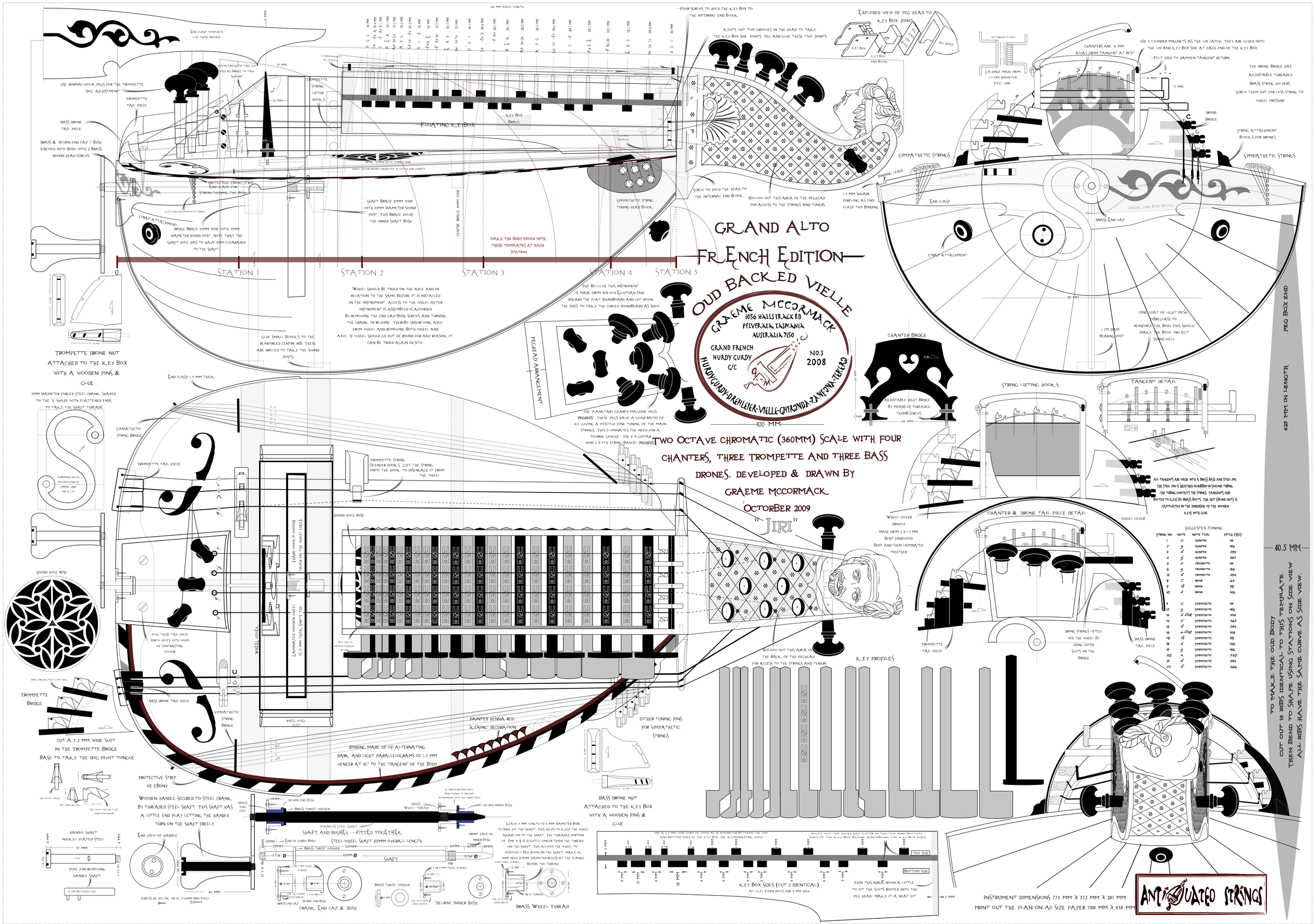
GRAND ALTO
FRENCH EDITION
OUD BACKED VIELLE
GRAEME MCCORMACK
1056 HALLS TRACK RD
PELVERATA, TASMANIA
AUSTRALIA 7150
GRAND FRENCH
HURDY GURDY
C/C
NO.3
2008
HURDYGURDY-DREHLEIER-VIELLE-GHIRONDA-ZAMFONA-TEKERO
TWO OCTAVE CHROMATIC (360MM) SCALE WITH FOUR CHANTERS, THREE TROMPETTE AND THREE BASS DRONES. DEVELOPED & DRAWN BY
GRAEME MCCORMACK
OCTOBER 2009
"JIRI"
ANTIQUATED STRINGS
625 MM IN LENGTH
PEG BOX END
40.5 MM
100 MM
360 MM SCALE LENGTH
FLOATING KEYBOX
KEY BOX BRACE
STATION 1
STATION 2
STATION 3
STATION 4
STATION 5
MAKE THE BODY MOULD WITH THESE TEMPLATES AT EACH STATION
SHAFT BRACE 20MM WIDE WITH 10MM DIAMETER SOUND POST. THIS BRACE HOLDS THE INNER SHAFT BUSH
BRIDGE BRACE 35MM WIDE WITH 10MM DIAMETER SOUND POST. NOTE THAT THE SHAFT HOLE HAS TO HAVE 2MM CLEARANCE TO THE SHAFT.
PROTECTIVE EBONY STRIP END CLASP FOR STRENGTHENING THE BODY
STRAP ATTACHMENT
SYMPATHETIC STRING TUNING HEAD BLOCK
WHEEL COVER MOUNT FADED OUT A LITTLE FOR CLARITY
CENTRE BRACE 10MM WIDE
TROMPETTE STRING LIFTER HOOKS
VIOLIN SYNTHETIC TAIL GUT USED AS BRIDGE TO TAIL SUPPORT
USE NORMAL VIOLA PEGS FOR THE TROMPETTE 'DOG' ADJUSTMENT
TROMPETTE TAIL PIECE
BASS DRONE TAIL PIECE
BRASS & DELRIN END CAP / BUSH SCREWED INTO BODY WITH 2 BRASS ROUND HEAD SCREWS
END CLASP TEMPLATE 2 OF THESE NEEDED
FOUR SCREWS TO HOLD THE KEY BOX TO THE INTERNAL END BLOCK
ROUTE OUT TWO GROOVES IN THE HEAD TO TAKE THE KEY BOX SIDE JOINTS. PEG AND GLUE THESE TWO JOINTS
SCREW TO HOLD THE HEAD TO THE INTERNAL END BLOCK
HOLLOW OUT THIS AREA OF THE PEGHEAD FOR ACCESS TO THE STRINGS AND TUNERS
1.5 MM SQUARE PURFLING AS END CLASP TOP BINDING
SYMPATHETIC STRINGS
BINDING LEDGE
END CLASP
BRASS END CAP
STRAP ATTACHMENT
LID HINGE MADE FROM 1.5 MM DIAMETER STEEL WIRE
CHANTERS ARE 6 MM AWAY FROM TANGENT AT REST
USE 4 CYLINDER MAGNETS AS THE LID LATCH. THEY ARE GLUED INTO THE LID AND KEY BOX SIDE AT EACH END OF THE KEY BOX
FELT PAD TO DAMPEN TANGENT RETURN
THE DRONE BRIDGE HAS ADJUSTABLE THREADED BRASS STRING HOLDERS. SCREW THEM OUT FOR LESS STRING TO WHEEL PRESSURE
DRONE BRIDGE
STRING ATTACHMENT BLOCKS FOR DRONES
ONE COAT OF LIGHT MESH FIBREGLASS TO REINFORCE THE BODY. THIS SHOULD MAKE THE BOWL PROJECT SOUND WELL
1 CM DIAM. BEARING POST
TROMPETTE DRONE NUT ATTACHED TO THE KEY BOX WITH A WOODEN PINS & GLUE
WHEEL SHOULD BE TRIED ON THE AXLE AND IN RELATION TO THE SAME BEFORE IT IS INSTALLED IN THE INSTRUMENT. ACCESS TO THE WHEEL AFTER INSTRUMENT IS ASSEMBLED IS AFFORDED BY REMOVING THE END CAP/BUSH SCREWS AND TURNING THE CRANK, IN REVERS. THEREBY UNSCREWING AXLE FROM WHEEL AND REMOVING BOTH WHEEL AND AXLE. IF WHEEL SHOULD GO OUT OF ROUND FOR ANY REASON, IT CAN BE TRIED AGAIN IN SITU.
GLUE SMALL BLOCKS TO THE REINFORCED CENTRE RIB. THESE ARE DRILLED TO TAKE THE SOUND POSTS
THE BELLY OF THIS INSTRUMENT IS MADE FROM AN OLD EGYPTIAN OUD. DISCARD THE FLAT SOUNDBOARD AND CUT DOWN THE SIDES TO TAKE THE CURVED SOUNDBOARD AS SHOW
PEGHEAD ARRANGEMENT
USE PLANETARY GEARED MACHINE PEGS 'PEGHEDS'. THESE PEGS HAVE A GEAR RATIO OF 4:1, GIVING A POSITIVE FINE TUNING OF THE MAIN STRINGS. THIS ELIMINATES THE NEED FOR A 'TOURNE GOUCHE'. USE 8 X GUITAR AND 2 X 5TH STRING BANJO 'PEGHEDS'
CHANTER BRIDGE
ADJUSTABLE HIGHT BRIDGE BY MEANS OF THREADED THUMB SCREWS
STRING LIFTING HOOKS
TANGENT DETAIL
ALL TANGENTS ARE MADE WITH A BRASS BASE AND STEEL PIN. THE STEEL PIN IS SEATED IN RUBBER OR SILICONE TUBING. THE TUBING CONTACTS THE STRINGS. TANGENTS ARE BOLTED TO KEYS BY BRASS BOLTS. THE NUT (BLIND NUT) IS CAPTIVATED IN THE UNDERSIDE OF THE WOODEN KEYS WITH GLUE
SUGGESTED TUNING
STRING NO. | NOTE | NOTE TYPE | PITCH (HZ)
1 | C | CHANTER | 131
2 | g | CHANTER | 196
3 | d' | CHANTER | 294
4 | g | CHANTER | 392
5 | C | TROMPETTE | 131
6 | g | TROMPETTE | 196
7 | d' | TROMPETTE | 294
8 | C | DRONE | 65
9 | G | DRONE | 98
10 | d | DRONE | 146
11 | C | SYMPATHETIC | 131
12 | g | SYMPATHETIC | 196
13 | b flat | SYMPATHETIC | 233
14 | c' | SYMPATHETIC | 262
15 | d' | SYMPATHETIC | 294
16 | e flat | SYMPATHETIC | 156
17 | G | SYMPATHETIC | 98
18 | d | SYMPATHETIC | 146
19 | g | SYMPATHETIC | 196
20 | a | SYMPATHETIC | 220
21 | d' | SYMPATHETIC | 294
22 | b' | SYMPATHETIC | 466
WHEEL COVER PROFILE MADE FROM 2 X 1.5 MM BENT HARDWOOD BENT AND THEN LAMINATED TOGETHER
CHANTER & DRONE TAIL PIECE DETAIL
TROMPETTE TAIL PIECE
DRONE STRINGS LIFTED OFF THE WHEEL BY USING OUTER SLOTS ON THE BRIDGE
BASS DRONE TAIL PIECE
HOLLOW OUT THIS AREA OF THE BACK OF THE PEGHEAD FOR ACCESS TO THE STRINGS AND TUNERS
KEY PROFILES
TO MAKE THE OUD BODY
CUT OUT 13 RIBS IDENTICAL TO THIS TEMPLATE
THEN BEND TO SHAPE USING STATIONS ON SIDE VIEW
ALL RIBS HAVE THE SAME CURVE AS SIDE VIEW.
INSTRUMENT DIMENSIONS 775 MM X 372 MM X 281 MM
PRINT OUT THE PLAN ON A0 SIZE PAPER 1188 MM X 838 MM
SYMPATHETIC STRING BRIDGE
TROMPETTE TAIL PIECE
TROMPETTE STRING SILENCER HOOKS. LIFT THE STRING ONTO THE HOOK, TO DISENGAGE IT FROM THE WHEEL
SOUND HOLE ROSE
PLUG THESE TAIL PIECE SCREW HOLES WITH WOOD OF CONTRASTING COLOUR
WHEEL COVER
LAMINATED WOODEN WHEEL 15 OF 3MM THICK (NOTE THE TAPER ON THE WHEEL EDGE)
FELT PAD TO DAMPEN TANGENT RETURN
BONE STRINGING PLATE 3 MM THICK
TROMPETTE BRIDGE
BASS DRONE TAIL PIECE
SYMPATHETIC STRING BRIDGE
WHEEL COVER CLASP
CUT A 3.2 MM WIDE SLOT IN THE TROMPETTE BRIDGE BASE TO TAKE THE DOG PIVOT TONGUE
PROTECTIVE STRIP OF EBONY
WOODEN HANDLE SECURED TO STEEL CRANK BY THREADED STEEL SHAFT. THIS SHAFT HAS A LITTLE END PLAY LETTING THE HANDLE TURN ON THE SHAFT FREELY.
BINDING MADE UP OF ALTERNATING DARK AND LIGHT PARALLELOGRAMS OF 1.5 MM VENEER AT 45° TO THE TANGENT OF THE BODY
PAINTED HENNA RED ROQING DECORATION
ZITHER TUNING PINS FOR SYMPATHETIC STRINGS
BASS DRONE NUT ATTACHED TO THE KEY BOX WITH A WOODEN PINS & GLUE
HANDLE SHAFT NICKEL PLATED STEEL
TOOL FOR REMOVING HANDLE SHAFT
END VIEW OF HANDLE
SCREWS 4G X 12 CSK, OR 4G X 16MM RND STEEL
STAINLESS STEEL SHAFT
SHAFT AND BUSHES FITTED TOGETHER
STEEL WHEEL SHAFT 205MM OVERALL LENGTH
DELRIN END BUSH
BRASS THRUST WASHER
BRASS END CAP
BRASS WHEEL THREAD
DELRIN INNER BUSH
END OF GURDY BODY
SHAFT
FRONT FACE OF INNER BUSH
LEAVE 5 MM LENGTH OF 6 MM DIAMETER BORE TO SNUG FIT THE SHAFT. THIS HELPS TO KEEP THE WHEEL SQUARE ON TO THE SHAFT. THE THREADED PORTION OF (M8 X 1) IS SLIGHTLY LONGER THAN THE THREAD ON THE SHAFT. THIS ALLOWS THE WHEEL TO POSITIVELY BED DOWN ON THE SHAFT. MAKE A 2MM DEEP X 8MM DIAMETER RECESS AT THE FLANGE BEFORE THE THREAD.
CRANK END CAP & BUSH
BRASS WHEEL THREAD
USE A 3.2 MM WIDE STRIP OF WOOD AS A SPACER FOR BETWEEN THE TOP AND BOTTOM SIDES OF THE KEY BOX. USE A CONTRASTING WOOD.
ROUTE OUT THE NOTCHES (ALL SLOTS) IN THE TOP AND BOTTOM SIDES OF THE KEY BOX BEFORE ASSEMBLING THE KEY BOX SIDES
TOP SIDE
BOTTOM SIDE
KEY BOX SIDES (CUT 2 IDENTICAL)
ALL KEY SIDER NOTCHES ARE 6 MM HIGH
THEN THIS AREA DOWN A LITTLE TO FIT THE SLOTS ROUTED INTO THE PEG HEAD. MAKE IT A NEAT FIT