FRONZ / ONTRACK

APPROVED CODE OF PRACTISE
FOR
HERITAGE NETWORK OPERATORS

Mechanical Task Instruction
B3.2.4.01

Certification of Single Car Brake Testers

Issue	Prepared (P), Reviewed (R), Amended (A)	Approved by	Effective Date
1	P McCallum (P)	Heritage Technical Committee	1 Dec 2010

Reference Material

Source	Description	Date
Tranz Rail	Wagon Brake Manual	21 May 1997
Taieri Gorge Railway	Single Vehicle Brake Tester - Annual Certification Code	11 Nov 2010

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Amendment History

Version	Section	Amendment

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Certification of Brake Testers

1 Introduction

Single car brake testers need to be tested annually (and after repair) to ensure correct operation within code limits.

The purpose of the annual test is to:-
1. Check for any damaged or insecure fittings.
2. Check the accuracy of the brake tester pressure gauge.
3. Check that there are no external leaks
4. Check that there are no internal leaks
5. Check the stability of the pressure regulator(s)
6. Check that critical timing chokes are operating within specification

This task instruction may need to be modified to suit the arrangement of individual brake testers.

The two basic types of brake tester differ in the connection of valves and chokes. They connect either:-
- Direct to the train pipe outlet; or
- To an auxiliary reservoir that in turn controls the train pipe outlet via a relay valve.

This task instruction mainly refers to the first type.

2 Equipment Required

The following equipment is required to complete the certification.
- Certified pressure gauge
- Stopwatch
- Test reservoir

Options for a test reservoir are:-
- A standard 1.47 ltr reservoir (see attached plans 1 - 5)
- A suitably sized reservoir of about the same size. In this case reference times will need to be established by fitting the brake tester with new chokes and timing them.

3 Safety Precautions

The test system pressure must be exhausted to zero before disconnecting the brake tester hose. Otherwise the hose may jump unpredictably.

4 Test Procedure

Test Connections

Before starting tests:-
- Connect the test equipment to the brake tester (See Fig 2 below.)
- Connect a certified pressure gauge to the test equipment
- Connect an air supply of greater than 500kPa to the brake tester

1. Visual Check

- Inspect the brake tester for any damage, loose or insecure fittings. Check hose for splits, cracks or perishing. Repair before continuing tests.

2. Pressure Gauge Test

- Charge the brake tester to 550 kPa
- Check the brake tester gauge against the certified pressure gauge. The error must be no more than ± 20 kPa at 550kPa
- Reduce the pressure and note if the gauge needle drops smoothly without sticking or jumping.

3. **External Leakage Test**

- Charge system to 550 kPa
- Close all valves.
- Monitor the pressure for two minutes. No drop in pressure is allowed.
- Leakage may occur at pipe fittings, equipment gaskets, hose and hose connections or through the Application Valve.

4. **Internal Leakage Test**

- Reduce train pipe pressure to 450 kPa and close all valves.
- Monitor the pressure for two minutes. No increase in pressure is allowed.
- Any rise in pressure may be due to leakage through the Release Valve or the Slow Release Valve.

5. **Pressure Regulator Tests**

- Open Release Valve
- Pressure should settle at approximately 550 kPa
- Monitor the pressure for two minutes. No change in pressure is allowed.
- Repeat the test for any other regulators fitted.

6. **Application Choke Test**

- Charge system to 550 kPa and close valves.
- Open Application Valve (Exhaust) and record the time for the pressure to drop from 550 kPa to 250 kPa.
    - This time must be less than 5 seconds if the choke exhausts the brake pipe directly to atmosphere.
    - This time must be between 22 and 32 seconds when the choke controls an auxiliary reservoir.
- A time greater than the maximum indicates that the application (exhaust) choke is blocked. It may be removed and cleaned with a gas tip cleaner of the right size.
- A time less that the minium (auxiliary reservoir type only) indicates that the choke is too large. Replace.
- Repeat this test if the choke has been cleaned or replaced.

7. **Slow Release Choke Test**

- Reduce pressure to below 100 kPa and close valves.
- Open Slow Release Valve and record the time for the pressure to rise from 100 kPa to 500 kPa. This time must be between 20 and 30 seconds.
- A time greater than 30 seconds indicates that the slow release choke is blocked. It may be removed and cleaned with a gas tip cleaner of the right size.
- A time less than 20 seconds indicates that the choke is too large. Replace.
- Repeat this test if the choke has been cleaned or replaced.

5 Recording Results

Record the results. A sample form is shown below

Test Results

Test	Result	Limits
1 – Visual		No faults
2 – Pressure gauge - accuracy	kPa	± 20 kPa
- operation		No sticking or jerking
3 - External Leakage	kPa	0 kPa over 2 minutes
4 – Internal Leakage	kPa	0 kPa over 2 minutes
5 – Pressure Regulator	kPa	0 kPa
6 – Application choke	secs	Less than 5 seconds
7 – Slow release choke	secs	20 to 30 seconds

Fig 1 – Sample record form

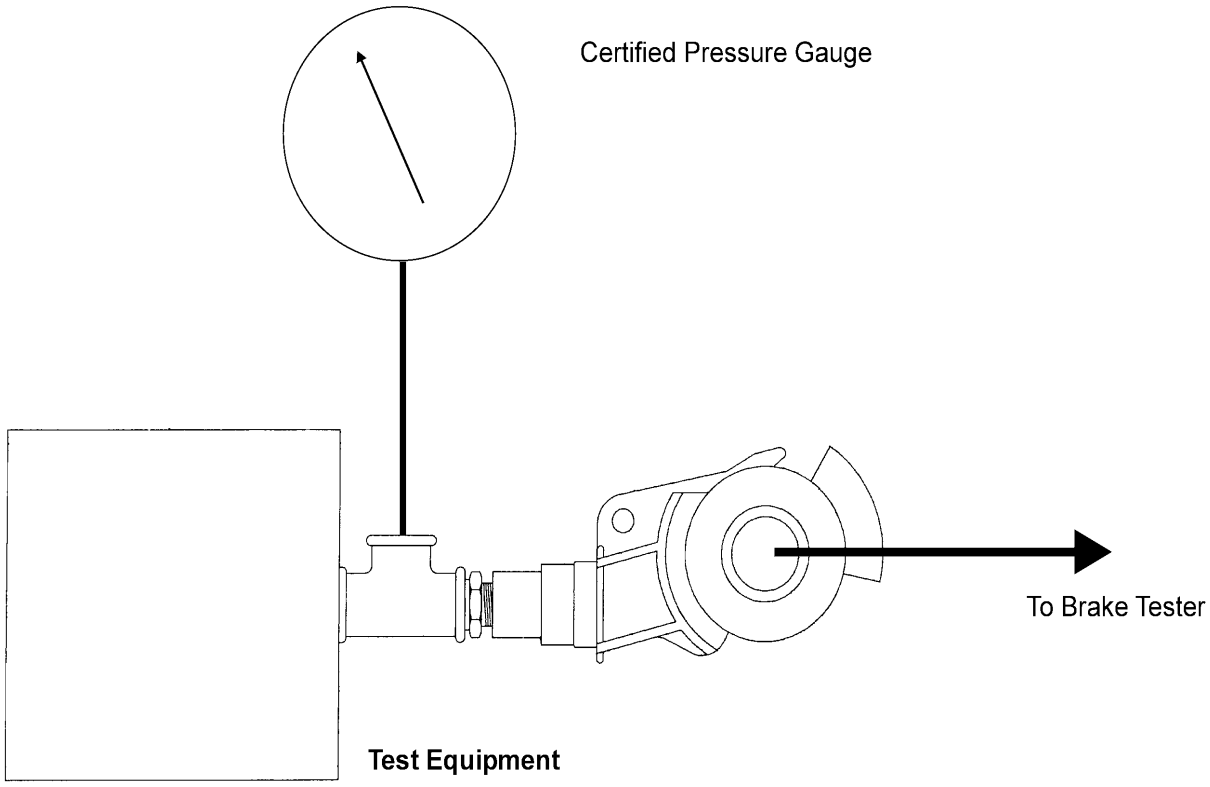
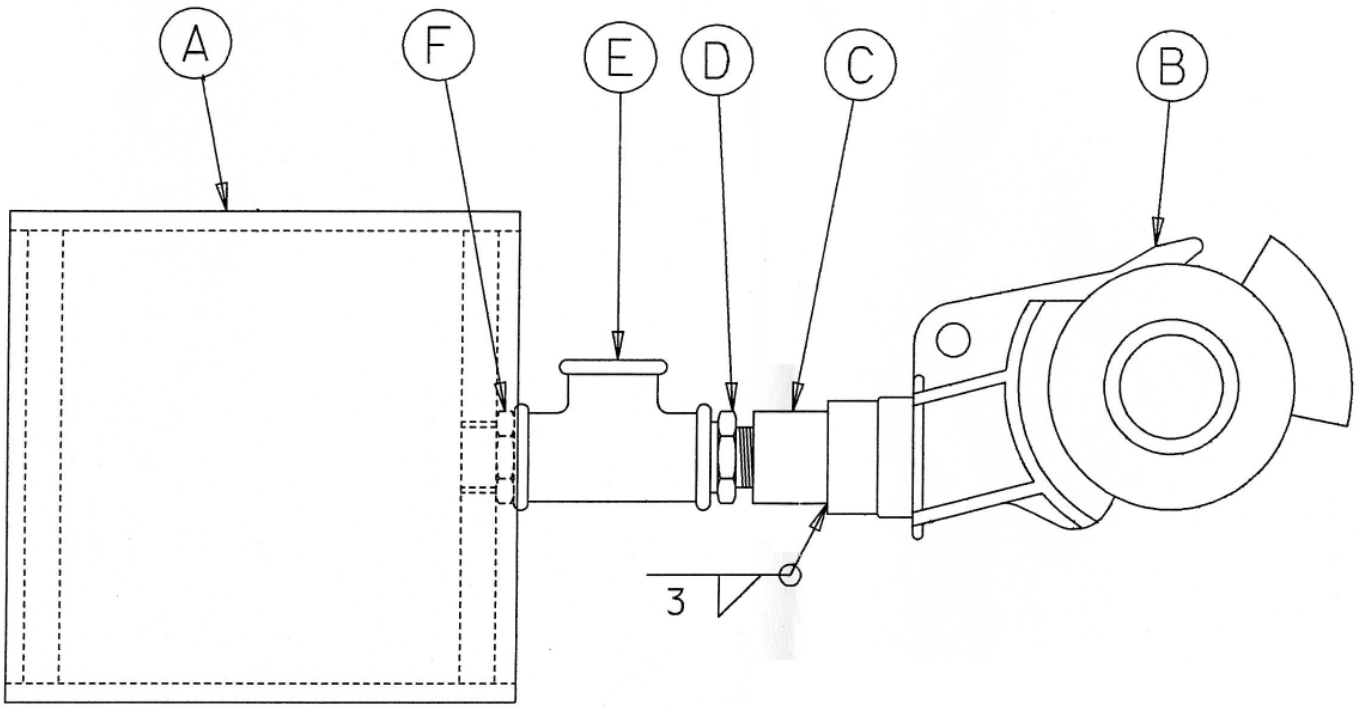
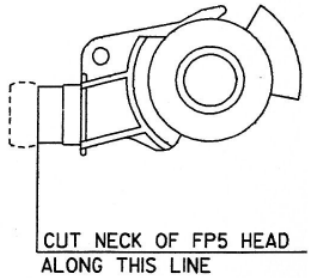


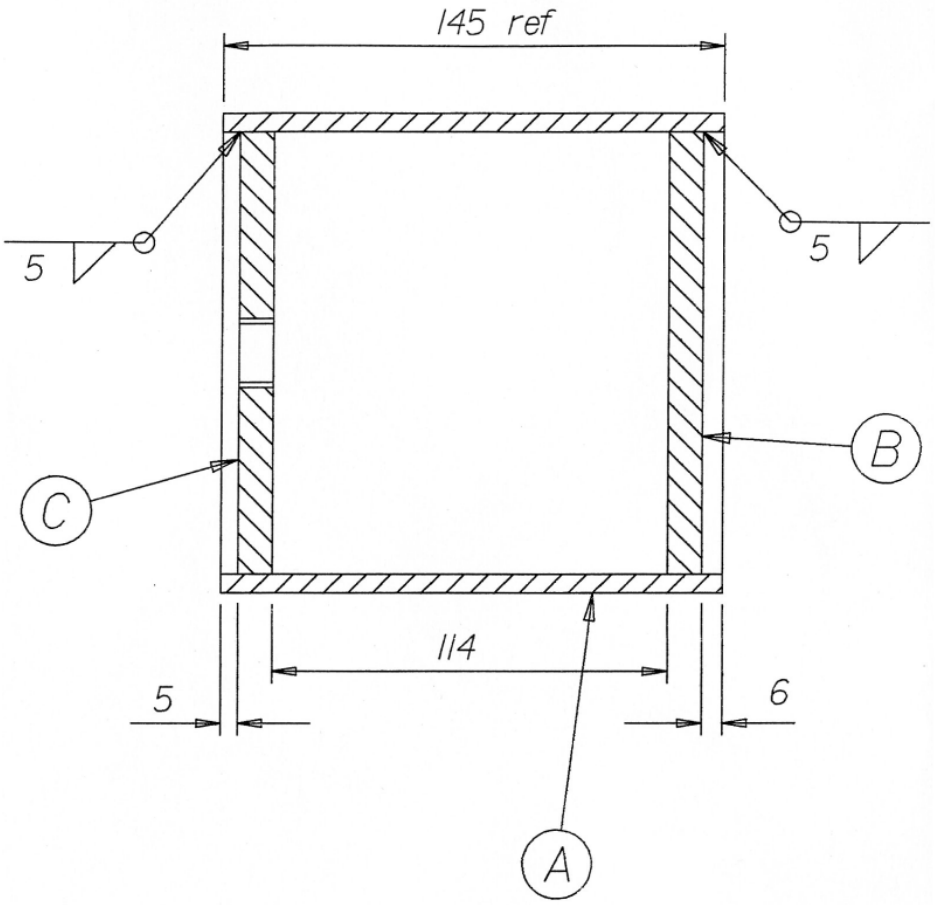
Fig 2 – Connection of Test Equipment



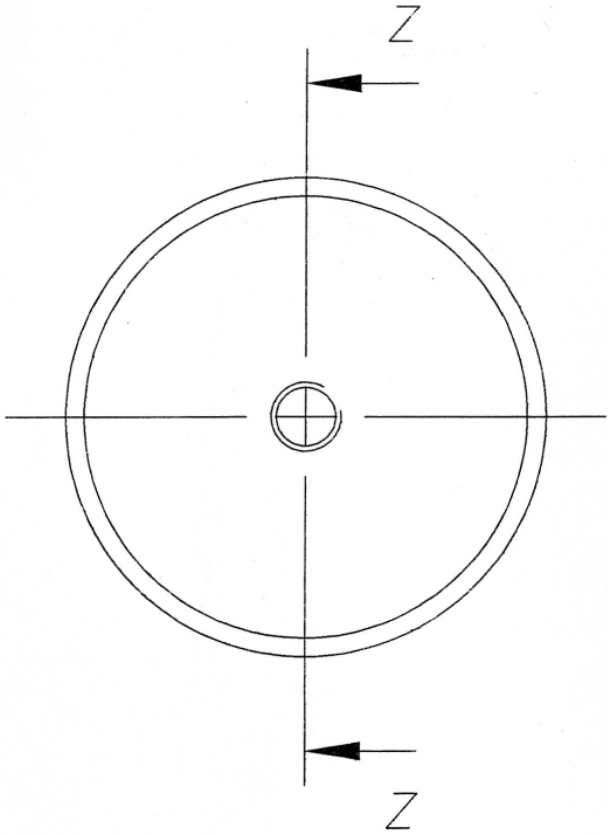


No Req'd	Item	Description	Source
1	A	WHB reservoir assembly – 1.47 litre (90 cubic inch)	Drawing 2
1	B	1 ¼" brake hose head	Commercial
1	C	1" BSP socket	Commercial
1	D	1" x ¾" reducing nipple	Commercial
1	E	¾" BSP tee	Commercial
1	F	¾" BSP nipple	Commercial

Single Car Tester
Dummy Reservoir Assembly
(Redrawn from Railfleet drawing 13090238 of 12-3-92)
Drawing 1 of 5



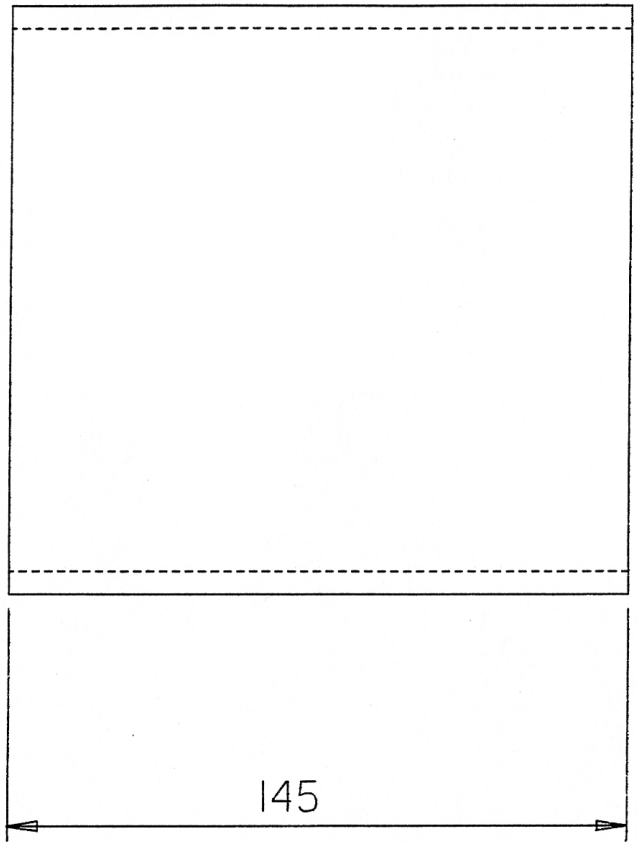
Section Z - Z

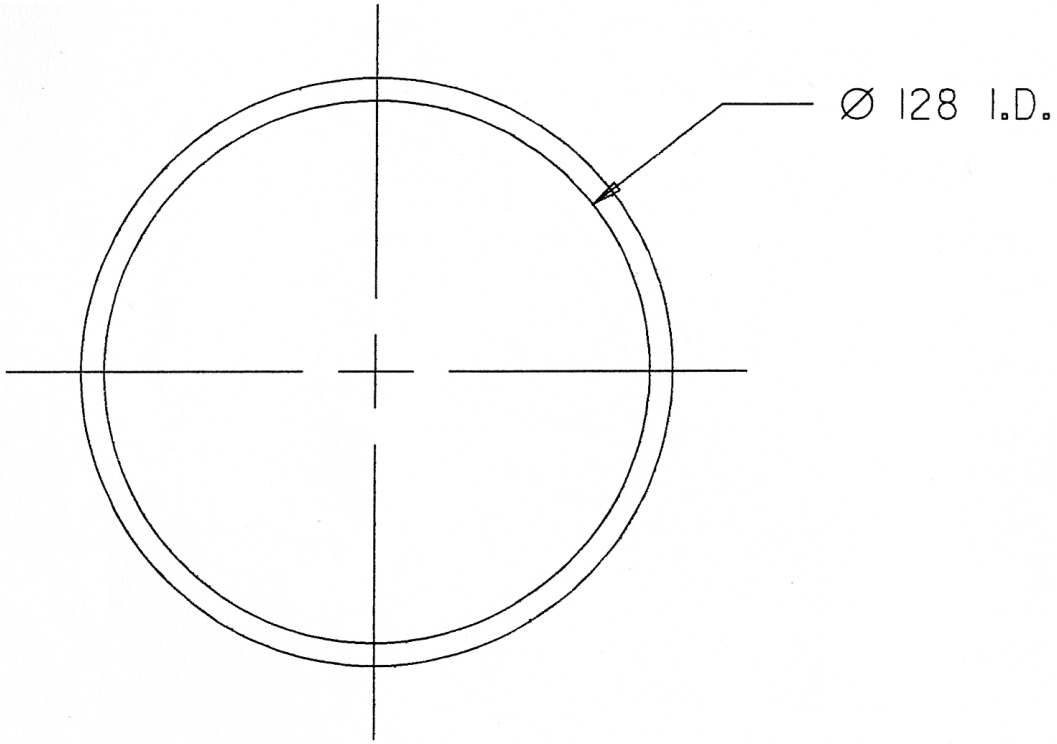


Quoted as "A" on Drawing 1
1 no. required per assembly

No Req'd	Item	Description	Source
1	A	WHB reservoir barrel	Drawing 3
1	B	WHB reservoir cap – 1	Drawing 4
1	C	WHB reservoir cap - 2	Drawing 5

W.H.B. Reservoir
1.47 litre (90 cubic inch)
(Redrawn from Railfleet drawing 13090271 of 12-3-92)
Not To Scale
Drawing 2 of 5

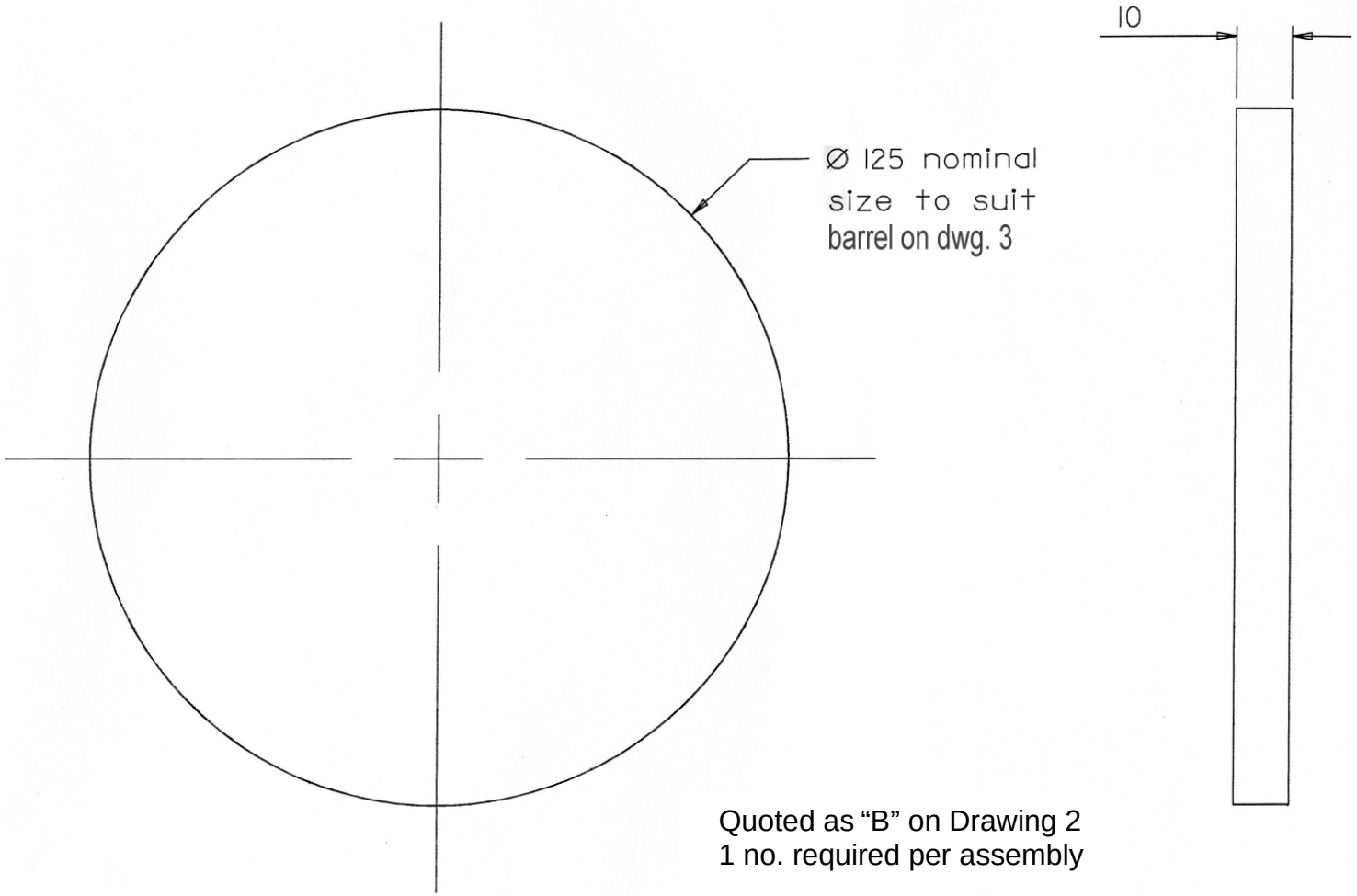




Quoted as “A” on Drawing 2
1 no. required per assembly

Material	Size
BS 1387	125 NB Heavy Tube

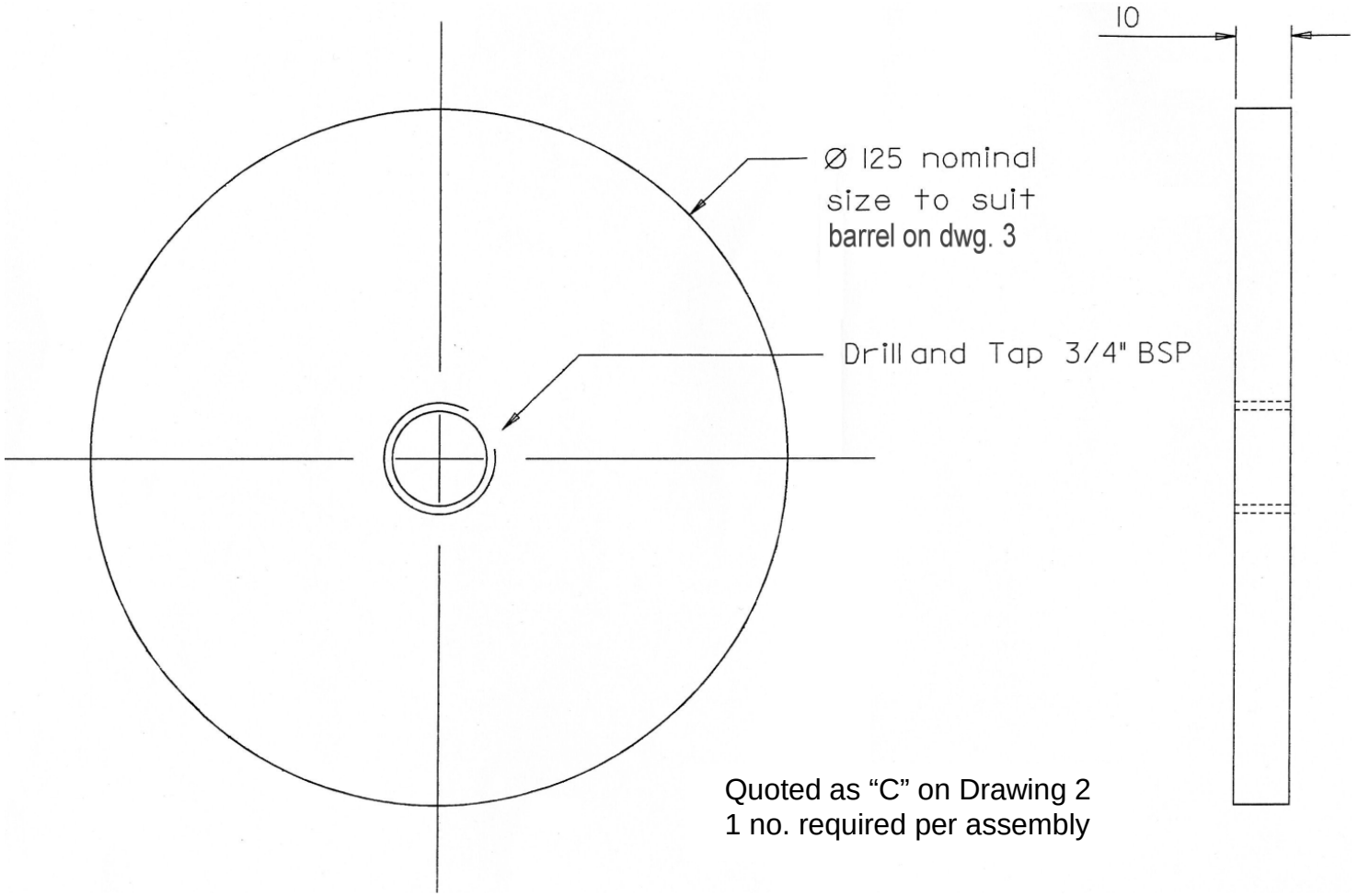
W.H.B. Reservoir Barrel
(Redrawn from Railfleet drawing 13090273 of 12-3-92)
Not To Scale
Drawing 3 of 5



Quoted as “B” on Drawing 2
1 no. required per assembly

Material	Size
BS 4360 GR 43A	10 mm plate

W.H.B. Reservoir End Cap - 1
(Redrawn from Railfleet drawing 13090274 of 12-3-92)
Not To Scale
Drawing 4 of 5



Quoted as “C” on Drawing 2
1 no. required per assembly

Material	Size
BS 4360 GR 43A	10 mm plate

W.H.B. Reservoir End Cap - 2
(Redrawn from Railfleet drawing 13090275 of 12-3-92)
Not To Scale
Drawing 5 of 5