2009 NATIONAL GADGET COMPETITION
Hydraulic Filter Change out Device

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A filter-changing device was designed and built by Greg Koopmans a Welder/Fabricator at Zellstoff Celgar in Castlegar, BC. The device allows an Oiler to easily remove and reinstall a heavy (23 kg) Canister and Filter assembly without risk of Back Strain. The device is used in several locations in the mill.

Un dispositif filtre changeant a été conçu et construit par Greg Koopmans un soudeur/fabricatrice a Zellstoff Celgar a Castlegar,en Colombie-Britannique. Le dispositif permet a un mécanicien de lubrification d'enlever facilement et réinstaller un lourd [des 23 kg] boite métallique et de montage du filtre sans risque de claquage de dos. Le dispositif est utilise dans plusieurs endroits dans le moulin.

2009 GADGET COMPETITION – ZELLSTOFF CELGAR, CASTLEGAR, BC

THE NEED IDENTIFIED

In 2008 one of our Oilers at Zellstoff Celgar, Alfred Pether, identified an occupational risk while changing hydraulic oil filters on the Pressure Diffuser Hydraulic Units. Changing the filters called for an Oiler to reach out at arms length to unscrew the filter canister and remove the filter. The total weight of the canister, filter and oil weighed about 23 kg (50 lb). This action caused a lower back strain. Reinstalling the canister was more difficult as the threads are very fine, holding the weight and starting the threads proved difficult.

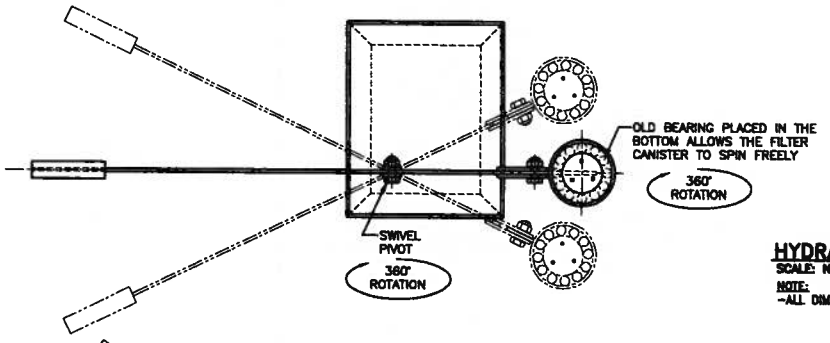
Jan Summersides our Physiotherapist completed an ergonomic risk assessment. The following recommendations were made to mitigate the risk;

1. Move the filter for better access
2. Make a device to change out the filter

Work on recommendation 2 was started first as recommendation 1 would require a mill shutdown and would be expensive.

THE NEED SATISFIED

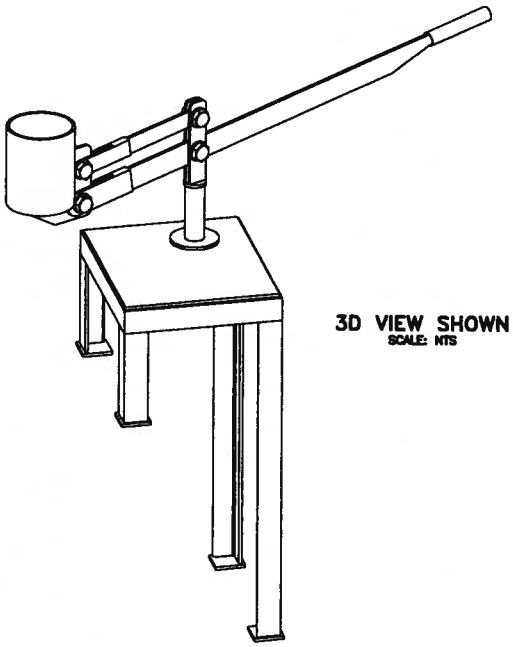
Greg Koopmans a Welder/Fabricator started to work on the device. After looking at the layout of the equipment and the positioning Greg designed and fabricated the filter-changing device we call the **JAG** (Jan, Alfred, Greg). The device consists of an oil filter holder mounted on the end of a lever arm. The lever moves up and down and rotates 360 degrees. The Oiler can support the weight of the filter and unscrew the canister. This is made easier by a bearing installed in the bottom of the holder, which allows the canister to spin freely. Reinstallation is just as easy with the weight supported and the threads starting freely with the filter canister riding on the bearing. The stand can be moved to other Hydraulic units easily due to its lightweight aluminum construction. The cost of the device is minimal in comparison to moving the filters. Note: a used bearing was pulled from the scrap bin and the other materials were readily available in the welding shop. This device is in use today.



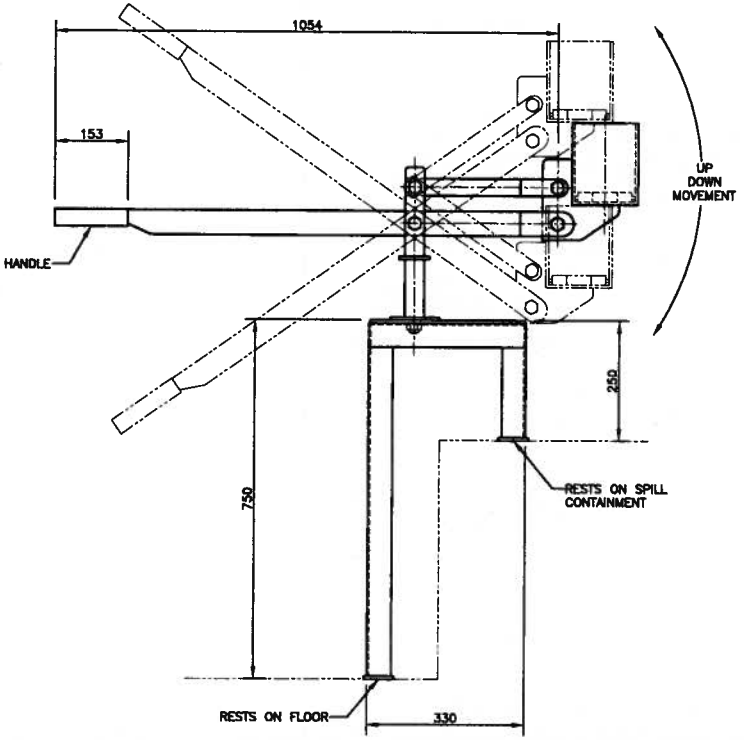
HYDRAULIC FILTER CHANGEOUT DEVICE

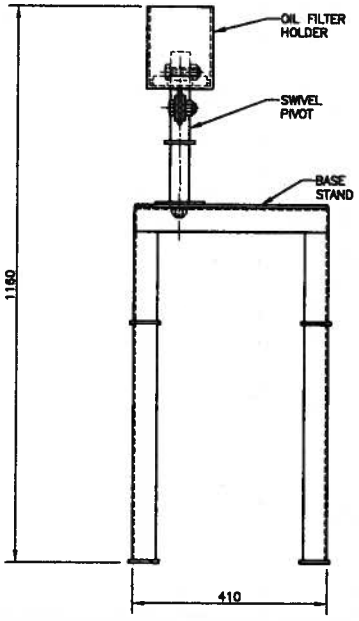
SCALE: NTS

NOTE:
-ALL DIMENSIONS ARE APPROXIMATE.



3D VIEW SHOWN
SCALE: NTS





B of M		DESCRIPTION
		SWIVEL, ARM & PIVOT – MAT'L: S.S.
		ALL OTHER – MAT'L: ALUMINUM

REFERENCE DRAWINGS		

ISSUED FOR	APP	ISSUE D/M/Y	No.	ISSUED FOR	APP	ISSUE D/M/Y	ISSUED FOR	APP	ISSUE D/M/Y	No	ISSUED FOR LINE1 LINE2	APP	DATE D/M/Y	ISSUED

REV.	D/M/Y	DESC.	DR	CH	APP
REV.	D/M/Y	DESCRIPTION	DR.	CH.	APP

APPROVALS		DAY	MO.	YR.
PROJ. –	DSN. –	–	–	–
PDA. –	DR. –	–	–	–
M/O. –	CH. –	–	–	–
	APP. –	–	–	–

ZELLSTOFF CELGAR
CASTLEGAR B.C. CANADA

AREA: –

DWG. TITLE: HYDRAULIC FILTER CHANGEOUT DEVICE

SUBJECT:

DWG. No.: B– SKETCH

REV 0

010-12