NIFTYLIFT FLOOR AND POINT LOADINGS 16/09/10

Trailers & Self Drives

MODEL	MAX WEIGHT	AREA cm^2 (1)	AREA M^2		FLOOR LOADING kN/ M^2		POINT LOADING		
	Kgs **(kN)**	FOOT **(TYRE)** **(For M^2/10,000)**	WORKING (2)	TRANSIT (3)	WORKING (4)	TRANSIT (5)	kN/ cm^2 **(kN/ M^2)** (6)	P.S.I (7)	**kN** (8)
90	600+120=720 **(7.06)**	182.4	2.1x2.1= **4.41**		1.6		0.023 **(230)**	33	**4.19**
120M	1160+200=1360 **(13.34)**	182.4	2.7x2.7= **7.29**		1.83		0.043 **(430)**	64	**7.84**
120H	1300+200=1500 **(14.7)**	324.3	3.36x3.55= **11.93**		1.23		0.027 **(270)**	39	**8.75**
120T	1400+200=1600 **(15.7)**	324.3	3.66x3.55= **13**		1.2		0.029 **(290)**	42	**9.4**
140H	1470+225=1696 **(16.63)**	324.3	3.35x3.2= **10.72**		1.55		0.031 **(310)**	45	**10.05**
150T	1785+225=2010 **(19.72)**	314.2	3.89x3.82= **14.86**		1.27		0.0388 **(388)**	56	**12.2**
170M	1900+200=2100 **(20.6)**	324.3	4.4x4.25= **18.7**		1.1		0.038 **(380)**	55	**12.3**
170MBE	2000+200=2200 **(21.58)**	324.3	4.4x4.25= **18.7**		1.15		0.04 **(400)**	58	**12.97**
170H	1900+200=2100 **(20.6)**	540	4.425x4.37= **19.34**		1.07		0.023 **(230)**	33	**12.42**
170HBE	2000+200=2200 **(21.58)**	540	4.425x4.37= **19.34**		1.12		0.024 **(240)**	35	**12.96**
210	3500+225=3725 **(36.54)**	680 **(375)**	5x4.5= **22.5**		1.4		0.032 **(324)**	47	**21.9**
SD120DE	2260+200=2460 **(24.13)**	324.3	3.66x3.55= **13**	1.77x1.6= **(2.832)**	1.54	**(9.9)**	0.045 **(446)**	65	**14.48**
SD170 2WD	2450+200=2650 **(26)**	540 **(504)**	4.425x4.37= **19.34**	2.4x1.55= **(3.72)**	1.34	**(7.0)**	0.029 **(290)**	42 **(45)**	**15.66**
SD170 4WD	2775+200=2975 **(29.18)**	540 **(504)**	4.425x4.37= **19.34**	2.4x1.55= **(3.72)**	1.51	**(7.85)**	0.0324 **(324)**	47 **(45)**	**17.5**
SD210	3950+225=4175 **(40.96)**	680 **(558)**	4.6x4.28= **19.7**	2.2x2.0= **(4.4)**	2.08	**(9.3)**	0.036 **(360)**	52	**24.58**

Track Drive Models

16/09/10

MODEL	MAX WEIGHT	AREA cm^2	AREA M^2		FLOOR LOADING kN/ M^2		POINT LOADING		
	Kgs **(kN)**	FOOT **(TYRE)** **(For M^2/10,000)**	WORKING	TRANSIT	WORKING	TRANSIT	kN/ cm^2 **(kN/ M^2)**	P.S.I	**kN**
TD90	850+120=970 **(9.52)**	182.4	2.1x2.1= **4.41**	0.85x0.15x2= **0.255**	2.16	37.33	0.029 **(298)**	43	**5.43**
TD120T (Variable width)	1650+200=1850 **(18.15)**	324.3	4.46x3.55= **15.83**	1.39x1.5= **(2.09)** 1.39x0.24x2= **0.67**	1.15	**(8.68)** 27.09	0.0336 **(336)**	49	**10.89**
TD120T (Fixed width)	1850+200=2050 **(20.11)**	324.3	4.46x3.55= **15.83**	1.39x1.5= **(2.09)** 1.39x0.24x2= **0.67**	1.27	**(9.62)** 30	0.0372 **(372)**	54	**12.07**
TD120T'N' (Variable width)	1770+120=1890 **(18.54)**	324.3	3.56x2.93= **10.43**	1.39x1.15= **(1.6)** 1.39x0.24x2= **0.67**	1.78	**(11.59)** 27.7	0.0343 **(343)**	49	**11.12**
TD120T'N' (2 Man)	1770+200=1970 **(19.33)**	324.3	3.56x2.93= **10.43**	1.39x1.15= **(1.6)** 1.39x0.24x2= **0.67**	1.78	**(12.08)** 28.85	0.0358 **(358)**	51	**11.6**
TD150T	2025+225=2250 **(22.07)**	314.2	3.89x3.82= **14.86**	1.39x1.4= **(1.946)** 1.39x0.25x2= **0.695**	1.485	**(11.34)** 31.75	0.042 **(420)**	60	**13.24**
TD170	2875+200=3075 **(30.16)**	540	4.2x4.2= **17.64**	1.61x1.85= **(2.98)** 1.61x0.26x2= **0.837**	1.71	**(10.12)** 36	0.0335 **(335)**	49	**18.1**

Note! The point loadings of all trailer units, self drive or track mount machines can be altered as desired by the use of larger pads under the jack feet, or spreader plates. For example, if a figure of 50 kN/ M^2 is quoted as the target point loading, and the intended machine is a 120M, then dividing the actual figure of 430 by 50 gives a ratio of 8,6. Hence the existing footplate of 182.4 cm^2 needs to increase by this factor to reduce the point loading to the desired figure. Hence 182.4 x 8.6 gives an area of 1568 cm^2. This would then be divided by Pi (3.1416) and the result square rooted to give a radius of 22.34 cm. Therefore a circular plate is required, minimum diameter of 44.7cm, under each foot. This may be made from substantially thick plywood or metal, so long as the plate itself is capable of transmitting the load over the chosen area. Using a material of insufficient stiffness makes little difference to the initial point loading, i.e. will not work as a load spreader.

Self Propelled Models

16/09/10

MODEL	MAX WEIGHT	AREA cm^2	AREA M^2		FLOOR LOADING kN/ M^2		POINT LOADING		
	Kgs **(kN)**	**(TYRE) (For M^2/10,000)**	WORKING	TRANSIT	WORKING	TRANSIT	kN/ cm^2 **(kN/ M^2)**	P.S.I	**kN**
HR10	2130+200=2330 **(22.9)**	(258)		1.9x1.5= **2.85**		8.04	0.053 **(530)**	76	**13.64**
HR10 (SOLID TYRE)	2130+200=2330 **(22.9)**	(70)		1.9x1.5= **2.85**		8.04	0.1963 **(1963)**	281	**13.64**
HR12	2630+200=2830 **(27.8)**	(383)		1.9x1.8= **3.42**		8.13	0.044 **(440)**	64	**16.7**
HR12N	3060+200=3260 **(32)**	(383)		1.9x1.5= **2.85**		11.23	0.05 **(500)**	73	**19.2**
HR12N (SOLID TYRE)	3132+200=3332 **(32.7)**	(70)		1.9x1.5= **2.85**		11.47	0.28 **(2800)**	409	**19.6**
HR12 4x4	3330+200=3530 **(34.63)**	(504)		1.9x1.6= **3.04**		11.4	0.041 **(410)**	59	**20.77**
HR15N	6680+225=6905 **(67.74)**	(340)		1.85x1.5= **2.775**		24.25	0.119 **(1195)**	172	**40.64**
HR15 4X4	6400+225=6625 **(64.99)**	(256)		1.85x1.98= **3.663**		17.73	0.152 **(1521)**	220	**39.98**
HR17N	7200+225=7425 **(72.84)**	(340)		1.85x1.5= **2.775**		26.25	0.128 **(1284)**	186	**43.7**
HR17 4X4	6500+225=6725 **(65.97)**	(256)		1.85x1.98= **3.663**		18.06	0.155 **(1546)**	222	**39.58**
HR18 4X4	6300 + 300=6600 **(64.75)**	(517)		2.3x2.25= **5.2**		13.68	0.075 **(751)**	119	**38.85**
HR21BE 2X4 & 4X4	6220+225=6445 **(63.22)**	(370)		2.3x2.25= **5.2**		12.19	0.1051 **(1051)**	151	**37.93**
V160 (9)	4856+200=5056 **(49.6)**	340		3.235x2.4= **7.76**		6.39	0.074 **(740)F** 0.056 **(560)R**	107	**25.26**

(1) Area of Foot plate is indicated where a machine has outriggers; self-propelled machines show the tyre area in brackets.
(2) The working area is the machine footprint, in the case of trailer units it is over the footplate outside edges.
(3) The transit area for a self-propelled machine is the wheelbase multiplied by the overall transit width, in the case of the Track Drive machines (TD) it is the track length in contact with the ground multiplied by the overall track width.
(4) Working area loadings are given for trailer units, and are the weight of the machine and operator(s) divided by the floor area of the machine when jacked to the extreme.
(5) Transit area loadings are given for self-propelled machines and are the weight of the machine and operator(s) divided by the transit area. This loading applies to the machine when the booms are stowed. For the Track Drive machines (TD) an additional calculation has been given for the weight spread over the total track area itself. This is the figure below the bold one in brackets.
(6) Point loadings are given in all cases. They are the total weight of the machine and operator(s), supported on the area of one foot or tyre and multiplied by a factor of **~60%**. We have found this to be a very close approximation to the Realistic Point Loading figure, and can be worked to as an absolute. If additional factors of safety are required they should be added to this figure.
(7) Multiply **P.S.I** by 144 to give **lbs/ft^2**, i.e., 82psi = 11808 lbs/ft^2 .
(8) The final column gives the point load as a mass, and not as had been calculated before, a pressure. This is gained by multiplying the floor loading pressure in column 8 by the area of the foot, or tyre, listed in column 3. To find the load on the foot or tyre in kilograms, convert these back by multiplying the kN figures by 98.1, rough approximation 100. (i.e. the first number shown is **4.19kN**, or **419kg**.)
(9) The Point load figures for the front and rear axles are measured values, and were obtained from a specific load test.
No figures are entered for the Niftylift V100, V105 or V125 machines as they are supported on two jacks and the floor loadings will vary to a much greater degree.