

# MAXIMUM ALLOWABLE PAYLOAD FOR VEHICLE COMBINATIONS

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# 1: INFORMATION & PROCEDURES

	INSPECT:	MEASURE:	WEIGH:	LOAD:	Adrest	National Road Traffic Act-Reg. 240 (Defined maximum axle loads)				
	Manufacturer	axles/axle	Unladen	Payload						
	data plates,	units & total	mass of	(&CoG) for						
	tyre ratings	length; C-C	axles/axle	each semi-	al his second and the second sec					
		of extreme	units	trailer axles/		REG. 240:	STEERING:	NON-STEER:	NON-STEER:	
		axles		axle units		(Max. axle mass load)		(2 wheels/axle)	(4 wheels/axle)	
	CALCULA Permissable			<u>ATE: (4)</u> s distribution-		per wheel:	3850kg	4000kg		
		pination mass (PMCM) rear axle to f		BU91		per axle:	7700kg	8000kg	9000kg	
	<u>CHECKS: (</u> Compliance of		ECKS: (5)	CHECKS: (5) Overall dimensio		2 axle unit:	15400kg	16000kg	18000kg	
	rims, wheel ar	<b>J</b>	npliance of er, traction	& bridge formul		3 axle unit:	23100kg	24000kg	24000kg	
$\langle \sim$	group load	ds an	d steering	compliance						
V										

# 2: HOW TO DETERMINE THE PERMISSABLE MAXIMUM COMBINATION MASS (PMCM) OF A VEHICLE CONFIGURATION

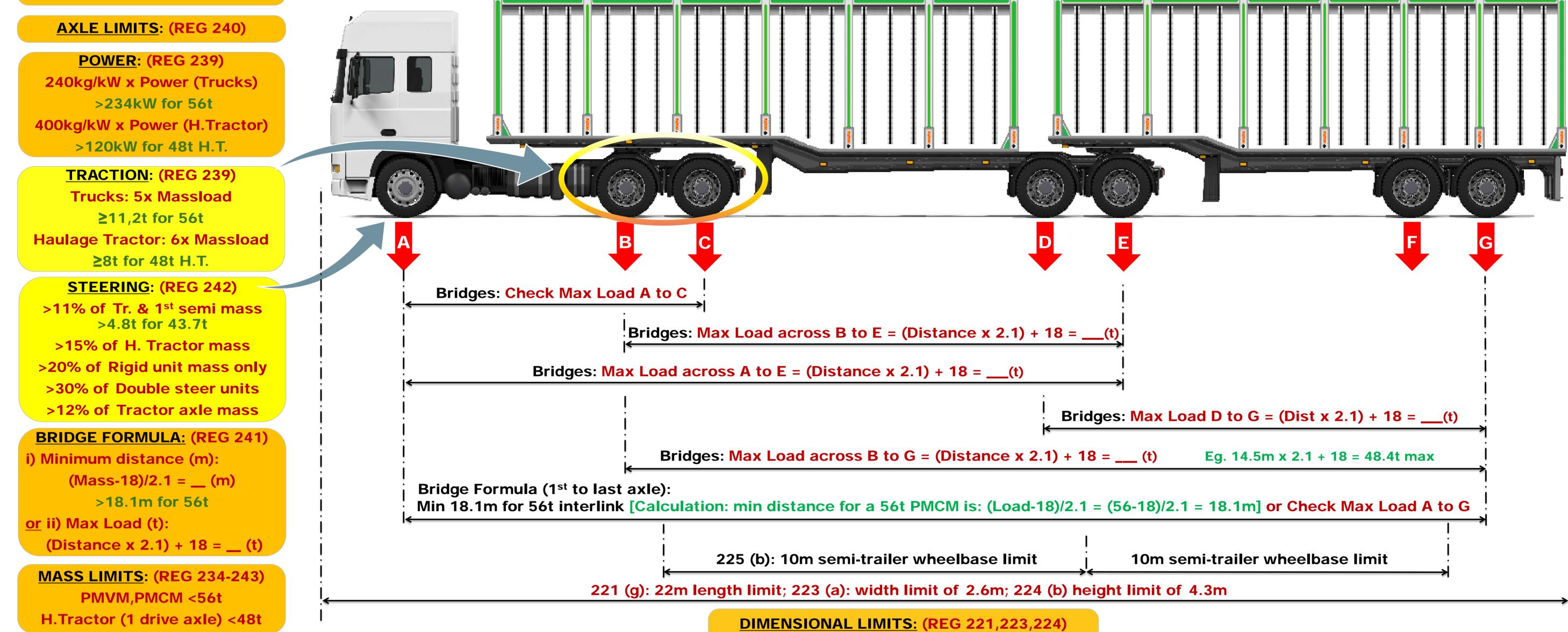
MASS LIMIT REGULATIONS:

COLOR KEY: MINIMUM REQUIREMENT

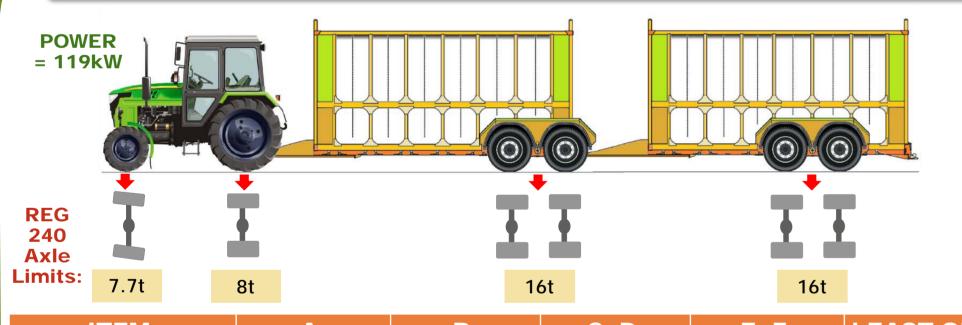
**COLOR KEY: MAXIMUM LIMIT** 

TEXT COLOR KEY: <u>HEADINGS</u> - **REFERENCE / RULE - EXAMPLE** 

**<u>TYRES</u>: (REG 238,243)** 

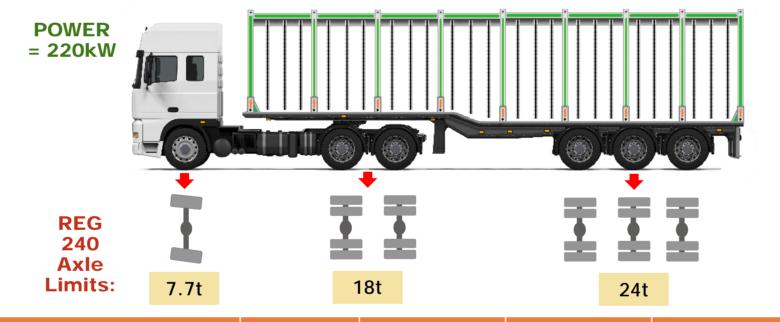


#### 3: EXAMPLE: PMCM DETERMINATION: HAULAGE TRACTOR



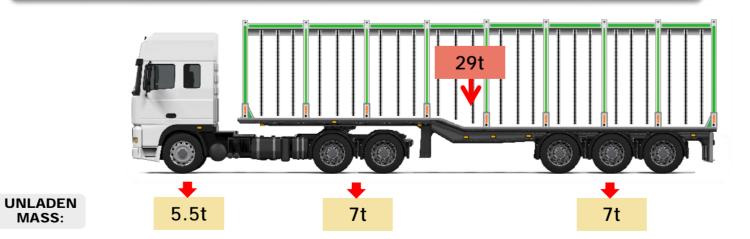
ITEM:	<b>A</b> :	B:	C+D:	E+F:	LEAST OF:	
TYRES:	Speed & load ratin	Check all				
LOAD DISTRIBUTION:	Check load distrib	Check all				
AXLE LIMITS (Reg. 240):	7.7t	8t	16t	16t	47.7t	
AXLE LIMITS (MANUF.):	Check off data pla	Check				
GCM:	Vehicle GCM limit off data plate (manufacturer) - eg. 60t					
POWER:	400kg/kW (H. Trac	47.6t*				
TRACTION:	6x the drive axle u	48t				
STEERING:	>15% of sum tract	Check >2.4t				
BRIDGE FORMULA:	1 <sup>st</sup> to last axle (A-I	55.2t				
BRIDGE:	A-B: eg. 3.1m x 2.	Check				
BRIDGE:	B-F: eg. 14.6m x 2	2.1 +18 = <mark>48.7t</mark> (ex	cluding steering ax	(le A)	Check	
BRIDGE: C-F: eg. 8.1m x 2.1 +18 = 35t (excluding steer & drive axles A +				axles A + B)	Check	
BRIDGE:	A-D: eg. 11m x 2.1	Check				
BRIDGE:	B-D: eg. 7.9m x 2.	Check				
COMBINATION LIMIT:	Permissible max c	ombination mass (F	PMCM) = 48t(2wd),	56t(4wd) or least	<47.6t*	

#### 3: EXAMPLE: PMCM DETERMINATION: TRIAXLE

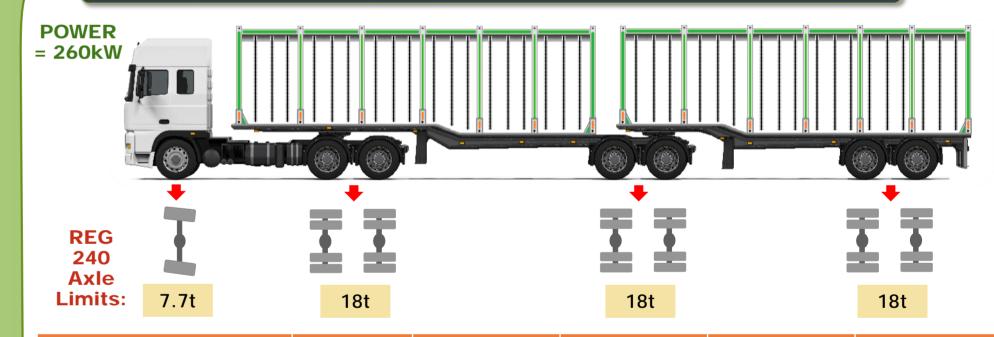


TYRES:Speed and load ratings; load uniformity; tyre uniformityCheck allLOAD DISTRIBUTION:Check load distribution across tyres, axles (<10% variance)Check allAXLE LIMITS (Reg. 240):7.7t18t24t-49.7tAXLE LIMITS (MANUF.):Check off data plate/manufacturers specificationsCheckCheckGCM:Vehicle GCM limit off data plate (manufacturer) - eg. 75t75t75tPOWER:240kg/kW (Trucks) x 220kW (example) = 52.8t52.8t52.8tTRACTION:5x the drive axle unit mass @ 18t x 5 = 90t or >20% mass on drive90tSTEERING:>11% of: Truck + 1st semi mass = (7.7t + 18t + 24t) x 11% = 5.47tCheck >5.47tBRIDGE FORMULA:1st to last axle (A-F): eg. 14.6m x 2.1 + 18 = 48.7t48.7t*BRIDGE:A-C: eg. 4.75m: 4.75 x 2.1 + 18 = 28tCheck	ITEM:	<b>A</b> :	B+C:	D+E+F:	-	LEAST OF:
AXLE LIMITS (Reg. 240):7.7t18t24t-49.7tAXLE LIMITS (MANUF.):Check off data plate/manufacturers specificationsCheckGCM:Vehicle GCM limit off data plate (manufacturer) - eg. 75t75tPOWER:240kg/kW (Trucks) x 220kW (example) = 52.8t52.8tTRACTION:5x the drive axle unit mass @ 18t x 5 = 90t or >20% mass on drive90tSTEERING:>11% of: Truck + 1st semi mass = (7.7t + 18t + 24t) x 11% = 5.47tCheck >5.47tBRIDGE FORMULA:1st to last axle (A-F): eg. 14.6m x 2.1 + 18 = 48.7t48.7t*	TYRES:	Speed and loa	Check all			
AXLE LIMITS (MANUF.):Check off data plate/manufacturers specificationsCheckGCM:Vehicle GCM limit off data plate (manufacturer) - eg. 75t75tPOWER:240kg/kW (Trucks) x 220kW (example) = 52.8t52.8tTRACTION:5x the drive axle unit mass @ 18t x 5 = 90t or >20% mass on drive90tSTEERING:>11% of: Truck + 1st semi mass = (7.7t + 18t + 24t) x 11% = 5.47tCheck >5.47tBRIDGE FORMULA:1st to last axle (A-F): eg. 14.6m x 2.1 + 18 = 48.7t48.7t*	LOAD DISTRIBUTION:	Check load dis	Check all			
GCM:Vehicle GCM limit off data plate (manufacturer) - eg. 75t75tPOWER:240kg/kW (Trucks) x 220kW (example) = 52.8t52.8tTRACTION:5x the drive axle unit mass @ 18t x 5 = 90t or >20% mass on drive90tSTEERING:>11% of: Truck + 1st semi mass = (7.7t + 18t + 24t) x 11% = 5.47tCheck >5.47tBRIDGE FORMULA:1st to last axle (A-F): eg. 14.6m x 2.1 + 18 = 48.7t48.7t*	AXLE LIMITS (Reg. 240):	7.7t	18t	24t	-	49.7t
POWER: 240kg/kW (Trucks) x 220kW (example) = 52.8t 52.8t   TRACTION: 5x the drive axle unit mass @ 18t x 5 = 90t or >20% mass on drive 90t   STEERING: >11% of: Truck + 1 <sup>st</sup> semi mass = (7.7t + 18t + 24t) x 11% = 5.47t Check >5.47t   BRIDGE FORMULA: 1 <sup>st</sup> to last axle (A-F): eg. 14.6m x 2.1 + 18 = 48.7t 48.7t*	AXLE LIMITS (MANUF.):	Check off data	Check			
TRACTION:   5x the drive axle unit mass @ 18t x 5 = 90t or >20% mass on drive   90t     STEERING:   >11% of: Truck + 1 <sup>st</sup> semi mass = (7.7t + 18t + 24t) x 11% = 5.47t   Check >5.47t     BRIDGE FORMULA:   1 <sup>st</sup> to last axle (A-F): eg. 14.6m x 2.1 + 18 = 48.7t   48.7t*	GCM:	Vehicle GCM li	75t			
STEERING:   >11% of: Truck + 1 <sup>st</sup> semi mass = (7.7t + 18t + 24t) x 11% = 5.47t   Check >5.47t     BRIDGE FORMULA:   1 <sup>st</sup> to last axle (A-F): eg. 14.6m x 2.1 + 18 = 48.7t   48.7t*	POWER:	240kg/kW (Tru	52.8t			
BRIDGE FORMULA:   1 <sup>st</sup> to last axle (A-F): eg. 14.6m x 2.1 + 18 = 48.7t   48.7t*	TRACTION:	5x the drive a	90t			
	STEERING: >11% of: Truck + 1 <sup>st</sup> semi mass = (7.7t + 18t + 24t) x 11% = 5.47t					Check >5.47t
BRIDGE: A-C: eg. 4.75m: 4.75 x 2.1 + 18 = 28t Check	BRIDGE FORMULA:	1 <sup>st</sup> to last axle	(A-F): eg. 14.6m	x 2.1 + 18 = <mark>48.7t</mark>		48.7t*
	BRIDGE: A-C: eg. 4.75m: 4.75 x 2.1 + 18 = 28t					Check
BRIDGE:B-F: eg. 11.3m:11.3 x 2.1 +18 = 41.7t (excluding steering axle A)Check	BRIDGE: B-F: eg. 11.3m:11.3 x 2.1 +18 = 41.7t (excluding steering axle A)					Check
COMBINATION LIMIT:Permissible maximum combination mass (PMCM) = 56t or least<48.7t*	COMBINATION LIMIT: Permissible maximum combination mass (PMCM) = 56t or least					<48.7t*

### 4: ESTIMATING PAYLOAD DISTRIBUTIONS

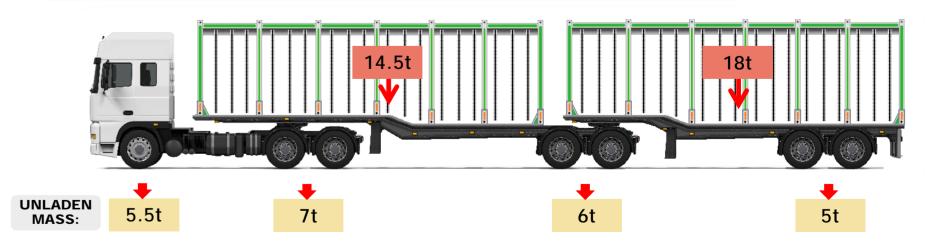


## 3: EXAMPLE: PMCM DETERMINATION: INTERLINK

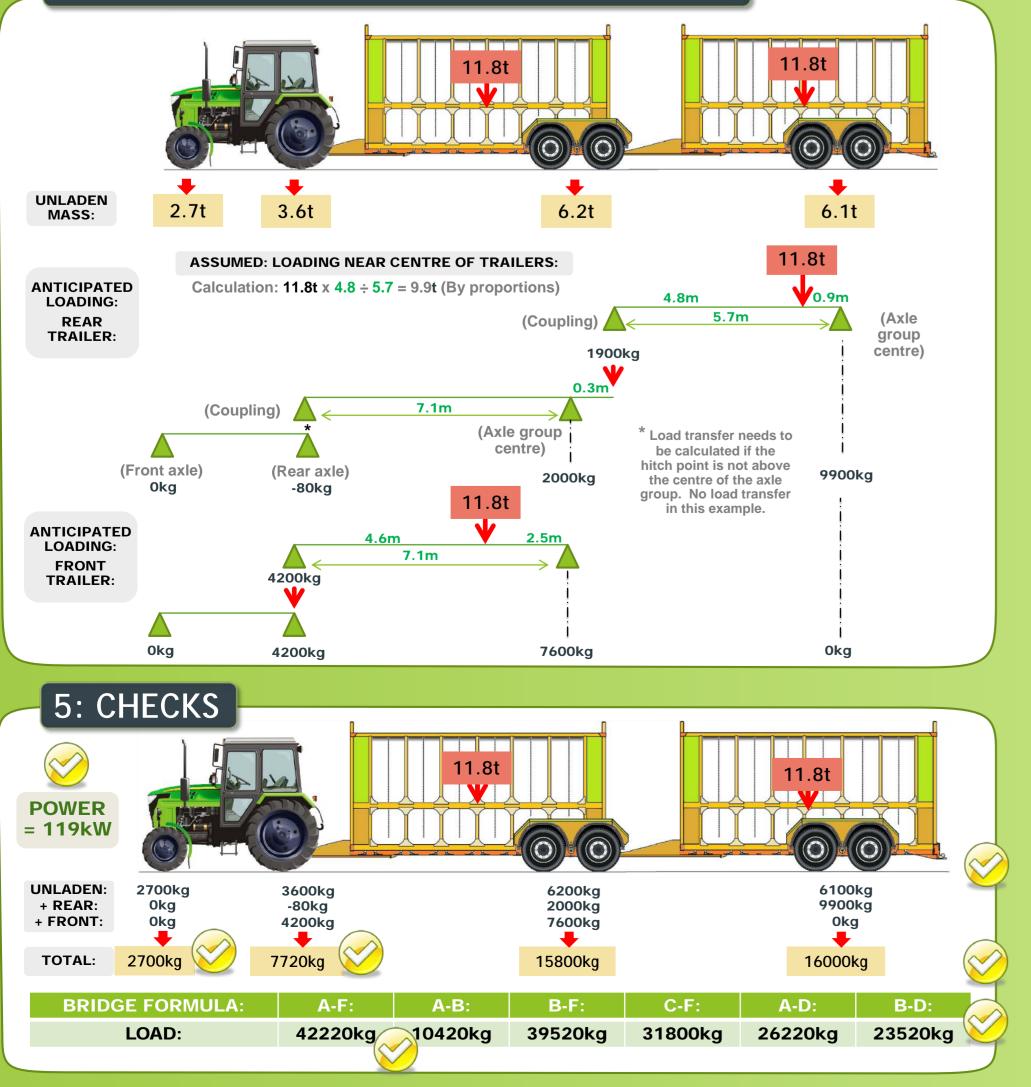


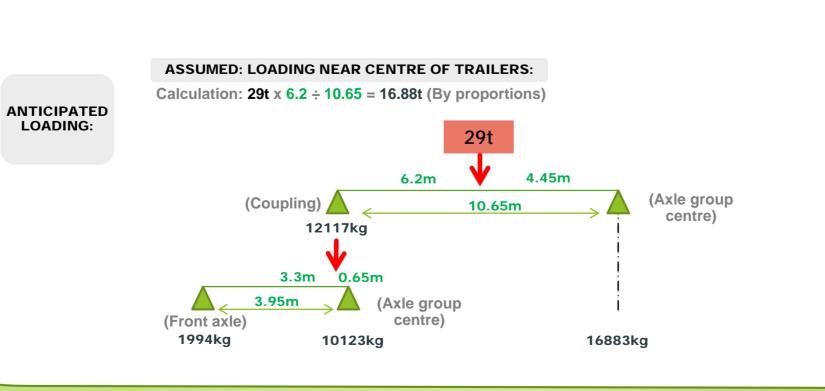
ITEM:	<b>A</b> :	B+C:	D+E:	F+G:	LEAST OF:
TYRES:	Speed and loa	Check all			
LOAD DISTRIBUTION:	Check load dis	Check all			
AXLE LIMITS (Reg. 240):	7.7t 18t 18t 18t				61.7t
AXLE LIMITS (MANUF.):	Check off data	Check			
GCM:	Vehicle GCM li	75t			
POWER:	240kg/kW (Tru	62.4t			
TRACTION:	5x the drive a	90t			
STEERING:	11% of mass of	Check >4.8t			
BRIDGE FORMULA:	1 <sup>st</sup> to last axle	58.4t			
BRIDGE:	A-C: eg. 4.75n	Check			
BRIDGE:	B-G: eg. 16m:	Check			
BRIDGE:	D-G: eg. 8.75r	Check			
BRIDGE:	A-E: eg. 12m:	Check			
BRIDGE:	BRIDGE: B-E: eg. 8.75m: 8.75 x 2.1 + 18 = 36.4t				
COMBINATION LIMIT:	Permissible ma	aximum combinat	ion mass (PMCM) =	56t* or least	<56t*

## 4: ESTIMATING PAYLOAD DISTRIBUTIONS

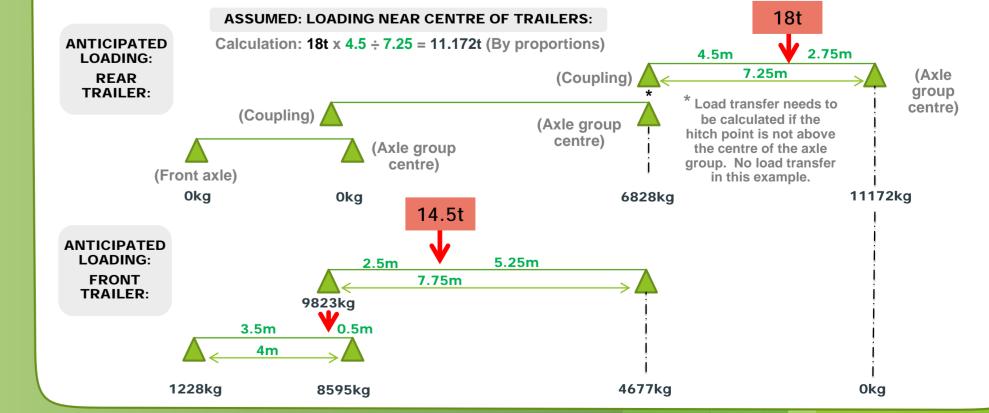


#### 4: ESTIMATING PAYLOAD DISTRIBUTIONS











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