	STANDARD FORM SF 11 Standard Mod Nomination Issue 1	Date :
		No. of sheets attached :

This standard form is used to nominate a modification or manufacturer's option to be included in the list of PFA approved Standard Mods which appears on the PFA website (<http://www.pfa.org.uk>).

1. AIRCRAFT

Aircraft Type(s)	Manufacturer's name and address
Europa Classic & XS	Europa Aircraft (2004) Ltd, Kirby Mills Industrial Estate, Kirbymoore, North Yorkshire, YO62 6NR

2. NOMINEE

Name	Peter Kember	Member No.	13704
Address	2 Steelbridge Cottages, Eridge Green, East Sussex, TN39JD		

3. MODIFICATIONS

Modification Description / Name	Reference No. (see Note)	Issue
"Tropical" Chin Intake	See attached	1

Note : The Reference number will be the manufacturer's option number or the PFA mod number as appropriate.

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TITLE : 'Tropical' Chin Intake

AIRCRAFT TYPE : (eg : Pitts S2A)	Europa XS	
Mod Type : (<i>Delete as required</i>)	New Build	Retro-fit

1. Introduction

1.1 Originally designed in 1999 for use on the first Europa 'Classic' to be fitted with a Rotax 912 ULS engine. Redesigned for Europa XS fitted with 912 ULS engine. Can be installed retrospectively but it is preferable for the modification to be installed during construction.

1.2 The standard Europa XS cowling design has been known to result in overheating when operating in high ambient temperatures and when aircraft is taxiing for extended periods of time. Although the XS duct design, serving the coolant radiation and oil cooler is efficient the intake has been designed more for ease of moulding than performance.

1.3 The modification is designed to expedite the passage of air into the duct by collecting ram air from behind the propeller. The principles involved are explained in "The Anatomy of the Aeroplane" by D.Stinton and in "Speed with Economy" by K.Paser. The original 'tropical' chin intake was PFA approved for use on Europa Classic 912S G-OPJK in January 1999 and subsequently adopted by others after testing. In over 400 hours the aircraft showed no signs of overheating despite continuous climbing to 7500 ft at MTW A in ambient temperatures of upto 35°C.

1.4 The tropical chin intake modification extends the standard intake forwards to line up with the front face of the cowling, on the trailing edge of the spinner. It removes the bluff rectangular shape of the standard XS opening and introduces smooth flowing curves behind a new sharp edged elliptical shaped opening.

2. Parts List

List any new manufactured or procured parts:

Qty	Part No.	Description	Source
1		350 mm x 550 mm soft aluminium 20 A WG	Hardware store
1		100 mm x 190 mm fibreboard 10 mm thick	Hardware store
1		Styrofoam offcuts for fairing in chin intake	Europa Aircraft
10		Aluminium pop rivts 3.2 mm dia x 10 mm long	Hardware store
1		Araldite 5 min epoxy Resin & hardener	Europa Aircraft
1	Davids PP100	Lightweight body filler	Automotive Parts
1	Ampeg	Resin and hardner	Europa Aircraft
1	Qcel	Microfiller	Europa Aircraft

List of related drawings / photos

Drawing No.	Title / Description	Issue
Tropical 1	Cutout template	
Tropical 2	General layout	

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3. Action

3.1 Cut from the 20 A WG aluminium the inner surface of the chin intake as per pattern A (Tropical 1). Curve the aluminium into the ellipse around the pattern B fibreboard former. Two pop rivets are used to join together the ends of the aluminium. Drill 3.2 mm holes at 15 mm intervals around the mouth of the intake, 10 mm in from the leading edge. This assists with the adhesion in due course of the bid layups. Temporarily fix the fibreboard former in place using a glue gun.

3.2 Insert the tube of aluminium into the rectangular intake of the lower cowling, bend the trailing edge as necessary to take up the rectangular shape of the 'old' intake and to provide a smooth transition to the duct beyond. Fix in position with 8 pop rivets and 5 minute Araldite. When cured scuff sand the outer surface of the aluminium tube and lay up wedges of Styrofoam as per pattern C on the upper (outside) surface of the intake using Ampreg and Q-ce1 micro mix. Use tapered fingers of Styrofoam to fair the lower (outside) surface of the intake into the cowling. Lay up 2 plies of bid over the intake extending 20 mm from the new intake onto the cowling. Cover with peel ply and leave to cure.

3.3 Scuff sand the area of the lay up and use PPIOO lightweight body filler ("Bondo") to fair in the new intake with the cowling. Trim off the leading edge of the intake as necessary and open up the trailing edge of the intake inside the cowling to enable the airflow smoothly to transition to the standard duct. Smooth the surface, prime and paint in the usual way. The leading edge of the intake can be protected with a 'U' section neoprene/rubber extrusion if required.

4. Flight Test and Special Inspections

4.1 The Inspector should conduct a functional check of the finished installation, to ensure that airflow through the duct is not impeded in any way.

4.2 Conduct ground taxiing and air tests to confirm that coolant and cylinder head temperatures stay within limits. The air test to be authorised under a PMR by PF A Inspector.

List of related analysis or test reports

Report No.	Title / Description	Issue
	"The Anatomy of the Aeroplane" by D.Stinton	
	"Speed with Economy" by K.Paser	

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5. Weight and Balance Effects

5.1 This modification is designed to be installed during the construction of the aircraft. There will be a small weight increase over the standard aircraft and because of the position at the front of the aircraft it is important therefore that the filling to produce a smooth transition surface is kept to the minimum. The increase in weight over the standard aircraft will be recorded during the weight and balance calculations prior to the grant of a permit to test.

5.2 Retrofitting of this modification is possible. **In** these circumstances the lower cowling should be weighed both before and after the installation of the modification and a new weight and balance calculation prepared for inspection by the PFA Inspector.

- *Amend weight and balance records by calculation to reflect the following changes :*

Weight Change	Moment arm	Moment Change
<i>0.5lb</i>	<i>-4.0in</i>	<i>-2.0</i>

6 Certification

Your PFA inspector should make the appropriate logbook entry for this modification

6. Applicant's Declaration

I Declare that the foregoing information is correct and I agree to abide by any conditions pertaining to this modification. I agree that this modification and all ideas contained within are the property of PFA (Ulair) Ltd and can be used in any way for the benefit of the PFA and it's members.

Signed _____ Applicant _____ Date _____

REV	Drawn By	Date	Description

Pattern "A" cut from 20 A WG soft Aluminium

Continue shape - Part 2

only part 1 is drawn (Part 2 is continuous and identical to part 1)

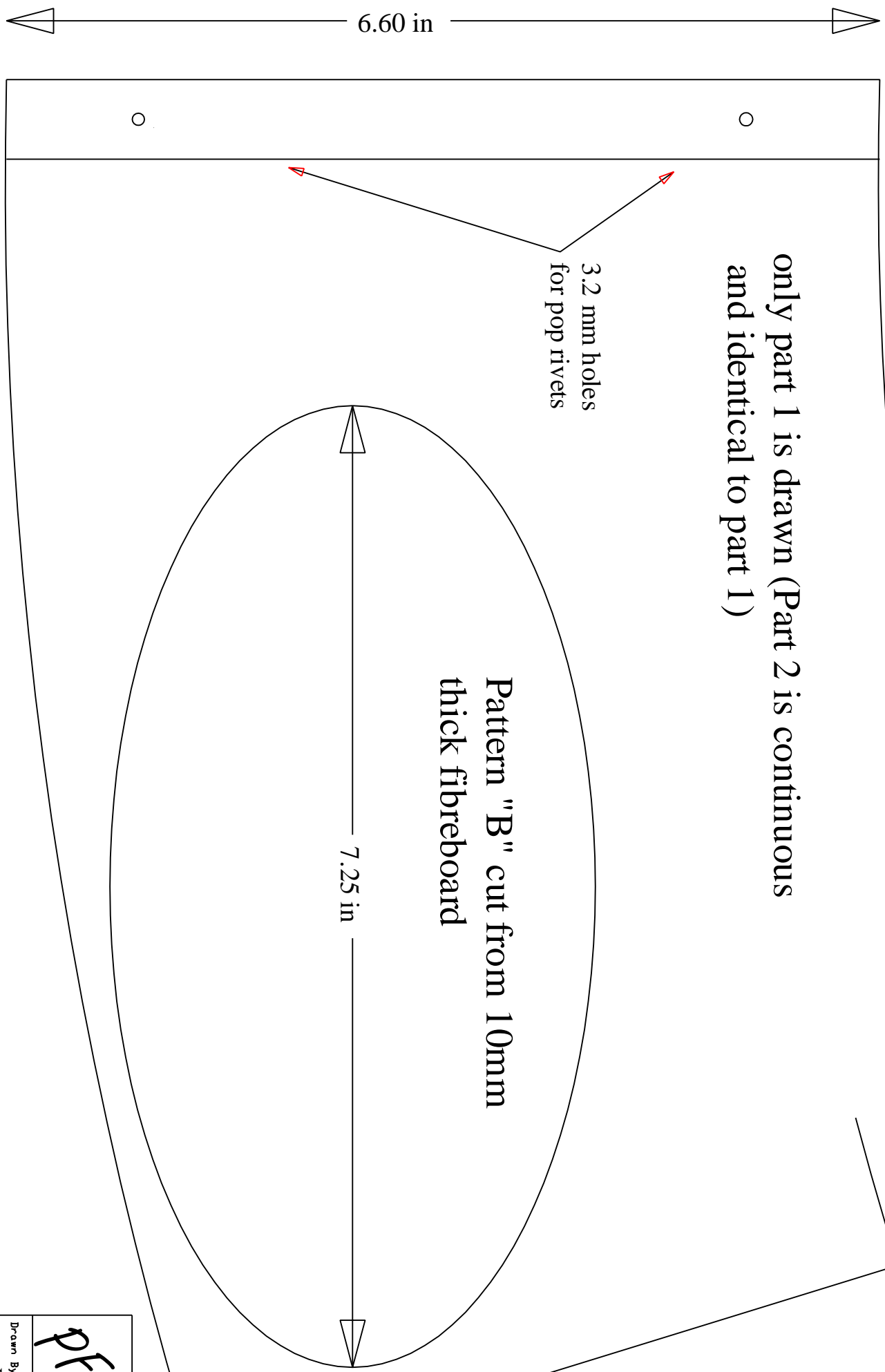
Pattern "B" cut from 10mm thick fibreboard

Pattern "C"
Styrofoam offcuts

3.2 mm holes for pop rivets

6.60 in

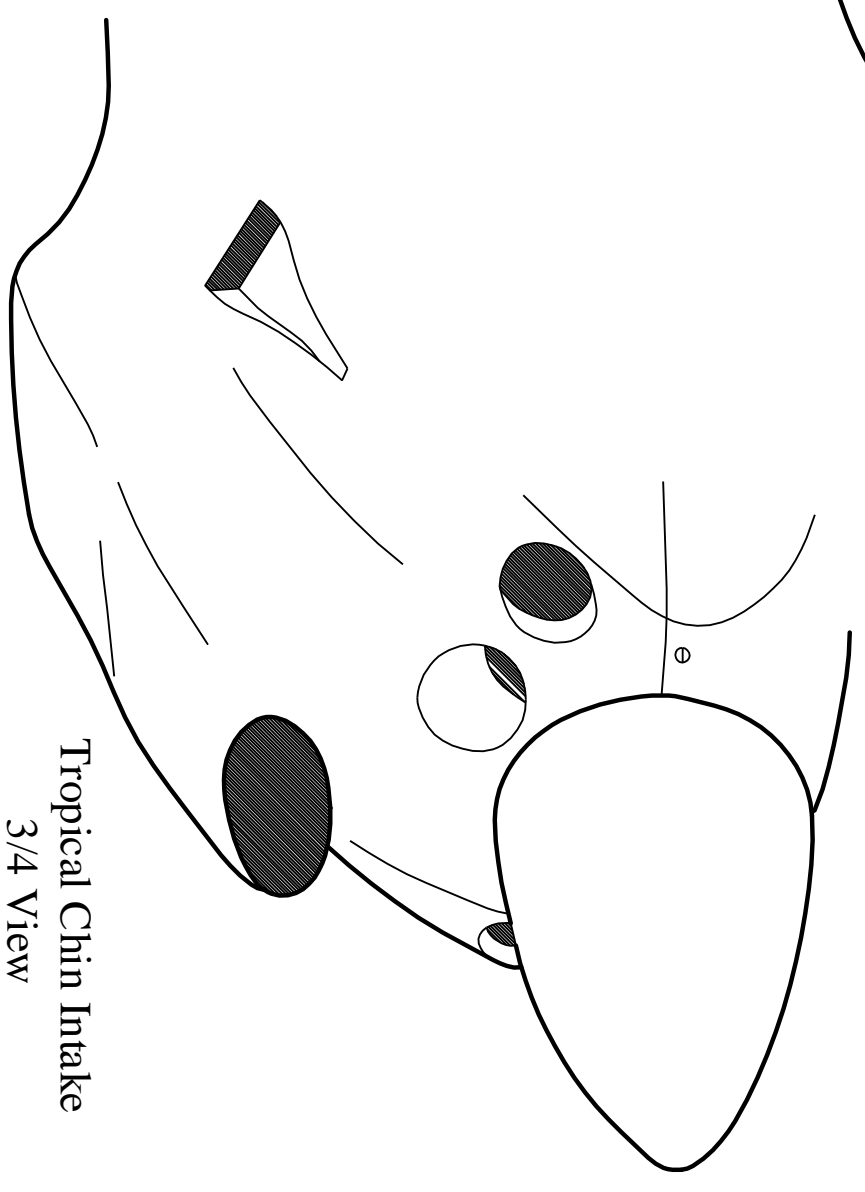
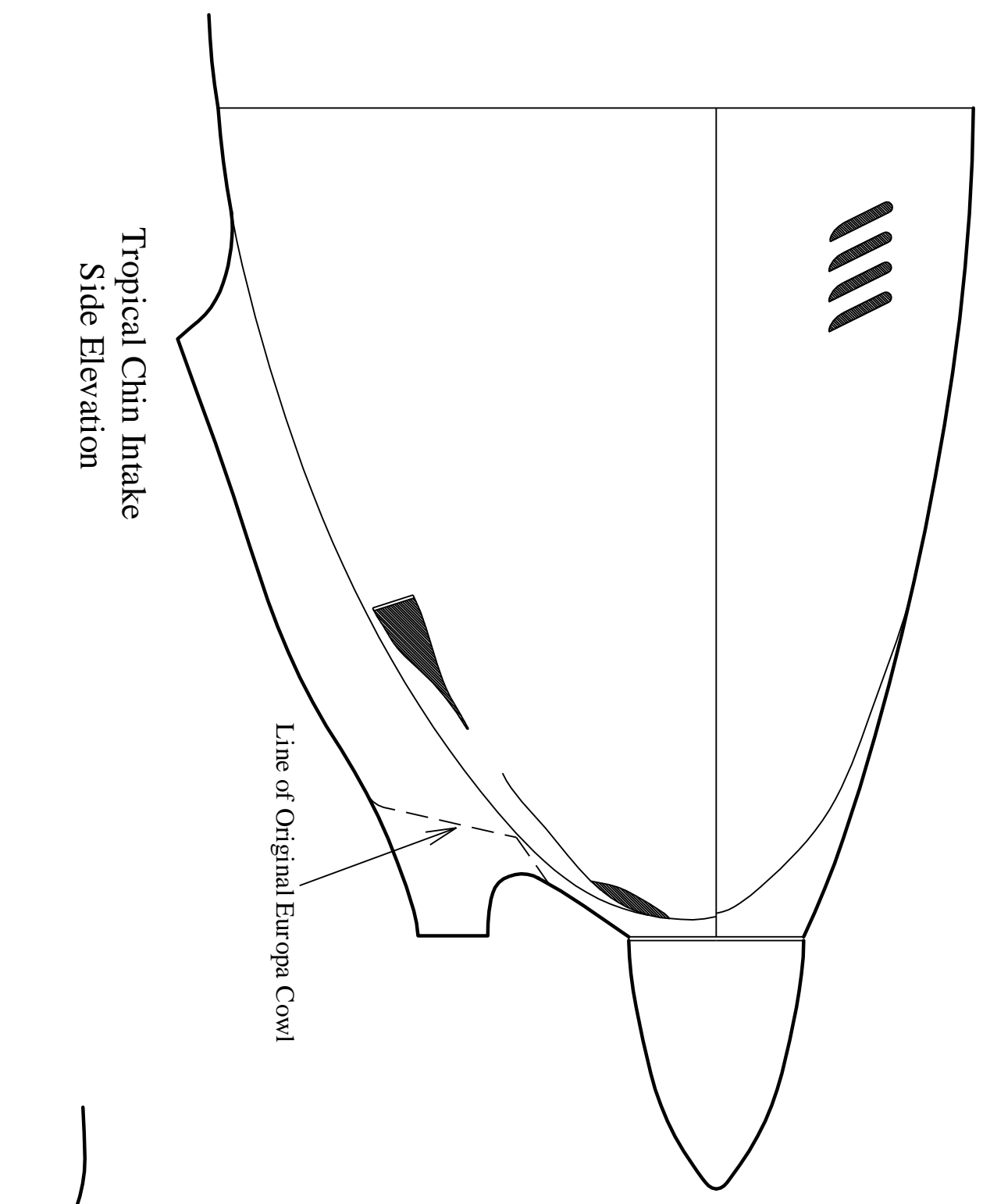
7.25 in



PFA MODIFICATION APPLICATION

Drawn By P. J. Kember	Title Europa XS Trigear Tropical Chin Intake - Partterns		
Date 06/01/2005	PFA A/C Type 247 - Europa	Serial No 1000	Drawing No Tropical-1
Checked by Date	Scale N.T.S	A/C Reqn G-TOPK	Drawing Sheet 1 of 2
			Rev 2

REV	Drawn By	Date	Description



PFA MODIFICATION APPLICATION

Drawn By P. J. Kember	Title Europa XS Trigear Tropical Chin Intake		
Date 06/01/2005	PFA A/C Type 247 - Europa	Serial No 1000	Drawing No Tropical 2
Checked by	Scale N.T.S	A/C Regn G-TOPK	Rev 2
Date	Drawing Sheet		2 of 2