

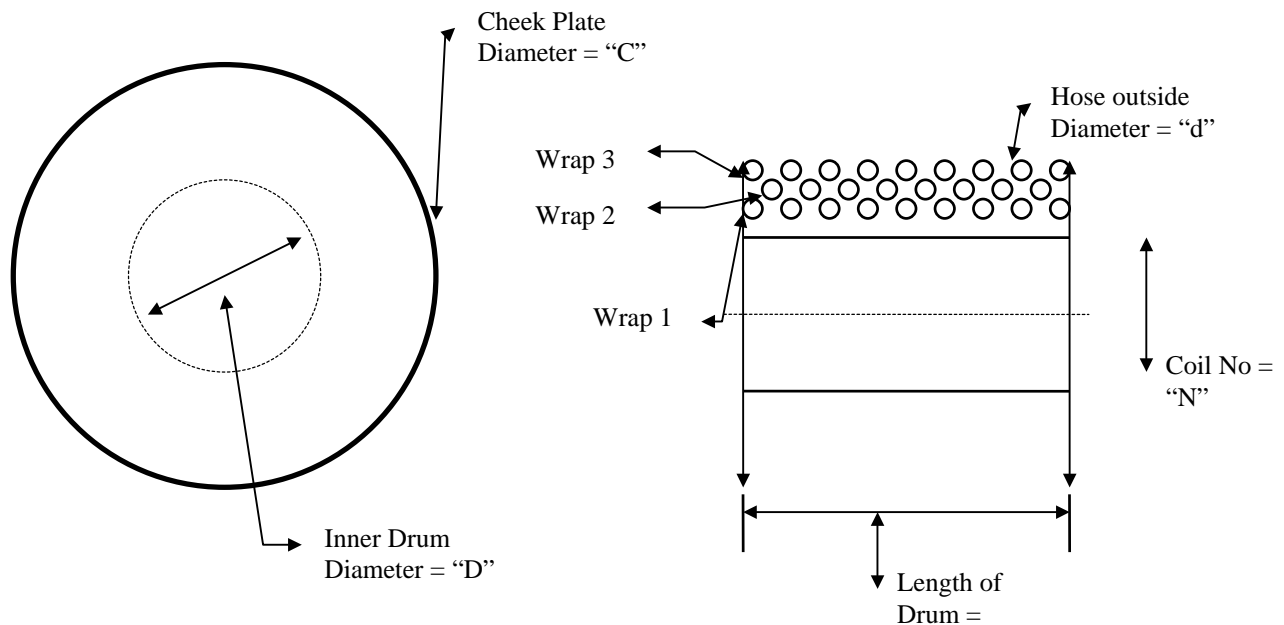
Technical Talk

No: 33 23/03/98

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SUBJECT: Hosereel Capacity - How Much Hose Can I Get On My Reel?

AIM: This technical bulletin will enable the reader to calculate how much hose can be loaded onto a hosereel, irrespective of the size of the hose and reel.



Formula for Each Single Wrap Is:

$$\text{Metres per revolution (wrap)} = \pi [D + d (2N - 1)]$$

$$(\pi = 3.142)$$

$$\text{The Total Length per Coil} = \text{“Z”}$$

$$\therefore \text{Total Length on a Hosereel} = \frac{L}{d} \times Z$$

Take an AHR250 Cartwheel type reel for example; (Single Coil)

Inner Drum Diameter	D	=	608mm
Cheek Plate Diameter	C	=	1500mm
Hose Outer Diameter	d	=	69mm

Step 1: - Establish the maximum “N” number of coils that is physically possible on the given Hosereel.

$$\frac{C - D}{2d} = \text{Maximum Wraps} = 6.46$$

$$\therefore N = 6 \text{ maximum}$$

Step 2: - Apply the formula for each wrap in turn.

For **N = 1** (First Wrap)
 Metres / Revolution = $(\pi/1000) \times [608 + 69(2-1)] = 2.1\text{m}$

For **N = 2** (Second Wrap)
 Metres / Revolution = $(\pi/1000) \times [608 + 69(4-1)] = 2.56\text{m}$

For **N = 3** = 3.0m

For **N = 4** = 3.4m

For **N = 5** = 3.86m

For **N = 6** = 4.29m

Therefore the total length of hose that will physically fit on an AHR250 Cartwheel type reel is;

$$N=1 + N=2 + N=3 + N=4 + N=5 + N=6 \quad Z = 19.2\text{m}$$

The amount of hose that will practically fit on a hosereel depends on whether the hose flattens as it is wound on. This can occur, for example, with Nylex PR Hose with no residual pressure. On the other hand, LPG hose remains firm and pressurised and retains its round section.

Following are two tables showing extremes for capacity for the two cases.

When talking to customers, make sure you get the facts and give the figure as **approximate**. (as capacity can vary by just the method of winding).

***The Following is a Matrix Giving Maximum Hose Length on Liquip Standard Drum Style Hosereels; (PRESSURISED)**

Hosereel Sizes (FR, ER, HR)

Hard Hose Hose - (O.D) Nom. Bore	12'' Drum Style Hosereel	18'' Drum Style Hosereel	24'' Drum Style Hosereel
1'' (33.5mm)	36m	55m	73m
1.25''(41.8mm)	24m	35m	47m
1.5'' (52.4mm)	15m	20m	26m
2'' (64.6mm)	5m	8m	11m

***The Following is a Matrix Giving Maximum Hose Length on Liquip Standard Drum Style Hosereels; (NON-PRESSURISED)**

Hosereel Sizes (FR, ER, HR)

Hard Hose Hose - (O.D) Nom. Bore	12'' Drum Style Hosereel	18'' Drum Style Hosereel	24'' Drum Style Hosereel
1'' (33.5mm)	60m	90m	120m
1.25''(41.8mm)	30m	45m	60m
1.5'' (52.4mm)	24m	37m	49m
2'' (64.6mm)	8m	12m	16m

* Please note the non-pressured values are only a guideline

***The Following is a Matrix Giving Maximum Hose Length on Liquip Aviation Drum Style Hosereels; (PRESSURISED)**

Hosereel Sizes (AHR250D)

Aviation Hose Nom. Bore (O.D)	12'' Drum Style Hosereel	18'' Drum Style Hosereel	24'' Drum Style Hosereel
1.5'' (51mm)	18m	27m	36m
2''(66mm)	14m	22m	29m
2.5'' (79mm)	5m	8m	11m

A FAX FROM



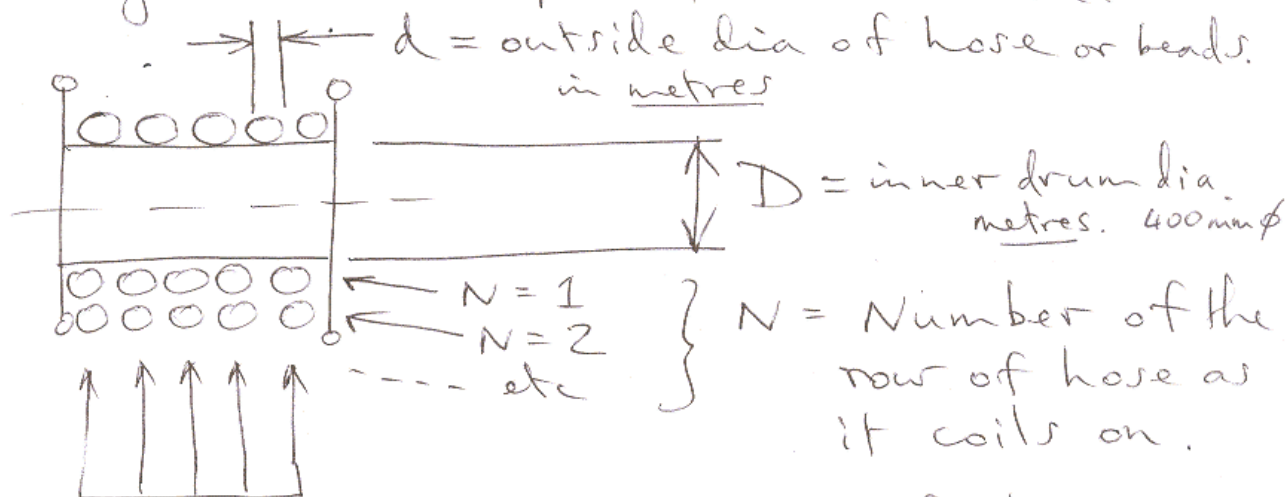
HEAD OFFICE:
LIQUIP SALES PTY. LTD.
A.C.N. 001 595 222
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SMITHFIELD, SYDNEY
N.S.W. AUSTRALIA 2164

PHONE FROM OVERSEAS : +61-2-9725 1055
FAX : +61-2-9725 1252

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	TODAY	<input type="checkbox"/>	BY

MESSAGE

Formula for calculating total length of hose possible on a reel:-



$C = \text{Number of coils which can fit lengthways.}$

Then total length of hose on reel is....

1st row ($N=1$) Metres = $C \times \pi [D + d(2N-1)]$

plus 2nd row ($N=2$) " = $C \times \pi [D + d \times 3]$

plus 3rd row ($N=3$) " = $C \times \pi [D + 5d]$

etc etc

Add for total = _____

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Byd DG

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602 - 606 SOMERVILLE ROAD, SUNSHINE, VIC. 3020

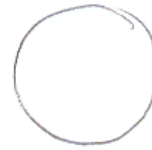
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DAVID,

GOOD MORNING.



I NEED TO ORDER AVIATION, DRUM
TYPE HOSE REELS FOR UNIT 1 AM
 BUILDING FOR PERTH AIRPORT, BUT
 I DON'T KNOW HOW TO WORK OUT WHAT
 DRUM WIDTH I NEED.

I HAVE: -

- 1 x 20mtr x 1 1/4" NO BEADS.
- 1 x 20mtr x 1 1/2" WITH BEADS. AT 450mm SPACING.
- 1 x 20mtr x 2" WITH BEADS AT 450mm SPACING.

YOUR HELP WOULD BE APPRECIATED.!

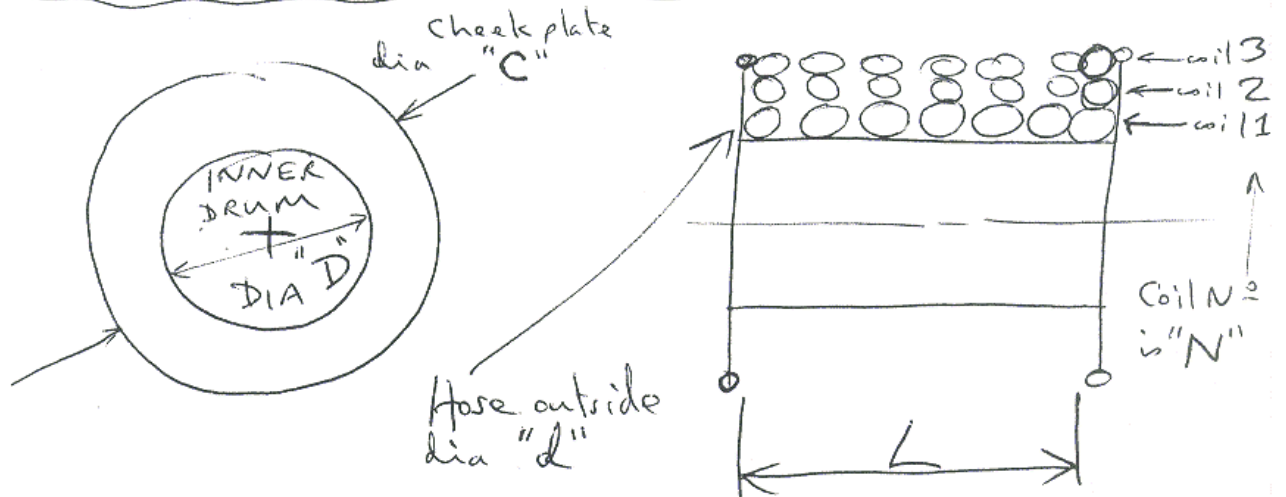
REGARDS

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o/DIA 83mm

TOTAL P.01

AB Hosereel Capacity Please have someone nominated to do a tech note on this as it crops up so often.



FORMULA FOR EACH SINGLE WRAP IS

$$\text{Metres per rev}^n(\text{wrap}) = \pi [D + d (2N - 1)]$$

FOR THIS EXAMPLE, TAKE AHR 250 CARTWHEEL REEL.

	AV ⁿ . CARTWHEEL	AV ⁿ DRUM STYLE
INNER DRUM DIA	D = 608 mm	D = 390 mm
CHEEK PLATE DIA	C = 1,500 mm	C = 660 mm
HOSE O/D DIA	d = 69 mm.	

STEP ONE.

Establish the most wraps we can get ("N") by simple arithmetic.

$$\frac{C - D}{2 \times 69} = \text{Most wraps} = 6.46$$

$$\therefore N = 6 \text{ maxim}^n$$

