CHOPPER BUILDERS HANDBOOK

GENERAL NOTES

1. THESE PLANS, DRAWINGS, DETAILS AND ASSEMBLIES ARE INTENDED TO BE USED BY PROFESSIONAL FABRICATORS WHO ARE WELL SKILLED IN THEIR TRADES. BUILDING CUSTOM PARTS FOR MOTORCYCLES IS A VERY DANGEROUS UNDERTAKING AND THE END USER OF THESE DOCUMENTS ASSUMES FULL RESPONSIBILITY AND LIABILITY FOR THE PRODUCTS THAT ARE PRODUCED AS THE RESULT OF USING THESE DRAWINGS AND THE MATERIALS AND COMPONENT SPECIFICATIONS CONTAINED HEREIN. THE USER SHALL BE AWARE HOWEVER THAT SEVERAL DOZEN FRONTEND ASSEMBLIES HAVE BEEN FABRICATED USING THE BASIC DESIGN AND SPECIFICATIONS SHOWN HEREIN OVER THE PAST THIRTY YEARS AND NO COMPONENT FAILURES HAVE EVER BEEN REPORTED.

2. MATERIALS USED THROUGHOUT SHALL BE 1018–1020 COLD ROLLED STEEL. UNDER NO CIRCUMSTANCES SHALL HIGH–STRENGTH STEEL SUCH AS CHROMOLY OR STAINLESS STEELS BE USED. IF THE PARTS ARE TO BE PLATED, NICKLE IS PREFERRED OVER CHROME. IF PLATING IS TO BE USED VERIFY CLEARANCES REQUIRED FOR 'FIT' COMPONENTS WITH THE PLATER AND THE MACHINIST. A SPRINGER FORK ASSEMBLY IS DESIGNED TO BE SOMEWHAT FLEXIBLE AND AS A RESULT NICKLE PLATE AND SILVER–BRAZED CONNECTIONS WILL LAST FAR LONGER THAN CHROME OR CONVENTIONAL WELDS. WHERE WELDING IS USED IT SHOULD BE THE TIG METHOD WITH MINIMAL HEAT.

3. THE FORK DESIGN SHOWN HEREIN IS INTENDED TO BE USED ON LIGHT WEIGHT CHOPPERS WITH A TOTAL RUNNING WEIGHT, INCLUDING DRIVER, OF LESS THAN 650 POUNDS.

4. THE PLANS ARE INTENDED TO BE USED ON FORK ASSEMBLIES HAVING A MAXIMUM EXTENSION OVER STOCK SPRINGERS OF 12–INCHES. IF THE BUILDER EXCEEDS THIS LIMIT THEY DO SO AT THEIR OWN RISK.

5. THE MAJORITY OF PART NUMBERS SHOWN IN THE DRAWINGS ARE FOR PRODUCTS MADE OR SOLD BY THE 45–RESTORATION COMPANY, J&P CYCLES, PAUGHCO AND McMASTER–CARR. ALMOST ALL OF THE PARTS ARE COMMONLY AVAILABLE FROM A VERY WIDE VARITY OF SOURCES INCLUDING THE BETTER STOCKED LOCAL HARDWARE STORES.

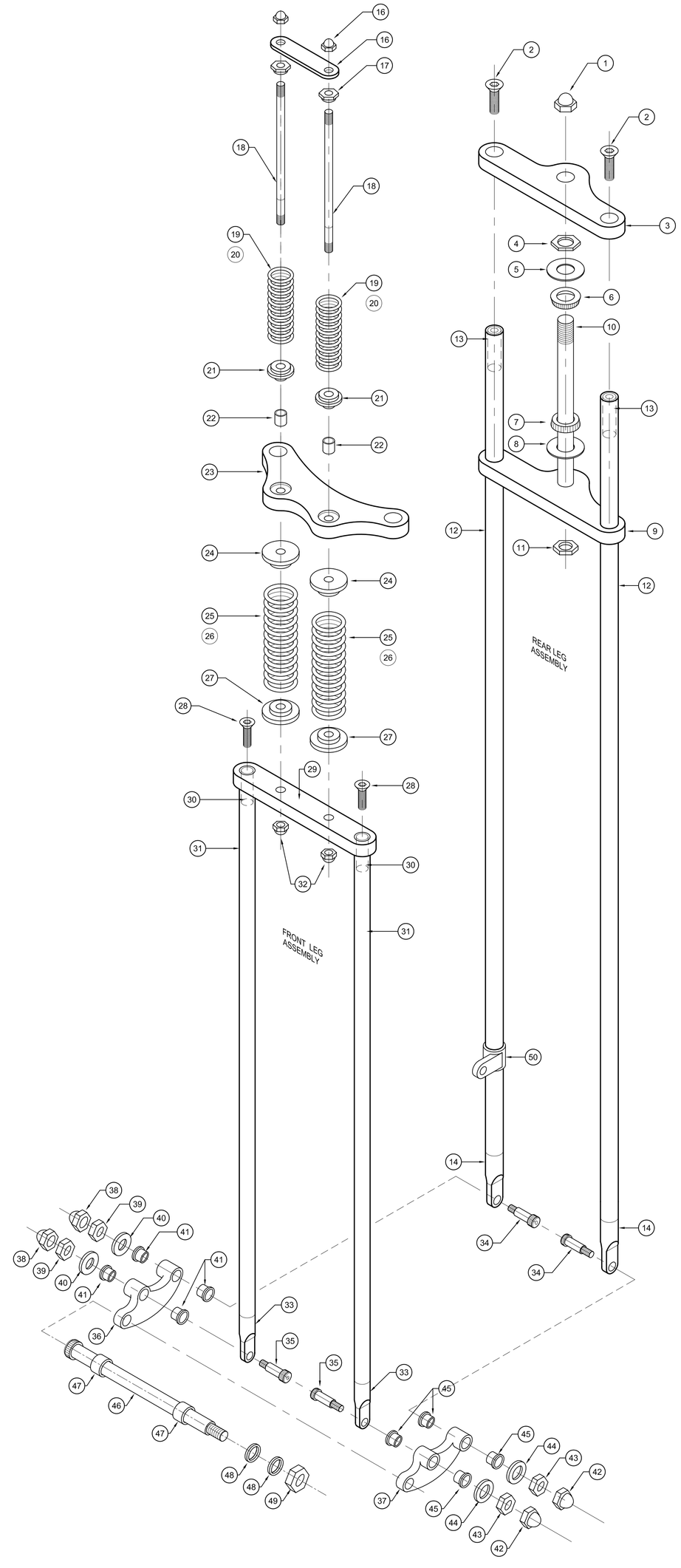
6. SINCE IT IS LIKELY THAT THE FABRICATOR WILL ASSEMBLE THE FORKS USING BOTH CUSTOM–MADE AND STORE–BOUGHT COMPONENTS WE HAVE NOT PROVIDED DIMENSIONS THAT INCLUDE THE USUAL TOLERANCES MOST MACHINISTS ARE USED TO WORKING WITH.
IT IS STRONGLY SUGGESTED THAT YOU PROVIDE YOUR MACHINISTS WITH ALL OF YOUR STORE–BOUGHT PARTS SO THAT THEY CAN HAVE HANDS–ON ACCESS TO THE COMPONENTS AND DETERMINE THE 'REAL' DIMENSIONS AND FIT OF THE FINAL SELECTED BITS AND PIECES.

7. TUBING DIMENSIONS CAN VARY SIGNIFICANTLY SO VERIFY ALL OUT–SIDE AND INSIDE TUBE MEASUREMENTS AFTER THE MILL–SCALE IS REMOVED PRIOR TO DOING ANY MACHINE OPERATIONS.

8. IT IS CRITICALLY IMPORTANT THAT YOU HAVE A HUB AND ROTOR ASSEMBLY IN HAND PRIOR TO LAYING OUT YOUR DESIGN SO THAT YOU CAN VERIFY THAT THE FORK ASSEMBLY HAS THE PROPER AMOUNT OF CLEARANCE BETWEEN THE ROTOR ATTACHMENT STUDS AND THE INSIDE BOLT HEADS AT THE ROCKER CONNECTIONS.

9. THIS PARTICULAR FORK DESIGN IS RELATIVELY NARROW AND HAS MINIMAL OFFSET SO THE USER SHOULD VERIFY THAT THE UPPER TREE WILL CLEAR THE TANK ON AN EXISTING BIKE. FOR NEW BIKES IT IS SUGGESTED THAT THE FORK STOPS BE SET TO 35 DEGREES ON EITHER SIDE AS OPPOSED TO THE 45 DEGREES WHICH IS USED ON MOST TELESCOPIC FRONT–ENDS.

10. THE ORIGINAL DESIGN FOR THIS PLAN WAS DEVELOPED IN THE LATE SIXTIES AND REFINED UP THROUGH 1974 BUT IT WAS A VERY NARROW SPRINGER, INTENDED TO RUN A BRAKELESS HUB. SINCE MANY STATES TODAY REQUIRE A FRONT BRAKE THIS PARTICULAR PLAN WAS MODIFIED TO FIT A TYPICAL WIDE–GLIDE HUB/BRAKE ASSEMBLY BUT IT IS STILL A RELATIVELY NARROW DESIGN. FOR REFERENCE THE INDUSTRY STANDARD FOR FORK WIDTHS IS:
WIDE–GLIDE – 9.875" CENTER TO CENTER
MID–GLIDE – 8.875" CENTER TO CENTER
NARROW–GLIDE – 7" CENTER TO CENTER



SPRINGER PARTS DIAGRAM - EXPLODED VIEW

THIS ILLUSTRATION DEPICTS A TYPICAL SPRINGER ASSEMBLY AND SPECIFIC PARTS MAY VARY FROM ONE MAKER TO THE NEXT.

PARTS LIST

1	STEM NUT	COLONY CHROME PLATED STEM NUT. 38-77 BIG TWIN, J&P No. 220-111	
2	REAR LEG ANCHOR BOLTS	5/8"x1-1/4" FLAT HEAD SOCKET CAP SCREWS	
3	TOP TREE	CUSTOM MADE - 3/4" THICK CRS	
4	BEARING ADJUSTER NUT	ALTERNATE FOR No. X BELOW, J&P No. 2300085 W/ 2300055 LOCKTAB	
5	DUST COVER	COMBINATION FORK STEM BEARING ADJUSTER NUT/DUST COVER.	J&P No. 230-769 (OEM 48330-48A)
6	UPPER STEM BEARING	TIMKEN	TIMKEN No. L44610 CUP, No. L44643 CONE
7	LOWER STEM BEARING	TIMKEN	TIMKEN No. L44610 CUP, No. L44643 CONE
8	LOWER DUST COVER	J&P PART No. 2300070	
9	BOTTOM TREE	CUSTOM MADE - 3/4" THICK CRS	
10	STEERING STEM	CUSTOM MADE - 1" DIA. 1018 CRS	
11	STEERING STEM JAM NUT	STD. 1"x8 JAM NUT ALTERNATE IF THREADED STEM USED.	
12	REAR (RIGID) FORK LEGS	1.125" DIA. DOM TUBING. SEE SCHED. FOR WALL THICKNESS. LENGTH PER BUILDER.	
13	REAR FORK ANCHOR BOLT LUGS	CUSTOM MADE	
14	REAR FORK ROCKER MOUNT LUGS	CUSTOM MADE	
15	SPRING ROD CAP NUTS	STANDARD 3/8-16 CAP NUTS	
16	SPRING BRIDGE	CUSTOM MADE	
17	REBOUND SPRING RETAINERS	SPRING ROD RETAINERS - CAD, PLATED - 45 RESTORATION PARTS No.45647-30	
18	SPRING RODS	1/2" DIA. x 12" LONG SPRING RODS. 45 RESTORATION PARTS No. 45641-36	
19	REBOUND SPRINGS-OUTERS	45 RESTORATION PARTS No. 46055-30 (PARKERIZED) 46055-30C (CHROME)	
20	REBOUND SPRINGS-INNER (NOT SHOWN)	45 RESTORATION PARTS No. 46057-30 (PARKERIZED) 46057-30C (CHROME)	
21	REBOUND SPRING-LOWER RETAINER	CUSTOM MADE	
22	SPRING ROD BUSHINGS	.5"I.D.x.75"O.D.x.625" LONG SLEEVE BUSHING, SAE 841 BRONZE (OILITE)	McMASTER-CARR # 6391K222
23	SPRING PERCH/PLATE	CUSTOM MADE	
24	COMPRESSION SPRING-UPPER RETAINER	CUSTOM MADE	
25	COMPRESSION SPRINGS-OUTERS	45 RESTORATION PARTS No. 46056-37 (PARKERIZED) 46056-37C (CHROME)	
26	COMPRESSION SPRINGS-INNERS (NOT SHOWN)	45 RESTORATION PARTS No. 46056-36 (PARKERIZED) 46056-36C (CHROME)	
27	COMPRESSION SPRINGS-LOWER RETAINER	CUSTOM MADE	
28	FRONT LEG ANCHOR BOLTS	3/8-16 x 1-1/4" FLAT HEAD SOCKET CAP SCREWS, McMASTER-CARR No.	
29	SPRING PEDESTAL BAR	CUSTOM MADE	
30	FRONT LEG ANCHOR BOLT LUGS	CUSTOM MADE	
31	FRONT (SPRUNG) FORK LEGS	1.0" DIA. DOM TUBING. SEE SCHED. FOR WALL THICKNESS. LENGTH PER BUILDER.	
32	SPRING ROD LOWER RETAINING CAP NUTS	STD. 3/8-16 CAP NUTS	
33	FRONT FORK ROCKER MOUNT LUGS	CUSTOM MADE	
34	REAR ROCKER PIVOT STUDS	5/8" SHAFT DIA. x 1" LONG STEEL SHOULDER BOLTS W/ 3/8-16 THREADS	
35	FRONT ROCKER PIVOT STUDS	5/8" SHAFT DIA. x 1" LONG STEEL SHOULDER BOLTS W/ 3/8-16 THREADS	
36	RIGHT ROCKER	CUSTOM MADE	
37	LEFT ROCKER	CUSTOM MADE	
38	RIGHT ROCKER CAP NUT	1/2-13 DEEP HEX CAP NUT	McMASTER-CARR No. 94922A50
39	RIGHT ROCKER JAM NUT	1/2-13 JAM NUT	McMASTER-CARR No. 6557A130
40	RIGHT ROCKER WASHER		
41	RIGHT ROCKER BUSHINGS	.625"I.D.x.75"O.D.x.625" LONG W/ .125x1" FLANGE, ALLOY 932 (SAE 660) BRONZE	McMASTER-CARR No. 7815K36
42	LEFT ROCKER CAP NUT	1/2-13 DEEP HEX CAP NUT	McMASTER-CARR No. 94922A50
43	LEFT ROCKER JAM NUT	1/2-13 JAM NUT	McMASTER-CARR No. 6557A130
44	LEFT ROCKER WASHER		
45	LEFT ROCKER BUSHINGS	.625"I.D.x.75"O.D.x.625" LONG W/ .125x1" FLANGE, ALLOY 932 (SAE 660) BRONZE	McMASTER-CARR No. 7815K36
46	FRONT AXLE	PAUGHCO	PAUGHCO
47	FRONT AXLE WHEEL SPACERS	PAUGHCO	PAUGHCO
48	FRONT AXLE WASHERS	PAUGHCO	PAUGHCO
49	FRONT AXLE NUT	PAUGHCO	PAUGHCO
50	BRAKE ARM CLAMP	CUSTOM MADE	

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GARY W. WEISHAUPT

PERFORMANCE ENGINEERING
CHASSIS FABRICATION
FLOWBENCH TESTING
MACHINE WORK
RESTORATIONS

1490 RIVER PARK BLVD.
NAPA, CALIFORNIA 94559
Ph. 707–252–3427
Fax 707–252–3427
email: gww25@pacbell.net

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Project Title

CHOPPER BUILDERS HANDBOOK

SPRINGER FORKS

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Date	11–16–05
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Sheet Description

GENERAL NOTES AND PARTS SCHEDULE

Sheet No.

SF1.0