

H. TRACY HALL, INCORPORATED  
RESEARCH & DEVELOPMENT  
P. O. BOX 7835 UNIVERSITY STATION  
PROVO, UTAH 84601

3 February 1973

Mc Cartney Manufacturing Co,  
Baxter Springs, Kansas 66713

Re: Request for quotation

Dear George/Wally:

I've got to do some additional research and development on presses intended for commercial use. The 1200 ton (at 20,000 psi oil pressure) press being used by Megadiamond Corporation has a number of problems: 1. We have only been able to use it at 400 tons max load ( just 1/3 of my anticipated 1200 ton design rating ); 2, Even at only 400 tons we have severe gasket wear and leakage; 3. anvil, back-up block, and binding ring breakage are excessive.

About 500 runs per month are made in the Megadiamond press, whereas our research presses at the university average only 10 runs per month. I think the key to solving the gasket wear and leakage problems in a commercial press is to reduce the oil pressure drastically. This would ordinarily require excessively large diameter rams. To keep ram diameter down, I have invented a scheme called "staged sealing" (sketch No. 1) wherein the maximum differential oil pressure on each seal will not exceed 3333 psi in the planned design.

Even though staged sealing is used, I will still increase the ram diameter by about 1.5 over that previously used. The increased ram diameter will increase the weight of the press bases too much if my normal base designs are followed. Consequently, I am holding the base diameter down but increasing its length to maintain the needed strength. Also, "blind" holes are being used in the bases with a solid, circular section of steel below the holes to add additional strength.

Another scheme for holding the total weight down is the use of the Anvil-Guide (with hollow guide pins) for retraction of the rams (see sketch No. 2). Oil, under pressure, admitted to the interconnected channels of the hollow guide pins will retract the press.

To reduce anvil, back-up block, and binding ring breakage, I have changed the usual arrangement to that shown in sketch No. 2 and have increased the size of the binding ring considerably. If the staged seals and the new idea for retracting the press prove to be practical, I will file for patents on these principles. The bases for the new press are too large to be built here. Consequently, I would like to have a quote on 6 each according to sketch No. 3. Also, please quote on 12 each tie-bars according to sketch No. 4. All the other parts can be built here. If you wish, I can purchase the steel and you can quote on the machining only.

Best regards.

Sincerely,

*Tracy*

40002750



5"

PISTON

OIL AT .33 P

OIL AT .67 P

3 1/2"

WIPER

STAGED  
SEALS

3" PISTON TRAVEL

OIL AT P

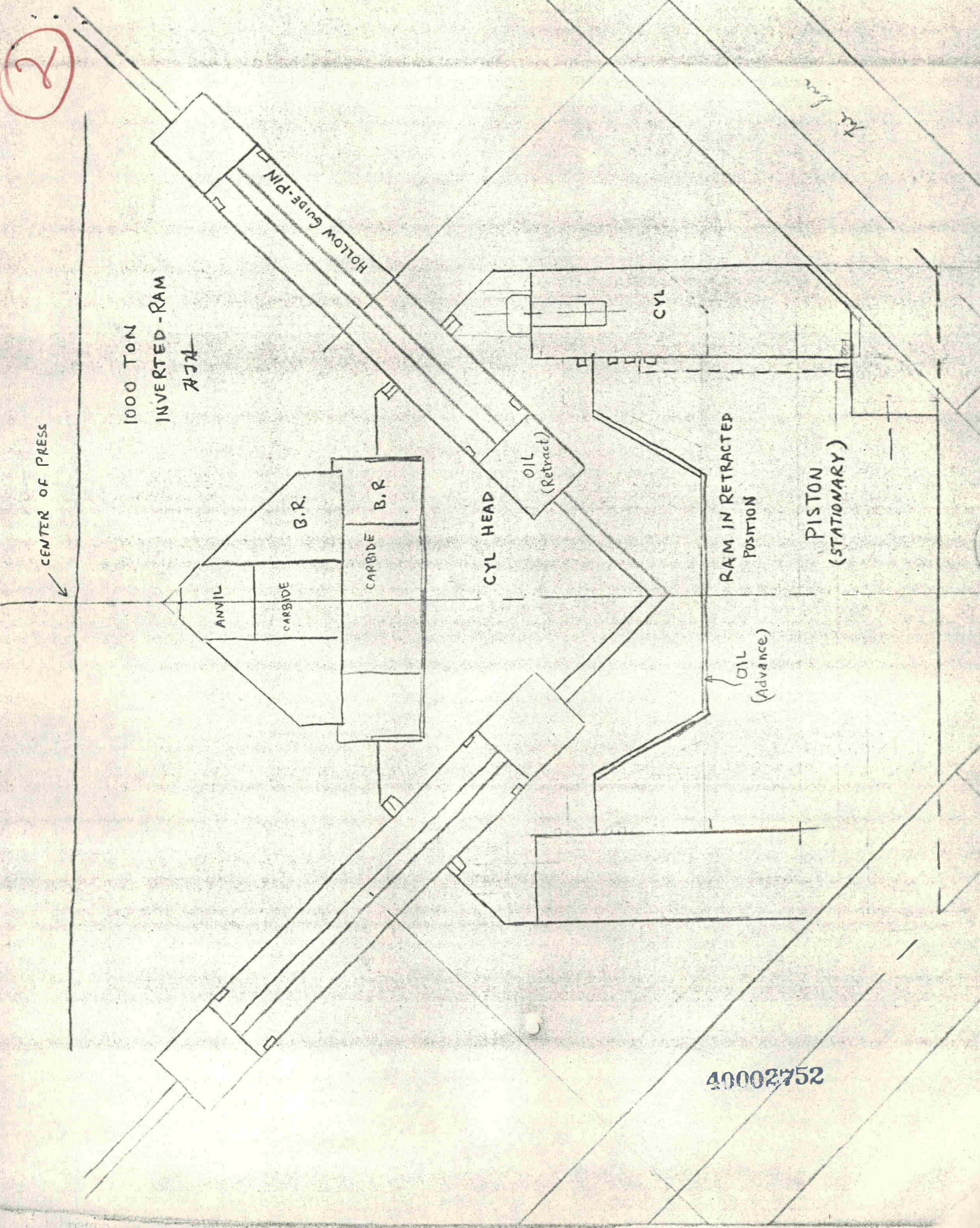
MAX OIL P = 10,000 psi

CYLINDER

40002751

H. Tracy Hall  
3 FEB 1973

2



1000 TON  
INVERTED-RAM

HOLLOW GUIDE-PIN

CENTER OF PRESS

ANNIL

CARBIDE

B.R.

CARBIDE

B.R.

CYL HEAD

OIL  
(Retract)

CYL

RAM IN RETRACTED  
Position

OIL  
(Advance)

PISTON  
(STATIONARY)

40002752

*Mr. ...*