as possible without causing too much tire spin. The intersection point will have a considerable affect on your elapsed time through the first gear change on high horsepower cars. Therefore, you can get a lot of good testing in on only 100 feet or so. Remember that the intersection point adjustment is only part of the combination. You will have to also adjust other things to optimize your combination.

INTERSECT POINTS WITH FRONT MOUNT 6-1/2" ABOVE GROUND

| BOTTOM BAR | | TOP BAR | | INTERSECTION POINT | |
|-------------|----------------|-------------|----------------|--------------------|---------------|
| <u>Axle</u> | <u>Chassis</u> | <u>Axle</u> | <u>Chassis</u> | <u>Length</u> | <u>Height</u> |
| A | 1 | E | 7 | 65.04 | 8.58 |
| A | 1 | E | 6 | 47.25 | 8.15 |
| A | 1 | E | 5 | 36.81 | 7.90 |
| A | 1 | E | 4 | 29.85 | 7.73 |
| A | 1 | D | 7 | 91.86 | 9.23 |
| A | 1 | D | 6 | 57.90 | 8.41 |
| A | 1 | D | 5 | 41.86 | 8.02 |
| A | 1 | D | 4 | 32.42 | 7.79 |
| A | 2 | E | 7 | 48.99 | 10.84 |
| A | 2 | E | 6 | 38.24 | 10.00 |
| A | 2 | E | 5 | 31.14 | 9.45 |
| A | 2 | E | 4 | 26.05 | 9.05 |
| A | 2 | D | 7 | 60.27 | 11.73 |
| A | 2 | D | 6 | 43.61 | 10.42 |
| A | 2 | D | 5 | 33.90 | 9.66 |
| A | 2 | D | 4 | 27.47 | 9.17 |
| A | 3 | E | 7 | 39.35 | 12.20 |
| A | 3 | E | 6 | 31.15 | 11.25 |
| A | 3 | E | 5 | 27.02 | 10.58 |
| A | 3 | E | 4 | 23.13 | 10.06 |
| A | 3 | D | 7 | 44.93 | 12.94 |
| A | 3 | D | 6 | 35.03 | 11.63 |
| A | 3 | D | 5 | 28.52 | 10.77 |
| A | 3 | D | 4 | 23.85 | 10.16 |
| B | 1 | E | 7 | 87.12 | 5.47 |
| B | 1 | E | 6 | 55.62 | 6.42 |
| B | 1 | E | 5 | 40.47 | 6.89 |
| B | 1 | E | 4 | 31.46 | 7.17 |
| B | 1 | D | 7 | 172.54 | 2.86 |
| B | 1 | D | 6 | 76.45 | 5.79 |
| B | 1 | D | 5 | 48.51 | 6.65 |
| B | 1 | D | 4 | 35.07 | 7.06 |
| B | 2 | E | 7 | 58.27 | 9.54 |
| B | 2 | E | 6 | 42.38 | 9.15 |
| B | 2 | E | 5 | 33.05 | 8.92 |
| B | 2 | E | 4 | 26.83 | 8.77 |
| B | 2 | D | 7 | 81.04 | 10.09 |
| B | 2 | D | 6 | 51.13 | 9.36 |
| B | 2 | D | 5 | 37.01 | 9.02 |
| B | 2 | D | 4 | 28.69 | 8.82 |
| B | 3 | E | 7 | 43.89 | 11.56 |
| B | 3 | E | 6 | 34.30 | 10.81 |
| B | 3 | E | 5 | 27.98 | 10.31 |

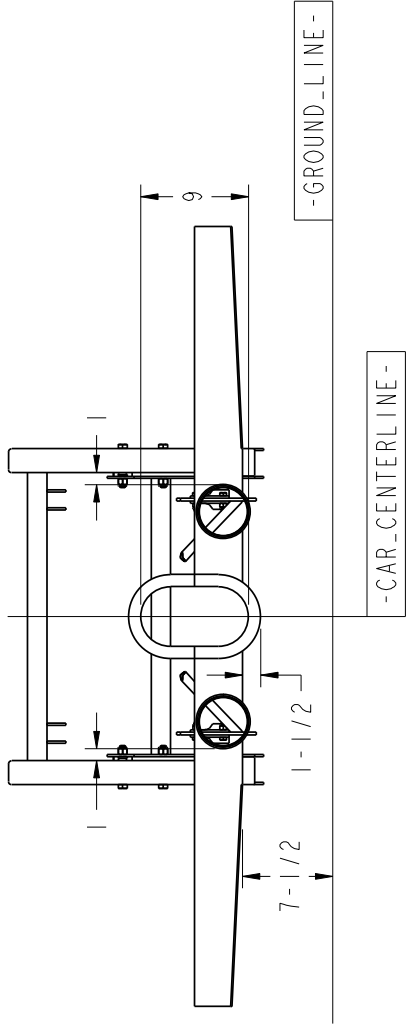
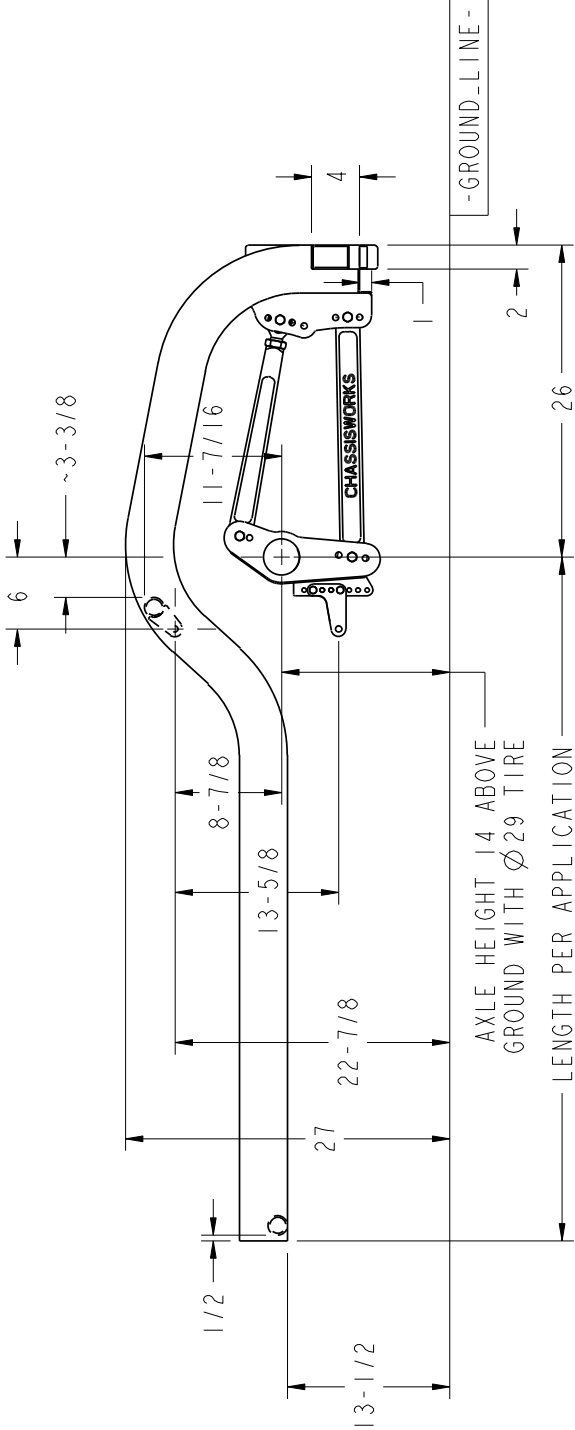
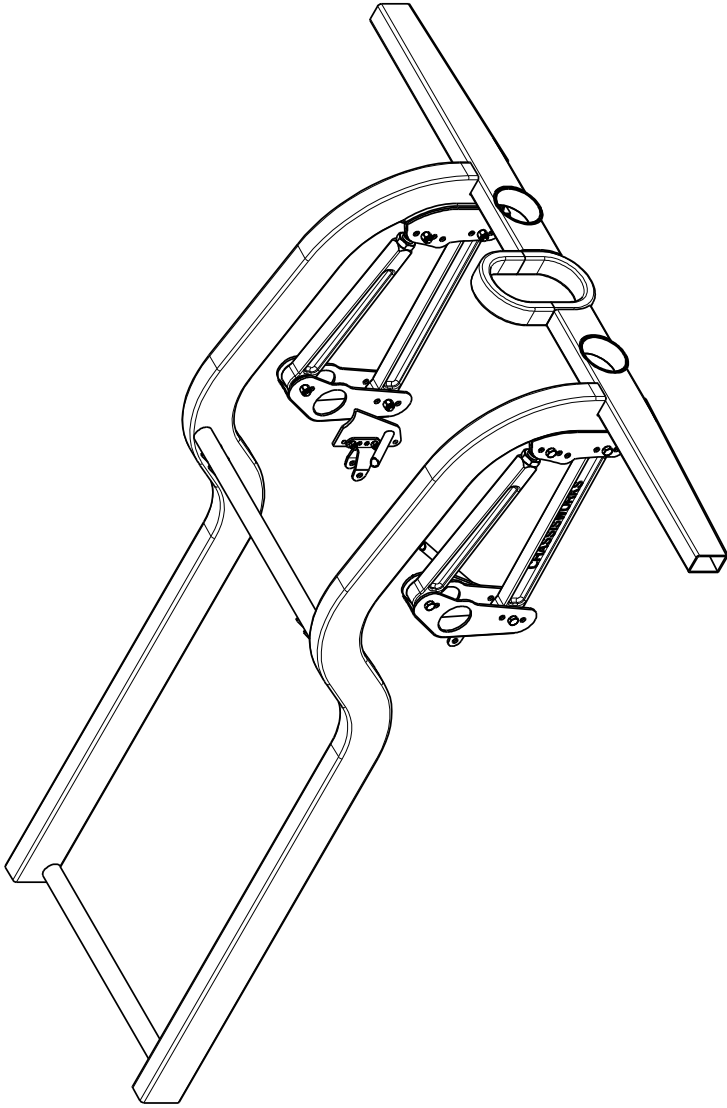
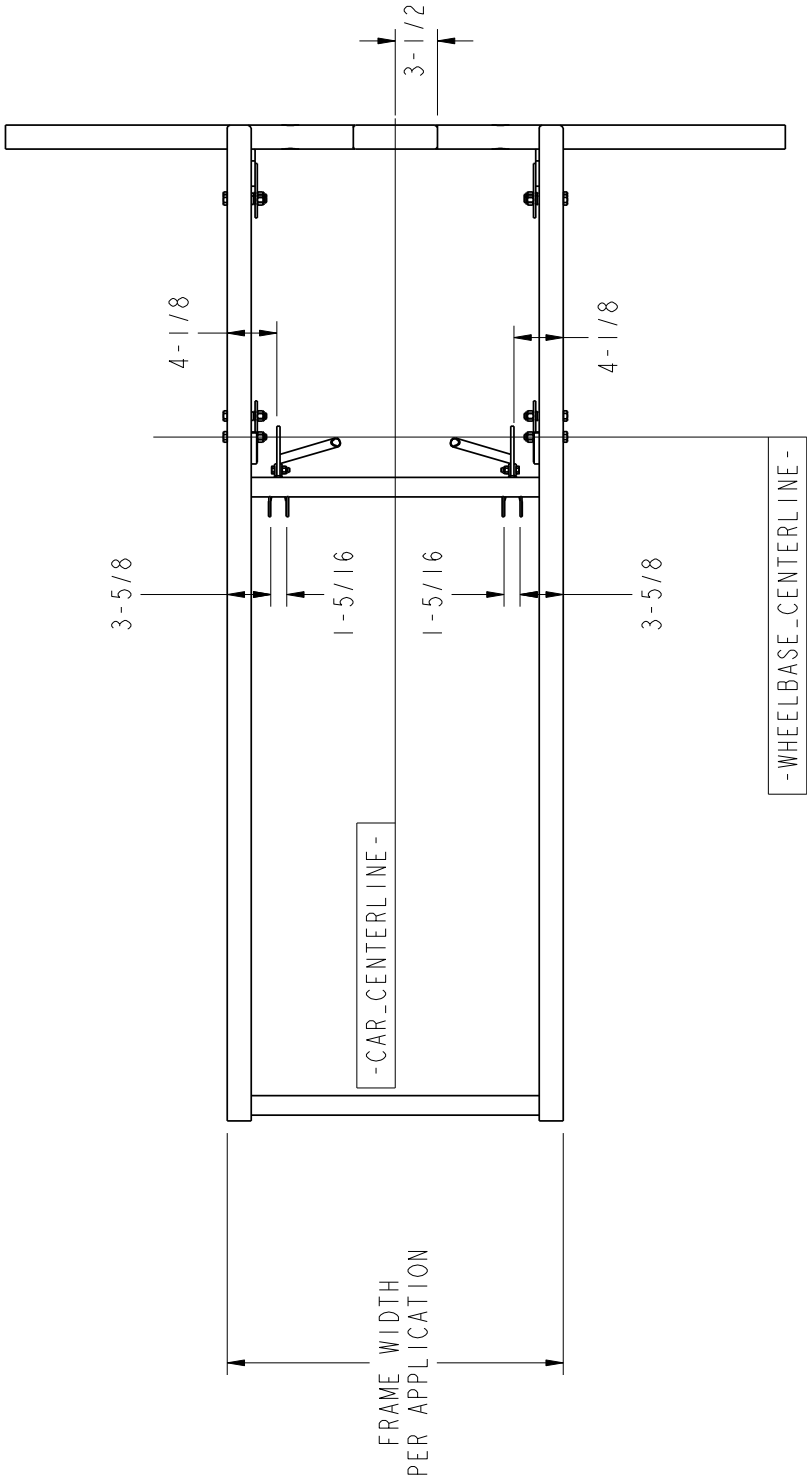
| BOTTOM BAR | | TOP BAR | | INTERSECTION POINT | |
|-------------|----------------|-------------|----------------|--------------------|---------------|
| <u>Axle</u> | <u>Chassis</u> | <u>Axle</u> | <u>Chassis</u> | <u>Length</u> | <u>Height</u> |
| B | 3 | E | 4 | 23.43 | 9.96 |
| B | 3 | D | 7 | 53.17 | 12.29 |
| B | 3 | D | 6 | 38.52 | 11.14 |
| B | 3 | D | 5 | 29.98 | 10.47 |
| B | 3 | D | 4 | 24.32 | 10.03 |
| C | 1 | E | 7 | 154.53 | -4.03 |
| C | 1 | E | 6 | 71.96 | 3.07 |
| C | 1 | E | 5 | 46.37 | 5.27 |
| C | 1 | E | 4 | 33.79 | 6.36 |
| C | 1 | D | 7 | No intersect | No intersect |
| C | 1 | D | 6 | 133.07 | 2.19 |
| C | 1 | D | 5 | 61.44 | 3.98 |
| C | 1 | D | 4 | 39.32 | 5.88 |
| C | 2 | E | 7 | 76.89 | 6.91 |
| C | 2 | E | 6 | 49.17 | 7.76 |
| C | 2 | E | 5 | 35.83 | 8.16 |
| C | 2 | E | 4 | 27.90 | 8.40 |
| C | 2 | D | 7 | 149.21 | 4.71 |
| C | 2 | D | 6 | 66.22 | 7.24 |
| C | 2 | D | 5 | 42.09 | 7.97 |
| C | 2 | D | 4 | 30.48 | 8.33 |
| C | 3 | E | 7 | 51.45 | 10.50 |
| C | 3 | E | 6 | 37.49 | 10.16 |
| C | 3 | E | 5 | 29.28 | 9.96 |
| C | 3 | E | 4 | 23.82 | 9.82 |
| C | 3 | D | 7 | 70.12 | 10.95 |
| C | 3 | D | 6 | 44.32 | 10.32 |
| C | 3 | D | 5 | 32.13 | 10.03 |
| C | 3 | D | 4 | 24.96 | 9.86 |

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| REVISIONS | | | |
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| UNLESS OTHERWISE SPECIFIED | | APPROVALS | DATE | DESCRIPTION | |
|---|--|-----------|--------------------|---|--------------|
| DIMENSIONS ARE IN INCHES TOLERANCES FRACTIONS ±1/16 DECIMAL ±0.5 ANGLES ±0.05 ±0.005 ±0.0010 | DRAWN BY: K. DAVIS CHECKED BY: S. RIEGER DWG RELEASE LEVEL: RELEASED | 08/20/03 | | 4 x 2 REAR FRAME | |
| | | 05/04/04 | | BILLET 4 LINK | |
| | | RELEASED | | Chris Alston's CHASSISWORKS INC. 8661 YOUNGER CREEK DRIVE SACRAMENTO, CA 95828 (916) 388-0288 FAX 388-0295 | |
| FINISH NONE | PART NO. | | 7153 | | PART REV. |
| MATERIAL ASSEMBLY | SCALE: 1:16 | | DWG: 927153 REV: 0 | | SHEET 1 OF 1 |