Strange Engineering
8300 North Austin Avenue · Morton Grove IL 60053 · 847-663-1701 · Fax 847-663-1702 · www.strangeengineering.net

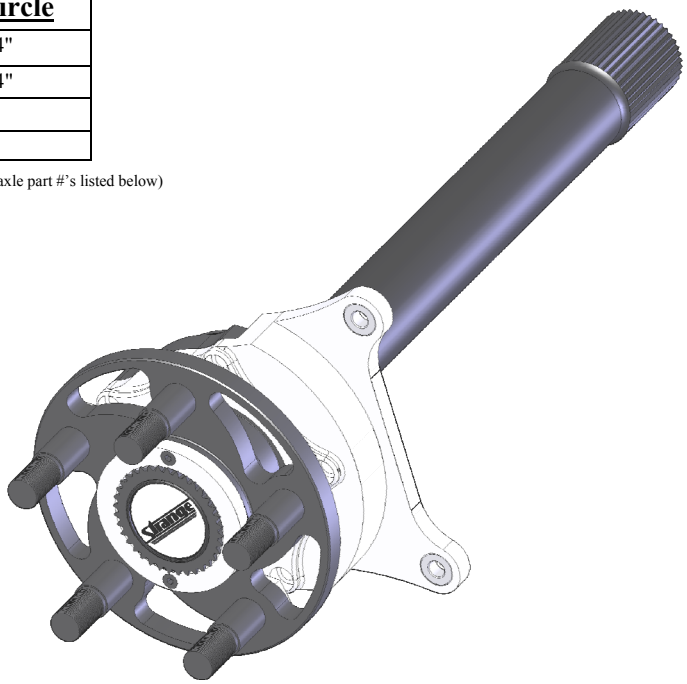
Installation instructions for P1020 Strange Two Piece Axle Kits

BEFORE YOU BEGIN INSTALLATION: Strange Engineering Two Piece Axle kits and brakes are designed for **DRAG RACING ONLY!** The basic guidelines for welding housing ends to the housing tube are covered; however, a professional and qualified chassis shop should perform the welding to ensure that the alignment of the housing is correct and the integrity of the welds is sufficient. In addition, assembly should be performed by a professional & qualified mechanic. Read these instructions thoroughly and save for future reference. If after reading these installation instructions, you have any questions or comments, please do not hesitate to call us.

2-PIECE AXLE KIT BREAKDOWN:

Option #	Brake Type	[1]Axle Length	Bolt Circle
WJF4C	Carbon	-	4-3/4"
WJF4S	Steel	-	4-3/4"
WJF5C	Carbon	-	5"
WJF5S	Steel	-	5"

[1] Axle selection is dependant upon application and is to be determined when ordering. (Corresponding axle part #'s listed below)



AXLE SHAFT OPTIONS:

Option #	Description:	Axle Length:
VZ123	40/45 Spline 2-Piece Axle	12.30"
VZ126	40/45 Spline 2-Piece Axle	12.72"
VZ132	40/45 Spline 2-Piece Axle	13.15"
VZ133	40/45 Spline 2-Piece Axle	13.41"
VZ135	40/45 Spline 2-Piece Axle	13.67"
VZ138	40/45 Spline 2-Piece Axle	13.90"
VZ142	40/45 Spline 2-Piece Axle	14.25"
VZ146	40/45 Spline 2-Piece Axle	14.75"
VZ150	40/45 Spline 2-Piece Axle	14.97"
VZ153	40/45 Spline 2-Piece Axle	15.30"
VZ155	40/45 Spline 2-Piece Axle	15.67"
VZ162	40/45 Spline 2-Piece Axle	16.10"
VZ163	40/45 Spline 2-Piece Axle	16.35"
VZ165	40/45 Spline 2-Piece Axle	16.62"
VZ168	40/45 Spline 2-Piece Axle	16.85"
VZ172	40/45 Spline 2-Piece Axle	17.25"
VZ176	40/45 Spline 2-Piece Axle	17.70"
VZ180	40/45 Spline 2-Piece Axle	17.91"
VZ203	40/45 Spline 2-Piece Axle	20.38"

BEARING OPTIONS:

Option #	Description
WJMG	McGill spherical double row roller bearing
WJBB	Low Friction Ball Bearing

OPTIONAL INSTALLATION TOOLS:

Option #	Description
WJ11	Axle nut wrench
WJ13	40 Spline Axle Vice Holder

Advantages/Benefits Include:

High-Misalignment Double Row Spherical Bearing and Aluminum Cartridge resists binding and prevents HP Loss

Gun-Drilled 2-Piece Axle is lighter and stronger than traditional one piece axles

Axle step captivates the axle bearing eliminating the need for a wedding ring

Reduced wheel deflection

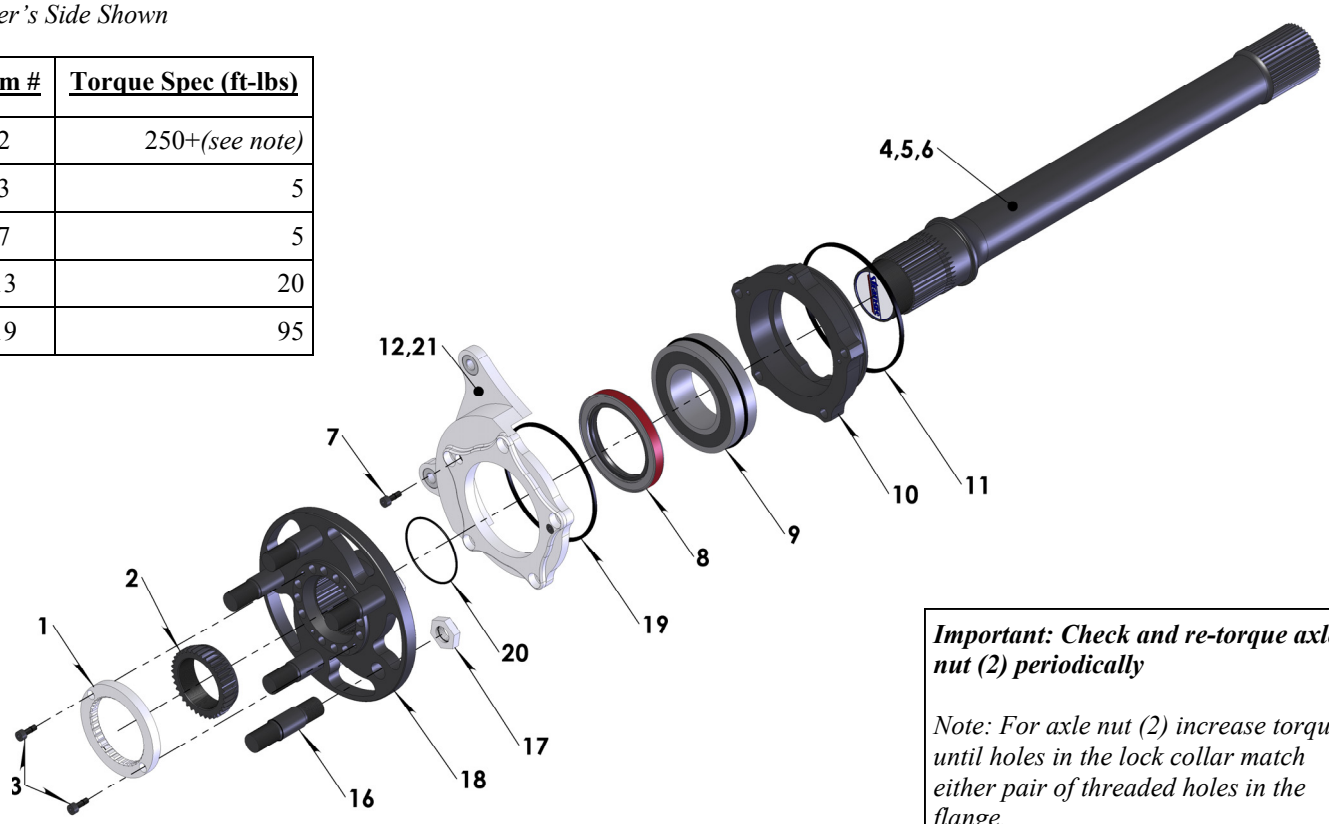
KIT COMPONENTS:

Item#	Part#	Qty.	Description
1	WJ08	2	Lock Collar
2	WJ04	2	2-Piece Axle Nut
3	WJ10	4	10-32 x 1/2" SHCS Bolt
4	-	2	40/45 Spline Gun-Drilled Axle (length to depend on application)
5	WJ02	2	1" Freeze Plug
6	A1RS	2	Strange Engineering Aluminum Decal
7	WJ12	4	10-24 x 5/8" SHCS Bolt
8	WJ01	2	Oil Seal
9	WJ00	2	McGill® High-Misalignment Bearing
Not Shown	WHBB	2	Low Friction Ball Bearing
10	WJ027	2	Bearing Cartridge
11	WJ028	2	-154 O-Ring (installed in WJ027)
12	B1301E	4	3/8-20 Press Nut
13	WJ09	10	5/6"-24 x 1-1/4" SHCS Bolt
14	L5500SBB	2	Strange Housing End
15	Z0206D01[2]	2	Strange Housing End w/ added offset
Not Shown	A1027D	10	5/8"-18 Lug Nut
Not Shown	A1027F	10	0.250" Aluminum Anti-Marring Spacer
16	A1037AM	10	5/8"-18 x 2.575" Wheel Stud
17	A1037D	10	5/8"-18 Thin Stover Jam Nut
18	WJ023	1	L.H. Axle Flange for 4-3/4" B.C. (WJF4C & WJF4S)
Not Shown	WJ029	1	L.H. Axle Flange for 5" B.C. (WJF5C & WJF5S)
Not Shown	WJ024	1	R.H. Axle Flange for 4-3/4" B.C. (WJF4C & WJF4S)
Not Shown	WJ030	1	R.H. Axle Flange for a 5" B.C. (WJF5C & WJF5S)
19	WJ036	2	-153 O-Ring (installed in caliper bracket)
20	S5000O	2	-033 O-Ring
21	WJ026	2	Ultra Carbon Caliper Bracket for 2-Piece Axle (WJF4C & WJF5C)
Not Shown	WJ032	2	Steel brake mounting caliper (WJF4S & WJF5S)

[2] To be used when replacing an existing housing end. To take the place of L5500SBB and to be determined when ordering

Figure 2: ***WJF4C Sub-Assembly***
Driver's Side Shown

Item #	Torque Spec (ft-lbs)
2	250+*(see note)*
3	5
7	5
13	20
19	95



Important: Check and re-torque axle nut (2) periodically

Note: For axle nut (2) increase torque until holes in the lock collar match either pair of threaded holes in the flange.

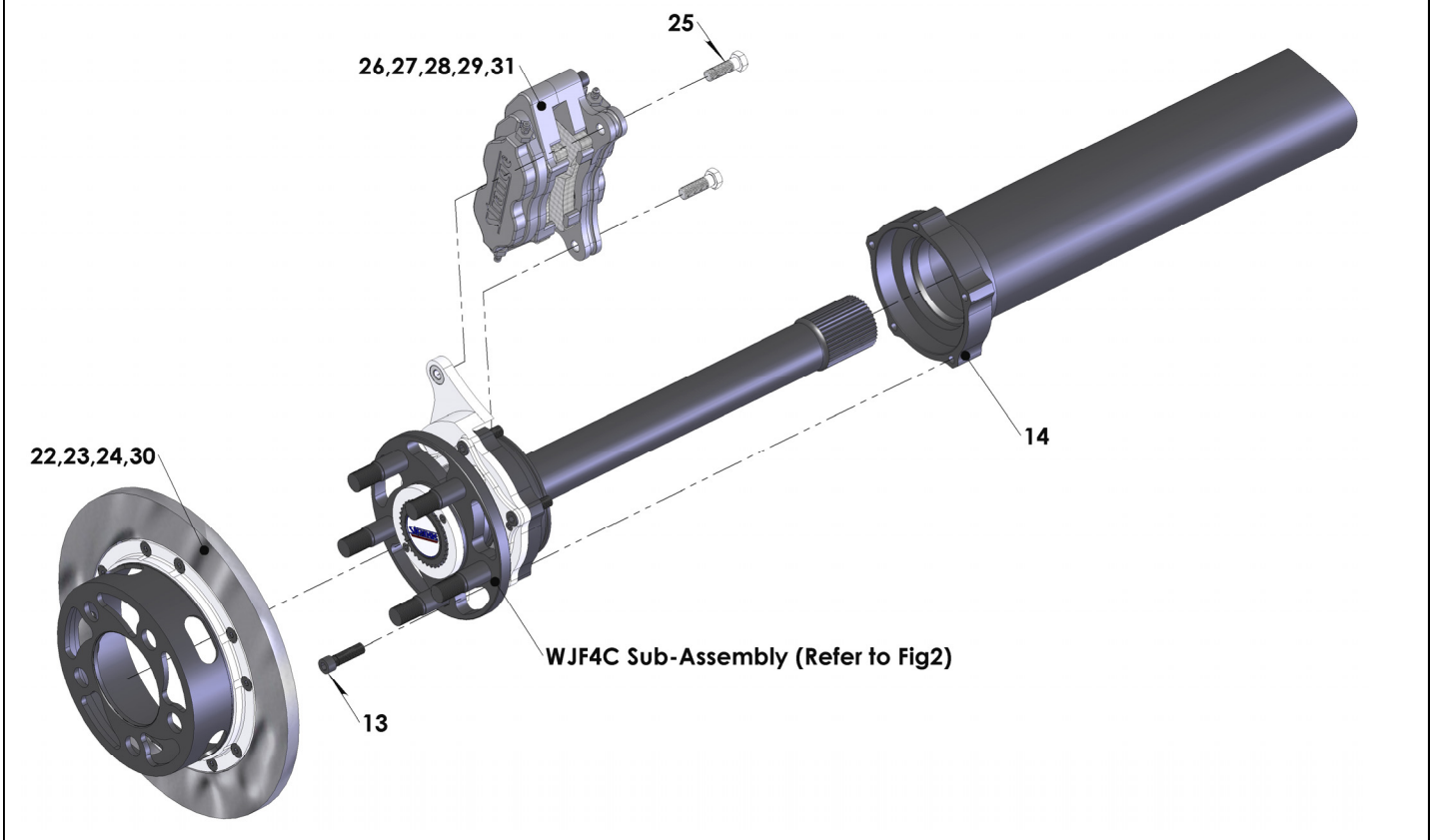
COMPONENTS INCLUDED IN C18104NBUC & C18105NBUC (carbon brake) KITS:

Item#	Part#	Qty.	Description
22	C1700D	20	1/4-20 x 1/2" FHSCS
23	C1700H	2	11" Carbon Rotor Retaining Ring
24	C1790	2	11" Carbon Rotor
25	B5000Z	4	3/8-24 x 1.187" Caliper Mounting Bolt
26	B5042	2	4 Piston Brake Caliper (w/ 2 pc. insulated pistons)
27	L4050H1	2	Slotted (directional) 4-Piston Carbon Pad
28	L4050H2	2	Slotted (directional) 4-Piston Carbon Pad
29	P2316	2	1/8" NPT x #3 AN Fitting
Not Shown	C1700B	1	R.H. carbon rotor adapter for use with 4-3/4" B.C. (C18104NBUC)
Not Shown	C1700F	1	R.H. carbon rotor adapter for use with 5" B.C. (C18105NBUC)
30	C1700C	1	L.H. carbon rotor adapter for use with 4-3/4" B.C. (C18104NBUC)
Not Shown	C1700G	1	L.H. carbon rotor adapter for use with 5" B.C. (C18105NBUC)
31	S3402L	4	Flanged bushing

COMPONENTS INCLUDED IN B1711NBM (pro race steel brake) KIT:

Item#	Part#	Qty.	Description
Not shown	B2792	1	HD/MD R.H. Steel Rotor
Not shown	B2793	1	HD/MD L.H. Steel Rotor
Not shown	B5000Y	4	3/8"-24 x 1.125" HHCS Caliper Bolt
Not shown	B1301J	4	3/8 I.D. Flat Caliper Washer
Not shown	B1301H	16	3/8" I.D. x 0.025" Thick Caliper Shim
Not shown	B5020	4	4-Piston Metallic Pad
Not shown	B5002	1	R.H. 4-Piston Caliper
Not shown	B5004	1	L.H. 4-Piston Caliper
Not shown	P2316	2	1/8" NPT x #3AN Fitting (installed in B5002/B5004)

Figure 3: ***WJF4C with C18104NBUC***
Driver's Side Shown



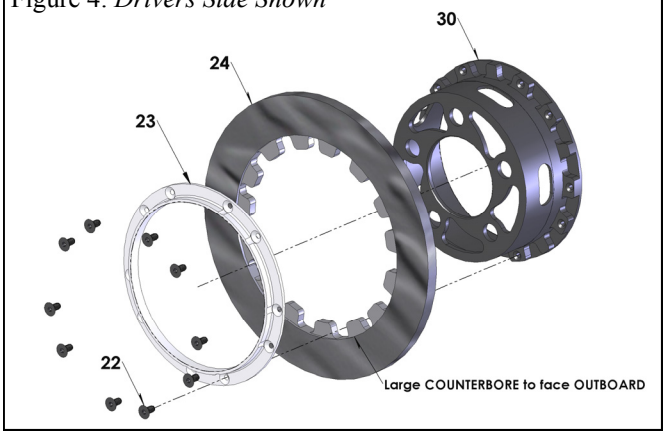
INSTALLATION INSTRUCTIONS: These instructions apply to all 2-Piece Axle Kits, however, figures 2 and 3 specifically cover the WJF4C kit with C18104NBUC (ultra carbon brakes).
Note: All axle kits are shipped fully assembled as shown in figure 3. Refer to figure 2 for sub-assembly if service is required.

1.) Slide the sub-assembly into the axle housing, ensuring that the bearing cartridge (10) lines up with the housing end.
2.) Turn the axle flange to allow for the five 5/16"-24 x 1.25" bolts (13) to be threaded through the sub-assembly and into the housing end . Torque to 20 ft-lbs

FOR 2-PIECE AXLE KITS USING CARBON BRAKES:

3a.) Slide the rotor assembly (22,23,24,30) over the wheel studs (16) and axle flange (18), ensuring that the rotor adapter (30) sits flat on the face of the axle flange. Rotors come preassembled from Strange Engineering. However, if you ever need to disassemble the rotor, reassemble it by placing the rotor (24) between the retaining ring (23), and the adapter (30). Secure using the 1/4"-20 x 1/2" flat head socket bolts (22) and torque to 15-20 ft-lbs. **Re-torque before every event.**
Note: During re-assembly of rotor ensure that the large counterbore on the 11" rotor (24) faces **OUTBOARD**; otherwise the retainer (23) will not fully seat in the rotor (24) and **FAILURE** *will* occur.
-Please read B5046 instruction sheet for complete Brake Caliper instructions.

Figure 4: *Drivers Side Shown*

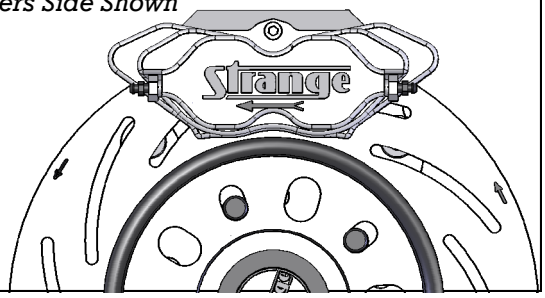


4a.) Attach caliper (26) using 3/8"-24 bolts (25). Torque the caliper mounting bolts (25) to 35 ft-lbs.
5a.) Connect the brake lines to the calipers. Calipers are tapped to 1/8"-27 NPT and supplied with –3AN fittings. Use proper adapters to connect them to the existing lines or use new –3AN braided steel line (teflon lined). Bleed the calipers with DOT 4 or DOT 5.1 brake fluid **ONLY**.

Note: After the initial installation of this kit, ensure that there is adequate clearance between all braking and chassis components by moving the suspension all the way up and down throughout its travel. Additionally, make sure the the brake lines are not subject to binding or kinking. Operate the vehicle in a cautious manner until you determine that the brakes are functioning properly. Check and re-torque all bolts before every event.
Note: Rear Carbon brakes perform best with caliper pressure from 1,100-1,200 psi.
Note: Pads should be replaced when thickness equals 0.200". Replace rotors when tickness equals 0.300" or less. Rotors wear concave and pads wear convex; therefore, measure rotor thickness in the middle of the rotor and pad thickness in the area where there are no pistions.
Note: Keep Carbon away from all chemicals. If contamination occurs, the carbon component must be baked for three hours @ 500º F-(**Bake Carbon ONLY!** REMOVE ALUMINUM HAT & HARDWARE **BEFORE** BAKING)- If badly contaminated an odor will occur.
Note: The HOTTER the rotors become, the MORE EFFECTIVE braking becomes. Carbon brakes stop you vehicle far better at the "top end" and will not "hold" as well at the starting line, compared to steel brakes. We recommend that when you first "tow" your vehicle to the starting line, you apply the brakes several time to get the "feel" of carbon at low speeds. After you become comfortable with the vehicle at "pit area" speeds, you may want to "drag" the brakes to create rotor and pad heat to better hold the vehicle at the starting line. We recommend a few 1/2 or 3/4 passes, so as to become aware of how your carbon brakes perform at higher M.P.H. Remember, carbon works better at higher temperatures. The longer the brakes are applied the more aggressive braking will become.

FOR 2-PIECE AXLE KITS USING STEEL BRAKES:

FIGURE 5: *Drivers Side Shown*



3b) Slide the rotor over the wheel studs and axle flange ensuring that the rotor sits flush with the face of the axle flange.
Note: Slotted rotors mount with the arrow pointing in the direction of normal rotation. (See figure 5)
-Please read B1855 instruction sheet for complete caliper instructions.
4b) Attach the caliper with the arrow facing in the direction of normal rotor rotation (see figure 5) using the 3/8"-24 caliper bolts and 1/16" thick flat washers. Use 0.025" thick caliper shims to center the caliper over the rotor, making sure the pads contact the rotor evenly. The caliper bolt should be fully engaged in the press nut. If however, the bolt is over engaged, use any remaining shims under the head of the bolt to prevent it from running into the rotor.
Note: Torque caliper mounting bolts to 35 ft-lbs.
5b) Connect the brake lines to the calipers. Calipers are tapped to 1/8"-27 NPT and supplied with –3AN fittings. Use proper adaptors to connect them to the existing lines or use new –3AN braided steel lines (teflon lined). Bleed the calipers with DOT 4 or DOT 5.1 brake fluid **ONLY**.
6b) A proper break in procedure is required to avoid brake fade and uneven rotor deposits from the pads. It consists of 8-10 brake applications increasing in harshness while allowing the brakes to cool slightly in between; do not keep the brakes applied between stops. After the last stop the brakes should be allowed to cool completely.

Note: After initial installation of the kit, ensure that there is adequate clearance between all braking and chassis components by fully cycling the suspension. Additionally, make sure that the brakes lines are not interfering with the wheel travel, or subject to binding or kinking. Operate the vehicle in a cautious manner until you determine that the brakes are functioning properly. Routinely check and re-torque all bolts.

TO REMOVE AXLE SUB-ASSEMBLY FROM HOUSING:

1. Unscrew the 5/6"-24 x 1-1/4" bolts (13)
2. Rotate the bearing cartridge (10) to misalign the points of the housing end (14) and the bearing cartridge (10).
3. Evenly tap on all five points of the bearing cartridge (10) to pull it out of the housing end (14).

TO TIGHTEN THE AXLE NUT USING OPTIONAL TOOLS:

1. Securely locate the axle holder (WJ13) in a vice and insert 2-piece axle sub assembly.
2. Using a 3/4" drive wrench and optional 36 spline 3/4" wrench head (WJ11), tighten the axle nut. Torque to 250 ft-lbs.
Note: Torque the axle nut past 250 ft-lbs, until the two sets of holes in the lock collar line up with either pair of threaded holes in the axle flange.
3. Secure the lock collar using the 10-32 x 1/2" bolts (3). Torque to 5 ft-lbs.

Figure 6:
WJF4C Sub-Assembly Shown

Note: Re-Torque axle nut to 250 ft-lbs periodically