

*Paul Brown*

**MY  
SELF-CONTAINED  
COOLING SYSTEM  
for  
TYPE-CASTING MACHINES**

**by**

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**for**

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## INTRODUCTION

First of all, there is nothing new about using a closed-loop, or self-contained, cooling system with a typesetting machine. The English 'Monotype' Composition Caster Manual, dated 1970, suggests an alternative to that of attaching the machine's mold-cooling piping to a city water or well water source (see section 11.1, Moulds—cooling).

The system described in the above document and illustrated in Plate 62 of its Plate Book may have been acceptable for servicing rows of casters in a commercial foundry of "the good old days," but for today's scaled-down personal foundry another approach is needed—something closer to that which lies under the hood of almost every vehicle on our planet.

A device I built for myself, mostly of scrap parts, was documented in ATF Newsletter #19 dated January 1996. A copy of the article is included herein for convenience of the reader. My unit remains in its crude, prototype form and has performed without failing for over eight years. The only modification made to the system was the addition of quick-disconnect hose fittings to facilitate change from one machine to another.

Advantages in the use of the self-contained cooling system in my foundry are as follows:

- a. Elimination of over 120 feet of piping and tubing and many valves and fittings that were previously necessary with my three casters.
- b. No more frozen pipes in winter.
- c. No more waste of city tap water or draining of a waste water collection barrel or fishing drowned mice from it.
- d. No more mineral, organic or rust deposits in the piping or mold waterways.
- e. As a bonus feature, the quick-disconnect fitting at the caster doubles as a convenient means to apply air pressure to blow out the mold and mold stand waterways whenever the machine is to be shut down for overnight or longer periods of idleness. Something all of us are supposed to do!

Finally, a schematic, 3-D sketch and "bill of materials" is provided for any reader eager to build such a cooling unit for his or her own foundry.



# A Self-Contained Cooling System

BY JIM WALCZAK  
Oxon Hill, Md.

My foundry is a 16x24 backyard shed with only a woodstove for comfort during cold winter months. Although casting has progressed successfully on a year-round basis, there has been some aggravation associated with my city-water plumbing network to cool the molds and to carry off the waste water (which was collected in a 55-gallon drum for garden use).

After four years of fussing with overly cold water, worrying about waste of a precious resource, and repairing freeze-cracked copper lines in winter, I decided to make a self-contained cooling system. I leaned toward a gravity-fed tank system suggested in the English Monotype School instruction manual. This low-tech approach grew complicated as I added up the components: Two tanks, pumps, float-valve, piping, hoses, electrical wiring, and even wood framing to support the supply tank 10 feet overhead.

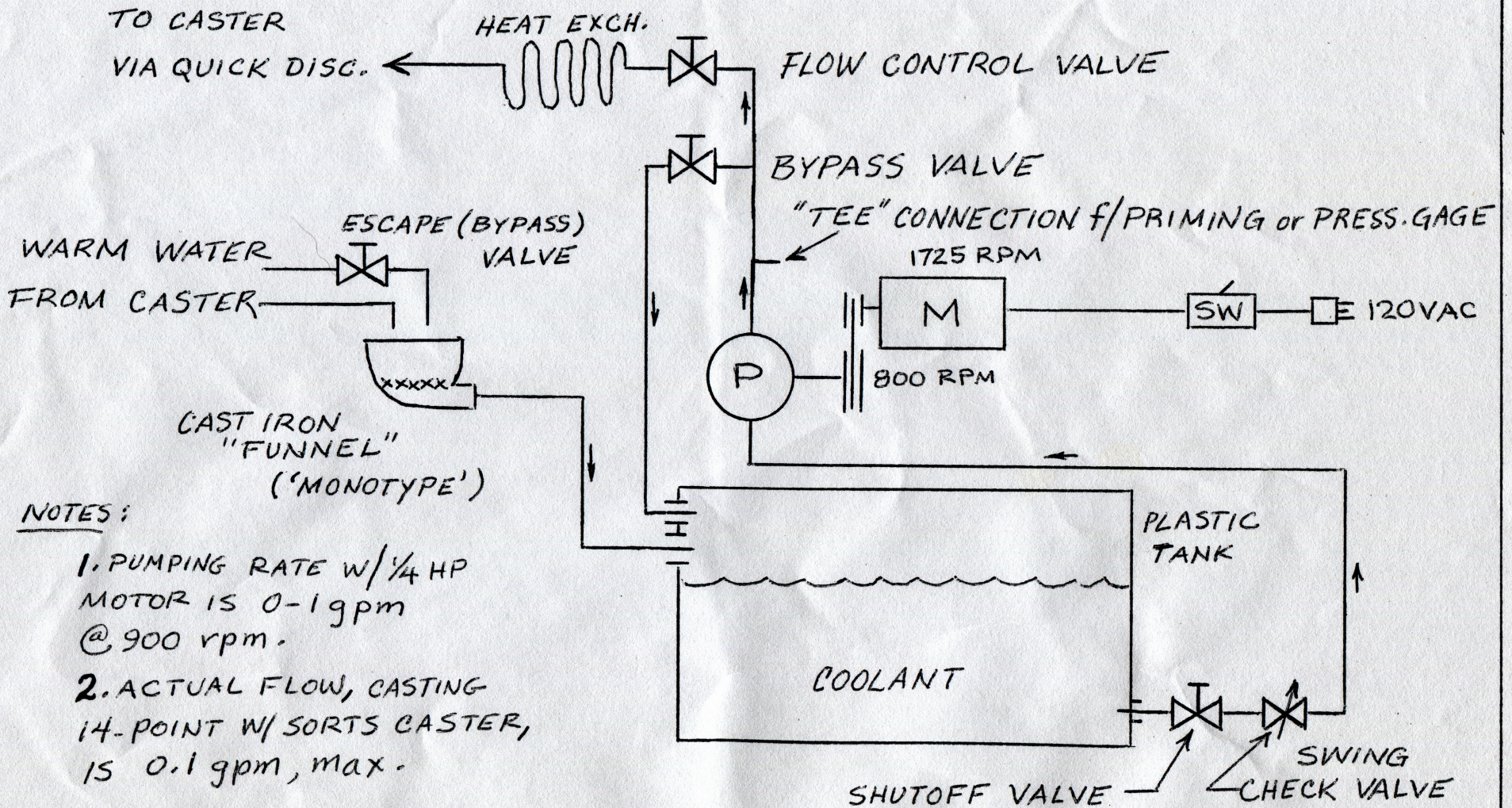
At the ATF Conference in Buena Park, the subject surfaced in discussions with our proverbial inventor and idea man Monroe Postman. He said "No problem" and described a "closed loop" he had built and was using successfully in his shop. He rigged a pump, motor, pressure gauge, bypass valve and hoses on a bucket full of antifreeze and said it worked fine.

It started with a bronze gear pump from W. W. Grainger, Inc. I can't detail all the mistakes and trips to the hardware stores I had to make before getting happy results. After successful casting runs with the cooling unit attached to my Thompson and my Sorts Caster, I have started ripping out some of the over 120 feet of outmoded pipes and drainage to my four machines. In less than five minutes I can wheel the unit to any of them, make hose connections and go to work. Starting and stopping the flow is a simple flip of a switch. Flow control is easily adjusted by output and bypass valves on the unit, and whatever valves are on the caster itself.

I modified each of my casters by attaching a short piece of washing machine hose to the water supply line on the front of the machine. The only other modification is the plugging of the machine drain and rerouting drainage to my device. I'll be happy to provide a schematic and bill of materials for anyone interested.

ATF  
NEWSLETTER #19  
ARTICLE  
JAN 1996





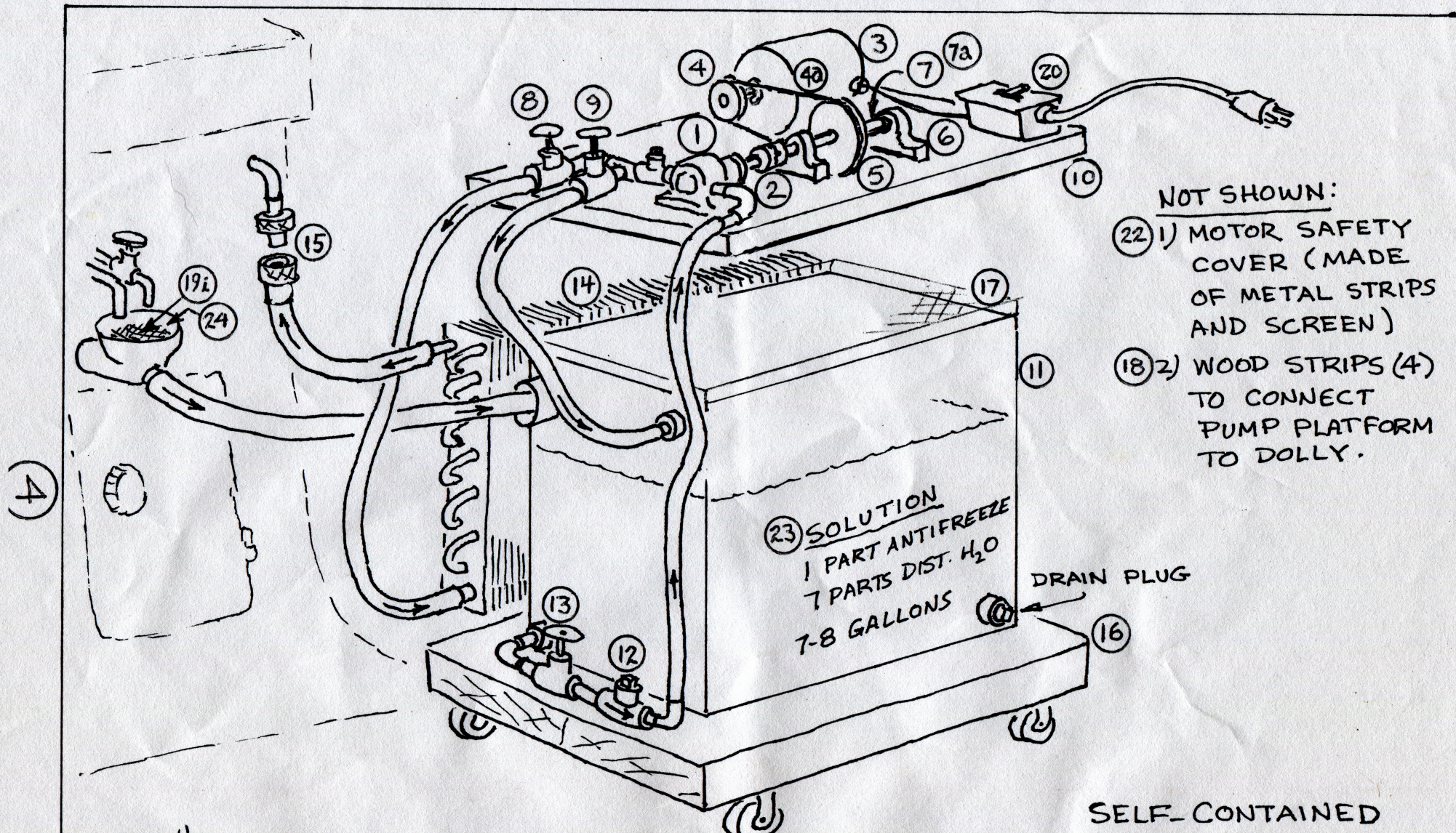
NOTES:

1. PUMPING RATE W/ 1/4 HP MOTOR IS 0-1 gpm @ 900 rpm.
2. ACTUAL FLOW, CASTING 14-POINT W/ SORTS CASTER, IS 0.1 gpm, max.
3. 1/6 HP MOTOR OK FOR THIS APPLICATION.

= SCHEMATIC = SELF-CONTAINED COOLING SYSTEM

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NOT SHOWN:

- (22) 1) MOTOR SAFETY COVER (MADE OF METAL STRIPS AND SCREEN)
- (18) 2) WOOD STRIPS (4) TO CONNECT PUMP PLATFORM TO DOLLY.

(23) SOLUTION  
 1 PART ANTIFREEZE  
 7 PARTS DIST. H<sub>2</sub>O  
 7-8 GALLONS

DRAIN PLUG

NOTE: 1) ALL HOSES SHOWN ELONGATED FOR EXPLODED VIEW OF ASSEMBLY  
 2) ENCIRCLED NUMBERS ARE BILL OF MATERIALS ITEMS

SELF-CONTAINED COOLING SYSTEM FOR TYPECASTING MACH'S  
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## BILL of MATERIALS

### Self-Contained Cooling System for Typesetting Machines

(For general guidance only, Substitutions and upgrades may be necessary to meet individual methods)

ITEM	SOURCE	PART#?NOTES
1. Pump, bronze w/ss shaft	Grainger, Inc.	1P771
2. Coupling, shaft 3 pcs.	"	4X176 (2) and 1X409
3. Motor, 1/6-1/4 hp 1725 rpm	New or used	Low cost, continuous duty
4. Pulley, motor, 1 1/2" OD	"	—
4a.V-Belt	"	—
5. Pulley, shaft, 3 1/2" OD	"	—
6. Pillow Block (2) ball or brz brg	"	4X723
7. Shaft, 1/2"D x 8 1/2"L	Local Mach. Shop	—
7a.Collar, shaft (2)	Grainger, Inc.	—
8. Valve, needle	"	6NM30 or "Mono" spare
9. Valve, needle	"	"
10. Base for pump/motor assy.	Shop made	Plywood or sink cutout
11.Tank, plastic, 10 gallon	RV supplier or JC Whitney	Barker Co. manufacturer
12.Check Valve, swing check	Grainger, Inc.	6NN92 ( Nibco TI-3)
13.Valve, shut-off, 1/2"	Home Depot, etc.	—
14. Heat Exchanger	Junkyard or AC repair	One side of "A-coil"
15. Hose quick disconnect	Home Depot, etc.	—
16. Dolly	Shop made, wood plank	Off. chair swivel casters
17. Vibration Damping Sub-base	Shop made	Carpet, carpet pad, etc.
18. Vertical side support strips	"	Ply or solid wood
19. Plumbing items	Home Depot, etc.	—
a. elbows (4)		
b. pipe nipples (12)		
c. pipe reducers		
d. pipe plugs (2)		
e. hose clamps (9)		
f. pipe tees (2)		
g. hose barbs as needed		
h. hose, rubber or plastic 3/8 -1/2"		
i. stainless steel screen (kitchen strainer)	∨	
20. Electrical box, cover plate, switch, cable and plug		
21. Hardware as needed (screws, bolts, nuts and washers		
22. Safety cover for motor belt drive Shop made from sheet metal and screen		
23. Coolant—7 gallons distilled water and one gallon automotive antifreeze		
24. Waterproof coating for cast iron "funnel" on "Monotype" machine— 3M "Scotchcote" Electrical Coating, #M part #054007-14853, Source: Electrical Supply Co.		