
Tablas de cargas

LR 1600 / 2 - W

074548

SL2DFB, SL4DFB

I - - I ==> Viento 12.8 m/s

EPROM: 30. 08. 2011

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Departamento de producción:
Tipo : LR 1600/2
N° de la máquina : 074548
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I. INDICACIONES PARA EL USO DE LAS TABLAS DE CARGAS



PELIGRO

¡Peligro de accidentes!

Para el servicio de grúa, es decisivo seguir las instrucciones del manual de instrucciones para el uso.

- Observar las indicaciones y los datos del manual de instrucciones para el uso!

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II. TABLAS DE CARGAS

1. Explicaciones

- 1.1 Los valores de cargas en las tablas de cargas se indican en toneladas [t].
- 1.2 El alcance es la distancia horizontal calculada desde el centro de gravedad de la carga al eje de giro del chasis superior, medida en el suelo. Esta indicación es válida bajo carga nominal, es decir incluyendo la flexión elástica de la pluma.
- 1.3 Está prohibido posiciones de pluma a otros valores que no estén indicados en las tablas.
- 1.4 También sin carga, la pluma sólo se debe mover a los campos determinados por valores de cargas, sino hay peligro de vuelco. En el servicio normal esta operación está asegurada por el Controlador de cargas. Al conectarse en "Montaje" (mediante el pulsador de llave para el montaje) la pluma no deberá descender sobrepasando más allá de la zona de alcance.
- 1.5 Los pesos de los medios portantes, los medios elevadores de carga y los elementos de detención ya están considerados en el valor de la carga. O sea que para conocer tan sólo el peso de carga por levantar se deberá sustraer los pesos de los dispositivos mencionados anteriormente.
- 1.6 Con los modos de servicio con coche lastre o lastre de suspensión se debe determinar el peso lastre Derrick para la carga por elevarse con el planificador de aplicación LICCON.

2. Servicio de la grúa "Grúa estabilizada"

- 2.1 Los largueros de apoyo desplegable de la estabilización hidráulica se deben extender a la medida indicada en la tabla de cargas por utilizarse (uniformemente por ambos lados).
- 2.2 Las placas de apoyo y las placas de base deben estar montados tal como se describe en el manual de instrucciones para el uso de la grúa en los cilindros de apoyo.
- 2.3 Las dos vigas de orugas deben desprenderse del suelo.
- 2.4 Por medio del terminal Bluetooth™ (BTT) se debe nivelar la grúa horizontalmente. Dicha posición horizontal de la grúa deberá controlarse de tiempo en tiempo durante el servicio de grúa y si es necesario, corregirla.

3. Procedimiento

Véase el manual de instrucciones para el uso de la grúa.

4. Existe peligro de vuelco o peligro de sobrecarga en los componentes portantes en los casos siguientes:

- 4.1 Si las cargas, largos de pluma y alcances indicados en las tablas de cargas se han excedido.
- 4.2 Si por un mando erróneo del movimiento de la grúa, la carga enganchada comienza a oscilar.
- 4.3 Si se efectúa una tracción en diagonal. Especialmente es peligroso la tracción transversalmente a la dirección de la pluma. ¡Está prohibido la tracción transversal!
- 4.4 Si no se mantiene bastante distancia de las fosas, sótanos y taludes.
- 4.5 Si en el estado de servicio "Grúa estabilizada":
 - 4.5.1 La grúa no se ha apoyado correctamente en todos los 4 estabilizadores hidráulicos ni nivelado verticalmente.
 - 4.5.2 Los largueros de apoyo desplegados no se han extendido a la medida indicada en la respectiva tabla de cargas.
 - 4.5.3 Las placas de apoyo y las placas de base no están montadas tal como se describe en el manual de instrucciones para el uso de la grúa en los cilindros de apoyo.
 - 4.5.4 Los 4 estabilizadores hidráulicos no se ha asegurado a la base respondiendo a las condiciones del terreno ni colocando en una gran área materiales estables.
- 4.6 Si en el estado de servicio "Grúa sobre la viga de orugas":
 - 4.6.1 El suelo no está en condiciones de soportar con seguridad el peso máximo de servicio de la grúa y además el peso de la carga.
 - 4.6.2 Si el suelo no es plano aunque está inclinado. Véase "*15.2 Inclinación lateral máxima autorizada de la grúa al operar con las tablas de cargas*" en la pág.50.

5. Utilización de la grúa (acumulador de carga)

Las grúas automotrices y las grúas sobre orugas de Liebherr están concebidas para el servicio de montaje (categoría de acumulador de carga = "ligera" = Q1 ó L1). Si las grúas se utilizan con el servicio de imán, con cuchara almeja o servicio de transbordo (categoría de acumulador de carga = "medio" o superior), se deben observar diferentes puntos. Véase el capítulo 8.01 "Control periódico de las grúas" en el manual de instrucciones para el uso de la grúa.



Nota

- En caso que la grúa esté sometida a una acumulación de carga más elevada del promedio, por ejemplo por operar con el servicio de imán, con cuchara almeja o servicio de transbordo, entonces se deberán acortar los intervalos de control respectivo.
-

AVISO

¡Desgaste prematuro y fisuras en los componentes portantes!

Si la grúa no se utiliza en el servicio de montaje sino en el servicio de imán, con cuchara almeja o servicio de transbordo, entonces se debe contar con un desgaste prematuro en los componentes de transmisión y/o con fisuras en los componentes portantes de acero.

- Por eso le recomendamos reducir urgentemente las cargas de un promedio del 50% en relación a los valores indicados en la respectiva tabla de cargas.
-

AVISO

¡Alto desgaste del cable y daños en el cable!

¡Para mantener el más mínimo desgaste de los cables de elevación con el servicio de imán, con cuchara almeja o servicio de transbordo, se recomienda utilizar un largo de cable especial!

Si no es el caso, se pueden enroscar las capas de cable que no se utilizan.

¡En caso de fuertes tracciones de cable, el cable puede tirarse en las capas de cable que no se utilizan y causar daños de cable!

- ¡Con el servicio de imán, cuchara almeja o servicio de transbordo, utilizar un largo de cable especial para que todo el largo de cable se desenrolle en la posición más inferior del motón de gancho (hasta quedar unas 3-5 vueltas restantes de cable)!
-

6. Controlador de cargas LICCON e interruptores de fin de carrera

El Controlador de cargas LICCON funcionando electrónicamente desconecta los movimientos de elevación, de basculamiento de la pluma al sobrepasar el momento de carga admisible. Es posible descargar efectuando un movimiento opuesto. Antes de toda utilización, se debe controlar el funcionamiento correcto del Controlador de cargas LICCON.

- 6.1 El Controlador de cargas LICCON se debe ajustar al estado de montaje actual de la grúa mediante las teclas de función o introduciendo el código abreviado de 4 cifras respectivo.
- 6.2 El Controlador de cargas LICCON es un dispositivo de seguridad y no se deberá usar como dispositivo de desconexión de funcionamiento. El gruísta deberá comprobar el peso de la carga antes de comenzar el trabajo con cargas. La existencia del Controlador de cargas LICCON no exime al gruísta de su deber de operar con cuidado.
- 6.3 En la unidad de mando y de visualización del Controlador de cargas LICCON, se indican entre otros el alcance, largo de pluma, altura de los rodillos, carga y el estado de carga de la grúa. Esto permite tener un control permanente del campo de trabajo y de la utilización de la grúa.
- 6.4 Los interruptores de fin de carrera colocados en las puntas de pluma (pluma en celosía, pluma auxiliar) deberán evitar que el motón de gancho se inserte dentro del cabezal de pluma. Antes de cada aplicación de grúa, se deberá verificar la capacidad de su funcionamiento.
- 6.5 Controlar que los transmisores de giro de los cabrestantes de cable permitan que queden 3 vueltas de seguridad en los tambores de cable. Acercándose a la última capa del cable, se debe controlar también visualmente que se quede 3 vueltas de cable. Habiendo sobregirado los mecanismos de elevación en el sentido de elevación, así como después de cambiar el cable de elevación, es preciso ajustar de nuevo el interruptor de fin de carrera correspondiente antes de ponerlo en servicio.
- 6.6 El gruísta debe cerciorarse del funcionamiento correcto del Controlador de cargas LICCON antes de cada trabajo. El fabricante de la grúa no asume ninguna responsabilidad en caso de daños o daños consecuentes ocurridos por no poner en funcionamiento o estar fuera de servicio el Controlador de cargas LICCON.

7. Cabrestantes (Mecanismos de elevación)

7.1 Tracciones máximas de cable de los cabrestantes

| Cable de elevación | Tracción máxima | Utilización |
|---------------------|-----------------|--------------------------------|
| Tipo 1 (D=28 mm) | 180 KN (18,1 t) | Cabrestante 1 Cabrestante 2 |
| Tipo 2 (D=25 mm) | 125 KN (12,6 t) | Cabrestante 6 |
| Tipo 3 (D=28 mm) | 160 KN (16,1 t) | Cabrestante 6 |

Estas tracciones no deberán sobrepasarse en ningún caso. Seleccionar respectivamente el número inferior de ramal de cable de elevación (colocación de cable) según el peso de la carga que se va a cargar (véase la tabla "Colocación de cable de elevación" en el capítulo II).

- 7.2 ¡Para evitar que el cable se enrosque, una persona deberá controlar el recorrido del cable en los cabrestantes al montar los equipos adicionales (por ej. polea de ramal simple)!

8. Colocación del cable de elevación

- 8.1 El cable de elevación se debe colocar entre cabezal de la pluma y el motón de gancho, lo cual depende de la tracción máx. del cable del mecanismo de elevación y del peso de la carga por elevar.
- 8.2 En caso de varios ramales de cable de elevación, el rendimiento del motón de gancho se reduce por la fricción de los rodillos y flexión del cable. Por ello, con una tracción de cable de por ej. de 180 KN para 10 ramales se pueden tirar sólo 1681 KN (169 t) en vez de 1800 KN (181 t).
- 8.3 Las cargas máx. a llevar según el número de ramales del cable de elevación se pueden ver en la tabla "Colocación del cable de elevación" en el capítulo II de este cuaderno.

- 8.3.1 Servicio de grúa con 1 cabrestante de cable de elevación en el servicio simple.

Ejemplo: Cálculo de la colocación de cable requerida para elevar una carga de 280 t.

El número de ramal que se requiere con 1 cabrestante de cable de elevación según la tabla "Colocación del cable de elevación" del cap. II es para el diámetro de cable de 28 mm (tipo 1) de:

18 ramales (287,0 t)

8.3.2 Servicio de grúa con 2 cabrestantes de cable de elevación en el servicio paralelo.

En el servicio de grúa con 2 cabrestantes de cable de elevación del servicio paralelo, el número de ramales de cable que se requiere se calcula según 3 procedimientos.

Procedimiento 1: La carga se divide entre 2 ya que se tomará la misma cantidad de carga del cabrestante de cable de elevación 1 y del cabrestante de cable de elevación 2.

Procedimiento 2: El número de ramales que se requiere para 1 cabrestante de cable de elevación se calcula.

Procedimiento 3: El número de ramal calculado para 1 cabrestante de cable de elevación se aplica a los dos cabrestantes de cable de elevación.

Ejemplo: Cálculo del número de ramal que se requiere para elevar una carga de 280 t con 2 cabrestantes de cable de elevación en el servicio paralelo.

Procedimiento 1: $280 \text{ t} / 2 \text{ cabrestantes de cable de elevación} = 140 \text{ t}$.

Procedimiento 2: El número de ramal que se requiere con 1 cabrestante de cable de elevación según la tabla "Colocación del cable de elevación" del cap. II es para el diámetro de cable de 28 mm (tipo 1) de:

9 ramales (153,2 t)

Procedimiento 3: El número de ramales necesarios con 2 cabrestante de cable de elevación en el servicio paralelo es igualmente de:
 $2 \times 9 \text{ ramales} = 18 \text{ ramales}$ ($2 \times 153,2 \text{ t} = 306,4 \text{ t}$)



Nota

- Antes de aplicar el número de ramales calculado en el servicio de grúa, se debe controlar si el número de ramal mínimo de cable de elevación y el peso mínimo de motón de gancho son necesarios. Véase "10. Ramales mínimos de cable de elevación y pesos mínimos de motones de gancho" en la pág.21.
-

8.4 El número de ramales del cable de elevación en la unidad de mando y visualización del Limitador de cargas debe corresponder al número de ramales del cable de elevación presente actualmente en la grúa.

8.5 La tracción de cable máxima para países con un factor de seguridad de cable 5 según ASME B30.5 (Canadá, USA y Taiwán)



Nota

En los países en donde se aplica la norma nacional ASME B30.5 (Canadá, USA, y Taiwán) se ha prescrito una seguridad de cable de grado 5 para los cables de elevación antigiratorios. Las cargas que resultan de estas tracciones en la tabla "Colocación del cable de elevación" en el capítulo II de este manual se han medido según la norma DIN EN 13000 con una seguridad de cable de grado 4,5.

En la norma DIN EN 13000, al contrario de la ASME B30.5 se toma en cuenta así mismo el rendimiento de la tracción de cable. Por ese motivo en los países en donde se aplica la norma nacional ASME B30.5 (Canadá, USA, y Taiwán) se debe utilizar con una colocación de cable de hasta 13 ramales las cargas que resultan de las tracciones de cable en las tablas a continuación. ¡A partir de 13 ramales, el grado de seguridad del cable de 4,5 según la norma DIN EN 13000 es más seguro que aquel del grado 5 según la ASME B30.5!

Al respetar lo indicado en el capítulo 5.3.2.1.1 (d) en las normas ASME B30.5 se pueden utilizar igualmente las tracciones de cable según la DIN EN 13000.

8.5.1 Cargas máximas dependiendo del número de ramales de cable utilizado

Cable de elevación Tipo 1: D=28,0 mm

| Número de ramal | Carga máxima (DIN EN 13000) [t] | Carga máxima (ASME B30.5) (Canadá, USA, y Taiwán) [t] |
|-----------------|---|--|
| 1 | 18,1 | 16,5 |
| 2 | 35,9 | 33,0 |
| 3 | 53,4 | 49,5 |
| 4 | 70,7 | 66,1 |
| 5 | 87,7 | 82,6 |
| 6 | 104,5 | 99,1 |
| 7 | 121,0 | 115,6 |
| 8 | 137,2 | 132,1 |
| 9 | 153,2 | 148,6 |
| 10 | 169,0 | 165,1 |
| 11 | 184,5 | 181,7 |
| 12 | 199,9 | 198,2 |
| 13 | 214,9 | 214,7 |

Cable de elevación Tipo 2: D=25,0 mm

| Número de ramal | Carga máxima (DIN EN 13000) [t] | Carga máxima (ASME B30.5) (Canadá, USA, y Taiwán) [t] |
|----------------------------|---|---|
| 1 | 12,6 | 11,5 |
| 2 | 24,9 | 22,9 |
| 3 | 37,1 | 34,4 |
| 4 | 49,1 | 45,9 |
| 5 | 60,9 | 57,3 |
| 6 | 72,5 | 68,8 |
| 7 | 84,0 | 80,3 |
| 8 | 95,3 | 91,7 |
| 9 | 106,4 | 103,2 |
| 10 | 117,4 | 114,7 |
| 11 | 128,2 | 126,1 |
| 12 | 138,8 | 137,6 |
| 13 | 149,3 | 149,1 |

Cable de elevación Tipo 3: D=28,0 mm

| Número de ramal | Carga máxima (DIN EN 13000) [t] | Carga máxima (ASME B30.5) (Canadá, USA, y Taiwán) [t] |
|----------------------------|---|---|
| 1 | 16,1 | 14,7 |
| 2 | 31,9 | 29,4 |
| 3 | 47,5 | 44,0 |
| 4 | 62,8 | 58,7 |
| 5 | 78,0 | 73,4 |
| 6 | 92,8 | 88,1 |
| 7 | 107,5 | 102,8 |
| 8 | 122,0 | 117,4 |
| 9 | 136,2 | 132,1 |
| 10 | 150,2 | 146,8 |
| 11 | 164,0 | 161,5 |
| 12 | 177,6 | 176,1 |
| 13 | 191,0 | 190,8 |

9. Motones de gancho y ganchos de carga

En este capítulo, el gancho de carga y los motones de gancho para este tipo de grúa se indicarán con el número de ramal máximo autorizado y su peso propio.

Adicionalmente se puede calcular a partir de las tablas:

- 1.) El peso del motón de gancho requerido para un cierto número de ramal y un cierto largo total de pluma.
- 2.) El número de ramal máximo posible para un cierto peso del motón de gancho y un cierto largo total de pluma.
- 3.) El largo total de pluma máximo posible para un cierto número de ramal y un cierto peso del motón de gancho.

Los valores indicados en las tablas se han calculado como datos básicos específicos a la grúa. Por esta razón, los datos en la tabla deben concordar con aquellos datos de la grúa.

Los datos específicos a la grúa para el servicio de grúa con 1 cabrestante de cable de elevación en el servicio simple y el servicio de grúa con 2 cabrestantes de cable de elevación en el servicio paralelo se indicarán respectivamente antes de los motones de gancho previstos para ello.

AVISO

¡Existe peligro de daño para el cable debido al peso insuficiente del motón de gancho!

Si el peso del motón de gancho es insuficiente para tensar correctamente el cable de elevación, es posible que al descender o elevar el motón de gancho, hayan problemas en los cabrestantes si el cable se enrosca. ¡Por lo tanto, el cable puede dañarse!

- Para evitar el problema de enrollado en los cabrestantes, se puede aumentar el peso del motón de gancho en caso necesario, con los pesos adicionales o los kits de modificación. ¡Observar al respecto que se deban desmontar nuevamente los pesos adicionales si debido al aumento del peso propio del motón de gancho, se ha sobrepasado los pesos del motón de gancho autorizados para el levantamiento y descenso del sistema de pluma!
-

9.1 Gancho de carga y motón de gancho para el servicio de grúa con 1 cabrestante de cable de elevación en el servicio simple con cable de tipo 1 (D=28 mm)

| Datos específicos a la grúa | | |
|--|---------|-------|
| Diámetro del cable: | 28,0 | [mm] |
| Peso de cable: | 0,00394 | [t/m] |
| Partes de la pluma: | 6 | [m] |
| Largo de pluma mín.: | 24 | [m] |
| Largo de pluma máx.: | 192 | [m] |
| Número de cabrestantes de cable de elevación: | 1 | |
| Largo de cable de elevación: | 1050 | [m] |
| Derrick hasta la inversión del cable de elevación: | 31,0 | [m] |

9.1.1 Gancho de carga 16 E (0 poleas / carga 16,0 t)

| N° de ramales | Largo total de pluma máximo posible [m] con el peso de motón de gancho [t] | | | | | |
|---------------|--|--|--|--|--|--|
| | 1,1 t sin peso adicional | | | | | |
| 1 | 192 | | | | | |

9.1.2 Motón de gancho 50 EM (1 poleas / carga 50,0 t)

| N° de ramales | Largo total de pluma máximo posible [m] con el peso de motón de gancho [t] | | | | | |
|---------------|--|-------------------------------|-------------------------------|--|--|--|
| | 1,0 t sin peso adicional | 2,0 t con 2 pesos adicionales | 3,0 t con 4 pesos adicionales | | | |
| 3 | 60 | 120 | 186 | | | |
| 2 | 90 | 186 | 192 | | | |
| 1 | 192 | 192 | 192 | | | |

9.1.3 Motón de gancho 125 DM (3 poleas / carga 121,0 t)

| N° de ramales | Largo total de pluma máximo posible [m] con el peso de motón de gancho [t] | | | | | |
|---------------|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--|
| | 1,5 t sin peso adicional | 2,5 t con 2 pesos adicionales | 3,5 t con 4 pesos adicionales | 4,5 t con 6 pesos adicionales | 5,5 t con 8 pesos adicionales | |
| 7 | 36 | 60 | 84 | 108 | 120 | |
| 6 | 42 | 72 | 102 | 132 | 138 | |
| 5 | 48 | 84 | 120 | 156 | 162 | |
| 4 | 66 | 114 | 156 | 192 | 192 | |
| 3 | 90 | 150 | 192 | 192 | 192 | |
| 2 | 138 | 192 | 192 | 192 | 192 | |
| 1 | 192 | 192 | 192 | 192 | 192 | |

9.1.4 Motón de gancho 200 DM (5 poleas / carga 184,5 t)

| N° de ramales | Largo total de pluma máximo posible [m] con el peso de motón de gancho [t] | | | | | |
|---------------|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|
| | 2,0 t sin peso adicional | 3,0 t con 2 pesos adicionales | 4,0 t con 4 pesos adicionales | 5,0 t con 6 pesos adicionales | 6,0 t con 8 pesos adicionales | 7,0 t con 10 pesos adicionales |
| 11 | 24 | 42 | 54 | 72 | 78 | 78 |
| 10 | 30 | 48 | 60 | 78 | 84 | 84 |
| 9 | 36 | 54 | 72 | 90 | 96 | 96 |
| 8 | 42 | 60 | 84 | 102 | 108 | 108 |
| 7 | 48 | 72 | 96 | 120 | 120 | 120 |
| 6 | 54 | 84 | 114 | 138 | 138 | 138 |
| 5 | 66 | 102 | 138 | 162 | 162 | 162 |
| 4 | 90 | 132 | 180 | 192 | 192 | 192 |
| 3 | 120 | 186 | 192 | 192 | 192 | 192 |
| 2 | 186 | 192 | 192 | 192 | 192 | 192 |
| 1 | 192 | 192 | 192 | 192 | 192 | 192 |

9.1.5 Motón de gancho doble 400 - 200 DMZ (5 poleas / carga 184,5 t)

| N° de ramales | Largo total de pluma máximo posible [m] con el peso de motón de gancho [t] | | | | | |
|------------------|---|---|---|--|--|--|
| | 5,0 t sin peso adicional | 6,0 t con 2 pesos adiciona- les | 7,0 t con 4 pesos adiciona- les | | | |
| 11 | 72 | 78 | 78 | | | |
| 10 | 78 | 84 | 84 | | | |
| 9 | 90 | 96 | 96 | | | |
| 8 | 102 | 108 | 108 | | | |
| 7 | 120 | 120 | 120 | | | |
| 6 | 138 | 138 | 138 | | | |
| 5 | 162 | 162 | 162 | | | |
| 4 | 192 | 192 | 192 | | | |
| 3 | 192 | 192 | 192 | | | |
| 2 | 192 | 192 | 192 | | | |
| 1 | 192 | 192 | 192 | | | |

9.1.6 Motón de gancho doble 600 - 300 DMZ (9 poleas / carga 300 t)

| N° de ramales | Largo total de pluma máximo posible [m] con el peso de motón de gancho [t] | | | | | |
|------------------|---|--|--|--|--|--|
| | 8,5 t sin peso adicional | | | | | |
| 19 | 48 | | | | | |
| 18 | 48 | | | | | |
| 17 | 54 | | | | | |
| 16 | 54 | | | | | |
| 15 | 60 | | | | | |
| 14 | 60 | | | | | |
| 13 | 66 | | | | | |
| 12 | 72 | | | | | |
| 11 | 78 | | | | | |
| 10 | 84 | | | | | |
| 9 | 96 | | | | | |
| 8 | 108 | | | | | |
| 7 | 120 | | | | | |
| 6 | 138 | | | | | |
| 5 | 162 | | | | | |
| 4 | 192 | | | | | |
| 3 | 192 | | | | | |
| 2 | 192 | | | | | |
| 1 | 192 | | | | | |

9.2 Motón de gancho para el servicio de grúa con 2 cabrestantes de cable de elevación en el servicio paralelo con cable de tipo 1 (D=28 mm)

| Datos específicos a la grúa | | |
|--|---------|-------|
| Diámetro del cable: | 28,0 | [mm] |
| Peso de cable: | 0,00394 | [t/m] |
| Partes de la pluma: | 6 | [m] |
| Largo de pluma mín.: | 24 | [m] |
| Largo de pluma máx.: | 192 | [m] |
| Número de cabrestantes de cable de elevación: | 2 | |
| Largo de cable de elevación: | 1050 | [m] |
| Derrick hasta la inversión del cable de elevación: | 31,0 | [m] |

9.2.1 Motón de gancho doble 400 - 200 DMZ (2 x 5 poleas / carga 369 t)

| N° de ramales | Largo total de pluma máximo posible [m] con el peso de motón de gancho [t] | | | | | |
|---------------|--|---|---|---|--|---|
| | 6,0 t sin peso adicional | 7,0 t con 2 pesos adiciona- les | 8,0 t con 4 pesos adiciona- les | 9,0 t con 6 pesos adiciona- les | 10,0 t con 8 pesos adiciona- les | 11,0 t con 10 pesos adiciona- les |
| 2 x 11 | 42 | 48 | 54 | 66 | 72 | 78 |
| 2 x 10 | 48 | 54 | 60 | 72 | 78 | 84 |
| 2 x 9 | 54 | 60 | 72 | 78 | 90 | 96 |
| 2 x 8 | 60 | 72 | 84 | 90 | 102 | 108 |
| 2 x 7 | 72 | 84 | 96 | 108 | 120 | 120 |
| 2 x 6 | 84 | 102 | 114 | 132 | 138 | 138 |

9.2.2 Motón de gancho doble 600 - 300 DMZ (2 x 9 poleas / carga 600 t)

| N° de ramales | Largo total de pluma máximo posible [m] con el peso de motón de gancho [t] | | | | | |
|------------------|---|--|--|--|--|---|
| | 11,0 t sin peso adicional | 12,0 t con 2 pesos adiciona- les | 13,0 t con 4 pesos adiciona- les | 14,0 t con 6 pesos adiciona- les | 15,0 t con 8 pesos adiciona- les | 16,0 t con 10 pesos adiciona- les |
| 2 x 19 | 36 | 42 | 48 | 48 | 48 | 54 ^(a) |
| 2 x 18 | 42 | 42 | 48 | 48 | 48 | 54 ^(a) |
| 2 x 17 | 42 | 48 | 54 | 54 | 54 | 60 ^(a) |
| 2 x 16 | 48 | 54 | 54 | 54 | 54 | 60 ^(a) |
| 2 x 15 | 54 | 60 | 60 | 60 | 60 | 66 ^(a) |
| 2 x 14 | 60 | 60 | 60 | 60 | 60 | 66 ^(a) |
| 2 x 13 | 66 | 66 | 66 | 66 | 66 | 72 ^(a) |
| 2 x 12 | 72 | 72 | 72 | 72 | 72 | 72 |
| 2 x 11 | 78 | 78 | 78 | 78 | 78 | 78 |
| 2 x 10 | 84 | 84 | 84 | 84 | 84 | 84 |
| 2 x 9 | 96 | 96 | 96 | 96 | 96 | 96 |
| 2 x 8 | 108 | 108 | 108 | 108 | 108 | 108 |
| 2 x 7 | 120 | 120 | 120 | 120 | 120 | 120 |
| 2 x 6 | 138 | 138 | 138 | 138 | 138 | 138 |

^(a) = ¡En los valores marcados con un ^(a) (largo total de pluma), el motón de gancho no puede descenderse hasta llegar al suelo debido al largo del cable de elevación!

10. Ramales mínimos de cable de elevación y pesos mínimos de motones de gancho

Para un servicio de grúa seguro, se requieren por diferentes razones un número de ramal mínimo de cable de elevación y pesos mínimos de motones de gancho.

Existen 4 diferentes criterios límites para calcular el número de ramal mínimo de cable de elevación. Cada criterio implica un número de ramal mínimo de cable de elevación.

Estos criterios límites son:

- 1.) Tabla de número de ramal del cable de elevación (n_{\min} [Tabla de ramales])
 - 2.) Motivos estáticos (n_{\min} [Estático]), (G_{\min} [Estático])
 - 3.) Peso seguro de carga (n_{\min} [peso de lastre])
 - 4.) Control del servicio paralelo en funcionamiento (n_{\min} [servicio paralelo])
- 1.) **Número de ramal mínimo de cable de elevación debido a la tracción de cable máxima autorizada (n_{\min} [Tabla de ramales])**
Es el número de ramal mínimo de cable de elevación que dependiendo de la tracción máxima de cable del mecanismo de elevación es necesario para elevar la carga. Véase la tabla "Colocación del cable de elevación" en el capítulo II de este cuaderno.
 - 2.) **Número de ramal mínimo de cable de elevación y pesos mínimos de motones de gancho por razones estáticas (n_{\min} [Estático]), (G_{\min} [Estático])**
Son el número de ramal mínimo de cable de elevación y los pesos mínimos de motones de gancho necesarios para ciertos modos de servicio y los cuales deben impedir que la grúa con la pluma en posiciones erectas se mueva hacia atrás incontroladamente y se vuelque. Véase "10.1 Número de ramal mínimo de cable de elevación y pesos mínimos de motones de gancho, que por motivos estáticos son necesarios para ciertos modos de servicio" en la pág.22.
 - 3.) **Número de ramal mínimo de cable de elevación para un peso seguro de carga del Controlador de cargas LICCON (n_{\min} [Peso carga])**
Es el número de ramal mínimo de cable de elevación necesario en general en todos los modos de servicio para el peso seguro de carga del Controlador de cargas LICCON. Véase "10.2 Número de ramales mínimo de cable de elevación requerido para un peso seguro de carga del Controlador de cargas LICCON" en la pág.26.
 - 4.) **Número de ramal mínimo de cable de elevación para un control del servicio paralelo en funcionamiento (n_{\min} [servicio paralelo])**
Es el número de ramal mínimo de cable de elevación que permite evitar que el motón de gancho en el servicio paralelo se encuentre en una posición inclinada no autorizada. Véase "10.3 Número requerido de ramal mínimo de cable de elevación con el servicio paralelo" en la pág.29.

Antes del servicio de grúa, se deben calcular los números de ramales mínimos de cable de elevación según todos los 4 criterios límites. ¡El mayor número de ramal mínimo de cable de elevación calculado es el número determinante y debe utilizarse para elevar la carga!

10.1 Número de ramal mínimo de cable de elevación y pesos mínimos de motones de gancho, que por motivos estáticos son necesarios para ciertos modos de servicio

10.1.1 Número de ramal mínimo de cable de elevación con el servicio SLF; SL3F

TAB 18100047



ADVERTENCIA

¡Peligro de vuelco!

Si el número de ramal mínimo de cable de elevación y el peso mínimo de motón de gancho no se respeta, la pluma al estar en la posición erecta puede moverse hacia atrás incontroladamente. ¡La grúa puede volcarse!

- Los pesos mínimos de motón de gancho y los números de ramal mínimo de cable de elevación indicados en la tabla deberán respetarse obligatoriamente en relación al ángulo de pluma principal.
- El motón de gancho puede bajarse sólo por debajo del campo de ángulo dado, es decir a posiciones planas por debajo de este campo.

En el servicio con las combinaciones de pluma según (1), el motón de gancho con el peso mínimo (2) y con el número de ramal mínimo de cable de elevación (3) debe actuar en el campo de ángulo de pluma principal (4).

| (1) Pluma | | (2) Peso mínimo del motón de gancho [t] | (3) Número de ramales mínimo del cable de ele- vación | (4) Ángulo de pluma principal | |
|-----------------------|------------|---|--|-------------------------------------|--------------|
| SL [m] | F [m] | | | desde [°] | hasta [°] |
| SL-54 - SL3-108 | F-12 / 11° | 2,5 | 7 | 75 | 87 |
| | F-12 / 11° | 3,0 | 6 | 75 | 87 |
| | F-12 / 11° | 3,5 | 5 | 75 | 87 |
| | F-12 / 11° | 4,0 | 4 | 75 | 87 |
| | F-12 / 16° | 1,5 | 3 | 75 | 87 |

**10.1.2 Número de ramal mínimo de cable de elevación con el servicio SW;
SDW; SDWV
TAB 18100027**



ADVERTENCIA

¡Peligro de vuelco!

Si el número de ramal mínimo de cable de elevación y el peso mínimo de motón de gancho no se respeta, la pluma al estar en la posición erecta puede moverse hacia atrás incontroladamente. ¡La grúa puede volcarse!

- ▶ Los pesos mínimos de motón de gancho y los números de ramal mínimo de cable de elevación indicados en la tabla deberán respetarse obligatoriamente en relación al ángulo de pluma principal.



ADVERTENCIA

¡Peligro de vuelco!

Si la polea de ramal simple está montada en la punta en celosía basculable W-12 y el cable de elevación de la polea de ramal simple no tiene al menos 2 ramales colocados, entonces la pluma puede moverse incontroladamente hacia atrás cuando llegue la pluma a la posición vertical. ¡La grúa puede volcarse!

- ▶ Con la punta en celosía basculable W-12, y con la polea de ramal simple montada, se debe colocar el cable de elevación en la polea de ramal simple con al menos 2 ramales.



Nota

- ▶ Como ángulo de pluma principal se indica la inclinación de la pluma principal en relación a la horizontal.
- ▶ Los valores indicados en la tabla son también válidos de manera general para el servicio con la polea de ramal simple.
- ▶ Los números de ramal mínimo de cable de elevación son válidos para el servicio con 1 cabrestante de cable de elevación y para el servicio con 2 cabrestantes de cable de elevación.

Ejemplo para 6 ramales mínimo de cable de elevación:

1 cabrestante de cable de elevación: 1 x 6 ramales

2 cabrestantes de cable de elevación: 2 x 3 ramales

En el servicio con las combinaciones de pluma según (1) debe actuar el motón de gancho con el peso mínimo (3) y con el ramal mínimo (2) de cable de elevación en el respectivo campo de ángulo de pluma principal.

| (1) Pluma | | (2) Número de ramales mínimo del cable de elevación | (3) Peso mínimo del motón de gancho [t] | |
|--------------|----------|---|--|---------------------------------------|
| S [m] | W [m] | | Angulo de pluma principal > 70° | Angulo de pluma principal < 70° |
| S-36 | W-12 (b) | 8 | 3,0 | - |
| | W-18 (b) | 4 | 2,0 | - |
| S-42 | W-12 (b) | 8 | 3,0 | - |
| | W-18 (b) | 4 | 2,0 | - |
| S-48 | W-12 (b) | 10 | 4,0 | - |
| | W-18 (b) | 4 | 4,0 | - |
| S-54 | W-12 (b) | 10 | 7,0 | 4,0 |
| | W-18 (b) | 4 | 4,0 | - |
| S-60 | W-12 (b) | 12 | 8,0 | 6,0 |
| | W-18 (b) | 4 | 5,0 | - |
| | W-24 | 4 | 2,0 | - |
| S-66 | W-12 (b) | 14 | 9,0 | 7,0 |
| | W-18 (b) | 6 | 6,0 | - |
| | W-24 | 4 | 3,5 | - |
| | W-30 | 4 | 3,5 | - |
| S-72 | W-12 (b) | 16 | 11,0 | 9,0 |
| | W-18 (b) | 6 | 7,0 | 4,0 |
| | W-24 | 4 | 5,0 | - |
| | W-30 | 4 | 5,0 | - |
| S-78 | W-12 (b) | 14 | 13,0 | 10,0 |
| | W-18 (b) | 8 | 8,0 | 5,0 |
| | W-24 | 6 | 5,0 | - |
| | W-30 | 6 | 5,0 | - |
| | W-36 | 4 | 3,0 | - |

| (1) Pluma | | (2) Número de ramales mínimo del cable de eleva- ción | (3) Peso mínimo del motón de gancho [t] | |
|--------------|---------------------|--|--|--|
| S [m] | W [m] | | Angulo de pluma princi- pal > 70° | Angulo de pluma princi- pal < 70° |
| S-84 | W-12 ^(b) | 12 | 16,0 | 12,0 |
| | W-18 ^(b) | 10 | 10,0 | 6,0 |
| | W-24 | 6 | 7,0 | 4,0 |
| | W-30 | 6 | 7,0 | - |
| | W-36 | 4 | 3,0 | - |
| S-90 | W-18 ^(b) | 12 | 11,0 | 8,0 |
| | W-24 | 6 | 10,0 | 4,0 |
| | W-30 | 6 | 9,0 | - |
| | W-36 | 4 | 5,0 | - |
| | W-42 | 4 | 4,0 | - |
| | W-48 | 4 | 4,0 | - |
| S-96 | W-24 | 8 | 11,0 | 6,0 |
| | W-30 | 6 | 11,0 | - |
| | W-36 | 4 | 7,0 | - |
| | W-42 | 4 | 4,0 | - |
| | W-48 | 4 | 4,0 | - |
| S-102 | W-24 | 6 | 15,0 | 6,0 |
| | W-30 | 6 | 13,0 | 5,0 |
| | W-36 | 6 | 8,0 | - |
| | W-42 | 4 | 5,0 | - |
| | W-48 | 4 | 4,0 | - |
| | W-54 | 4 | 4,0 | - |

^(b) = Las puntas en celosía basculables W-12 y W-18 indicadas con una ^(b) son válidas sólo para el servicio SDWV.

10.2 Número de ramales mínimo de cable de elevación requerido para un peso seguro de carga del Controlador de cargas LICCON

Con un número bajo de ramal de cable de elevación, especialmente en posiciones erectas de la pluma, la señal de la brida medidora de tracción tomada del arriostramiento para pesar la carga, es tan baja que el Controlador de cargas LICCON no puede pesar la carga con bastante exactitud. Los números de ramales mínimos de cable de elevación indicados en las tablas aseguran que la grúa especialmente en posiciones erectas de la pluma a más de 60° con relación a la horizontal, no se sobrecargue involuntariamente.



ADVERTENCIA

¡Peligro si los componentes portantes de carga se sobrecargan!

¡Si el número de ramal mínimo de cable de elevación no se observa, el Controlador de cargas LICCON puede recibir un peso de carga demasiado bajo. ¡Si el Controlador de cargas LICCON, debido a la indicación de carga baja, desconecta muy tarde la operación, los componentes portadores de carga se sobrecargarán causando por lo tanto su ruptura y accidentes mortales!

- Los números de ramales mínimos de cable de elevación indicados en las siguientes tablas deben respetarse obligatoriamente.
- El número de ramal mínimo de cable de elevación que es decisivo, es aquel que está en la tabla para la pluma, que está enganchando la carga.

10.2.1 Número de ramales mínimos de cable de elevación en la pluma principal con los modos de servicio sin Derrick, carga en la pluma principal

| Modo de servicio | Largo de pluma principal [m] | Número de ramales mínimo del cable de elevación | |
|------------------|------------------------------|---|-------------------|
| | | Servicio simple | Servicio paralelo |
| S | 24 | 7 | 2 x 8 |
| | 30 | 7 | 2 x 8 |
| | 36 | 6 | 2 x 6 |
| | 42 | 5 | 2 x 6 |
| | 48 | 5 | 2 x 6 |
| | 54 | 5 | 2 x 6 |
| | 60 | 4 | 2 x 6 |
| | 66 | 4 | - |
| | 72 | 4 | - |
| | 78 | 3 | - |
| | 84 | 3 | - |
| | 90 | 3 | - |
| | 96 | 3 | - |
| | 102 | 3 | - |
| | 108 | 3 | - |

10.2.2 Número de ramales mínimos de cable de elevación en la pluma principal con los modos de servicio con Derrick, carga en la pluma principal

| Modo de servicio | Largo de pluma principal [m] | Número de ramales mínimo del cable de elevación | |
|------------------|------------------------------|---|-------------------|
| | | Servicio simple | Servicio paralelo |
| SD | 36 | 13 | 2 x 14 |
| | 42 | 14 | 2 x 14 |
| | 48 | 12 | 2 x 12 |
| | 54 | 10 | 2 x 10 |
| | 60 | 8 | 2 x 10 |
| | 66 | 7 | 2 x 8 |
| | 72 | 6 | 2 x 8 |
| | 78 | 6 | 2 x 6 |
| | 84 | 5 | 2 x 6 |
| | 90 | 5 | 2 x 6 |
| | 96 | 4 | 2 x 6 |
| | 102 | 4 | - |
| | 108 | 4 | - |
| | 114 | 4 | - |
| | 120 | 3 | - |
| | 126 | 3 | - |
| | 132 | 3 | - |
| | 138 | 3 | - |
| | 144 | 3 | - |

10.2.3 Número de ramales mínimos de cable de elevación en la punta en celosía basculable (WV), carga en la punta en celosía basculable (WV)

| Modo de servicio | Largo de la punta basculable [m] | Número de ramales mínimo del cable de elevación | |
|------------------|----------------------------------|---|-------------------|
| | | Servicio simple | Servicio paralelo |
| WV | 12 | 5 | 2 x 6 |
| | 18 | 5 | 2 x 6 |
| | 24 | 4 | 2 x 6 |
| | 30 | 4 | - |
| | 36 | 3 | - |
| | 42 | 3 | - |
| | 48 | 3 | - |
| | 54 | 2 | - |
| | 60 | 2 | - |
| | 66 | 2 | - |
| | 72 | 2 | - |
| | 78 | 2 | - |
| | 84 | 2 | - |
| | 90 | 2 | - |
| | 96 | 3 | - |

10.2.4 Número de ramales mínimos de cable de elevación en la punta en celosía basculable (W), carga en la punta en celosía basculable (W)

| Modo de servicio | Largo de la punta basculable [m] | Número de ramales mínimo del cable de elevación | |
|------------------|----------------------------------|---|-------------------|
| | | Servicio simple | Servicio paralelo |
| W | 24 | 5 | 2 x 6 |
| | 30 | 5 | 2 x 6 |
| | 36 | 4 | 2 x 6 |
| | 42 | 4 | - |
| | 48 | 3 | - |
| | 54 | 3 | - |
| | 60 | 3 | - |
| | 66 | 3 | - |
| | 72 | 3 | - |
| | 78 | 2 | - |
| | 84 | 2 | - |
| | 90 | 2 | - |
| | 96 | 2 | - |

10.3 Número requerido de ramal mínimo de cable de elevación con el servicio paralelo

Con un número de ramal mínimo de cable de elevación de 2 x 6 ramales, asegurarse que con el servicio paralelo del cabrestante 1 y cabrestante 2, el motón de gancho evite encontrarse en una posición desviada no autorizada y que se asegure el funcionamiento paralelo del cabrestante 1 y cabrestante 2.



ADVERTENCIA

¡Peligro si los componentes portantes de carga se sobrecargan!

¡Si el número de ramal mínimo de cable de elevación no se observa, se pueden sobrecargar los componentes portadores de carga debido a la posición desviada del motón de gancho causando por lo tanto su ruptura y accidentes mortales!

- ▶ ¡Con el servicio paralelo del cabrestante 1 y cabrestante 2, al menos 2 x 6 ramales deben estar colocados!
-

11. Procedimiento para calcular el número de ramal del cable de elevación y el motón de gancho

Antes de elevar una carga, se debe calcular el número de ramal del cable de elevación y el motón de gancho que se requieren para esta operación. A continuación se representará por procedimiento como se debe calcular el número de ramal de cable de elevación y el motón de gancho con el servicio simple (servicio de grúa con 1 cabrestante de cable de elevación) y con el servicio paralelo (servicio de grúa con 2 cabrestantes de cable de elevación).

11.1 Procedimiento 1: Cálculo de la carga

Las cargas indicadas en las tablas de cargas comprenden los siguientes pesos:

- Peso de la carga por levantar
- Peso de los elementos elevadores de carga (eslingas) (motón de gancho y gancho de carga)
- Peso de los elementos de detención

Antes de calcular el número de ramal de cable de elevación se debe calcular la carga (Peso de la carga + Peso de los elementos elevadores de carga (eslingas) + Peso de los elementos de detención).

El peso de los elementos elevadores de carga (eslingas) se calcula como en el capítulo "Motón de gancho y gancho de carga".

- ▶ Peso del motón de gancho requerido para calcular la carga por elevarse.
- ▶ Calcular el peso de los elementos de detención.

Resultado:

- Peso de la carga

11.2 Procedimiento 2: Cálculo del número de ramal mínimo de cable de elevación en relación a la tracción de cable máximo autorizado (n_{\min} [Tabla de número de ramales])

El número de ramales en relación a la tracción máxima de cable de los cabrestantes de cable de elevación se calculan a partir de la "Tabla de número de ramales" en el capítulo II de este cuaderno.

- Calcular el número de ramal del cable de elevación n_{\min} [tabla de ramales] de la carga en el servicio de grúa con 1 cabrestante de cable de elevación, en el servicio simple.

-o-

Calcular el número de ramal del cable de elevación n_{\min} [Tabla de ramales] de la carga en el servicio de grúa con 2 cabrestantes de cable de elevación, en el servicio paralelo.

Resultado:

- Número de ramal requerido n_{\min} [Tabla de ramales]



Nota

En el servicio de grúa con 2 cabrestantes de cable de elevación del servicio paralelo, el número de ramales de cable que se requiere se calcula según 3 procedimientos.

- La carga se divide entre 2 ya que se tomará la misma cantidad de carga del cabrestante de cable de elevación 1 y del cabrestante de cable de elevación 2.
 - El número de ramal requerido para 1 cabrestante de cable de elevación se calcula.
 - El número de ramal calculado para 1 cabrestante de cable de elevación se aplica para los dos cabrestantes de cable de elevación.
-

11.3 Procedimiento 3: Cálculo del número de ramal mínimo de cable de elevación y del peso mínimo de motón de gancho por razones estáticas (n_{\min} [Estático]), (G_{\min} [Estático])

El número de ramales y los pesos del motón de gancho requeridos por razones estáticas que se requieren para ciertos modos de servicio, se calculan como en el capítulo "Número de ramales mínimo de cable de elevación y pesos mínimos de motón de gancho, necesarios por razones estáticas en ciertos modos de servicio".

- Calcular el número de ramales mínimo de cable de elevación n_{\min} [Estática] y el peso mínimo de motón de gancho G_{\min} [Estática], que se requieren por razones estáticas en ciertos modos de servicio.

Resultado:

- Número de ramal requerido n_{\min} [Estática]
- Motón de gancho requerido G_{\min} [Estático]

11.4 Procedimiento 4: Cálculo del número de ramal mínimo de cable de elevación para un peso seguro de la carga en el Controlador de cargas LICCON (n_{\min} [peso de carga])

El número de ramales mínimo de cable de elevación requerido para un peso seguro de carga en el Controlador de cargas LICCON se calcula como en el capítulo "Número de ramales mínimo de cable de elevación requerido para un peso de carga seguro del Controlador de cargas LICCON".

- Calcular el número de ramal mínimo de cable de elevación n_{\min} [peso de carga], que se requiere para un peso seguro de carga en el Controlador de cargas LICCON.

Resultado:

- Número de ramal requerido n_{\min} [peso de carga]

11.5 Procedimiento 5: Cálculo del número de ramal mínimo de cable de elevación para un control de servicio paralelo en funcionamiento (n_{\min} [servicio paralelo])

El número de ramal de cable de elevación que se requiere para un control de servicio paralelo en funcionamiento y el cual se necesita sólo para el servicio paralelo del cabrestante 1 y cabrestante 2, se calculan en el capítulo "Número de ramal mínimo de cable de elevación en el servicio paralelo".

- Calcular el número de ramal mínimo de cable de elevación n_{\min} [servicio paralelo], que se requiere para un peso seguro de carga en el Controlador de cargas LICCON.

Resultado:

- Número de ramal requerido n_{\min} [servicio paralelo]

11.6 Procedimiento 6: Cálculo del número de ramal mínimo de cable de elevación (n_{\min}) y del peso mínimo de motón de gancho (G_{\min}), que deben utilizarse para elevar la carga

Después de calcular el número de ramal mínimo de cable de elevación y el peso mínimo de motón de gancho para los criterios límites (n_{\min} [tabla de ramales], n_{\min} [Estático], G_{\min} [Estático], n_{\min} [Peso de carga], n_{\min} [Servicio paralelo]) se debe calcular el número mayor de ramal mínimo de cable de elevación y el peso del motón de gancho.

- Calcular el número mayor de ramal mínimo de cable de elevación n_{\min} a partir del número de ramal mínimo de cable de elevación calculado (n_{\min} [tabla de ramales], n_{\min} [Estático], n_{\min} [Peso de carga], n_{\min} [Servicio paralelo]) y el peso mínimo de motón de gancho G_{\min} para (G_{\min} [Estático]).

Resultado:

- Número de ramal mínimo de cable de elevación n_{\min} y peso mínimo de motón de gancho G_{\min} que se requieren. Estos deben utilizarse para elevar la carga.

12. Reducciones de cargas

12.1 Reducción de carga con la polea de ramal simple montada

12.1.1 Las cargas indicadas en las tabla de cargas para el servicio de grúa en la pluma principal con mástil en celosía o en la punta en celosía son válidas si no está montada la polea de ramal simple.

12.1.2 Si la polea de ramal simple en los modos de servicio sin polea de ramal simple, se queda montada en la cabezal de la pluma, entonces la capacidad de carga es menor en estos modos de servicio por incluir lo siguiente:

- El peso de la polea de ramal simple
- El peso del cable de elevación que se encuentra colocado en la polea de ramal simple
- El peso de los elementos elevadores de carga (eslingas) utilizados en la polea de ramal simple
- El peso de los elementos elevadores de carga (eslingas) y de detención en el cabezal de pluma

12.1.3 Para el servicio de grúa en la polea de ramal simple con la carga máxima de 36 t no existe ninguna tabla de cargas adjunta. Son válidas las tablas de cargas de los modos de servicio con pluma principal y pluma adicional aunque deberán reducirse la capacidad de carga debido a lo siguiente:

- El peso de la polea de ramal simple
- El peso del cable de elevación que se encuentra colocado en la polea de ramal simple
- El peso de los elementos elevadores de carga (eslingas) y de detención utilizados en la polea de ramal simple
- El peso de los elementos elevadores de carga (eslingas) utilizados en el cabezal de pluma

12.2 Reducción de carga con las barras de arriostramiento montadas

12.2.1 Las cargas indicadas en la tabla de cargas son válidas sin considerar las barras de arriostramiento montadas.

12.2.2 Si las barras de arriostramiento están montadas, los valores de la capacidad de carga posibles están reducidos.

La reducción de carga depende del peso y del centro de gravedad de las barras de arriostramiento y del ángulo de pluma. Cuanto más grande sea el peso de las barras de arriostramiento, más cerca será el centro de gravedad de las barras de arriostramiento al cabezal de poleas y cuanto más inclinada esté la pluma principal hacia la posición horizontal, mayor será la reducción de carga.

12.2.3 La reducción de capacidad de carga se calcula simplemente tomando el largo de pluma y el peso métrico de las barras de arriostramiento:

Reducción de capacidad de carga = $0,5 \times \text{largo de pluma} \times \text{peso métrico de las barras de arriostramiento}$

12.2.4 Ejemplo para el servicio de pluma principal con las barras de arriostramiento colocadas en el caballete WA II:

| | |
|---|-----------|
| Largo de pluma: | 90 m |
| Peso métrico de las barras de arriostramiento: | 0,120 t/m |
| Reducción de capacidad de carga (aprox.): $0,5 \times 90 \text{ m} \times 0,120 \text{ t/m}$ | 5,4 t |

12.3 Reducción de capacidad de carga al montar un juego de rodillos adicional

12.3.1 Existen 2 juegos de rodillos cambiables que pueden montarse individualmente o juntos en la extensión cabezal SW. El cabezal de conexión W puede operar con uno de los dos juegos de rodillos.



Indicación

- Para las configuraciones en donde se ha previsto sólo un juego de rodillos en la extensión cabezal SW, se reduce la capacidad de carga indicada en la tabla al montar otro juego de rodillos. La reducción de capacidad corresponde al peso de dicho juego de rodillos adicional.



ADVERTENCIA

Peligro de vuelco o peligro de sobrecarga con los componentes portadores de carga

Si los dos juegos de rodillos están montados en la extensión cabezal SW a pesar que está previsto sólo 1 juego de rodillos, entonces la grúa puede volcarse con el levantamiento y descenso o los componentes portadores de carga pueden sobrecargarse. ¡Los componentes pueden romperse y causar accidentes mortales!

- El peso del motón de gancho autorizado tal como se indica en las tablas de levantamiento y descenso, debe reducirse equivalente al peso propio del juego de rodillos adicional.

12.3.2 Peso propio de los juegos de rodillos

| Juegos de rodillos | Peso propio |
|--------------------|-------------|
| 320 t | 1,5 t |
| 300 t | 1,4 t |

12.3.3 Configuraciones de pluma de la tabla de cargas

| Pluma | Modo de servicio | Cabezal de pluma |
|----------------------|--------------------------------|---|
| S sin pluma auxiliar | S, SD, ... | Extensión cabezal SW con juegos de rodillos 320 t + 300 t |
| S con pluma auxiliar | SW, SDW, SDWV, SWF, ... | Cabezal de conexión W con juego de rodillos 300 t |
| SL y SL2 | SL, SLF, SLD, SL2D, SL2DF, ... | Extensión cabezal SW con juego de rodillos 320 t |
| SL3 y SL4 | SL3F, SL4DF, ... | Cabezal de conexión F |
| W | SW, SDW, SDWV, SWF, ... | Extensión cabezal SW con juego de rodillos 320 t |
| F | SLF, SL3F, SL2DF, SWF, ... | Extensión cabezal F |

13. Sistema de pluma

13.1 Descripción breve de los grupos constructivos del sistema de pluma

13.1.1 Pluma principal

| | | |
|-----|---|--|
| SL | = | Pluma principal con mástil en celosía, versión mixta |
| SL2 | = | Pluma principal con mástil en celosía, versión mixta, variante 2 |
| SL3 | = | Pluma principal con mástil en celosía, versión mixta, variante 3 |
| SL4 | = | Pluma principal con mástil en celosía, versión mixta, variante 4 |
| S | = | Pluma principal con mástil en celosía, versión pesada |

13.1.2 Accesorio fijo

| | | |
|---|---|--|
| F | = | Punta fija en celosía |
| H | = | Pluma auxiliar (polea de ramal simple) |



Nota

- Para las poleas de ramal simple con propios dispositivos para pesar, no existen tablas de cargas en anexo.

13.1.3 Accesorio movable

| | | |
|----|---|---|
| W | = | Punta en celosía basculable, versión pesada |
| WV | = | Punta en celosía, versión pesada, a un ángulo fijo en relación a la pluma principal |

13.1.4 Pluma Derrick

| | | |
|---|---|-----------------------------|
| D | = | Pluma Derrick (contrapluma) |
|---|---|-----------------------------|

13.1.5 Lastre Derrick

| | | |
|----|---|----------------------|
| B | = | Lastre de suspensión |
| BW | = | Coche lastre |

13.2 Combinación de los grupos constructivos para los modos de servicio

Los grupos constructivos del sistema de pluma pueden combinarse unos con otros respetando ciertos reglamentos de acuerdo a los modos de servicio.

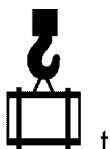
Véase "14. Explicaciones de símbolos" en la pág.38.

14. Explicaciones de símbolos

Colocación del cable de elevación

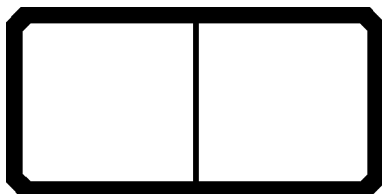


Este símbolo aparece en la tabla "Colocación del cable de elevación" (1ra. tabla en capítulo II). Valor del número de ramales para el cable de elevación con el fin de alcanzar una capacidad de carga determinada.



Carga en toneladas

Este símbolo aparece en la tabla "Colocación del cable de elevación" (1ra. tabla en capítulo II). Valor de la carga máxima autorizada dependiendo de la colocación del cable de elevación.



Símbolo de modos de servicio

El símbolo de los modo de servicio está dividido en dos partes.

Los datos representados en la mitad izquierda del símbolo, indican lo siguiente:

- Modo de pluma principal
- Angulo de pluma principal
- Largo de la pluma principal
- Largo del caballete SA

Los datos representados en la mitad derecha del símbolo, indican lo siguiente:

- Modo de pluma adicional
- Angulo de pluma adicional
- Largo de la pluma adicional



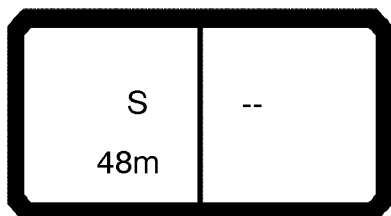
Nota

- ¡Los valores que se representan en la mitad izquierda y mitad derecha del símbolo de los modos de servicio de la tabla de cargas respectiva, deberán concordar exactamente con los ajustes seleccionados en el Controlador de cargas LICCON!
- Igualmente, en los modos de servicio sin accesorio, se debe ajustar la mitad derecha del símbolo de modos de servicio según lo indicado en la representación de la tabla de cargas del Controlador de cargas LICCON, para que se pueda seleccionar debidamente el modo de servicio.

Servicio de grúa sin accesorio

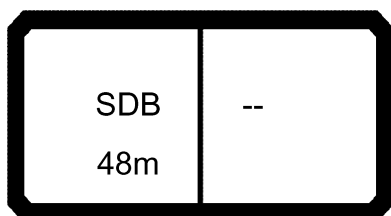
En el servicio de grúa sin accesorio, sólo la mitad izquierda del símbolo está ocupada.

Ejemplos:



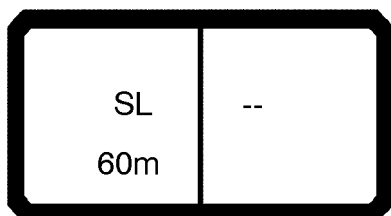
Lado izquierdo = Modo de servicio Pluma principal

- Modo de pluma principal por ej.: S = Pluma principal con mástil en celosía, versión pesada
- Largo de la pluma principal por ej.: 48 m



Lado izquierdo = Modo de servicio Pluma principal

- Modo de pluma principal por ej.: SDB = Pluma principal con mástil en celosía, versión pesada, pluma Derrick y lastre de suspensión
- Largo de la pluma principal por ej.: 48 m



Lado izquierdo = Modo de servicio Pluma principal

- Modo de pluma principal por ej.: SL = Pluma principal con mástil en celosía, versión mixta
- Largo de la pluma principal por ej.: 60 m

Servicio de grúa con accesorio

En el servicio de grúa con accesorio, las dos mitades del símbolo están ocupados.



PELIGRO

Peligro de accidentes!

- ▶ ¡La pluma principal y la punta en celosía basculable no deberán bascularse al mismo tiempo, sino sólo uno después de otro!

Ejemplos:

| | |
|--------------|----------|
| xx° S 36m | W 24m |
|--------------|----------|

Lado izquierdo = Modo de servicio Pluma principal

- Angulo de pluma principal por ej.: xx° = La pluma principal con mástil en celosía se encuentra a un ángulo fijo cuyo valor en grados se encuentra en la respectiva tabla de cargas en la línea xx en relación a la horizontal.
- Modo de pluma principal por ej.: S = Pluma principal con mástil en celosía, versión pesada
- Largo de la pluma principal por ej.: 36 m

Lado derecho = Modo de servicio Pluma adicional

- Modo de pluma adicional por ej.: W = Punta en celosía basculable, versión pesada
- Largo de la pluma adicional por ej.: 24 m

| | |
|----------------|----------|
| xx° SDB 48m | W 72m |
|----------------|----------|

Lado izquierdo = Modo de servicio Pluma principal

- Angulo de pluma principal por ej.: xx° = La pluma principal con mástil en celosía se encuentra a un ángulo fijo cuyo valor en grados se encuentra en la respectiva tabla de cargas en la línea xx en relación a la horizontal.
- Modo de pluma principal por ej.: SDB = Pluma principal con mástil en celosía, versión pesada, pluma Derrick y lastre de suspensión
- Largo de la pluma principal por ej.: 48 m

Lado derecho = Modo de servicio Pluma adicional

- Modo de pluma adicional por ej.: W = Punta en celosía basculable, versión pesada
- Largo de la pluma adicional por ej.: 72 m

| | |
|-----|--------|
| SDB | WV xx° |
| 84m | 12m |

Lado izquierdo = Modo de servicio Pluma principal

- Modo de pluma principal por ej.: SDB = Pluma principal con mástil en celosía, versión pesada, pluma Derrick y lastre de suspensión
- Largo de la pluma principal por ej.: 84 m

Lado derecho = Modo de servicio Pluma adicional

- Modo de pluma adicional por ej.: WV = Punta en celosía, versión pesada, a un ángulo fijo en relación a la pluma principal
- Angulo de pluma adicional por ej.: xx° = La pluma adicional con mástil en celosía se encuentra a un ángulo fijo cuyo valor en grados se encuentra en la respectiva tabla de cargas en la línea xx en relación a la pluma principal con mástil en celosía.
- Largo de la pluma adicional por ej.: 12 m

| | |
|-------|----------|
| xx° S | W54m |
| 42m | F36m 26° |

Lado izquierdo = Modo de servicio Pluma principal

- Angulo de pluma principal por ej.: xx° = La pluma principal con mástil en celosía se encuentra a un ángulo fijo cuyo valor en grados se encuentra en la respectiva tabla de cargas en la línea xx en relación a la horizontal.
- Modo de pluma principal por ej.: S = Pluma principal con mástil en celosía, versión pesada
- Largo de la pluma principal por ej.: 42 m

Lado derecho = Modo de servicio Pluma adicional

- Modo de pluma adicional por ej.: W54m = Punta en celosía basculable, versión pesada. Largo de la punta en celosía basculable 54 m.
- por ej.: F36m 26° = Punta fija en celosía. Largo de la punta fija en celosía 36 m. Montada a un ángulo fijo de 26° con relación a la punta en celosía basculable.

| | |
|-----|-------|
| SL | F 10° |
| 72m | 36m |

Lado izquierdo = Modo de servicio Pluma principal

- Modo de pluma principal por ej.: SL = Pluma principal con mástil en celosía, versión mixta
- Largo de la pluma principal por ej.: 72 m

Lado derecho = Modo de servicio Pluma adicional

- Modo de pluma adicional por ej.: F = Punta fija en celosía
- Ángulo de pluma adicional por ej.: 10° = Montado a un ángulo de 10° en relación a la pluma principal con mástil en celosía.
- Largo de pluma adicional por ej.: 36 m

| | |
|-----|-------|
| SL3 | F 18° |
| 93m | 24m |

Lado izquierdo = Modo de servicio Pluma principal

- Modo de pluma principal por ej.: SL3 = Pluma principal con mástil en celosía, versión mixta, variante 3
- Largo de la pluma principal por ej.: 93 m

Lado derecho = Modo de servicio Pluma adicional

- Modo de pluma adicional por ej.: F = Punta fija en celosía
- Ángulo de pluma adicional por ej.: 18° = Montado a un ángulo de 18° en relación a la pluma principal con mástil en celosía.
- Largo de pluma adicional por ej.: 24 m

| | |
|-------|-------|
| SL2DB | F 28° |
| 108m | 30m |

Lado izquierdo = Modo de servicio Pluma principal

- Modo de pluma principal por ej.: SL2DB = Pluma principal con mástil en celosía, versión mixta, variante 2, pluma Derrick y lastre de suspensión
- Largo de la pluma principal por ej.: 108 m

Lado derecho = Modo de servicio Pluma adicional

- Modo de pluma adicional por ej.: F = Punta fija en celosía
- Ángulo de pluma adicional por ej.: 28° = Montado a un ángulo de 28° en relación a la pluma principal con mástil en celosía.
- Largo de pluma adicional por ej.: 30 m

| | |
|--------|-------|
| SL4DBW | F 32° |
| 78m | 18m |

Lado izquierdo = Modo de servicio Pluma principal

- Modo de pluma principal por ej.: SL4DBW = Pluma principal con mástil en celosía, versión mixta, variante 4, pluma Derrick y coche lastre
- Largo de la pluma principal por ej.: 78 m

Lado derecho = Modo de servicio Pluma adicional

- Modo de pluma adicional por ej.: F = Punta fija en celosía
- Ángulo de pluma adicional por ej.: 32° = Montado a un ángulo de 32° en relación a la pluma principal con mástil en celosía.
- Largo de pluma adicional por ej.: 18 m

Modos de servicio para el montaje



PELIGRO

¡Peligro de accidentes!

- ▶ El modo de servicio para el montaje SA deberá utilizarse exclusivamente para el montaje de los componentes de la grúa. ¡Las instrucciones para el montaje en el manual de instrucciones para el uso deben observarse estrictamente!

Ejemplos:

| | |
|-------|------|
| SA | -- |
| 10.5m | (SA) |

Lado izquierdo = Modo de servicio Pluma principal

- Angulo de pluma principal por ej.: SA = Servicio de montaje con el
caballete SA
- Largo del caballete SA por ej.: 10,5 m

Símbolos del alcance

El alcance (radio de trabajo) es la distancia horizontal medida en el suelo entre el centro de gravedad de la carga enganchada y el eje giratorio del chasis superior.



Símbolo de alcance para modos de servicio con pluma principal.



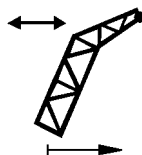
Símbolo de alcance para los modos de servicio Pluma principal con pluma Derrick y lastre Derrick.



Símbolo de alcance para los modos de servicio Pluma adicional con accesorio fijo.



Símbolo de alcance para los modos de servicio Pluma adicional con accesorio fijo, pluma Derrick y lastre Derrick.



Símbolo de alcance para los modos de servicio Pluma adicional con accesorio móvil.



Símbolo de alcance para los modos de servicio Pluma adicional con accesorio móvil, pluma Derrick y lastre Derrick.



m > < t

Largo de pluma principal con mástil en celosía

En la raya debajo de este símbolo se encuentran diferentes largos de pluma en forma de columnas. Las letras al lado del símbolo de pluma indican las unidades de medida de los diferentes valores indicados por ej.: "m> <t" significa que todos los valores de longitud están en metros [m], y las de peso en toneladas [t].

CODE>0010<

Código abreviado

Código abreviado de 4 dígitos. Describe de forma abreviada el modo de servicio / estado de equipo ajustado. El código abreviado puede introducirse directamente en el Controlador de cargas LICCON para abrir la tabla de cargas respectiva.

* n *

Colocación del cable de elevación

Aparece en las tablas de cargas en forma de línea debajo de los valores de carga. Indica el número de ramales del cable de elevación, necesario para elevar la carga máxima correspondiente a la columna de tabla respectiva en el servicio de grúa con 1 cabrestante de cable de elevación. Si un valor de carga de la columna sobrepasa la carga levatable con el número de ramal máximo posible en el servicio de grúa con 1 cabrestante de cable de elevación, entonces al lado del número de ramal, se inscribe una marca (!), indicando que para elevar dicha carga, es necesario un equipo especial.

El número de ramales requerido para el servicio paralelo del cabrestante de cable de elevación 1 y cabrestante de cable de elevación 2 debe calcularse a partir de la tabla de colocación de cable. Véase "8. Colocación del cable de elevación" en la pág.9.

xx

Angulo de pluma principal / Angulo relativo de pluma adicional

Aparece sólo con los modos de servicio con punta en celosía basculable en forma de línea debajo del número de ramales.

En las columnas, se han indicado al lado los ángulos de pluma principal o los ángulos de pluma adicional que deberán ajustarse para poder elevar las cargas correspondientes a la columna de carga.



Nota

- ▶ Si se ha indicado xx en la mitad izquierda del símbolo de modos de servicio (modo de servicio de pluma principal), entonces se ha inscrito los ángulos de pluma principal en las columnas.
- ▶ Si se ha indicado xx en la mitad derecha del símbolo de modos de servicio (modo de servicio de pluma adicional), entonces se han inscrito en las columnas los ángulos relativos de pluma adicional en relación a la pluma principal.

Radio del lastre Derrick

yy

Aparece sólo con los modos de servicio con lastre Derrick en forma de línea debajo del número de ramales. En las columnas están indicados sucesivamente los radios de lastre Derrick que deben ajustarse para poder elevar las cargas al respectivo valor indicado en la columna de carga.

Peso de lastre Derrick

zz

Aparece sólo con los modos de servicio con lastre Derrick en forma de línea debajo del radio lastre Derrick. En las columnas se han inscrito al lado, los pesos de lastre Derrick que deberán consultarse para poder elevar las cargas de la columna de tablas respectivas.

Radio lastre Derrick y peso de lastre Derrick

El símbolo aparece con los modos de servicio con lastre Derrick en vez del símbolo de campo de giro. El campo de giro autorizado del chasis superior es con estos modos de servicio de 360°.



Valores en el símbolo

- | | |
|----|---|
| zz | Peso de lastre Derrick que debe consultarse para poder elevar la carga de la respectiva columna de tabla. |
| yy | Radio de lastre Derrick que debe ajustarse para poder elevar la carga de la respectiva columna de tabla. |



Lastre central

En este símbolo, se indica el valor del lastre central expresado en toneladas [t] que debe encontrarse en el vehículo sobre orugas para poder llegar a los valores de la tabla presente.



Contrapeso

En este símbolo, se indica el valor del contrapeso expresado en toneladas [t] que debe encontrarse en la plataforma giratoria para poder llegar a los valores de la tabla presente.



Combinaciones de lastre

En este símbolo, se indican diferentes combinaciones de lastre. En la tabla indicada abajo se puede ver la composición de las combinaciones de lastre. Para obtener los valores de la tabla de cargas en cuestión, los contrapesos indicados y el lastre central de la respectiva combinación de lastre deben estar montados en la posición respectiva.

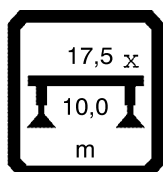
| Combinación de lastre | Contrapeso en la plataforma giratoria | Contrapeso en la prolongación de plataforma giratoria | Lastre central |
|-----------------------|---------------------------------------|---|----------------|
| var1 | 90 t | 67,5 t | 65 t |
| var2 | 90 t | 67,5 t | 45 t |
| var3 | 90 t | 47,5 t | 45 t |
| var4 | 90 t | 27,5 t | 45 t |



Radio de giro

Características de la zona de giro del conjunto superior de la grúa para la tabla de cargas portantes correspondiente:

360° = giro sin limitación alguna



Servicio de grúa "Grúa estabilizada"

Valores de la base de apoyo (por ej. 17,5 m x 10,0 m = largo x ancho). Los estabilizadores hidráulicos de la grúa deben estar extendidos a la medida indicada en este símbolo, si se debe operar con la respectiva tabla de cargas.



Velocidad de viento autorizado

Indicación de la velocidad del viento en [m/s] hasta la cual se permite el servicio de la grúa, según el largo de la pluma. Si la velocidad del viento sobrepasa el valor indicado, se debe ajustar el servicio de la grúa y, eventualmente retirar el equipo de la grúa.

15. Velocidad de giro autorizado e inclinación lateral

15.1 Velocidad de giro máxima autorizada del chasis superior con la carga nominal enganchada



ADVERTENCIA

¡Peligro de accidentes!

¡Si la velocidad de giro máxima autorizada se sobrepasa, la grúa puede volcarse y los componentes llevando la carga pueden sobrecargarse!

► ¡La velocidad de giro autorizada no podrá sobrepasarse!

| Modo de servicio | Número de mecanismos giratorios | Velocidad de giro autorizado LICCON [%] | Velocidad de giro autorizado $\left[\frac{1}{\text{min}}\right]$ |
|-----------------------------|---------------------------------|---|---|
| Todos los modos de servicio | 1 | 5 | 0,05 |
| | 2 | 5 | 0,05 |
| | 3 | 5 | 0,04 |

15.2 Inclinación lateral máxima autorizada de la grúa al operar con las tablas de cargas



ADVERTENCIA

¡Peligro de vuelco!

¡Si se sobrepasa la inclinación lateral máxima autorizada, la grúa puede volcarse!

► ¡La inclinación lateral autorizada no podrá sobrepasarse!

| Modo de servicio | Inclinación lateral máxima autorizada de la grúa al operar con las tablas de cargas. |
|-----------------------|--|
| Sobre orugas | 0,3° |
| Sobre estabilizadores | 0,0° |

16. Influencias del viento en el servicio de grúa

16.1 Definición de la terminología

Para una mejor comprensión, se indican a continuación los términos más importantes relativos a la influencia del viento en el servicio de grúa.



Nota

- Acostúmbrese a esta terminología. Para determinar y calcular la velocidad de viento autorizado, se deben conocer la magnitud de las influencias!
- ¡Diríjase a la empresa Liebherr-Werk Ehingen GmbH, si necesita más informaciones sobre las influencias del viento durante el servicio de grúa!

| | | Denominación | Definición |
|-------|---------|--------------------------------------|--|
| A_P | $[m^2]$ | Superficie de proyección | Superficie determinante para el cálculo de la superficie expuesta al viento, vertical en relación al flujo de entrada. |
| c_W | | Coeficiente de resistencia al viento | Valor para el arrastre de un cuerpo en resistencia al viento. |
| A_W | $[m^2]$ | Superficie expuesta al viento | Superficie expuesta al viento = Superficie de proyección x Coeficiente de resistencia $A_W = A_P \times c_W$ |
| m_T | $[t]$ | Carga | Valor individual tomado de la tabla de cargas. |
| m_H | $[t]$ | Carga de elevación | Peso por elevar (Masa) (incluye elementos de detención, motón de gancho y eventualmente parte del cable de elevación no considerado todavía en el cálculo). La carga de elevación podrá alcanzar como máximo aquel valor indicado como máximo en la tabla de cargas. |
| m_N | $[t]$ | Carga útil | Peso (Masa) del componente por elevar (sin elementos de detención ni motón de gancho). |

| | | Denominación | Definición |
|-----------------|---------------------|---|--|
| $v(z)$ | [m/s] | Velocidad de ráfagas de viento de 3 segundos | Valor promedio resentido en un espacio de 3 segundos a una altura z sobre el nivel del suelo. |
| v_{\max} | [m/s] | Velocidad de viento máximo autorizado | Velocidad de ráfagas de viento máximo autorizado de 3 segundos a una altura de elevación máxima. |
| v_{\max_TAB} | [m/s] | Velocidad de viento máximo autorizado (tabla de cargas) | Velocidad de ráfagas de viento máximo autorizado de 3 segundos a una altura de elevación máxima de acuerdo con la tabla de cargas para los valores de carga. |
| p | [N/m ²] | Presión dinámica | Carga de presión sometido en un cuerpo debido al flujo de entrada del viento. Presión dinámica = Densidad /2 x (velocidad ráfaga de viento de 3 segundos) ² $p = \rho/2 \times (v(z))^2$ (ρ = Densidad del aire = 1,25 kg/m ³) |
| F_W | [n] | Cargas sometidas a viento | Influencia de fuerza ejercida en un cuerpo debido al flujo de entrada del viento. $F_W = A_W \times p$ |

16.2 Influencia del viento ejercida en Controlador de cargas LICCON

Especialmente en los modos de servicio con sistemas largos de pluma y con la pluma en posición vertical, el sistema de la grúa puede estar sometido a carga o descarga adicional por la influencia del viento. Por consecuencia el valor de la carga visualizada está alterada. El Controlador de cargas LICCON se puede eventualmente desconectar mucho antes o mucho después.

16.2.1 Viento ejercido por la parte posterior

Si el viento viene por la parte posterior, el sistema de pluma estará sometido a carga adicional. La indicación del valor de carga será demasiado alta. La desconexión del Controlador de cargas LICCON ya se produce con una carga de elevación la cual es inferior a la carga máxima.

16.2.2 Viento ejercido por la parte de delante

Si el viento viene por la parte de delante, el sistema de pluma estará sometido a descarga adicional. La indicación del valor de carga será demasiado baja. La desconexión del Controlador de cargas LICCON se produce con una carga de elevación sólo cuando ésta es mayor que la carga máxima.



PELIGRO

¡Peligro de vuelco y peligro de sobrecarga de los componentes portadores de carga!

Los vientos por la parte delantera no reducen la carga ejercida en el gancho, cable de elevación, poleas de cable ni cabrestante de elevación. ¡En caso de vientos por la parte delantera, se podría sobrecargar dicho grupo constructivo al elevar la carga hasta llegar a la desconexión del Controlador de cargas LICCON!

Si baja el viento por la parte delantera y si antes se había cargado hasta haberse desconectado el Controlador de cargas LICCON, toda la grúa podrá sobrecargarse.

- ¡El gruista deberá conocer el peso de la carga de elevación y no podrá sobrepasar la carga máxima!

16.2.3 Viento por el lado lateral

Si el viento viene por la parte lateral, el sistema de pluma estará sometido a carga lateralmente. El indicador de carga es casi el mismo que con el servicio de grúa sin influencia del viento.



PELIGRO

¡Peligro de vuelco y peligro de sobrecarga de los componentes portadores de carga!

¡Si con el servicio de grúa, la velocidad de viento es mayor que aquella máxima autorizada, entonces la grúa se sobrecargará involuntariamente con el viento lateral!

- Antes de poner el servicio de grúa, conocer las velocidades de viento máximos autorizados y si es necesario efectuar un cálculo de la superficie de ataque del viento de la carga!
-

16.3 Velocidad de viento autorizado y cálculo de la superficie de ataque del viento de la carga



PELIGRO

¡Peligro de vuelco y peligro de sobrecarga de los componentes portadores de carga!

- ▶ El gruista antes de iniciar las operaciones, deberá informarse en el Instituto de Meteorología competente sobre las velocidades de viento previstas durante el tiempo de la operación. ¡Si se han pronosticado velocidades del viento inadmisibles, esta prohibido levantar la carga de elevación!
- ▶ ¡La velocidad de ráfagas de viento de 3 segundos $v(z)$ a una altura de elevación máxima, no deberá sobrepasar en ningún momento la velocidad de viento máximo autorizado ($v_{\text{máx}}$) ni la velocidad de viento máximo autorizado indicada según la tabla de cargas ($v_{\text{máx_TAB}}$)!



Nota

- ▶ La velocidad de viento máximo autorizado ($v_{\text{máx}}$) y la velocidad de viento máximo autorizado indicada según la tabla de cargas ($v_{\text{máx_TAB}}$) se refieren siempre a la velocidad de ráfagas de 3 segundos que alcanza en la altura máxima de elevación.

Los servicios de meteorología indican por lo general una velocidad de viento medida en un espacio de tiempo de 10 minutos (llamado promedio de 10 minutos) en vez de ráfagas resentedas durante 3 segundos. La velocidad de viento se relaciona normalmente al promedio de la velocidad de viento tal como lo es la escala de viento a la escala Beaufort, es decir una velocidad medida en un espacio de tiempo de 10 minutos a una altura de 10 m sobre el nivel del suelo o sobre el nivel del mar.

¡La velocidad de ráfagas de viento de 3 segundos determinante para el cálculo a una altura máxima de elevación es muy superior al promedio de velocidad de viento medida en un espacio de 10 minutos a una altura de 10 m sobre el nivel del suelo!

El servicio de grúa de manera general está autorizado hasta llegar a la velocidad de viento máximo autorizado ($v_{\text{máx_TAB}}$) indicada en la respectiva tabla de cargas para el largo de pluma actual.

Para ello, los requisitos previos son los siguientes:

- La superficie sometida al viento (A_W) de la carga de elevación no es superior a $1,2 \text{ m}^2/\text{t}$

¡Si la superficie sometida al viento (A_W) de la carga de elevación es superior a $1,2 \text{ m}^2/\text{t}$, se debe volver a medir la velocidad de viento máximo autorizado ($v_{\text{máx}}$)!

16.3.1 Medida de la velocidad de viento máximo autorizado

Con los métodos siguientes, se puede medir la velocidad de viento máximo autorizado:

- 1.) Cálculo con fórmula
- 2.) Medida con diagramas de escalas de viento

16.3.2 Cálculo de la velocidad de viento máximo autorizado con fórmula

$$V_{\max} = V_{\max_TAB} \times \sqrt{\frac{1,2 \frac{m^2}{t} \times m_H}{A_W}}$$

Fórmula para calcular la velocidad de viento máximo autorizado

Para el cálculo se requieren los siguientes datos:

- Velocidad de viento máximo autorizado de acuerdo con la tabla de cargas (V_{\max_TAB})
- Carga de elevación (m_H)
- Superficie de proyección de la carga de elevación (A_P)
- Coeficiente de resistencia al viento (c_W)

Descripción del procedimiento:

- 1.) Cálculo de la superficie sometida al viento ($A_W = A_P \times c_W$)
- 2.) Control si la superficie sometida al viento A_W sobrepasa el valor límite de $1,2 \text{ m}^2/\text{t}$
- 3.) Cálculo de la velocidad de viento máximo autorizado (V_{\max})

Ejemplo para calcular la velocidad de viento máximo autorizado

Datos para calcular el estado de carga:

$$V_{\text{máx_TAB}} = 9,0 \text{ m/s}$$

$$m_H = 50,0 \text{ t}$$

$$A_P = 70,0 \text{ m}^2$$

$$c_W = 1,4$$

Procedimiento 1: Cálculo de la superficie sometida al viento

$$A_W = A_P \times c_W$$

$$A_W = 70,0 \text{ m}^2 \times 1,4$$

$$A_W = 98,0 \text{ m}^2$$

Resultado:

- La superficie sometida al viento A_W es de : **98,0 m²**

Procedimiento 2: Control si la superficie sometida al viento A_W sobrepasa el valor límite de 1,2 m²/t

La superficie sometida al viento por tonelada de carga de elevación es de:

$$98,0 \text{ m}^2 / 50 \text{ t} = \mathbf{1,96 \text{ m}^2/\text{t}}$$

Resultado:

- La superficie sometida al viento por toneladas de carga de elevación sobrepasa el valor límite de 1,2 m²/t.

► ¡La velocidad de viento máximo autorizado debe volverse a calcular!

Procedimiento 3: Cálculo de la velocidad de viento máximo autorizado

$$V_{\text{max}} = V_{\text{max_TAB}} \times \sqrt{\frac{1,2 \frac{\text{m}^2}{\text{t}} \times m_H}{A_W}}$$

$$V_{\text{max}} = 9 \frac{\text{m}}{\text{s}} \times \sqrt{\frac{1,2 \frac{\text{m}^2}{\text{t}} \times 50 \text{ t}}{98 \text{ m}^2}}$$

$$\underline{\underline{V_{\text{max}} = 7,04 \frac{\text{m}}{\text{s}}}}$$

Resultado:

- La velocidad de viento máximo autorizado es de: **7,04 m/s**

16.3.3 Medida de la velocidad de viento máximo autorizado con diagramas de escalas de viento

Dependiendo de la velocidad de viento máximo autorizado de acuerdo con la tabla de cargas ($v_{\text{máx_TAB}}$), la velocidad de viento máximo autorizado ($v_{\text{máx}}$) puede medirse para el estado de carga con los siguientes diagramas de escalas de viento.

Presentación del diagrama de escalas de viento:

- **Diagrama 7,0 m/s:** Diagramas de escalas de viento para tablas de cargas con una velocidad de viento máximo autorizado ($v_{\text{máx_TAB}}$) de 7,0 m/s
- **Diagrama 8,6 m/s:** Diagramas de escalas de viento para tablas de cargas con una velocidad de viento máximo autorizado ($v_{\text{máx_TAB}}$) de 8,6 m/s
- **Diagrama 9,0 m/s:** Diagramas de escalas de viento para tablas de cargas con una velocidad de viento máximo autorizado ($v_{\text{máx_TAB}}$) de 9,0 m/s
- **Diagrama 9,9 m/s:** Diagramas de escalas de viento para tablas de cargas con una velocidad de viento máximo autorizado ($v_{\text{máx_TAB}}$) de 9,9 m/s
- **Diagrama 11,1 m/s:** Diagramas de escalas de viento para tablas de cargas con una velocidad de viento máximo autorizado ($v_{\text{máx_TAB}}$) de 11,1 m/s
- **Diagrama 12,8 m/s:** Diagramas de escalas de viento para tablas de cargas con una velocidad de viento máximo autorizado ($v_{\text{máx_TAB}}$) de 12,8 m/s
- **Diagrama 14,3 m/s:** Diagramas de escalas de viento para tablas de cargas con una velocidad de viento máximo autorizado ($v_{\text{máx_TAB}}$) de 14,3 m/s



AVISO

¡Peligro de accidentes al confundirse de diagrama de escala de viento!

- ¡La velocidad de viento máximo autorizado según la tabla de cargas ($v_{\text{máx_TAB}}$) debe coincidir con la velocidad de viento máximo autorizado del diagrama de escala de viento!
-

Para medir se requieren los siguientes datos:

- Velocidad de viento máximo autorizado de acuerdo con la tabla de cargas ($v_{\text{máx_TAB}}$)
- Carga de elevación (m_H)
- Superficie de proyección de la carga de elevación (A_P)
- Coeficiente de resistencia al viento (c_W)

Descripción del procedimiento:

- 1.) Cálculo de la superficie sometida al viento ($A_W = A_P \times c_W$)
- 2.) Control si la superficie sometida al viento A_W sobrepasa el valor límite de $1,2 \text{ m}^2/\text{t}$
- 3.) Medida de la velocidad de viento máximo autorizado ($v_{\text{máx}}$) tomada del respectivo diagrama de escala de viento

Ejemplo para medir la velocidad de viento máximo autorizado

Datos para calcular el estado de carga:

$$v_{\text{máx_TAB}} = 9,0 \text{ m/s}$$

$$m_H = 50,0 \text{ t}$$

$$A_P = 70,0 \text{ m}^2$$

$$c_W = 1,4$$

Procedimiento 1: Cálculo de la superficie sometida al viento

$$A_W = A_P \times c_W$$

$$A_W = 70,0 \text{ m}^2 \times 1,4$$

$$A_W = 98,0 \text{ m}^2$$

Resultado:

- La superficie sometida al viento A_W es de : **98,0 m²**

Procedimiento 2: Control si la superficie sometida al viento A_W sobrepasa el valor límite de 1,2 m²/t

La superficie sometida al viento por tonelada de carga de elevación es de:

$$98,0 \text{ m}^2 / 50 \text{ t} = \mathbf{1,96 \text{ m}^2/\text{t}}$$

Resultado:

- La superficie sometida al viento por toneladas de carga de elevación sobrepasa el valor límite de 1,2 m²/t.

► ¡La velocidad de viento máximo autorizado debe volverse a medir!

Procedimiento 3: Medida de la velocidad de viento máximo autorizado ($v_{\text{máx}}$) tomada del respectivo diagrama de escala de viento

Medida de la velocidad de viento máximo autorizado ($v_{\text{máx}}$) tomada del respectivo diagrama de escala de viento para las tablas de cargas con una velocidad de viento máximo autorizado ($v_{\text{máx_TAB}}$) de 9 m/s.

Diagrama de 9,0 m/s

Resultado:

- La velocidad de viento máximo autorizado es de: **7,04 m/s**

16.3.4 Diagramas de escala de viento

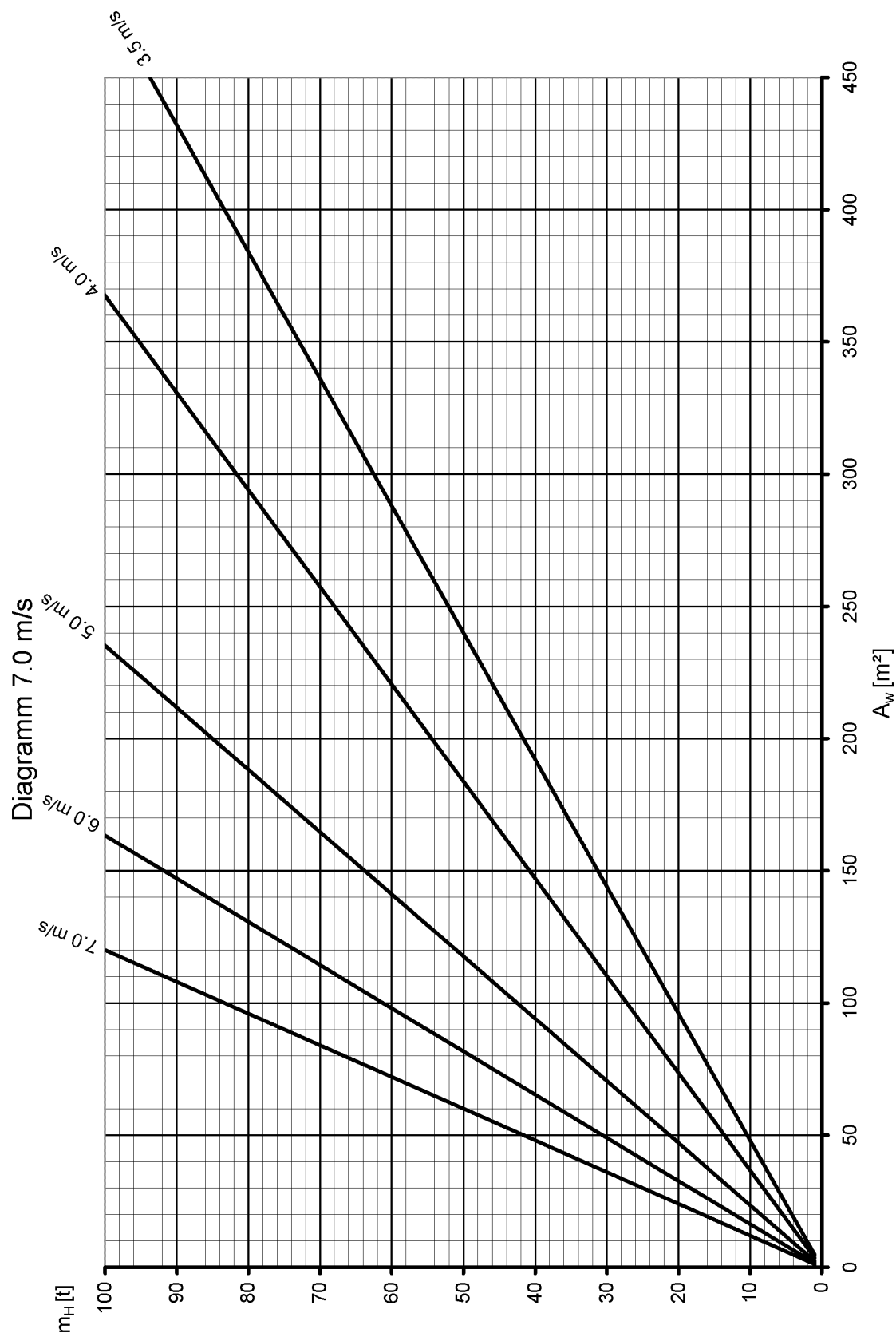


Diagrama de escala de viento de 7,0 m/s para tablas de cargas con una velocidad de viento máximo autorizado ($v_{\text{máx_TAB}}$) de 7,0 m/s.



Diagrama de escala de viento de 8,6 m/s para tablas de cargas con una velocidad de viento máximo autorizado ($v_{m\acute{a}x_TAB}$) de 8,6 m/s.



Diagrama de escala de viento de 9,0 m/s para tablas de cargas con una velocidad de viento máximo autorizado ($v_{m\acute{a}x_TAB}$) de 9,0 m/s.

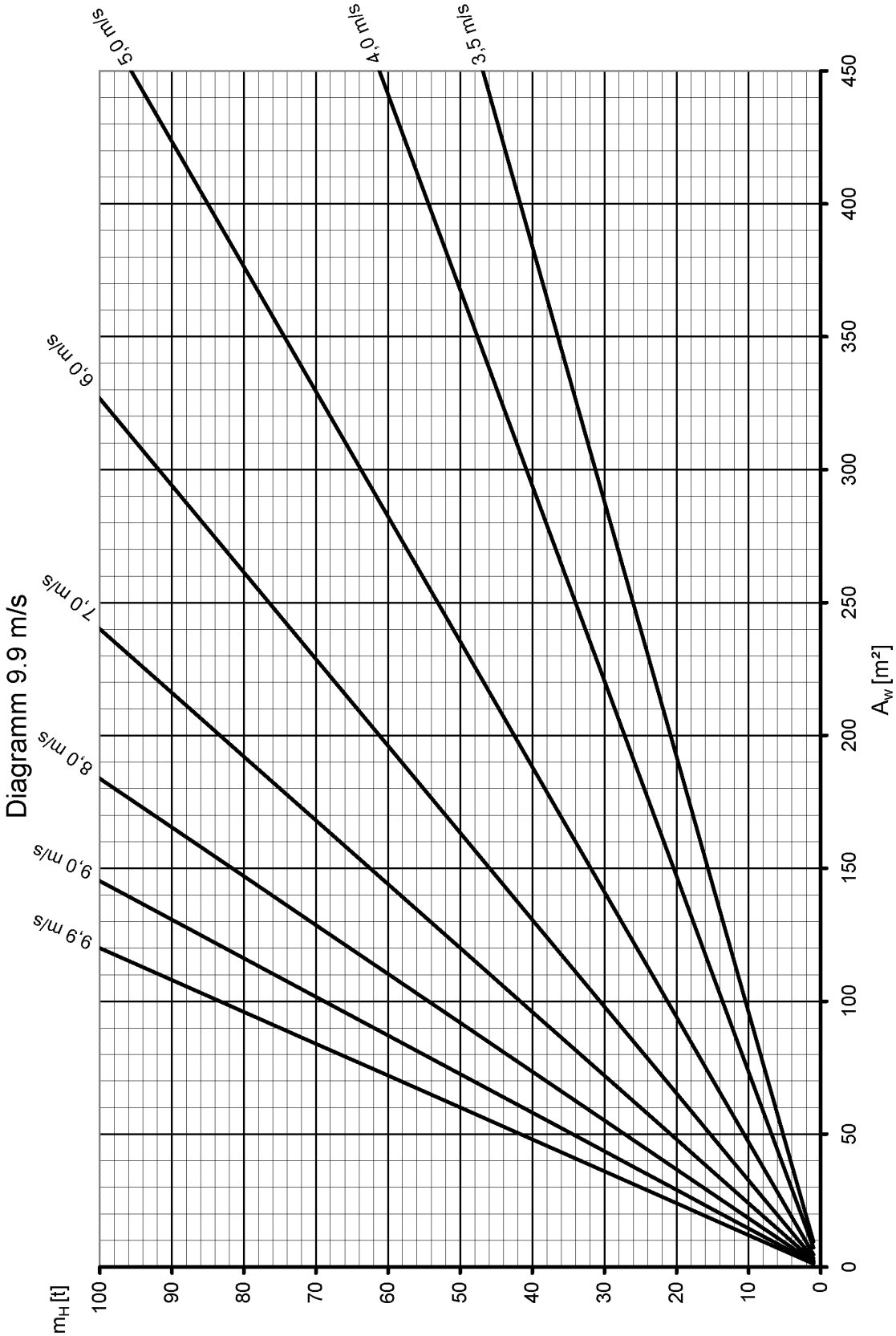


Diagrama de escala de viento de 9,9 m/s para tablas de cargas con una velocidad de viento máximo autorizado ($v_{m\acute{a}x_TAB}$) de 9,9 m/s.



Diagrama de escala de viento de 11,1 m/s para tablas de cargas con una velocidad de viento máximo autorizado ($v_{m\acute{a}x_TAB}$) de 11,1 m/s.



Diagrama de escala de viento de 12,8 m/s para tablas de cargas con una velocidad de viento máximo autorizado ($v_{m\acute{a}x_TAB}$) de 12,8 m/s.

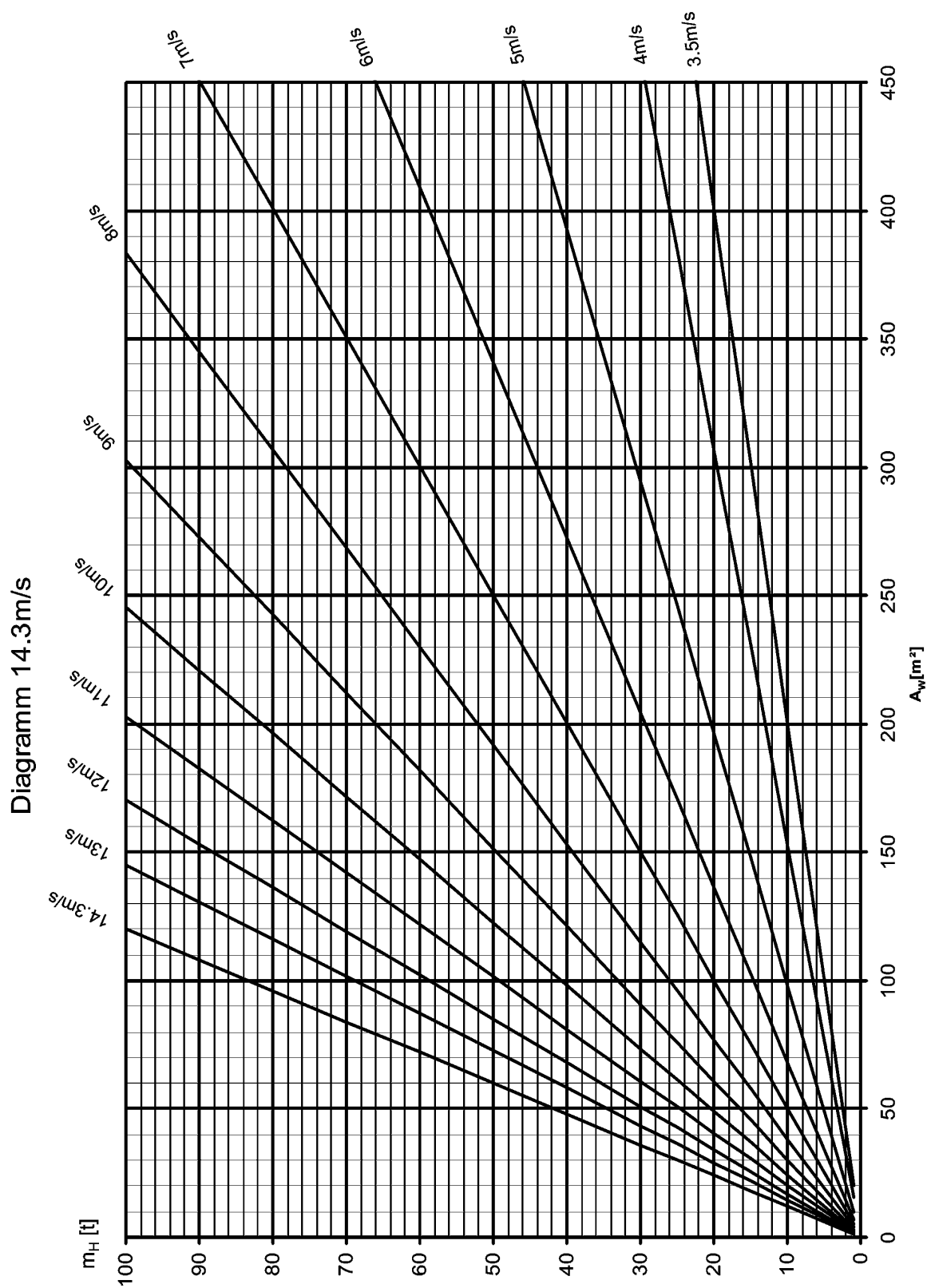
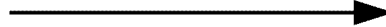
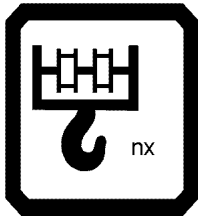
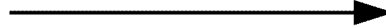
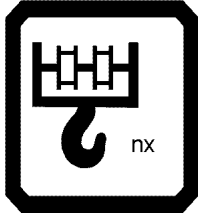


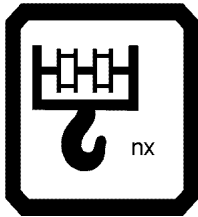
Diagrama de escala de viento de 14,3 m/s para tablas de cargas con una velocidad de viento máximo autorizado ($V_{m\acute{a}x_TAB}$) de 14,3 m/s.



48



50



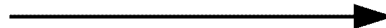
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| | |
|-------|------|
| SA | -- |
| 10.5m | (SA) |



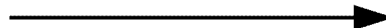
53

| | |
|-------|-------|
| SL2DB | F 11° |
| 72m | 12m |



54

| | |
|-------|-------|
| SL2DB | F 16° |
| 72m | 12m |



56

| | |
|-------|-------|
| SL2DB | F 31° |
| 72m | 12m |



58



| | |
|-------|-------|
| SL2DB | F 13° |
| 72m | 18m |



59

| | |
|-------|-------|
| SL2DB | F 18° |
| 72m | 18m |



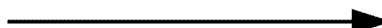
60

| | |
|-------|-------|
| SL2DB | F 32° |
| 72m | 18m |



61

| | |
|-------|-------|
| SL2DB | F 13° |
| 72m | 24m |



62

| | |
|-------|-------|
| SL2DB | F 18° |
| 72m | 24m |



63

| | |
|-------|-------|
| SL2DB | F 30° |
| 72m | 24m |



64

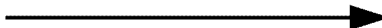
| | |
|-------|-------|
| SL2DB | F 12° |
| 72m | 30m |



65

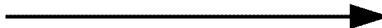


| | |
|-------|-------|
| SL2DB | F 16° |
| 72m | 30m |



66

| | |
|-------|-------|
| SL2DB | F 28° |
| 72m | 30m |



67

| | |
|-------|-------|
| SL2DB | F 10° |
| 72m | 36m |



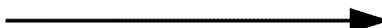
68

| | |
|-------|-------|
| SL2DB | F 14° |
| 72m | 36m |



69

| | |
|-------|-------|
| SL2DB | F 26° |
| 72m | 36m |



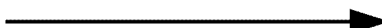
70

| | |
|-------|-------|
| SL2DB | F 11° |
| 78m | 12m |



71

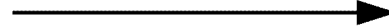
| | |
|-------|-------|
| SL2DB | F 16° |
| 78m | 12m |



73

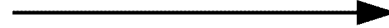


| | |
|-------|-------|
| SL2DB | F 31° |
| 78m | 12m |



75

| | |
|-------|-------|
| SL2DB | F 13° |
| 78m | 18m |



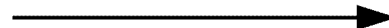
76

| | |
|-------|-------|
| SL2DB | F 18° |
| 78m | 18m |



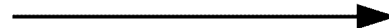
77

| | |
|-------|-------|
| SL2DB | F 32° |
| 78m | 18m |



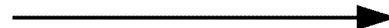
78

| | |
|-------|-------|
| SL2DB | F 13° |
| 78m | 24m |



79

| | |
|-------|-------|
| SL2DB | F 18° |
| 78m | 24m |



80

| | |
|-------|-------|
| SL2DB | F 30° |
| 78m | 24m |



81



| | |
|-------|-------|
| SL2DB | F 12° |
| 78m | 30m |



82

| | |
|-------|-------|
| SL2DB | F 16° |
| 78m | 30m |



83

| | |
|-------|-------|
| SL2DB | F 28° |
| 78m | 30m |



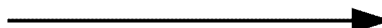
84

| | |
|-------|-------|
| SL2DB | F 10° |
| 78m | 36m |



85

| | |
|-------|-------|
| SL2DB | F 14° |
| 78m | 36m |



86

| | |
|-------|-------|
| SL2DB | F 26° |
| 78m | 36m |



87

| | |
|-------|-------|
| SL2DB | F 11° |
| 84m | 12m |



88



| | | | |
|--------------|--------------|---|-----|
| SL2DB 84m | F 16° 12m | → | 90 |
| SL2DB 84m | F 31° 12m | → | 92 |
| SL2DB 84m | F 13° 18m | → | 94 |
| SL2DB 84m | F 18° 18m | → | 96 |
| SL2DB 84m | F 32° 18m | → | 98 |
| SL2DB 84m | F 13° 24m | → | 99 |
| SL2DB 84m | F 18° 24m | → | 100 |



| | | | |
|--------------|--------------|---|-----|
| SL2DB 84m | F 30° 24m | → | 101 |
| SL2DB 84m | F 12° 30m | → | 102 |
| SL2DB 84m | F 16° 30m | → | 103 |
| SL2DB 84m | F 28° 30m | → | 104 |
| SL2DB 84m | F 10° 36m | → | 105 |
| SL2DB 84m | F 14° 36m | → | 106 |
| SL2DB 84m | F 26° 36m | → | 107 |



| | | | |
|--------------|--------------|---|-----|
| SL2DB 90m | F 11° 12m | → | 108 |
| SL2DB 90m | F 16° 12m | → | 110 |
| SL2DB 90m | F 31° 12m | → | 112 |
| SL2DB 90m | F 13° 18m | → | 114 |
| SL2DB 90m | F 18° 18m | → | 116 |
| SL2DB 90m | F 32° 18m | → | 118 |
| SL2DB 90m | F 13° 24m | → | 120 |



| | | | |
|--------------|--------------|---|-----|
| SL2DB 90m | F 18° 24m | → | 122 |
| SL2DB 90m | F 30° 24m | → | 124 |
| SL2DB 90m | F 12° 30m | → | 125 |
| SL2DB 90m | F 16° 30m | → | 126 |
| SL2DB 90m | F 28° 30m | → | 127 |
| SL2DB 90m | F 10° 36m | → | 128 |
| SL2DB 90m | F 14° 36m | → | 129 |



| | | | |
|--------------|--------------|---|-----|
| SL2DB 90m | F 26° 36m | → | 130 |
| SL2DB 96m | F 11° 12m | → | 131 |
| SL2DB 96m | F 16° 12m | → | 133 |
| SL2DB 96m | F 31° 12m | → | 135 |
| SL2DB 96m | F 13° 18m | → | 137 |
| SL2DB 96m | F 18° 18m | → | 139 |
| SL2DB 96m | F 32° 18m | → | 141 |



| | | | |
|--------------|--------------|---|-----|
| SL2DB 96m | F 13° 24m | → | 143 |
| SL2DB 96m | F 18° 24m | → | 145 |
| SL2DB 96m | F 30° 24m | → | 147 |
| SL2DB 96m | F 12° 30m | → | 149 |
| SL2DB 96m | F 16° 30m | → | 151 |
| SL2DB 96m | F 28° 30m | → | 153 |
| SL2DB 96m | F 10° 36m | → | 154 |



| | | | |
|---------------|--------------|---|-----|
| SL2DB 96m | F 14° 36m | → | 155 |
| SL2DB 96m | F 26° 36m | → | 156 |
| SL2DB 102m | F 11° 12m | → | 157 |
| SL2DB 102m | F 16° 12m | → | 159 |
| SL2DB 102m | F 31° 12m | → | 161 |
| SL2DB 102m | F 13° 18m | → | 163 |
| SL2DB 102m | F 18° 18m | → | 165 |



| | | | |
|---------------|--------------|---|-----|
| SL2DB 102m | F 32° 18m | → | 167 |
| SL2DB 102m | F 13° 24m | → | 169 |
| SL2DB 102m | F 18° 24m | → | 171 |
| SL2DB 102m | F 30° 24m | → | 173 |
| SL2DB 102m | F 12° 30m | → | 175 |
| SL2DB 102m | F 16° 30m | → | 177 |
| SL2DB 102m | F 28° 30m | → | 179 |



| | | | |
|---------------|--------------|---|-----|
| SL2DB 102m | F 10° 36m | → | 180 |
| SL2DB 102m | F 14° 36m | → | 181 |
| SL2DB 102m | F 26° 36m | → | 182 |
| SL2DB 108m | F 11° 12m | → | 183 |
| SL2DB 108m | F 16° 12m | → | 185 |
| SL2DB 108m | F 31° 12m | → | 187 |
| SL2DB 108m | F 13° 18m | → | 189 |



| | | | |
|---------------|--------------|---|-----|
| SL2DB 108m | F 18° 18m | → | 191 |
| SL2DB 108m | F 32° 18m | → | 193 |
| SL2DB 108m | F 13° 24m | → | 195 |
| SL2DB 108m | F 18° 24m | → | 197 |
| SL2DB 108m | F 30° 24m | → | 199 |
| SL2DB 108m | F 12° 30m | → | 201 |
| SL2DB 108m | F 16° 30m | → | 203 |



| | | | |
|---------------|--------------|---|-----|
| SL2DB 108m | F 28° 30m | → | 205 |
| SL2DB 108m | F 10° 36m | → | 207 |
| SL2DB 108m | F 14° 36m | → | 208 |
| SL2DB 108m | F 26° 36m | → | 209 |
| SL2DB 114m | F 11° 12m | → | 210 |
| SL2DB 114m | F 16° 12m | → | 212 |
| SL2DB 114m | F 31° 12m | → | 214 |



| | | | |
|---------------|--------------|---|-----|
| SL2DB 114m | F 13° 18m | → | 216 |
| SL2DB 114m | F 18° 18m | → | 218 |
| SL2DB 114m | F 32° 18m | → | 220 |
| SL2DB 114m | F 13° 24m | → | 222 |
| SL2DB 114m | F 18° 24m | → | 224 |
| SL2DB 114m | F 30° 24m | → | 226 |
| SL2DB 114m | F 12° 30m | → | 228 |



| | | | |
|---------------|--------------|---|-----|
| SL2DB 114m | F 16° 30m | → | 230 |
| SL2DB 114m | F 28° 30m | → | 232 |
| SL2DB 114m | F 10° 36m | → | 234 |
| SL2DB 114m | F 14° 36m | → | 235 |
| SL2DB 114m | F 26° 36m | → | 236 |
| SL2DB 120m | F 11° 12m | → | 237 |
| SL2DB 120m | F 16° 12m | → | 239 |



| | | | |
|---------------|--------------|---|-----|
| SL2DB 120m | F 31° 12m | → | 241 |
| SL2DB 120m | F 13° 18m | → | 243 |
| SL2DB 120m | F 18° 18m | → | 245 |
| SL2DB 120m | F 32° 18m | → | 247 |
| SL2DB 120m | F 13° 24m | → | 249 |
| SL2DB 120m | F 18° 24m | → | 251 |
| SL2DB 120m | F 30° 24m | → | 253 |



| | | | |
|---------------|--------------|---|-----|
| SL2DB 120m | F 12° 30m | → | 255 |
| SL2DB 120m | F 16° 30m | → | 257 |
| SL2DB 120m | F 28° 30m | → | 259 |
| SL2DB 120m | F 10° 36m | → | 261 |
| SL2DB 120m | F 14° 36m | → | 262 |
| SL2DB 120m | F 26° 36m | → | 263 |
| SL2DB 126m | F 11° 12m | → | 264 |



| | | | |
|---------------|--------------|---|-----|
| SL2DB 126m | F 16° 12m | → | 266 |
| SL2DB 126m | F 31° 12m | → | 268 |
| SL2DB 126m | F 13° 18m | → | 270 |
| SL2DB 126m | F 18° 18m | → | 272 |
| SL2DB 126m | F 32° 18m | → | 274 |
| SL2DB 126m | F 13° 24m | → | 276 |
| SL2DB 126m | F 18° 24m | → | 278 |



| | | | |
|---------------|--------------|---|-----|
| SL2DB 126m | F 30° 24m | → | 280 |
| SL2DB 126m | F 12° 30m | → | 282 |
| SL2DB 126m | F 16° 30m | → | 284 |
| SL2DB 126m | F 28° 30m | → | 286 |
| SL2DB 126m | F 10° 36m | → | 288 |
| SL2DB 126m | F 14° 36m | → | 290 |
| SL2DB 126m | F 26° 36m | → | 291 |



| | | | |
|---------------|--------------|---|-----|
| SL2DB 132m | F 11° 12m | → | 292 |
| SL2DB 132m | F 16° 12m | → | 294 |
| SL2DB 132m | F 31° 12m | → | 296 |
| SL2DB 132m | F 13° 18m | → | 298 |
| SL2DB 132m | F 18° 18m | → | 300 |
| SL2DB 132m | F 32° 18m | → | 302 |
| SL2DB 132m | F 13° 24m | → | 304 |



| | | | |
|---------------|--------------|---|-----|
| SL2DB 132m | F 12° 30m | → | 306 |
| SL2DB 132m | F 10° 36m | → | 308 |
| SL2DB 138m | F 11° 12m | → | 310 |
| SL2DB 138m | F 13° 18m | → | 312 |
| SL2DB 138m | F 13° 24m | → | 314 |
| SL4DB 72m | F 11° 12m | → | 316 |
| SL4DB 72m | F 16° 12m | → | 318 |



| | |
|-------|-------|
| SL4DB | F 31° |
| 72m | 12m |



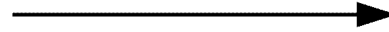
320

| | |
|-------|-------|
| SL4DB | F 13° |
| 72m | 18m |



321

| | |
|-------|-------|
| SL4DB | F 18° |
| 72m | 18m |



322

| | |
|-------|-------|
| SL4DB | F 32° |
| 72m | 18m |



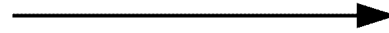
323

| | |
|-------|-------|
| SL4DB | F 13° |
| 72m | 24m |



324

| | |
|-------|-------|
| SL4DB | F 18° |
| 72m | 24m |



325

| | |
|-------|-------|
| SL4DB | F 30° |
| 72m | 24m |



326



| | | | |
|--------------|--------------|---|-----|
| SL4DB 72m | F 12° 30m | → | 327 |
| SL4DB 72m | F 16° 30m | → | 328 |
| SL4DB 72m | F 28° 30m | → | 329 |
| SL4DB 72m | F 10° 36m | → | 330 |
| SL4DB 72m | F 14° 36m | → | 331 |
| SL4DB 72m | F 26° 36m | → | 332 |
| SL4DB 78m | F 11° 12m | → | 333 |

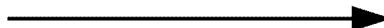


| | |
|-------|-------|
| SL4DB | F 16° |
| 78m | 12m |



335

| | |
|-------|-------|
| SL4DB | F 31° |
| 78m | 12m |



337

| | |
|-------|-------|
| SL4DB | F 13° |
| 78m | 18m |



339

| | |
|-------|-------|
| SL4DB | F 18° |
| 78m | 18m |



340

| | |
|-------|-------|
| SL4DB | F 32° |
| 78m | 18m |



341

| | |
|-------|-------|
| SL4DB | F 13° |
| 78m | 24m |



342

| | |
|-------|-------|
| SL4DB | F 18° |
| 78m | 24m |



343



| | | | |
|--------------|--------------|---|-----|
| SL4DB 78m | F 30° 24m | → | 344 |
| SL4DB 78m | F 12° 30m | → | 345 |
| SL4DB 78m | F 16° 30m | → | 346 |
| SL4DB 78m | F 28° 30m | → | 347 |
| SL4DB 78m | F 10° 36m | → | 348 |
| SL4DB 78m | F 14° 36m | → | 349 |
| SL4DB 78m | F 26° 36m | → | 350 |



| | | | |
|--------------|--------------|---|-----|
| SL4DB 84m | F 11° 12m | → | 351 |
| SL4DB 84m | F 16° 12m | → | 353 |
| SL4DB 84m | F 31° 12m | → | 355 |
| SL4DB 84m | F 13° 18m | → | 357 |
| SL4DB 84m | F 18° 18m | → | 359 |
| SL4DB 84m | F 32° 18m | → | 361 |
| SL4DB 84m | F 13° 24m | → | 362 |



| | | | |
|--------------|--------------|---|-----|
| SL4DB 84m | F 18° 24m | → | 363 |
| SL4DB 84m | F 30° 24m | → | 364 |
| SL4DB 84m | F 12° 30m | → | 365 |
| SL4DB 84m | F 16° 30m | → | 366 |
| SL4DB 84m | F 28° 30m | → | 367 |
| SL4DB 84m | F 10° 36m | → | 368 |
| SL4DB 84m | F 14° 36m | → | 369 |



| | | | |
|--------------|--------------|---|-----|
| SL4DB 84m | F 26° 36m | → | 370 |
| SL4DB 90m | F 11° 12m | → | 371 |
| SL4DB 90m | F 16° 12m | → | 373 |
| SL4DB 90m | F 31° 12m | → | 375 |
| SL4DB 90m | F 13° 18m | → | 377 |
| SL4DB 90m | F 18° 18m | → | 379 |
| SL4DB 90m | F 32° 18m | → | 381 |



| | |
|--------------|--------------|
| SL4DB 90m | F 13° 24m |
|--------------|--------------|



383

| | |
|--------------|--------------|
| SL4DB 90m | F 18° 24m |
|--------------|--------------|



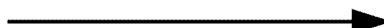
384

| | |
|--------------|--------------|
| SL4DB 90m | F 30° 24m |
|--------------|--------------|



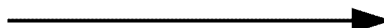
385

| | |
|--------------|--------------|
| SL4DB 90m | F 12° 30m |
|--------------|--------------|



386

| | |
|--------------|--------------|
| SL4DB 90m | F 16° 30m |
|--------------|--------------|



387

| | |
|--------------|--------------|
| SL4DB 90m | F 28° 30m |
|--------------|--------------|



388

| | |
|--------------|--------------|
| SL4DB 90m | F 10° 36m |
|--------------|--------------|



389



| | | | |
|--------------|--------------|---|-----|
| SL4DB 90m | F 14° 36m | → | 390 |
| SL4DB 90m | F 26° 36m | → | 391 |
| SL4DB 96m | F 11° 12m | → | 392 |
| SL4DB 96m | F 16° 12m | → | 394 |
| SL4DB 96m | F 31° 12m | → | 396 |
| SL4DB 96m | F 13° 18m | → | 398 |
| SL4DB 96m | F 18° 18m | → | 400 |



| | |
|-------|-------|
| SL4DB | F 32° |
| 96m | 18m |



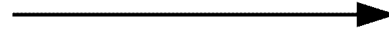
402

| | |
|-------|-------|
| SL4DB | F 13° |
| 96m | 24m |



404

| | |
|-------|-------|
| SL4DB | F 18° |
| 96m | 24m |



406

| | |
|-------|-------|
| SL4DB | F 30° |
| 96m | 24m |



408

| | |
|-------|-------|
| SL4DB | F 12° |
| 96m | 30m |



410

| | |
|-------|-------|
| SL4DB | F 16° |
| 96m | 30m |



412

| | |
|-------|-------|
| SL4DB | F 28° |
| 96m | 30m |



413



| | | | |
|---------------|--------------|---|-----|
| SL4DB 96m | F 10° 36m | → | 414 |
| SL4DB 96m | F 14° 36m | → | 415 |
| SL4DB 96m | F 26° 36m | → | 416 |
| SL4DB 102m | F 11° 12m | → | 417 |
| SL4DB 102m | F 16° 12m | → | 419 |
| SL4DB 102m | F 31° 12m | → | 421 |
| SL4DB 102m | F 13° 18m | → | 423 |



| | | | |
|---------------|--------------|---|-----|
| SL4DB 102m | F 18° 18m | → | 425 |
| SL4DB 102m | F 32° 18m | → | 427 |
| SL4DB 102m | F 13° 24m | → | 429 |
| SL4DB 102m | F 18° 24m | → | 431 |
| SL4DB 102m | F 30° 24m | → | 433 |
| SL4DB 102m | F 12° 30m | → | 435 |
| SL4DB 102m | F 16° 30m | → | 437 |



| | |
|-------|-------|
| SL4DB | F 28° |
| 102m | 30m |



439

| | |
|-------|-------|
| SL4DB | F 10° |
| 102m | 36m |



440

| | |
|-------|-------|
| SL4DB | F 14° |
| 102m | 36m |



441

| | |
|-------|-------|
| SL4DB | F 26° |
| 102m | 36m |



442

| | |
|-------|-------|
| SL4DB | F 11° |
| 108m | 12m |



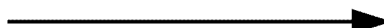
443

| | |
|-------|-------|
| SL4DB | F 16° |
| 108m | 12m |



445

| | |
|-------|-------|
| SL4DB | F 31° |
| 108m | 12m |



447



| | | | |
|---------------|--------------|---|-----|
| SL4DB 108m | F 13° 18m | → | 449 |
| SL4DB 108m | F 18° 18m | → | 451 |
| SL4DB 108m | F 32° 18m | → | 453 |
| SL4DB 108m | F 13° 24m | → | 455 |
| SL4DB 108m | F 18° 24m | → | 457 |
| SL4DB 108m | F 30° 24m | → | 459 |
| SL4DB 108m | F 12° 30m | → | 461 |



| | |
|-------|-------|
| SL4DB | F 16° |
| 108m | 30m |



463

| | |
|-------|-------|
| SL4DB | F 28° |
| 108m | 30m |



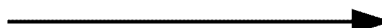
465

| | |
|-------|-------|
| SL4DB | F 10° |
| 108m | 36m |



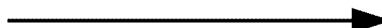
466

| | |
|-------|-------|
| SL4DB | F 14° |
| 108m | 36m |



467

| | |
|-------|-------|
| SL4DB | F 26° |
| 108m | 36m |



468

| | |
|-------|-------|
| SL4DB | F 11° |
| 114m | 12m |



469

| | |
|-------|-------|
| SL4DB | F 16° |
| 114m | 12m |



471



| | | | |
|---------------|--------------|---|-----|
| SL4DB 114m | F 31° 12m | → | 473 |
| SL4DB 114m | F 13° 18m | → | 475 |
| SL4DB 114m | F 18° 18m | → | 477 |
| SL4DB 114m | F 32° 18m | → | 479 |
| SL4DB 114m | F 13° 24m | → | 481 |
| SL4DB 114m | F 18° 24m | → | 483 |
| SL4DB 114m | F 30° 24m | → | 485 |



| | | | |
|---------------|--------------|---|-----|
| SL4DB 114m | F 12° 30m | → | 487 |
| SL4DB 114m | F 16° 30m | → | 489 |
| SL4DB 114m | F 28° 30m | → | 491 |
| SL4DB 114m | F 10° 36m | → | 493 |
| SL4DB 114m | F 14° 36m | → | 494 |
| SL4DB 114m | F 26° 36m | → | 495 |
| SL4DB 120m | F 11° 12m | → | 496 |



| | | | |
|---------------|--------------|---|-----|
| SL4DB 120m | F 16° 12m | → | 498 |
| SL4DB 120m | F 31° 12m | → | 500 |
| SL4DB 120m | F 13° 18m | → | 502 |
| SL4DB 120m | F 18° 18m | → | 504 |
| SL4DB 120m | F 32° 18m | → | 506 |
| SL4DB 120m | F 13° 24m | → | 508 |
| SL4DB 120m | F 18° 24m | → | 510 |



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|---------------|--------------|---|-----|
| SL4DB 120m | F 30° 24m | → | 512 |
| SL4DB 120m | F 12° 30m | → | 514 |
| SL4DB 120m | F 16° 30m | → | 516 |
| SL4DB 120m | F 28° 30m | → | 518 |
| SL4DB 120m | F 10° 36m | → | 520 |
| SL4DB 120m | F 14° 36m | → | 521 |
| SL4DB 120m | F 26° 36m | → | 522 |



| | |
|-------|-------|
| SL4DB | F 11° |
| 126m | 12m |



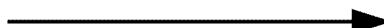
523

| | |
|-------|-------|
| SL4DB | F 16° |
| 126m | 12m |



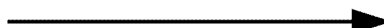
525

| | |
|-------|-------|
| SL4DB | F 31° |
| 126m | 12m |



527

| | |
|-------|-------|
| SL4DB | F 13° |
| 126m | 18m |



529

| | |
|-------|-------|
| SL4DB | F 18° |
| 126m | 18m |



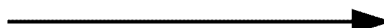
531

| | |
|-------|-------|
| SL4DB | F 32° |
| 126m | 18m |



533

| | |
|-------|-------|
| SL4DB | F 13° |
| 126m | 24m |



535



| | | | |
|---------------|--------------|---|-----|
| SL4DB 126m | F 18° 24m | → | 537 |
| SL4DB 126m | F 30° 24m | → | 539 |
| SL4DB 126m | F 12° 30m | → | 541 |
| SL4DB 126m | F 16° 30m | → | 543 |
| SL4DB 126m | F 28° 30m | → | 545 |
| SL4DB 126m | F 10° 36m | → | 547 |
| SL4DB 126m | F 14° 36m | → | 548 |

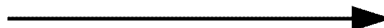


| | |
|-------|-------|
| SL4DB | F 26° |
| 126m | 36m |



549

| | |
|-------|-------|
| SL4DB | F 11° |
| 132m | 12m |



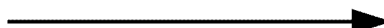
550

| | |
|-------|-------|
| SL4DB | F 16° |
| 132m | 12m |



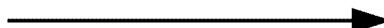
552

| | |
|-------|-------|
| SL4DB | F 31° |
| 132m | 12m |



554

| | |
|-------|-------|
| SL4DB | F 13° |
| 132m | 18m |



556

| | |
|-------|-------|
| SL4DB | F 18° |
| 132m | 18m |



558

| | |
|-------|-------|
| SL4DB | F 32° |
| 132m | 18m |



560



| | |
|-------|-------|
| SL4DB | F 13° |
| 132m | 24m |



562

| | |
|-------|-------|
| SL4DB | F 12° |
| 132m | 30m |



564

| | |
|-------|-------|
| SL4DB | F 10° |
| 132m | 36m |



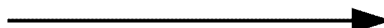
566

| | |
|-------|-------|
| SL4DB | F 11° |
| 138m | 12m |



568

| | |
|-------|-------|
| SL4DB | F 13° |
| 138m | 18m |



570

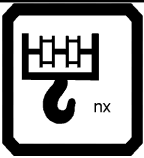
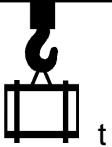
| | |
|-------|-------|
| SL4DB | F 13° |
| 138m | 24m |



572



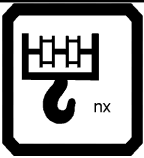
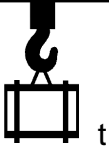
typ1: D=28.0 mm

|  |  |
|---|--|
| 1 | 18,1 |
| 2 | 35,9 |
| 3 | 53,4 |
| 4 | 70,7 |
| 5 | 87,7 |
| 6 | 104,5 |
| 7 | 121,0 |
| 8 | 137,2 |
| 9 | 153,2 |
| 10 | 169,0 |
| 11 | 184,5 |
| 12 | 199,9 |
| 13 | 214,9 |
| 14 | 229,8 |
| 15 | 244,4 |
| 16 | 258,8 |
| 17 | 273,0 |
| 18 | 287,0 |
| 19 | 300,8 |
| 20 | 314,3 |
| 21 | 327,7 |
| 22 | 340,8 |
| 23 | 353,8 |
| 24 | 366,6 |
| 25 | 379,1 |
| 26 | 391,5 |
| 27 | 403,7 |
| 28 | 415,7 |
| 29 | 427,6 |
| 30 | 439,2 |
| 31 | 450,7 |
| 32 | 462,0 |
| 33 | 473,2 |
| 34 | 484,2 |
| 35 | 495,0 |
| 36 | 505,6 |
| 37 | 516,1 |
| 38 | 526,4 |
| 39 | 536,6 |
| 40 | 546,6 |

| | |
|----|-------|
| 41 | 556,5 |
| 42 | 566,2 |
| 43 | 575,8 |
| 44 | 585,2 |
| 45 | 594,5 |
| 46 | 603,7 |
| 47 | 612,7 |
| 48 | 621,6 |
| 49 | 630,3 |
| 50 | 639,0 |



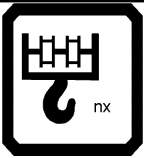
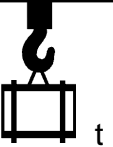
typ2: D=25.0 mm

|  |  |
|---|--|
| 1 | 12,6 |
| 2 | 24,9 |
| 3 | 37,1 |
| 4 | 49,1 |
| 5 | 60,9 |
| 6 | 72,5 |
| 7 | 84,0 |
| 8 | 95,3 |
| 9 | 106,4 |
| 10 | 117,4 |
| 11 | 128,2 |
| 12 | 138,8 |
| 13 | 149,3 |
| 14 | 159,6 |
| 15 | 169,7 |
| 16 | 179,7 |
| 17 | 189,6 |
| 18 | 199,3 |
| 19 | 208,9 |
| 20 | 218,3 |
| 21 | 227,5 |
| 22 | 236,7 |
| 23 | 245,7 |
| 24 | 254,6 |
| 25 | 263,3 |
| 26 | 271,9 |
| 27 | 280,4 |
| 28 | 288,7 |
| 29 | 296,9 |
| 30 | 305,0 |
| 31 | 313,0 |
| 32 | 320,9 |
| 33 | 328,6 |
| 34 | 336,2 |
| 35 | 343,7 |
| 36 | 351,1 |
| 37 | 358,4 |
| 38 | 365,6 |
| 39 | 372,6 |
| 40 | 379,6 |

| | |
|----|-------|
| 41 | 386,5 |
| 42 | 393,2 |
| 43 | 399,9 |
| 44 | 406,4 |
| 45 | 412,9 |
| 46 | 419,2 |
| 47 | 425,5 |
| 48 | 431,7 |
| 49 | 437,7 |
| 50 | 443,7 |






typ3: D=28.0 mm

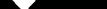
|  |  |
|---|--|
| 1 | 16,1 |
| 2 | 31,9 |
| 3 | 47,5 |
| 4 | 62,8 |
| 5 | 78,0 |
| 6 | 92,8 |
| 7 | 107,5 |
| 8 | 122,0 |
| 9 | 136,2 |
| 10 | 150,2 |
| 11 | 164,0 |
| 12 | 177,6 |
| 13 | 191,0 |
| 14 | 204,2 |
| 15 | 217,2 |
| 16 | 230,1 |
| 17 | 242,7 |
| 18 | 255,1 |
| 19 | 267,3 |
| 20 | 279,4 |
| 21 | 291,3 |
| 22 | 303,0 |
| 23 | 314,5 |
| 24 | 325,8 |
| 25 | 337,0 |
| 26 | 348,0 |
| 27 | 358,9 |



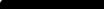
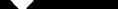
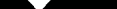
22.00

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|--|-------------|------------|--|--|---|--|--|
| | SA 10.5m | -- (SA) |  t |  t |  360° | | |
|--|-------------|------------|--|--|---|--|--|


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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 72m | F 11° 12m |  |  |  | | |
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| | SL2DB 72m | F 11° 12m |  |  |  | | |
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| | SL2DB 72m | F 16° 12m |  |  |  | | |
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| | SL2DB 72m | F 31° 12m |  |  |  | | |
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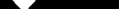
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| | SL2DB 72m | F 13° 18m |  |  |  | | |
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
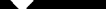

22.50

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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 72m | F 32° 18m |  |  |  | | |
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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 72m | F 13° 24m |  |  |  | | |
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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 72m | F 18° 24m |  |  |  | | |
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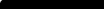
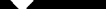
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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 72m | F 30° 24m |  |  |  | | |
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| | SL2DB 72m | F 12° 30m |  |  | | |
|--|--------------|--------------|---|---|--|--|

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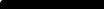
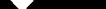

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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 72m | F 28° 30m |  |  |  | | |
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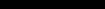
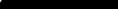
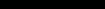
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|--|--------------|--------------|---|---|---|--|--|
| | SL2DB 72m | F 10° 36m |  |  |  | | |
|--|--------------|--------------|---|---|---|--|--|


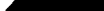
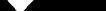
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| | SL2DB 72m | F 14° 36m |  |  |  | | |
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| | SL2DB 72m | F 26° 36m |  |  |  | | |
|--|--------------|--------------|---|---|---|--|--|

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| | SL2DB 78m | F 11° 12m |  |  |  | | |
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| | SL2DB 78m | F 16° 12m |  |  |  | | |
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
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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 78m | F 31° 12m |  |  |  | | |
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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 78m | F 13° 18m |  |  |  | | |
|--|--------------|--------------|---|---|--|--|--|

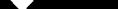
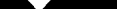
22.50

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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 78m | F 18° 18m |  |  |  | | |
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
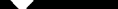
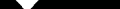
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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 78m | F 32° 18m |  |  |  | | |
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
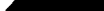
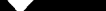
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| | SL2DB 78m | F 13° 24m |  |  |  | | |
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| | SL2DB 78m | F 30° 24m |  |  |  | | |
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| | SL2DB 78m | F 12° 30m |  |  |  | | |
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
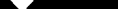

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| | SL2DB 78m | F 16° 30m |  |  |  | | |
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| | SL2DB 78m | F 10° 36m |  |  |  | | |
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| | SL2DB 78m | F 14° 36m |  |  |  | | |
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


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| | SL2DB 78m | F 26° 36m |  |  |  | | |
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
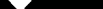

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| | SL2DB 84m | F 11° 12m |  |  |  | | |
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
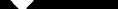
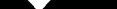
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| | SL2DB 84m | F 11° 12m |  |  |  | | |
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| | SL2DB 84m | F 16° 12m |  |  |  | | |
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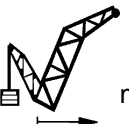


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| | SL2DB 84m | F 16° 12m |  |  |  | | |
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|---|--|------|-------|-------|-------|-------|------|------|-------|-------|-------|-------|------|------|
| | 84,0 | 84,0 | 84,0 | 84,0 | 84,0 | 84,0 | 84,0 | 84,0 | 84,0 | 84,0 | 84,0 | 84,0 | 84,0 | 84,0 |
| 20,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 |
| 22,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | 70,0 | 70,0 |
| 24,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 |
| 26,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 |
| 28,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 |
| 30,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 |
| 32,0 | 58,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 | 60,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 |
| 34,0 | 53,0 | 61,0 | 61,0 | 61,0 | 61,0 | 61,0 | 54,0 | 61,0 | 61,0 | 61,0 | 61,0 | 61,0 | 56,0 | 61,0 |
| 36,0 | 48,5 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 50,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 51,0 | 59,0 |
| 38,0 | 44,5 | 58,0 | 58,0 | 58,0 | 58,0 | 58,0 | 45,5 | 58,0 | 58,0 | 58,0 | 58,0 | 58,0 | 47,0 | 58,0 |
| 40,0 | 40,5 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 41,5 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 43,0 | 57,0 |
| 44,0 | 34,0 | 50,0 | 55,0 | 55,0 | 55,0 | 55,0 | 35,0 | 53,0 | 55,0 | 55,0 | 55,0 | 55,0 | 36,5 | 55,0 |
| 48,0 | 28,4 | 43,5 | 53,0 | 53,0 | 53,0 | 53,0 | 29,2 | 46,0 | 53,0 | 53,0 | 53,0 | 53,0 | 30,5 | 51,0 |
| 52,0 | 23,6 | 37,5 | 50,0 | 51,0 | 51,0 | 51,0 | 24,4 | 40,0 | 51,0 | 51,0 | 51,0 | 51,0 | 25,5 | 44,0 |
| 56,0 | 19,5 | 32,5 | 45,0 | 49,5 | 49,5 | 49,5 | 20,2 | 35,0 | 49,5 | 49,5 | 49,5 | 49,5 | 21,2 | 38,5 |
| 60,0 | 15,8 | 27,9 | 40,0 | 48,0 | 48,0 | 48,0 | 16,5 | 30,5 | 44,0 | 48,0 | 48,0 | 48,0 | 17,5 | 34,0 |
| 64,0 | 12,6 | 24,0 | 35,5 | 45,0 | 47,0 | 47,0 | 13,3 | 26,2 | 39,0 | 47,0 | 47,0 | 47,0 | 14,2 | 29,4 |
| 68,0 | 9,8 | 20,6 | 31,5 | 42,0 | 46,0 | 46,0 | 10,4 | 22,7 | 35,0 | 45,5 | 46,0 | 46,0 | 11,3 | 25,4 |
| 72,0 | 7,3 | 17,5 | 27,7 | 38,0 | 44,0 | 45,0 | 7,8 | 19,4 | 31,0 | 42,0 | 45,0 | 45,0 | 8,6 | 21,8 |
| 76,0 | 5,0 | 14,7 | 24,5 | 34,0 | 41,5 | 44,0 | 5,5 | 16,4 | 27,2 | 38,0 | 44,0 | 44,0 | 6,2 | 18,7 |
| 80,0 | | 12,2 | 21,4 | 30,5 | 38,5 | 43,5 | | 13,7 | 23,9 | 34,0 | 43,5 | 43,5 | | 15,9 |
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| * n * | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| yy | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 18,0 | 18,0 |
| zz | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 0,0 | 50,0 |
| | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | |
|  m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 |

SL2DB

F 31°

84m

12m

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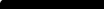
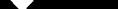
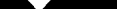
14,0 x

14,0

m



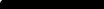
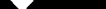

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| | SL2DB 84m | F 31° 12m |  |  |  | | |
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| | SL2DB 84m | F 13° 18m |  |  |  | | |
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| | SL2DB 84m | F 13° 18m |  |  |  | | |
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| | SL2DB 84m | F 18° 18m |  |  |  | | |
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| | SL2DB 84m | F 32° 18m |  |  |  | | |
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| | SL2DB 84m | F 13° 24m |  |  |  | | |
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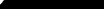
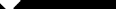
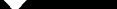
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| | SL2DB 84m | F 18° 24m |  |  |  | | |
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| | SL2DB 84m | F 30° 24m |  |  |  | | |
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| | SL2DB 84m | F 12° 30m |  |  |  | | |
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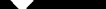

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| | SL2DB 84m | F 16° 30m |  |  |  | | |
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| | SL2DB 84m | F 28° 30m |  |  |  | | |
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


| | | | | | | | |
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| | SL2DB 84m | F 10° 36m |  |  |  | | |
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| | SL2DB 84m | F 14° 36m |  |  |  | | |
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| | SL2DB 90m | F 11° 12m |  |  |  | | |
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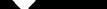

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| | SL2DB 90m | F 11° 12m |  |  |  | | |
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| | SL2DB 90m | F 16° 12m |  |  |  | | |
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| | SL2DB 90m | F 16° 12m |  |  |  | | |
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


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| | SL2DB 90m | F 31° 12m |  |  |  | | |
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
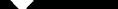
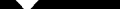
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| | SL2DB 90m | F 31° 12m |  |  |  | | |
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| | SL2DB 90m | F 13° 18m |  |  |  | | |
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| | SL2DB 90m | F 13° 18m |  |  |  | | |
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| | SL2DB 90m | F 18° 18m |  |  |  | | |
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The diagram illustrates the layout of the test area, which is a rectangular space measuring 90m by 18m. The area is divided into several sections, each containing specific equipment or dimensions:

- SL2DB**: A section labeled SL2DB, measuring 90m by 18m.
- F 18°**: A section labeled F 18°, measuring 18m.
- 150**: A section labeled 150, measuring 150m.
- 14,0 x**: A section labeled 14,0 x, measuring 14,0m.
- 14,0 m**: A section labeled 14,0 m, measuring 14,0m.
- zz t**: A section labeled zz t, measuring zz t.
- yy m**: A section labeled yy m, measuring yy m.

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| | SL2DB 90m | F 13° 24m |  |  |  | | |
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

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


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| | SL2DB 90m | F 18° 24m |  |  |  | | |
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
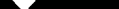
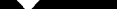
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| | SL2DB 90m | F 30° 24m |  |  |  | | |
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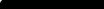
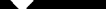

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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 90m | F 12° 30m |  |  |  | | |
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
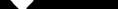
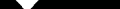
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| | | | | | | | |
|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 90m | F 28° 30m |  |  |  | | |
|--|--------------|--------------|---|---|--|--|--|




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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 90m | F 10° 36m |  |  |  | | |
|--|--------------|--------------|---|---|--|--|--|




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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 90m | F 14° 36m |  |  |  | | |
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| | SL2DB 90m | F 26° 36m |  |  |  | | |
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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 96m | F 11° 12m |  |  |  | | |
|--|--------------|--------------|---|---|--|--|--|




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| | | | | | | | |
|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 96m | F 11° 12m |  |  |  | | |
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|---|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------------------------|--|
| | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | | |
| 18,0 | 107,0 | 124,0 | 124,0 | 124,0 | 124,0 | 124,0 | 124,0 | 124,0 | 124,0 | 109,0 | 122,0 | 122,0 | 122,0 | 122,0 | 122,0 | |
| 20,0 | 94,0 | 122,0 | 122,0 | 122,0 | 122,0 | 122,0 | 122,0 | 122,0 | 122,0 | 96,0 | 119,0 | 119,0 | 119,0 | 119,0 | 119,0 | |
| 22,0 | 83,0 | 113,0 | 119,0 | 119,0 | 119,0 | 119,0 | 119,0 | 119,0 | 119,0 | 85,0 | 116,0 | 116,0 | 116,0 | 116,0 | 116,0 | |
| 24,0 | 74,0 | 101,0 | 116,0 | 116,0 | 116,0 | 116,0 | 116,0 | 116,0 | 116,0 | 76,0 | 107,0 | 112,0 | 112,0 | 112,0 | 112,0 | |
| 26,0 | 66,0 | 92,0 | 113,0 | 113,0 | 113,0 | 113,0 | 113,0 | 113,0 | 113,0 | 68,0 | 97,0 | 109,0 | 109,0 | 109,0 | 109,0 | |
| 28,0 | 60,0 | 83,0 | 107,0 | 109,0 | 109,0 | 109,0 | 109,0 | 109,0 | 109,0 | 61,0 | 88,0 | 106,0 | 106,0 | 106,0 | 106,0 | |
| 30,0 | 54,0 | 76,0 | 98,0 | 106,0 | 106,0 | 106,0 | 106,0 | 106,0 | 106,0 | 55,0 | 80,0 | 103,0 | 103,0 | 103,0 | 103,0 | |
| 32,0 | 48,0 | 69,0 | 90,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 49,5 | 73,0 | 97,0 | 100,0 | 100,0 | 100,0 | |
| 34,0 | 43,5 | 63,0 | 83,0 | 99,0 | 99,0 | 99,0 | 99,0 | 99,0 | 99,0 | 44,5 | 67,0 | 90,0 | 98,0 | 98,0 | 98,0 | |
| 36,0 | 39,0 | 58,0 | 77,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | 40,0 | 62,0 | 83,0 | 95,0 | 95,0 | 95,0 | |
| 38,0 | 35,0 | 53,0 | 71,0 | 89,0 | 93,0 | 93,0 | 93,0 | 93,0 | 93,0 | 36,5 | 57,0 | 77,0 | 92,0 | 92,0 | 92,0 | |
| 40,0 | 31,5 | 49,0 | 66,0 | 83,0 | 90,0 | 90,0 | 90,0 | 90,0 | 90,0 | 32,5 | 52,0 | 72,0 | 89,0 | 89,0 | 89,0 | |
| 44,0 | 25,6 | 41,5 | 57,0 | 73,0 | 84,0 | 85,0 | 85,0 | 85,0 | 85,0 | 26,5 | 44,5 | 62,0 | 80,0 | 85,0 | 85,0 | |
| 48,0 | 20,4 | 35,0 | 49,5 | 64,0 | 79,0 | 80,0 | 80,0 | 80,0 | 80,0 | 21,2 | 38,0 | 54,0 | 71,0 | 80,0 | 80,0 | |
| 52,0 | 16,0 | 29,5 | 43,0 | 57,0 | 70,0 | 75,0 | 75,0 | 75,0 | 75,0 | 16,7 | 32,0 | 47,5 | 63,0 | 76,0 | 76,0 | |
| 56,0 | 12,1 | 24,8 | 37,5 | 50,0 | 63,0 | 71,0 | 72,0 | 72,0 | 72,0 | 12,8 | 27,3 | 41,5 | 56,0 | 70,0 | 72,0 | |
| 60,0 | 8,8 | 20,7 | 32,5 | 44,5 | 56,0 | 66,0 | 69,0 | 69,0 | 69,0 | 9,4 | 23,0 | 36,5 | 50,0 | 64,0 | 69,0 | |
| 64,0 | 5,9 | 17,1 | 28,2 | 39,5 | 51,0 | 61,0 | 66,0 | 66,0 | 66,0 | 6,5 | 19,2 | 32,0 | 44,5 | 57,0 | 66,0 | |
| 68,0 | | 13,8 | 24,4 | 35,0 | 45,5 | 56,0 | 62,0 | 64,0 | 64,0 | | 15,9 | 28,0 | 40,0 | 52,0 | 61,0 | |
| 72,0 | | 11,0 | 21,0 | 31,0 | 41,0 | 51,0 | 57,0 | 62,0 | 62,0 | | 12,9 | 24,4 | 36,0 | 47,5 | 57,0 | |
| 76,0 | | 8,4 | 18,0 | 27,6 | 37,0 | 45,5 | 53,0 | 59,0 | 59,0 | | 10,3 | 21,2 | 32,0 | 43,0 | 52,0 | |
| 80,0 | | 6,1 | 15,3 | 24,4 | 33,5 | 41,5 | 49,0 | 56,0 | 56,0 | | 7,9 | 18,3 | 28,7 | 39,0 | 47,5 | |
| 84,0 | | | 12,8 | 21,5 | 30,0 | 37,5 | 45,0 | 52,0 | 52,0 | | 5,8 | 15,7 | 25,6 | 35,0 | 43,5 | |
| 88,0 | | | 10,6 | 18,9 | 26,8 | 34,0 | 40,5 | 47,5 | 47,5 | | | 13,4 | 22,9 | 31,5 | 39,5 | |
| 92,0 | | | 8,6 | 16,6 | 23,9 | 30,5 | 37,0 | 43,5 | 43,5 | | | 11,3 | 20,4 | 28,2 | 36,0 | |
| 96,0 | | | 6,8 | 14,5 | 21,2 | 27,6 | 34,0 | 40,5 | 40,5 | | | 9,3 | 18,0 | 25,4 | 33,0 | |
| | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | |
| * n * | 7 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 7 | 8 | 8 | 8 | 8 | 8 | |
| yy | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | |
| zz | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 350,0 | 350,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | |
| | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
|  m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | |

SL2DB

F 16°

96m

12m

150

t

14,0 x

14,0

m

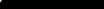
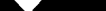



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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 96m | F 16° 12m |  |  |  | | |
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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 96m | F 31° 12m |  |  |  | | |
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
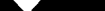

Diagram illustrating the layout of the experimental setup, showing various components and dimensions:

- SL2DB
- 96m
- F 13°
- 18m
- 150
- t
- 14,0 x
- 14,0
- m
- zz t
- yy m

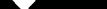
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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 96m | F 13° 18m |  |  |  | | |
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| | SL2DB 96m | F 18° 18m |  |  |  | | |
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
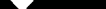

| | | | | | | | |
|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 96m | F 18° 18m |  |  |  | | |
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

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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 96m | F 32° 18m |  |  |  | | |
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
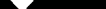

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| | SL2DB 96m | F 13° 24m |  |  |  | | |
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| | SL2DB 96m | F 13° 24m |  |  |  | | |
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| | SL2DB 96m | F 18° 24m |  |  |  | | |
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


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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 96m | F 30° 24m |  |  |  | | |
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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 96m | F 30° 24m |  |  |  | | |
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|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 96m | F 12° 30m |  |  |  | | |
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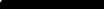
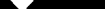

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| | | | | | | | |
|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 96m | F 12° 30m |  |  |  | | |
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


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|--|--------------|--------------|---|---|---|--|--|
| | SL2DB 96m | F 16° 30m |  |  |  | | |
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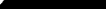
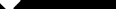
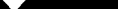
| | | | | | | | |
|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 96m | F 16° 30m |  |  |  | | |
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
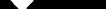

| | | | | | | | |
|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 96m | F 28° 30m |  |  |  | | |
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| | SL2DB 96m | F 14° 36m |  |  |  | | |
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

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| | | | | | | | |
|--|--------------|--------------|---|---|--|--|--|
| | SL2DB 96m | F 26° 36m |  |  |  | | |
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|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 |
| 18,0 | 101,0 | 131,0 | 131,0 | 131,0 | 131,0 | 131,0 | 131,0 | 131,0 | 131,0 | 103,0 | 128,0 | 128,0 | 128,0 | 128,0 |
| 20,0 | 89,0 | 120,0 | 127,0 | 127,0 | 127,0 | 127,0 | 127,0 | 127,0 | 127,0 | 91,0 | 124,0 | 124,0 | 124,0 | 124,0 |
| 22,0 | 79,0 | 108,0 | 124,0 | 124,0 | 124,0 | 124,0 | 124,0 | 124,0 | 124,0 | 81,0 | 113,0 | 121,0 | 121,0 | 121,0 |
| 24,0 | 70,0 | 97,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 72,0 | 102,0 | 117,0 | 117,0 | 117,0 |
| 26,0 | 63,0 | 88,0 | 113,0 | 117,0 | 117,0 | 117,0 | 117,0 | 117,0 | 117,0 | 64,0 | 93,0 | 114,0 | 114,0 | 114,0 |
| 28,0 | 56,0 | 80,0 | 103,0 | 113,0 | 113,0 | 113,0 | 113,0 | 113,0 | 113,0 | 58,0 | 84,0 | 111,0 | 111,0 | 111,0 |
| 30,0 | 50,0 | 72,0 | 94,0 | 110,0 | 110,0 | 110,0 | 110,0 | 110,0 | 110,0 | 52,0 | 77,0 | 102,0 | 107,0 | 107,0 |
| 32,0 | 45,0 | 66,0 | 87,0 | 107,0 | 107,0 | 107,0 | 107,0 | 107,0 | 107,0 | 46,5 | 70,0 | 94,0 | 104,0 | 104,0 |
| 34,0 | 40,5 | 60,0 | 80,0 | 100,0 | 104,0 | 104,0 | 104,0 | 104,0 | 104,0 | 41,5 | 64,0 | 87,0 | 101,0 | 101,0 |
| 36,0 | 36,5 | 55,0 | 74,0 | 93,0 | 101,0 | 101,0 | 101,0 | 101,0 | 101,0 | 37,5 | 59,0 | 80,0 | 98,0 | 98,0 |
| 38,0 | 32,5 | 51,0 | 68,0 | 86,0 | 98,0 | 98,0 | 98,0 | 98,0 | 98,0 | 33,5 | 54,0 | 74,0 | 95,0 | 96,0 |
| 40,0 | 29,3 | 46,5 | 63,0 | 80,0 | 95,0 | 95,0 | 95,0 | 95,0 | 95,0 | 30,0 | 49,5 | 69,0 | 88,0 | 93,0 |
| 44,0 | 23,3 | 39,0 | 55,0 | 70,0 | 86,0 | 90,0 | 90,0 | 90,0 | 90,0 | 24,2 | 42,0 | 60,0 | 78,0 | 88,0 |
| 48,0 | 18,3 | 32,5 | 47,0 | 62,0 | 76,0 | 85,0 | 85,0 | 85,0 | 85,0 | 19,1 | 35,5 | 52,0 | 68,0 | 82,0 |
| 52,0 | 14,0 | 27,4 | 41,0 | 54,0 | 68,0 | 80,0 | 80,0 | 80,0 | 80,0 | 14,7 | 30,0 | 45,5 | 61,0 | 76,0 |
| 56,0 | 10,2 | 22,8 | 35,5 | 48,0 | 60,0 | 73,0 | 75,0 | 76,0 | 76,0 | 10,9 | 25,2 | 39,5 | 54,0 | 68,0 |
| 60,0 | 7,0 | 18,7 | 30,5 | 42,5 | 54,0 | 66,0 | 71,0 | 73,0 | 73,0 | 7,6 | 21,0 | 34,5 | 48,0 | 61,0 |
| 64,0 | | 15,2 | 26,3 | 37,5 | 48,5 | 60,0 | 67,0 | 70,0 | 70,0 | | 17,4 | 30,0 | 42,5 | 55,0 |
| 68,0 | | 12,1 | 22,6 | 33,0 | 43,5 | 54,0 | 63,0 | 67,0 | 67,0 | | 14,1 | 26,1 | 38,0 | 50,0 |
| 72,0 | | 9,3 | 19,2 | 29,2 | 39,0 | 49,0 | 58,0 | 63,0 | 63,0 | | 11,2 | 22,6 | 34,0 | 45,5 |
| 76,0 | | 6,8 | 16,2 | 25,7 | 35,0 | 44,5 | 53,0 | 59,0 | 59,0 | | 8,6 | 19,4 | 30,0 | 41,0 |
| 80,0 | | | 13,6 | 22,6 | 31,5 | 40,0 | 47,5 | 55,0 | 55,0 | | 6,3 | 16,6 | 26,9 | 37,0 |
| 84,0 | | | 11,1 | 19,8 | 28,4 | 36,0 | 43,5 | 50,0 | 50,0 | | | 14,0 | 23,9 | 33,5 |
| 88,0 | | | 8,9 | 17,2 | 25,5 | 32,5 | 39,5 | 46,5 | 46,5 | | | 11,7 | 21,2 | 30,5 |
| 92,0 | | | 7,0 | 14,9 | 22,5 | 29,2 | 36,0 | 42,5 | 42,5 | | | 9,6 | 18,7 | 26,9 |
| 96,0 | | | 5,2 | 12,8 | 19,8 | 26,2 | 32,5 | 39,0 | 39,0 | | | 7,7 | 16,5 | 24,1 |
| 100,0 | | | | 10,8 | 17,4 | 23,6 | 29,7 | 36,0 | 36,0 | | | 6,0 | 14,2 | 21,5 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| * n * | 6 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 6 | 8 | 8 | 8 | 8 |
| yy | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 |
| zz | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 350,0 | 350,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 |
| | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
|  m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 |

SL2DB

F 11°

102m

12m

150

t

14,0 x

14,0

m




22.50



22.50

| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 102m | F 16° 12m |  |  |  | | |
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22.50

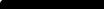
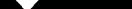
| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 102m | F 16° 12m |  |  |  | | |
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| | SL2DB 102m | F 31° 12m |  |  |  | | |
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22.50

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| | SL2DB 102m | F 13° 18m |  |  |  | | |
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| | SL2DB 102m | F 13° 18m |  |  |  | | |
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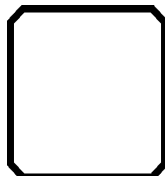
| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 102m | F 18° 18m |  |  |  | | |
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|  | |  | | m > < t | | CODE > 8189 < V181 4116.x(x) | | | | | | | | | |
|---|------|---|-------|---------|-------|------------------------------|-------|-------|-------|-------|--|--|--|--|--|
| m | | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | | | | | |
| 22,0 | 82,0 | 82,0 | 80,0 | 80,0 | 80,0 | 80,0 | 80,0 | 80,0 | 80,0 | 80,0 | | | | | |
| 24,0 | 79,0 | 79,0 | 77,0 | 77,0 | 77,0 | 77,0 | 77,0 | 77,0 | 77,0 | 77,0 | | | | | |
| 26,0 | 77,0 | 77,0 | 71,0 | 75,0 | 75,0 | 75,0 | 75,0 | 75,0 | 75,0 | 75,0 | | | | | |
| 28,0 | 75,0 | 75,0 | 64,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | | | | | |
| 30,0 | 73,0 | 73,0 | 58,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | | | | | |
| 32,0 | 71,0 | 71,0 | 52,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | | | | | |
| 34,0 | 68,0 | 68,0 | 47,0 | 68,0 | 68,0 | 68,0 | 68,0 | 68,0 | 68,0 | 68,0 | | | | | |
| 36,0 | 66,0 | 66,0 | 43,0 | 66,0 | 66,0 | 66,0 | 66,0 | 66,0 | 66,0 | 66,0 | | | | | |
| 38,0 | 64,0 | 64,0 | 39,0 | 63,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | | | | | |
| 40,0 | 63,0 | 63,0 | 35,0 | 58,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | | | | | |
| 44,0 | 59,0 | 59,0 | 28,9 | 50,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | | | | | |
| 48,0 | 56,0 | 56,0 | 23,5 | 43,0 | 56,0 | 56,0 | 56,0 | 56,0 | 56,0 | 56,0 | | | | | |
| 52,0 | 53,0 | 53,0 | 18,9 | 37,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | | | | | |
| 56,0 | 51,0 | 51,0 | 14,9 | 32,0 | 48,5 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | | | | | |
| 60,0 | 48,5 | 48,5 | 11,4 | 27,2 | 43,0 | 48,5 | 48,5 | 48,5 | 48,5 | 48,5 | | | | | |
| 64,0 | 46,5 | 46,5 | 8,4 | 23,3 | 38,0 | 46,5 | 46,5 | 46,5 | 46,5 | 46,5 | | | | | |
| 68,0 | 45,0 | 45,0 | 5,6 | 19,7 | 34,0 | 45,0 | 45,0 | 45,0 | 45,0 | 45,0 | | | | | |
| 72,0 | 43,0 | 43,0 | | 16,5 | 29,9 | 43,0 | 43,0 | 43,0 | 43,0 | 43,0 | | | | | |
| 76,0 | 41,5 | 41,5 | | 13,7 | 26,4 | 39,0 | 41,5 | 41,5 | 41,5 | 41,5 | | | | | |
| 80,0 | 40,5 | 40,5 | | 11,1 | 23,3 | 35,5 | 40,5 | 40,5 | 40,5 | 40,5 | | | | | |
| 84,0 | 39,0 | 39,0 | | 8,8 | 20,4 | 32,0 | 39,0 | 39,0 | 39,0 | 39,0 | | | | | |
| 88,0 | 38,0 | 38,0 | | 6,7 | 17,8 | 28,9 | 37,5 | 38,0 | 38,0 | 38,0 | | | | | |
| 92,0 | 37,0 | 37,0 | | | 15,4 | 26,1 | 35,0 | 37,0 | 37,0 | 37,0 | | | | | |
| 96,0 | 36,0 | 36,0 | | | 13,3 | 23,3 | 32,0 | 36,0 | 36,0 | 36,0 | | | | | |
| 100,0 | 35,0 | 35,5 | | | 11,3 | 20,8 | 29,4 | 35,0 | 35,5 | 35,5 | | | | | |
| 104,0 | 34,5 | 34,5 | | | 9,4 | 18,4 | 26,7 | 34,5 | 34,5 | 34,5 | | | | | |
| 108,0 | 31,5 | 34,0 | | | 7,7 | 16,2 | 24,1 | 32,0 | 34,0 | 34,0 | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| * n * | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | | | | |
| yy | | 15.0 | 15.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | | | | | |
| zz | | 300.0 | 350.0 | 0.0 | 50.0 | 100.0 | 150.0 | 200.0 | 250.0 | 300.0 | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| m/s | | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | | | | | |
| | | | | | | | | | | | | | | | |

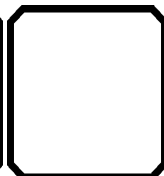
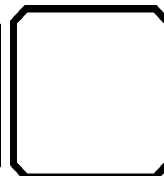
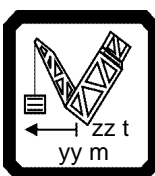
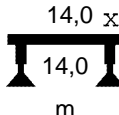
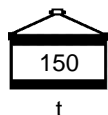


SL2DB

102m


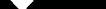

F 18°

18m



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22.50



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|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 102m | F 32° 18m |  |  |  | | |
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
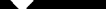

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|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 102m | F 13° 24m |  |  |  | | |
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| | SL2DB 102m | F 18° 24m |  |  |  | | |
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


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| | SL2DB 102m | F 18° 24m |  |  |  | | |
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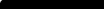
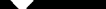

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| | SL2DB 102m | F 12° 30m |  |  |  | | |
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

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| | SL2DB 102m | F 12° 30m |  |  |  | | |
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|  m |  m > t | | | | | | | | | | | | | |
|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 |
| 26,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 |
| 28,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 |
| 30,0 | 49,0 | 49,0 | 49,0 | 49,0 | 49,0 | 49,0 | 49,0 | 49,0 | 49,0 | 49,0 | 49,0 | 49,0 | 49,0 | 48,5 |
| 32,0 | 47,5 | 47,5 | 47,5 | 47,5 | 47,5 | 47,5 | 47,5 | 47,5 | 47,0 | 47,0 | 47,0 | 47,0 | 47,0 | 47,0 |
| 34,0 | 45,5 | 45,5 | 45,5 | 45,5 | 45,5 | 45,5 | 45,5 | 45,5 | 45,5 | 45,5 | 45,5 | 45,5 | 45,5 | 45,5 |
| 36,0 | 43,0 | 44,0 | 44,0 | 44,0 | 44,0 | 44,0 | 44,0 | 44,0 | 44,0 | 44,0 | 44,0 | 44,0 | 44,0 | 43,5 |
| 38,0 | 39,0 | 42,5 | 42,5 | 42,5 | 42,5 | 42,5 | 42,5 | 40,0 | 42,5 | 42,5 | 42,5 | 42,5 | 42,5 | 41,5 |
| 40,0 | 35,5 | 41,0 | 41,0 | 41,0 | 41,0 | 41,0 | 41,0 | 36,5 | 41,0 | 41,0 | 41,0 | 41,0 | 41,0 | 38,0 |
| 44,0 | 29,6 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 30,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 32,0 |
| 48,0 | 24,4 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 25,2 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 26,4 |
| 52,0 | 20,0 | 33,0 | 34,5 | 34,5 | 34,5 | 34,5 | 34,5 | 20,7 | 34,5 | 34,5 | 34,5 | 34,5 | 34,5 | 21,8 |
| 56,0 | 16,1 | 28,4 | 32,5 | 32,5 | 32,5 | 32,5 | 32,5 | 16,8 | 31,0 | 32,5 | 32,5 | 32,5 | 32,5 | 17,8 |
| 60,0 | 12,7 | 24,2 | 31,0 | 31,0 | 31,0 | 31,0 | 31,0 | 13,3 | 26,5 | 31,0 | 31,0 | 31,0 | 31,0 | 14,3 |
| 64,0 | 9,7 | 20,5 | 29,3 | 29,3 | 29,3 | 29,3 | 29,3 | 10,3 | 22,7 | 29,3 | 29,3 | 29,3 | 29,3 | 11,2 |
| 68,0 | 7,0 | 17,3 | 27,6 | 27,8 | 27,8 | 27,8 | 27,8 | 7,6 | 19,3 | 27,8 | 27,8 | 27,8 | 27,8 | 8,4 |
| 72,0 | | 14,4 | 24,1 | 26,7 | 26,7 | 26,7 | 26,7 | 5,1 | 16,3 | 26,5 | 26,7 | 26,7 | 26,7 | 5,9 |
| 76,0 | | 11,7 | 21,0 | 25,6 | 25,6 | 25,6 | 25,6 | | 13,5 | 24,1 | 25,6 | 25,6 | 25,6 | |
| 80,0 | | 9,3 | 18,2 | 24,4 | 24,4 | 24,4 | 24,4 | | 11,0 | 21,2 | 24,4 | 24,4 | 24,4 | |
| 84,0 | | 7,1 | 15,6 | 23,0 | 23,5 | 23,5 | 23,5 | | 8,8 | 18,5 | 23,4 | 23,5 | 23,5 | |
| 88,0 | | 5,2 | 13,3 | 21,2 | 22,7 | 22,7 | 22,7 | | 6,7 | 16,0 | 22,6 | 22,7 | 22,7 | |
| 92,0 | | | 11,1 | 19,0 | 21,9 | 21,9 | 21,9 | | | 13,8 | 21,7 | 21,9 | 21,9 | |
| 96,0 | | | 9,2 | 16,7 | 21,1 | 21,1 | 21,1 | | | 11,7 | 20,2 | 21,1 | 21,1 | |
| 100,0 | | | 7,3 | 14,6 | 19,8 | 20,5 | 20,5 | | | 9,8 | 18,0 | 20,5 | 20,5 | |
| 104,0 | | | 5,7 | 12,6 | 18,2 | 19,9 | 19,9 | | | 8,0 | 16,0 | 19,9 | 19,9 | |
| 108,0 | | | | 10,9 | 16,7 | 19,4 | 19,4 | | | 6,3 | 14,0 | 19,4 | 19,4 | |
| 112,0 | | | | 9,1 | 14,9 | 18,9 | 18,9 | | | | 12,0 | 18,2 | 18,9 | |
| 116,0 | | | | 7,6 | 12,8 | 18,2 | 18,2 | | | | 10,0 | 16,5 | 18,3 | |
| 120,0 | | | | 6,2 | 10,8 | 16,3 | 16,7 | | | | 8,5 | 14,5 | 16,7 | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| * n * | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| yy | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 18,0 |
| zz | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 0,0 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
|  m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 |

SL2DB

F 16°

102m

30m

150

t




14,0 x

14,0


m



22.50




| | | | | | | | |
|--|---------------|--------------|---|---|---|--|--|
| | SL2DB 102m | F 16° 30m |  |  |  | | |
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| | SL2DB 102m | F 28° 30m |  |  |  | | |
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22.50

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| | SL2DB 102m | F 14° 36m |  |  |  | | |
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| | SL2DB 102m | F 26° 36m |  |  |  | | |
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|  m |  m > t | | | | | | | | | | | | | |
|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 |
| 18,0 | 97,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 99,0 | 125,0 | 125,0 | 125,0 | 125,0 |
| 20,0 | 86,0 | 116,0 | 124,0 | 124,0 | 124,0 | 124,0 | 124,0 | 124,0 | 124,0 | 87,0 | 122,0 | 122,0 | 122,0 | 122,0 |
| 22,0 | 76,0 | 104,0 | 122,0 | 122,0 | 122,0 | 122,0 | 122,0 | 122,0 | 122,0 | 77,0 | 110,0 | 120,0 | 120,0 | 120,0 |
| 24,0 | 67,0 | 94,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 69,0 | 99,0 | 117,0 | 117,0 | 117,0 |
| 26,0 | 60,0 | 85,0 | 109,0 | 117,0 | 117,0 | 117,0 | 117,0 | 117,0 | 117,0 | 61,0 | 89,0 | 114,0 | 114,0 | 114,0 |
| 28,0 | 54,0 | 77,0 | 100,0 | 115,0 | 115,0 | 115,0 | 115,0 | 115,0 | 115,0 | 55,0 | 81,0 | 107,0 | 111,0 | 111,0 |
| 30,0 | 48,0 | 70,0 | 91,0 | 112,0 | 112,0 | 112,0 | 112,0 | 112,0 | 112,0 | 49,0 | 74,0 | 99,0 | 109,0 | 109,0 |
| 32,0 | 43,0 | 63,0 | 84,0 | 104,0 | 109,0 | 109,0 | 109,0 | 109,0 | 109,0 | 44,0 | 67,0 | 91,0 | 106,0 | 106,0 |
| 34,0 | 38,0 | 58,0 | 77,0 | 97,0 | 106,0 | 106,0 | 106,0 | 106,0 | 106,0 | 39,5 | 62,0 | 84,0 | 104,0 | 104,0 |
| 36,0 | 34,0 | 53,0 | 71,0 | 90,0 | 103,0 | 104,0 | 104,0 | 104,0 | 104,0 | 35,0 | 56,0 | 77,0 | 99,0 | 101,0 |
| 38,0 | 30,5 | 48,0 | 66,0 | 83,0 | 99,0 | 101,0 | 101,0 | 101,0 | 101,0 | 31,5 | 52,0 | 72,0 | 92,0 | 99,0 |
| 40,0 | 27,1 | 44,0 | 61,0 | 78,0 | 95,0 | 99,0 | 99,0 | 99,0 | 99,0 | 28,1 | 47,5 | 66,0 | 86,0 | 97,0 |
| 44,0 | 21,2 | 36,5 | 52,0 | 68,0 | 83,0 | 94,0 | 94,0 | 94,0 | 94,0 | 22,1 | 40,0 | 57,0 | 75,0 | 92,0 |
| 48,0 | 16,3 | 30,5 | 45,0 | 59,0 | 74,0 | 87,0 | 89,0 | 89,0 | 89,0 | 17,1 | 33,5 | 49,5 | 66,0 | 82,0 |
| 52,0 | 12,0 | 25,3 | 38,5 | 52,0 | 65,0 | 79,0 | 84,0 | 85,0 | 85,0 | 12,7 | 27,9 | 43,0 | 58,0 | 73,0 |
| 56,0 | 8,3 | 20,8 | 33,0 | 45,5 | 58,0 | 71,0 | 80,0 | 80,0 | 80,0 | 9,0 | 23,2 | 37,5 | 52,0 | 66,0 |
| 60,0 | 5,1 | 16,8 | 28,5 | 40,0 | 52,0 | 64,0 | 74,0 | 76,0 | 76,0 | 5,7 | 19,0 | 32,5 | 45,5 | 59,0 |
| 64,0 | | 13,3 | 24,3 | 35,5 | 46,5 | 57,0 | 68,0 | 72,0 | 72,0 | | 15,4 | 28,0 | 40,5 | 53,0 |
| 68,0 | | 10,1 | 20,6 | 31,0 | 41,5 | 52,0 | 61,0 | 68,0 | 68,0 | | 12,2 | 24,1 | 36,0 | 48,0 |
| 72,0 | | 7,4 | 17,3 | 27,2 | 37,0 | 47,0 | 56,0 | 64,0 | 64,0 | | 9,3 | 20,6 | 32,0 | 43,0 |
| 76,0 | | | 14,3 | 23,7 | 33,0 | 42,5 | 51,0 | 59,0 | 59,0 | | 6,7 | 17,4 | 28,2 | 39,0 |
| 80,0 | | | 11,6 | 20,6 | 29,6 | 38,5 | 46,5 | 54,0 | 54,0 | | | 14,6 | 24,9 | 35,0 |
| 84,0 | | | 9,2 | 17,8 | 26,4 | 34,5 | 41,5 | 48,5 | 48,5 | | | 12,1 | 21,9 | 31,5 |
| 88,0 | | | 7,0 | 15,3 | 23,5 | 31,0 | 38,0 | 44,5 | 44,5 | | | 9,8 | 19,2 | 28,5 |
| 92,0 | | | 5,0 | 12,9 | 20,9 | 27,8 | 34,5 | 41,0 | 41,0 | | | 7,7 | 16,7 | 25,5 |
| 96,0 | | | | 10,8 | 18,1 | 24,6 | 31,0 | 37,5 | 37,5 | | | 5,8 | 14,4 | 22,4 |
| 100,0 | | | | 8,9 | 15,6 | 21,9 | 28,0 | 34,0 | 34,0 | | | | 12,3 | 19,8 |
| 104,0 | | | | 7,2 | 13,2 | 19,4 | 25,3 | 31,0 | 31,0 | | | | 10,1 | 17,4 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| * n * | 6 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 6 | 8 | 8 | 8 | 8 |
| yy | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 |
| zz | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 350,0 | 350,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
|  m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 |

SL2DB

F 11°

108m

12m

150

t

14,0 x


14,0

m



22.50

22.50

| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 16° 12m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 31° 12m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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The diagram shows a crane system with the following components and dimensions:

- SL2DB**: Crane model.
- 108m**: Crane length.
- F 31°**: Crane angle.
- 12m**: Crane height.
- 150**: Crane capacity.
- t**: Crane trolley.
- 14,0 x**: Crane span.
- 14,0**: Crane height.
- m**: Crane mass.
- zz t**: Crane trolley.
- yy m**: Crane mass.

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| | SL2DB 108m | F 13° 18m |  |  |  | | |
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|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 13° 18m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|


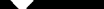

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| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 18° 18m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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


| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 18° 18m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 32° 18m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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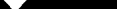
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| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 13° 24m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 13° 24m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|


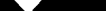

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| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 18° 24m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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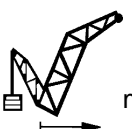


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| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 30° 24m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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|  m |  m > < t | | | | | | | | | | | | | |
|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 |
| 24,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 |
| 26,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 |
| 28,0 | 58,0 | 61,0 | 61,0 | 61,0 | 61,0 | 61,0 | 61,0 | 61,0 | 59,0 | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 |
| 30,0 | 53,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 54,0 | 58,0 | 58,0 | 58,0 | 58,0 | 58,0 |
| 32,0 | 47,5 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 49,0 | 56,0 | 56,0 | 56,0 | 56,0 | 56,0 |
| 34,0 | 43,0 | 55,0 | 55,0 | 55,0 | 55,0 | 55,0 | 55,0 | 55,0 | 44,5 | 54,0 | 54,0 | 54,0 | 54,0 | 54,0 |
| 36,0 | 39,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 40,0 | 52,0 | 52,0 | 52,0 | 52,0 | 52,0 |
| 38,0 | 35,5 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 36,5 | 50,0 | 50,0 | 50,0 | 50,0 | 50,0 |
| 40,0 | 32,0 | 48,5 | 49,0 | 49,0 | 49,0 | 49,0 | 49,0 | 49,0 | 33,0 | 48,5 | 48,5 | 48,5 | 48,5 | 48,5 |
| 44,0 | 26,3 | 41,5 | 45,5 | 45,5 | 45,5 | 45,5 | 45,5 | 45,5 | 27,2 | 44,5 | 45,5 | 45,5 | 45,5 | 45,5 |
| 48,0 | 21,3 | 35,5 | 42,5 | 42,5 | 42,5 | 42,5 | 42,5 | 42,5 | 22,1 | 38,0 | 42,5 | 42,5 | 42,5 | 42,5 |
| 52,0 | 17,0 | 30,0 | 40,0 | 40,0 | 40,0 | 40,0 | 40,0 | 40,0 | 17,8 | 32,5 | 40,0 | 40,0 | 40,0 | 40,0 |
| 56,0 | 13,3 | 25,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 14,0 | 27,9 | 37,5 | 37,5 | 37,5 | 37,5 |
| 60,0 | 10,0 | 21,5 | 33,0 | 35,5 | 35,5 | 35,5 | 35,5 | 35,5 | 10,7 | 23,7 | 35,5 | 35,5 | 35,5 | 35,5 |
| 64,0 | 7,1 | 17,9 | 28,7 | 33,5 | 33,5 | 33,5 | 33,5 | 33,5 | 7,7 | 20,0 | 32,5 | 33,5 | 33,5 | 33,5 |
| 68,0 | | 14,7 | 25,0 | 31,5 | 31,5 | 31,5 | 31,5 | 31,5 | 5,1 | 16,7 | 28,4 | 31,5 | 31,5 | 31,5 |
| 72,0 | | 11,9 | 21,6 | 29,9 | 30,5 | 30,5 | 30,5 | 30,5 | | 13,8 | 24,9 | 30,5 | 30,5 | 30,5 |
| 76,0 | | 9,3 | 18,6 | 27,8 | 29,0 | 29,0 | 29,0 | 29,0 | | 11,1 | 21,7 | 29,0 | 29,0 | 29,0 |
| 80,0 | | 7,0 | 15,8 | 24,7 | 27,7 | 27,7 | 27,7 | 27,7 | | 8,7 | 18,8 | 27,7 | 27,7 | 27,7 |
| 84,0 | | | 13,3 | 21,8 | 26,3 | 26,4 | 26,4 | 26,4 | | 6,5 | 16,2 | 25,8 | 26,4 | 26,4 |
| 88,0 | | | 11,1 | 19,2 | 24,7 | 25,4 | 25,4 | 25,4 | | | 13,8 | 23,0 | 25,4 | 25,4 |
| 92,0 | | | 9,0 | 16,7 | 23,1 | 24,4 | 24,4 | 24,4 | | | 11,6 | 20,4 | 24,4 | 24,4 |
| 96,0 | | | 7,0 | 14,5 | 21,5 | 23,5 | 23,5 | 23,5 | | | 9,5 | 18,1 | 23,5 | 23,5 |
| 100,0 | | | 5,3 | 12,5 | 19,7 | 22,4 | 22,5 | 22,5 | | | 7,7 | 15,9 | 22,4 | 22,5 |
| 104,0 | | | | 10,6 | 17,5 | 21,1 | 21,8 | 21,8 | | | 6,0 | 13,9 | 20,5 | 21,8 |
| 108,0 | | | | 8,8 | 15,2 | 19,7 | 21,1 | 21,1 | | | | 12,0 | 18,6 | 21,1 |
| 112,0 | | | | 7,2 | 13,0 | 18,4 | 20,4 | 20,4 | | | | 10,2 | 16,7 | 20,4 |
| 116,0 | | | | 5,7 | 11,0 | 16,6 | 19,8 | 19,9 | | | | 8,5 | 14,7 | 19,8 |
| 120,0 | | | | | 9,2 | 14,6 | 19,2 | 19,3 | | | | 7,1 | 12,7 | 19,0 |
| 124,0 | | | | | 7,8 | 12,7 | 17,7 | 18,9 | | | | 5,8 | 10,8 | 16,9 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| * n * | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| yy | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 |
| zz | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 350,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
|  m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 |

SL2DB

F 12°

108m

30m

150

t

14,0 x

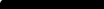
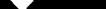

14,0

m



yy m

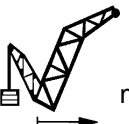


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| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 12° 30m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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22.50

|  m |  m > < t CODE > 8210 < V181 4218.x(x) | | | | | | | | | | | | | |
|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 |
| 26,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 |
| 28,0 | 52,0 | 52,0 | 52,0 | 52,0 | 52,0 | 52,0 | 52,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 |
| 30,0 | 49,5 | 49,5 | 49,5 | 49,5 | 49,5 | 49,5 | 49,5 | 49,5 | 49,5 | 49,5 | 49,5 | 49,5 | 49,5 | 49,5 |
| 32,0 | 48,0 | 48,0 | 48,0 | 48,0 | 48,0 | 48,0 | 48,0 | 48,0 | 48,0 | 48,0 | 48,0 | 48,0 | 48,0 | 48,0 |
| 34,0 | 45,0 | 46,5 | 46,5 | 46,5 | 46,5 | 46,5 | 46,5 | 46,0 | 46,0 | 46,0 | 46,0 | 46,0 | 46,0 | 46,0 |
| 36,0 | 41,0 | 44,5 | 45,0 | 45,0 | 45,0 | 45,0 | 45,0 | 42,0 | 44,5 | 44,5 | 44,5 | 44,5 | 44,5 | 44,5 |
| 38,0 | 37,0 | 43,5 | 43,5 | 43,5 | 43,5 | 43,5 | 43,5 | 38,0 | 43,0 | 43,0 | 43,0 | 43,0 | 43,0 | 43,0 |
| 40,0 | 34,0 | 42,0 | 42,0 | 42,0 | 42,0 | 42,0 | 42,0 | 34,5 | 42,0 | 42,0 | 42,0 | 42,0 | 42,0 | 42,0 |
| 44,0 | 27,8 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 28,6 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 |
| 48,0 | 22,6 | 36,5 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 23,4 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 |
| 52,0 | 18,2 | 31,0 | 35,0 | 35,0 | 35,0 | 35,0 | 35,0 | 19,0 | 34,0 | 35,0 | 35,0 | 35,0 | 35,0 | 35,0 |
| 56,0 | 14,4 | 26,6 | 33,0 | 33,5 | 33,5 | 33,5 | 33,5 | 15,1 | 28,9 | 33,0 | 33,0 | 33,0 | 33,0 | 33,0 |
| 60,0 | 11,0 | 22,5 | 31,5 | 31,5 | 31,5 | 31,5 | 31,5 | 11,6 | 24,7 | 31,5 | 31,5 | 31,5 | 31,5 | 31,5 |
| 64,0 | 8,0 | 18,8 | 29,6 | 30,0 | 30,0 | 30,0 | 30,0 | 8,6 | 20,9 | 30,0 | 30,0 | 30,0 | 30,0 | 30,0 |
| 68,0 | 5,3 | 15,6 | 25,8 | 28,7 | 28,7 | 28,7 | 28,7 | 5,9 | 17,6 | 28,7 | 28,7 | 28,7 | 28,7 | 28,7 |
| 72,0 | | 12,7 | 22,4 | 27,4 | 27,4 | 27,4 | 27,4 | | 14,6 | 25,6 | 27,4 | 27,4 | 27,4 | 27,4 |
| 76,0 | | 10,0 | 19,3 | 26,4 | 26,4 | 26,4 | 26,4 | | 11,8 | 22,4 | 26,3 | 26,4 | 26,4 | 26,4 |
| 80,0 | | 7,7 | 16,5 | 25,3 | 25,3 | 25,3 | 25,3 | | 9,4 | 19,4 | 25,3 | 25,3 | 25,3 | 25,3 |
| 84,0 | | 5,5 | 13,9 | 22,4 | 24,2 | 24,2 | 24,2 | | 7,1 | 16,8 | 24,2 | 24,2 | 24,2 | 24,2 |
| 88,0 | | | 11,6 | 19,7 | 23,1 | 23,4 | 23,4 | | 5,1 | 14,3 | 22,6 | 23,3 | 23,4 | 23,4 |
| 92,0 | | | 9,5 | 17,2 | 22,0 | 22,6 | 22,6 | | | 12,1 | 20,7 | 22,6 | 22,6 | 22,6 |
| 96,0 | | | 7,5 | 15,0 | 21,0 | 21,8 | 21,8 | | | 10,0 | 18,5 | 21,8 | 21,8 | 21,8 |
| 100,0 | | | 5,7 | 12,9 | 19,9 | 21,1 | 21,1 | | | 8,1 | 16,3 | 21,1 | 21,1 | 21,1 |
| 104,0 | | | | 11,0 | 17,9 | 20,2 | 20,5 | | | 6,3 | 14,2 | 19,8 | 20,5 | 20,5 |
| 108,0 | | | | 9,2 | 15,7 | 19,2 | 20,0 | | | | 12,3 | 18,2 | 20,0 | 20,0 |
| 112,0 | | | | 7,5 | 13,4 | 18,2 | 19,4 | | | | 10,6 | 16,7 | 19,4 | 19,4 |
| 116,0 | | | | 5,9 | 11,3 | 16,8 | 18,9 | | | | 8,7 | 15,0 | 18,9 | 18,9 |
| 120,0 | | | | | 9,4 | 14,8 | 18,5 | | | | 7,2 | 13,0 | 18,5 | 18,5 |
| 124,0 | | | | | 8,0 | 12,9 | 17,5 | | | | 6,0 | 11,0 | 16,9 | 17,6 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| * n * | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| yy | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 |
| zz | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
|  m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 |

SL2DB

F 16°

108m

30m

150

t

14,0 x


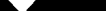

14,0

m



yy m




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| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 16° 30m |  |  |  | | |
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|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 10° 36m |  |  |  | | |
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|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 14° 36m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

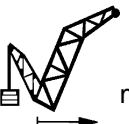


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| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 108m | F 26° 36m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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|  m |  m > t | | | | | | | | | | | | | |
|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 |
| 18,0 | 94,0 | 117,0 | 117,0 | 117,0 | 117,0 | 117,0 | 117,0 | 117,0 | 117,0 | 96,0 | 115,0 | 115,0 | 115,0 | 115,0 |
| 20,0 | 82,0 | 112,0 | 115,0 | 115,0 | 115,0 | 115,0 | 115,0 | 115,0 | 115,0 | 84,0 | 114,0 | 114,0 | 114,0 | 114,0 |
| 22,0 | 73,0 | 101,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 74,0 | 106,0 | 112,0 | 112,0 | 112,0 |
| 24,0 | 65,0 | 90,0 | 112,0 | 112,0 | 112,0 | 112,0 | 112,0 | 112,0 | 112,0 | 66,0 | 96,0 | 110,0 | 110,0 | 110,0 |
| 26,0 | 57,0 | 82,0 | 106,0 | 110,0 | 110,0 | 110,0 | 110,0 | 110,0 | 110,0 | 59,0 | 86,0 | 107,0 | 107,0 | 107,0 |
| 28,0 | 51,0 | 74,0 | 97,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 52,0 | 78,0 | 104,0 | 105,0 | 105,0 |
| 30,0 | 45,5 | 67,0 | 88,0 | 106,0 | 106,0 | 106,0 | 106,0 | 106,0 | 106,0 | 47,0 | 71,0 | 96,0 | 103,0 | 103,0 |
| 32,0 | 40,5 | 61,0 | 81,0 | 102,0 | 103,0 | 103,0 | 103,0 | 103,0 | 103,0 | 42,0 | 65,0 | 88,0 | 101,0 | 101,0 |
| 34,0 | 36,0 | 55,0 | 75,0 | 94,0 | 101,0 | 101,0 | 101,0 | 101,0 | 101,0 | 37,5 | 59,0 | 81,0 | 99,0 | 99,0 |
| 36,0 | 32,0 | 51,0 | 69,0 | 87,0 | 99,0 | 99,0 | 99,0 | 99,0 | 99,0 | 33,5 | 54,0 | 75,0 | 96,0 | 97,0 |
| 38,0 | 28,6 | 46,0 | 64,0 | 81,0 | 95,0 | 97,0 | 97,0 | 97,0 | 97,0 | 29,6 | 49,5 | 69,0 | 89,0 | 95,0 |
| 40,0 | 25,3 | 42,0 | 59,0 | 75,0 | 92,0 | 95,0 | 95,0 | 95,0 | 95,0 | 26,2 | 45,5 | 64,0 | 83,0 | 93,0 |
| 44,0 | 19,5 | 35,0 | 50,0 | 66,0 | 81,0 | 91,0 | 91,0 | 91,0 | 91,0 | 20,4 | 38,0 | 55,0 | 73,0 | 89,0 |
| 48,0 | 14,6 | 28,8 | 43,0 | 57,0 | 71,0 | 86,0 | 86,0 | 86,0 | 86,0 | 15,4 | 31,5 | 47,5 | 64,0 | 85,0 |
| 52,0 | 10,4 | 23,6 | 37,0 | 50,0 | 63,0 | 76,0 | 82,0 | 82,0 | 82,0 | 11,1 | 26,2 | 41,0 | 56,0 | 71,0 |
| 56,0 | 6,7 | 19,1 | 31,5 | 44,0 | 56,0 | 69,0 | 78,0 | 78,0 | 78,0 | 7,4 | 21,5 | 35,5 | 49,5 | 64,0 |
| 60,0 | | 15,2 | 26,8 | 38,5 | 50,0 | 62,0 | 73,0 | 74,0 | | | 17,4 | 30,5 | 44,0 | 57,0 |
| 64,0 | | 11,7 | 22,6 | 33,5 | 44,5 | 55,0 | 66,0 | 70,0 | | | 13,8 | 26,3 | 39,0 | 51,0 |
| 68,0 | | 8,6 | 19,0 | 29,3 | 39,5 | 50,0 | 60,0 | 66,0 | | | 10,6 | 22,4 | 34,0 | 46,0 |
| 72,0 | | 5,8 | 15,7 | 25,5 | 35,5 | 45,0 | 54,0 | 62,0 | | | 7,8 | 19,0 | 30,0 | 41,5 |
| 76,0 | | | 12,7 | 22,1 | 31,5 | 41,0 | 49,5 | 57,0 | | | 5,2 | 15,9 | 26,5 | 37,0 |
| 80,0 | | | 10,1 | 19,0 | 27,9 | 37,0 | 45,0 | 53,0 | | | | 13,1 | 23,2 | 33,5 |
| 84,0 | | | 7,7 | 16,2 | 24,8 | 33,5 | 41,0 | 48,0 | | | | 10,5 | 20,3 | 30,0 |
| 88,0 | | | 5,5 | 13,7 | 21,9 | 29,4 | 36,5 | 43,5 | | | | 8,2 | 17,6 | 26,9 |
| 92,0 | | | | 11,4 | 19,2 | 26,4 | 33,0 | 40,0 | | | | 6,1 | 15,1 | 24,1 |
| 96,0 | | | | 9,3 | 16,8 | 23,5 | 30,0 | 36,5 | | | | | 12,9 | 21,3 |
| 100,0 | | | | 7,4 | 14,1 | 20,6 | 26,8 | 33,0 | | | | | 10,8 | 18,5 |
| 104,0 | | | | 5,6 | 11,7 | 18,0 | 24,0 | 29,9 | | | | | 8,8 | 16,0 |
| 108,0 | | | | | 9,5 | 15,7 | 21,5 | 27,2 | | | | | 7,2 | 13,7 |
| 112,0 | | | | | 8,0 | 13,6 | 19,2 | 24,7 | | | | | 5,7 | 11,5 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| * n * | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 |
| yy | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 |
| zz | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 350,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
|  m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 |

SL2DB

F 11°

114m

12m

150

t

14,0 x

14,0

m






yy m

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22.50

|  | |  $m > < t$ | | | | | | | | | | CODE > 8215 < V181 4310.x(x) | | | |
|---|--|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------------------------|--|--|--|
| m | | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | | | | |
| 18,0 | | 115,0 | 115,0 | 98,0 | 113,0 | 113,0 | 113,0 | 113,0 | 113,0 | 113,0 | 113,0 | | | | |
| 20,0 | | 114,0 | 114,0 | 87,0 | 111,0 | 111,0 | 111,0 | 111,0 | 111,0 | 111,0 | 111,0 | | | | |
| 22,0 | | 112,0 | 112,0 | 77,0 | 109,0 | 109,0 | 109,0 | 109,0 | 109,0 | 109,0 | 109,0 | | | | |
| 24,0 | | 110,0 | 110,0 | 68,0 | 103,0 | 107,0 | 107,0 | 107,0 | 107,0 | 107,0 | 107,0 | | | | |
| 26,0 | | 107,0 | 107,0 | 61,0 | 94,0 | 105,0 | 105,0 | 105,0 | 105,0 | 105,0 | 105,0 | | | | |
| 28,0 | | 105,0 | 105,0 | 54,0 | 85,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | | | | |
| 30,0 | | 103,0 | 103,0 | 48,5 | 78,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | | | | |
| 32,0 | | 101,0 | 101,0 | 43,5 | 71,0 | 98,0 | 98,0 | 98,0 | 98,0 | 98,0 | 98,0 | | | | |
| 34,0 | | 99,0 | 99,0 | 39,0 | 65,0 | 91,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | | | | |
| 36,0 | | 97,0 | 97,0 | 35,0 | 60,0 | 84,0 | 94,0 | 94,0 | 94,0 | 94,0 | 94,0 | | | | |
| 38,0 | | 95,0 | 95,0 | 31,0 | 55,0 | 78,0 | 92,0 | 92,0 | 92,0 | 92,0 | 92,0 | | | | |
| 40,0 | | 93,0 | 93,0 | 27,7 | 50,0 | 73,0 | 91,0 | 91,0 | 91,0 | 91,0 | 91,0 | | | | |
| 44,0 | | 89,0 | 89,0 | 21,7 | 42,5 | 63,0 | 84,0 | 87,0 | 87,0 | 87,0 | 87,0 | | | | |
| 48,0 | | 85,0 | 85,0 | 16,6 | 36,0 | 55,0 | 74,0 | 83,0 | 83,0 | 83,0 | 83,0 | | | | |
| 52,0 | | 81,0 | 81,0 | 12,2 | 30,0 | 48,0 | 66,0 | 79,0 | 79,0 | 79,0 | 79,0 | | | | |
| 56,0 | | 77,0 | 77,0 | 8,5 | 25,2 | 42,0 | 59,0 | 75,0 | 76,0 | 76,0 | 76,0 | | | | |
| 60,0 | | 73,0 | 74,0 | 5,2 | 20,8 | 36,5 | 52,0 | 68,0 | 72,0 | 73,0 | 73,0 | | | | |
| 64,0 | | 69,0 | 71,0 | | 17,0 | 32,0 | 46,5 | 61,0 | 69,0 | 71,0 | 71,0 | | | | |
| 68,0 | | 65,0 | 69,0 | | 13,7 | 27,6 | 41,5 | 56,0 | 65,0 | 69,0 | 69,0 | | | | |
| 72,0 | | 61,0 | 67,0 | | 10,6 | 23,9 | 37,0 | 50,0 | 62,0 | 66,0 | 66,0 | | | | |
| 76,0 | | 57,0 | 64,0 | | 7,9 | 20,6 | 33,0 | 46,0 | 58,0 | 64,0 | 65,0 | | | | |
| 80,0 | | 52,0 | 59,0 | | 5,5 | 17,6 | 29,6 | 41,5 | 53,0 | 60,0 | 63,0 | | | | |
| 84,0 | | 48,0 | 55,0 | | | 14,8 | 26,4 | 38,0 | 48,5 | 56,0 | 62,0 | | | | |
| 88,0 | | 43,0 | 51,0 | | | 12,4 | 23,4 | 34,0 | 43,5 | 53,0 | 60,0 | | | | |
| 92,0 | | 39,5 | 47,0 | | | 10,1 | 20,7 | 31,0 | 40,0 | 49,0 | 57,0 | | | | |
| 96,0 | | 36,0 | 43,5 | | | 8,0 | 18,3 | 27,8 | 36,5 | 45,5 | 53,0 | | | | |
| 100,0 | | 33,0 | 39,5 | | | 6,2 | 16,0 | 24,8 | 33,0 | 41,5 | 49,5 | | | | |
| 104,0 | | 29,8 | 36,5 | | | | 13,5 | 22,0 | 30,0 | 38,0 | 45,5 | | | | |
| 108,0 | | 27,0 | 33,5 | | | | 11,2 | 19,5 | 27,6 | 35,5 | 42,0 | | | | |
| 112,0 | | 24,5 | 31,0 | | | | 9,4 | 17,3 | 25,1 | 32,5 | 38,5 | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| * n * | | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | | | | |
| yy | | 15,0 | 15,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | | | | |
| zz | | 300,0 | 350,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 350,0 | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
|  | | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | | | | |

SL2DB

F 11°

114m

12m

150

t

14,0 x

14,0

m




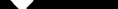
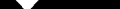
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| | SL2DB 114m | F 16° 12m |  |  |  | | |
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
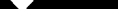
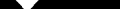
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| | SL2DB 114m | F 31° 12m |  |  |  | | |
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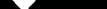
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Diagram showing the layout of the experimental setup. It includes a table with dimensions (SL2DB, 114m, F 13°, 18m), a crane with a load (150, t), and a platform with dimensions (14,0 x, 14,0, m).

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| | SL2DB 114m | F 13° 18m |  |  |  | | |
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| | SL2DB 114m | F 18° 18m |  |  |  | | |
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| | SL2DB 114m | F 32° 18m |  |  |  | | |
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

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| | SL2DB 114m | F 13° 24m |  |  |  | | |
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| | SL2DB 114m | F 18° 24m |  |  |  | | |
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
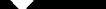

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| | SL2DB 114m | F 30° 24m |  |  |  | | |
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| | SL2DB 114m | F 12° 30m |  |  |  | | |
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| | SL2DB 114m | F 12° 30m |  |  |  | | |
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
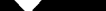
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| | SL2DB 114m | F 16° 30m |  |  |  | | |
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| | SL2DB 114m | F 28° 30m |  |  |  | | |
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| | SL2DB 114m | F 28° 30m |  |  |  | | |
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| | SL2DB 114m | F 10° 36m |  |  |  | | |
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| | SL2DB 114m | F 14° 36m |  |  |  | | |
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
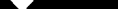
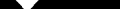
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|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 114m | F 26° 36m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|




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| | SL2DB 120m | F 11° 12m |  |  |  | | |
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| | SL2DB 120m | F 11° 12m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|




22.50

| | | | | | | | |
|--|---------------|--------------|---|---|---|--|--|
| | SL2DB 120m | F 16° 12m |  |  |  | | |
|--|---------------|--------------|---|---|---|--|--|


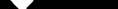
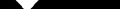
22.50

| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 120m | F 16° 12m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|




22.50

| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 120m | F 31° 12m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 120m | F 31° 12m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|




22.50

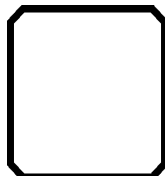
| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 120m | F 13° 18m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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22.50

|  | |  $m > < t$ | | | | | | | | | | CODE > 8233 < V181 4411 .x(x) | | | |
|---|--|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------------------|--|--|--|
| m | | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | | | | |
| 22,0 | | 82,0 | 82,0 | 77,0 | 80,0 | 80,0 | 80,0 | 80,0 | 80,0 | 80,0 | 80,0 | | | | |
| 24,0 | | 80,0 | 80,0 | 69,0 | 79,0 | 79,0 | 79,0 | 79,0 | 79,0 | 79,0 | 79,0 | | | | |
| 26,0 | | 79,0 | 79,0 | 61,0 | 77,0 | 77,0 | 77,0 | 77,0 | 77,0 | 77,0 | 77,0 | | | | |
| 28,0 | | 78,0 | 78,0 | 55,0 | 76,0 | 76,0 | 76,0 | 76,0 | 76,0 | 76,0 | 76,0 | | | | |
| 30,0 | | 76,0 | 76,0 | 49,5 | 74,0 | 74,0 | 74,0 | 74,0 | 74,0 | 74,0 | 74,0 | | | | |
| 32,0 | | 74,0 | 74,0 | 44,5 | 71,0 | 72,0 | 72,0 | 72,0 | 72,0 | 72,0 | 72,0 | | | | |
| 34,0 | | 73,0 | 73,0 | 40,0 | 65,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | | | | |
| 36,0 | | 72,0 | 72,0 | 36,0 | 60,0 | 70,0 | 70,0 | 70,0 | 70,0 | 70,0 | 70,0 | | | | |
| 38,0 | | 70,0 | 70,0 | 32,0 | 55,0 | 68,0 | 68,0 | 68,0 | 68,0 | 68,0 | 68,0 | | | | |
| 40,0 | | 69,0 | 69,0 | 28,8 | 51,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | | | | |
| 44,0 | | 66,0 | 66,0 | 22,8 | 43,0 | 63,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | | | | |
| 48,0 | | 64,0 | 64,0 | 17,8 | 36,5 | 55,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 | | | | |
| 52,0 | | 61,0 | 61,0 | 13,4 | 31,0 | 48,5 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | | | | |
| 56,0 | | 58,0 | 58,0 | 9,6 | 26,1 | 42,5 | 56,0 | 57,0 | 57,0 | 57,0 | 57,0 | | | | |
| 60,0 | | 56,0 | 56,0 | 6,3 | 21,8 | 37,0 | 53,0 | 55,0 | 55,0 | 55,0 | 55,0 | | | | |
| 64,0 | | 54,0 | 54,0 | | 17,9 | 32,5 | 47,0 | 52,0 | 52,0 | 52,0 | 52,0 | | | | |
| 68,0 | | 52,0 | 52,0 | | 14,6 | 28,4 | 42,0 | 50,0 | 51,0 | 51,0 | 51,0 | | | | |
| 72,0 | | 50,0 | 50,0 | | 11,5 | 24,6 | 37,5 | 47,5 | 49,5 | 49,5 | 49,5 | | | | |
| 76,0 | | 48,5 | 48,5 | | 8,8 | 21,3 | 33,5 | 45,0 | 48,0 | 48,0 | 48,0 | | | | |
| 80,0 | | 46,5 | 46,5 | | 6,3 | 18,2 | 30,0 | 42,0 | 46,5 | 46,5 | 46,5 | | | | |
| 84,0 | | 44,5 | 45,0 | | | 15,5 | 26,8 | 38,0 | 44,5 | 45,5 | 45,5 | | | | |
| 88,0 | | 42,0 | 44,0 | | | 12,9 | 23,9 | 35,0 | 42,0 | 44,0 | 44,0 | | | | |
| 92,0 | | 39,0 | 42,5 | | | 10,6 | 21,1 | 31,5 | 39,5 | 42,5 | 42,5 | | | | |
| 96,0 | | 36,5 | 41,0 | | | 8,5 | 18,6 | 28,6 | 36,5 | 41,0 | 41,0 | | | | |
| 100,0 | | 33,5 | 39,0 | | | 6,6 | 16,3 | 25,5 | 34,0 | 39,5 | 40,0 | | | | |
| 104,0 | | 31,0 | 36,5 | | | | 14,2 | 23,0 | 31,0 | 37,0 | 39,0 | | | | |
| 108,0 | | 27,9 | 34,0 | | | | 12,0 | 20,4 | 28,3 | 35,0 | 38,0 | | | | |
| 112,0 | | 25,1 | 31,5 | | | | 9,6 | 17,8 | 25,5 | 33,0 | 37,0 | | | | |
| 116,0 | | 22,7 | 28,8 | | | | 8,1 | 15,6 | 23,1 | 30,5 | 35,5 | | | | |
| 120,0 | | 20,5 | 26,3 | | | | 6,7 | 13,5 | 20,8 | 28,0 | 33,5 | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| * n * | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | | | |
| yy | | 15.0 | 15.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | | | | |
| zz | | 300.0 | 350.0 | 0.0 | 50.0 | 100.0 | 150.0 | 200.0 | 250.0 | 300.0 | 350.0 | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
|  | | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | | | | |

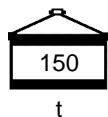


SL2DB

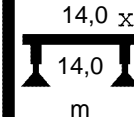
120m

F 13°

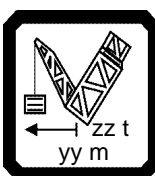
18m



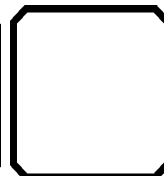
t



m





yy m



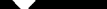
22.50

| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 120m | F 18° 18m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

22.50


| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 120m | F 18° 18m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

22.50

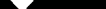

| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 120m | F 32° 18m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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22.50

| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 120m | F 13° 24m |  |  |  | | |
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|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 120m | F 13° 24m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|




22.50

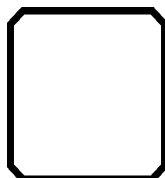
| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 120m | F 18° 24m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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22.50

|  | |  | | m > < t | | CODE > 8237 < V181 4417 .x(x) | | | | | | | | | |
|---|------|---|-------|---------|-------|-------------------------------|-------|-------|-------|-------|--|--|--|--|--|
| m | | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | | | | | |
| 26,0 | 60,0 | 60,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | | | | | |
| 28,0 | 59,0 | 59,0 | 58,0 | 58,0 | 58,0 | 58,0 | 58,0 | 58,0 | 58,0 | 58,0 | | | | | |
| 30,0 | 58,0 | 58,0 | 53,0 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | | | | | |
| 32,0 | 57,0 | 57,0 | 48,5 | 55,0 | 55,0 | 55,0 | 55,0 | 55,0 | 55,0 | 55,0 | | | | | |
| 34,0 | 56,0 | 56,0 | 43,5 | 54,0 | 54,0 | 54,0 | 54,0 | 54,0 | 54,0 | 54,0 | | | | | |
| 36,0 | 55,0 | 55,0 | 39,5 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | | | | | |
| 38,0 | 53,0 | 53,0 | 35,5 | 52,0 | 52,0 | 52,0 | 52,0 | 52,0 | 52,0 | 52,0 | | | | | |
| 40,0 | 52,0 | 52,0 | 32,5 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | | | | | |
| 44,0 | 49,0 | 49,0 | 26,2 | 46,5 | 48,5 | 49,0 | 49,0 | 49,0 | 49,0 | 49,0 | | | | | |
| 48,0 | 46,5 | 46,5 | 21,0 | 39,5 | 46,5 | 46,5 | 46,5 | 46,5 | 46,5 | 46,5 | | | | | |
| 52,0 | 44,5 | 44,5 | 16,5 | 34,0 | 44,5 | 44,5 | 44,5 | 44,5 | 44,5 | 44,5 | | | | | |
| 56,0 | 42,5 | 42,5 | 12,6 | 29,0 | 42,0 | 42,0 | 42,0 | 42,0 | 42,0 | 42,0 | | | | | |
| 60,0 | 40,5 | 40,5 | 9,2 | 24,6 | 40,0 | 40,5 | 40,5 | 40,5 | 40,5 | 40,5 | | | | | |
| 64,0 | 39,0 | 39,0 | 6,2 | 20,7 | 35,0 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | | | | | |
| 68,0 | 37,0 | 37,0 | | 17,2 | 31,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | | | | | |
| 72,0 | 35,5 | 35,5 | | 14,1 | 27,1 | 35,5 | 35,5 | 35,5 | 35,5 | 35,5 | | | | | |
| 76,0 | 34,5 | 34,5 | | 11,3 | 23,7 | 33,5 | 34,5 | 34,5 | 34,5 | 34,5 | | | | | |
| 80,0 | 33,5 | 33,5 | | 8,7 | 20,5 | 31,5 | 33,0 | 33,0 | 33,0 | 33,0 | | | | | |
| 84,0 | 32,0 | 32,0 | | 6,4 | 17,7 | 29,0 | 32,0 | 32,0 | 32,0 | 32,0 | | | | | |
| 88,0 | 31,0 | 31,0 | | | 15,1 | 26,0 | 31,0 | 31,0 | 31,0 | 31,0 | | | | | |
| 92,0 | 30,0 | 30,0 | | | 12,7 | 23,2 | 29,4 | 30,0 | 30,0 | 30,0 | | | | | |
| 96,0 | 29,4 | 29,4 | | | 10,5 | 20,6 | 27,8 | 29,4 | 29,4 | 29,4 | | | | | |
| 100,0 | 28,6 | 28,6 | | | 8,5 | 18,2 | 26,3 | 28,5 | 28,6 | 28,6 | | | | | |
| 104,0 | 27,7 | 27,7 | | | 6,6 | 16,0 | 24,8 | 27,7 | 27,7 | 27,7 | | | | | |
| 108,0 | 26,4 | 27,1 | | | | 13,9 | 22,4 | 26,6 | 27,1 | 27,1 | | | | | |
| 112,0 | 25,1 | 26,5 | | | | 12,0 | 20,0 | 25,4 | 26,5 | 26,5 | | | | | |
| 116,0 | 23,7 | 25,8 | | | | 10,0 | 17,5 | 24,2 | 25,9 | 25,9 | | | | | |
| 120,0 | 22,1 | 25,3 | | | | 8,1 | 15,3 | 22,6 | 25,3 | 25,3 | | | | | |
| 124,0 | 20,0 | 24,9 | | | | 6,6 | 13,2 | 20,3 | 24,9 | 24,9 | | | | | |
| 128,0 | 17,9 | 23,3 | | | | 5,4 | 11,2 | 18,2 | 24,1 | 24,1 | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| * n * | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | | | | | |
| yy | | 15.0 | 15.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | | | | | |
| zz | | 300.0 | 350.0 | 0.0 | 50.0 | 100.0 | 150.0 | 200.0 | 250.0 | 300.0 | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
|  | | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | | | | | |
| | | | | | | | | | | | | | | | |

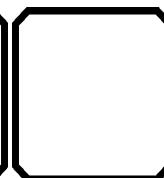
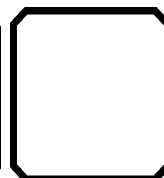
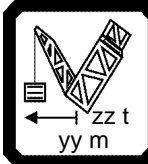
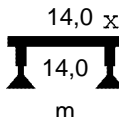
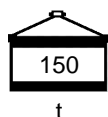


SL2DB

120m

F 18°

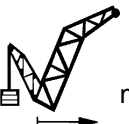


24m



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22.50

|  m |  m > < t | | | | | | | | | | | | | | CODE > 8238 < V181 4422 .x(x) | |
|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|-------|
| | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 | 120,0 |
| 30,0 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 |
| 32,0 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 |
| 34,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 |
| 36,0 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 |
| 38,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 |
| 40,0 | 33,5 | 36,0 | 36,0 | 36,0 | 36,0 | 36,0 | 36,0 | 36,0 | 36,0 | 34,5 | 36,0 | 36,0 | 36,0 | 36,0 | 36,0 | 36,0 |
| 44,0 | 27,5 | 35,0 | 35,0 | 35,0 | 35,0 | 35,0 | 35,0 | 35,0 | 35,0 | 28,3 | 35,0 | 35,0 | 35,0 | 35,0 | 35,0 | 35,0 |
| 48,0 | 22,1 | 33,5 | 33,5 | 33,5 | 33,5 | 33,5 | 33,5 | 33,5 | 33,5 | 22,9 | 33,5 | 33,5 | 33,5 | 33,5 | 33,5 | 33,5 |
| 52,0 | 17,5 | 30,5 | 32,5 | 32,5 | 32,5 | 32,5 | 32,5 | 32,5 | 32,5 | 18,2 | 32,5 | 32,5 | 32,5 | 32,5 | 32,5 | 32,5 |
| 56,0 | 13,5 | 25,6 | 31,5 | 31,5 | 31,5 | 31,5 | 31,5 | 31,5 | 31,5 | 14,2 | 28,0 | 31,5 | 31,5 | 31,5 | 31,5 | 31,5 |
| 60,0 | 9,9 | 21,3 | 30,5 | 30,5 | 30,5 | 30,5 | 30,5 | 30,5 | 30,5 | 10,6 | 23,6 | 30,5 | 30,5 | 30,5 | 30,5 | 30,5 |
| 64,0 | 6,8 | 17,5 | 28,3 | 29,7 | 29,7 | 29,7 | 29,7 | 29,7 | 29,7 | 7,4 | 19,7 | 29,4 | 29,6 | 29,6 | 29,6 | 29,6 |
| 68,0 | | 14,2 | 24,4 | 28,9 | 28,9 | 28,9 | 28,9 | 28,9 | 28,9 | | 16,2 | 27,8 | 28,8 | 28,8 | 28,8 | 28,8 |
| 72,0 | | 11,1 | 20,8 | 28,1 | 28,1 | 28,1 | 28,1 | 28,1 | 28,1 | | 13,0 | 24,0 | 28,0 | 28,0 | 28,0 | 28,0 |
| 76,0 | | 8,4 | 17,6 | 26,8 | 27,3 | 27,3 | 27,3 | 27,3 | 27,3 | | 10,2 | 20,7 | 27,1 | 27,3 | 27,3 | 27,3 |
| 80,0 | | 5,9 | 14,7 | 23,5 | 26,8 | 26,8 | 26,8 | 26,8 | 26,8 | | 7,6 | 17,6 | 25,6 | 26,8 | 26,8 | 26,8 |
| 84,0 | | | 12,1 | 20,5 | 26,2 | 26,3 | 26,3 | 26,3 | 26,3 | | 5,3 | 14,9 | 24,1 | 26,2 | 26,2 | 26,2 |
| 88,0 | | | 9,6 | 17,7 | 25,6 | 25,7 | 25,7 | 25,7 | 25,7 | | | 12,3 | 21,5 | 25,7 | 25,7 | 25,7 |
| 92,0 | | | 7,4 | 15,1 | 22,9 | 24,8 | 25,2 | 25,2 | 25,2 | | | 10,0 | 18,8 | 24,6 | 25,2 | 25,2 |
| 96,0 | | | 5,4 | 12,8 | 20,2 | 23,5 | 24,8 | 24,8 | 24,8 | | | 7,8 | 16,3 | 22,8 | 24,8 | 24,8 |
| 100,0 | | | | 10,6 | 17,8 | 22,2 | 24,4 | 24,4 | 24,4 | | | 5,8 | 14,0 | 21,0 | 24,4 | 24,4 |
| 104,0 | | | | 8,6 | 15,5 | 20,9 | 24,0 | 24,0 | 24,0 | | | | 11,9 | 19,2 | 24,0 | 24,0 |
| 108,0 | | | | 6,7 | 13,3 | 19,1 | 23,0 | 23,7 | 23,7 | | | | 9,9 | 17,1 | 22,9 | 22,9 |
| 112,0 | | | | 5,0 | 11,2 | 16,8 | 21,2 | 23,4 | 23,4 | | | | 8,1 | 14,8 | 20,8 | 20,8 |
| 116,0 | | | | | 9,2 | 14,4 | 19,4 | 23,1 | 23,1 | | | | 6,3 | 12,4 | 18,7 | 18,7 |
| 120,0 | | | | | 7,3 | 12,1 | 17,5 | 22,7 | 22,7 | | | | | 10,2 | 16,6 | 16,6 |
| 124,0 | | | | | 5,8 | 10,1 | 15,4 | 20,5 | 20,5 | | | | | 8,7 | 14,4 | 14,4 |
| | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | |
| * n * | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| yy | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 |
| zz | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 350,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 250,0 | 250,0 |
| | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | |
|  m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 |

SL2DB

F 30°

120m

24m

150

t

14,0 x

14,0

m



yy m

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| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 120m | F 30° 24m |  |  |  | | |
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|--|---------------|--------------|---|---|---|--|--|
| | SL2DB 120m | F 12° 30m |  |  |  | | |
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|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 120m | F 12° 30m |  |  |  | | |
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
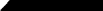
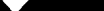
| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 120m | F 28° 30m |  |  |  | | |
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| | SL2DB 120m | F 10° 36m |  |  |  | | |
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| | SL2DB 120m | F 14° 36m |  |  |  | | |
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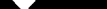
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
| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 126m | F 11° 12m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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
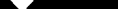
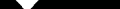
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| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 126m | F 16° 12m |  |  |  | | |
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| | SL2DB 126m | F 31° 12m |  |  |  | | |
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| | SL2DB 126m | F 31° 12m |  |  |  | | |
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Diagram showing the layout of the experimental setup. It includes a table with dimensions (SL2DB, 126m, F 13°, 18m), a crane with a load (150, t), and a platform with dimensions (14,0 x, 14,0, m).

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
The diagram shows a crane system with the following components and labels:

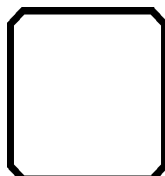
- SL2DB**: Label for the crane structure.
- 126m**: Dimension for the length of the crane structure.
- F 13°**: Angle of the crane structure.
- 18m**: Dimension for the height of the crane structure.
- 150**: Label for the crane hook.
- t**: Label for the crane hook.
- 14,0 x**: Dimension for the length of the crane hook.
- 14,0**: Dimension for the height of the crane hook.
- m**: Label for the crane hook.
- zz t**: Label for the crane hook.
- yy m**: Dimension for the height of the crane hook.

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|  m |  m < t | | | | | | | | | | | | | |
|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 |
| 24,0 | 64,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 66,0 | 67,0 | 67,0 | 67,0 | 67,0 |
| 26,0 | 57,0 | 68,0 | 68,0 | 68,0 | 68,0 | 68,0 | 68,0 | 68,0 | 68,0 | 59,0 | 66,0 | 66,0 | 66,0 | 66,0 |
| 28,0 | 51,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 53,0 | 65,0 | 65,0 | 65,0 | 65,0 |
| 30,0 | 46,0 | 66,0 | 66,0 | 66,0 | 66,0 | 66,0 | 66,0 | 66,0 | 66,0 | 47,0 | 64,0 | 64,0 | 64,0 | 64,0 |
| 32,0 | 41,0 | 61,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 42,0 | 63,0 | 63,0 | 63,0 | 63,0 |
| 34,0 | 36,5 | 55,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 37,5 | 59,0 | 62,0 | 62,0 | 62,0 |
| 36,0 | 32,5 | 50,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 | 33,5 | 54,0 | 61,0 | 61,0 | 61,0 |
| 38,0 | 29,1 | 46,0 | 61,0 | 61,0 | 61,0 | 61,0 | 61,0 | 61,0 | 61,0 | 30,0 | 49,5 | 60,0 | 60,0 | 60,0 |
| 40,0 | 25,8 | 42,0 | 58,0 | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 | 26,7 | 45,0 | 58,0 | 58,0 | 58,0 |
| 44,0 | 20,0 | 35,0 | 50,0 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 20,9 | 38,0 | 55,0 | 56,0 | 56,0 |
| 48,0 | 15,1 | 28,9 | 43,0 | 55,0 | 56,0 | 56,0 | 56,0 | 56,0 | 56,0 | 15,9 | 31,5 | 47,5 | 54,0 | 54,0 |
| 52,0 | 10,8 | 23,7 | 36,5 | 49,5 | 54,0 | 54,0 | 54,0 | 54,0 | 54,0 | 11,6 | 26,3 | 41,0 | 52,0 | 52,0 |
| 56,0 | 7,1 | 19,2 | 31,5 | 43,5 | 52,0 | 52,0 | 52,0 | 52,0 | 52,0 | 7,8 | 21,6 | 35,5 | 49,0 | 50,0 |
| 60,0 | | 15,3 | 26,6 | 38,0 | 48,5 | 49,5 | 49,5 | 49,5 | 49,5 | | 17,5 | 30,5 | 43,5 | 48,5 |
| 64,0 | | 11,7 | 22,5 | 33,0 | 44,0 | 47,5 | 47,5 | 47,5 | 47,5 | | 13,8 | 26,1 | 38,5 | 47,0 |
| 68,0 | | 8,6 | 18,8 | 28,9 | 39,0 | 45,5 | 45,5 | 45,5 | 45,5 | | 10,6 | 22,2 | 33,5 | 45,0 |
| 72,0 | | 5,8 | 15,4 | 25,1 | 34,5 | 43,0 | 44,0 | 44,0 | 44,0 | | 7,7 | 18,7 | 29,7 | 40,5 |
| 76,0 | | | 12,5 | 21,6 | 31,0 | 40,0 | 42,5 | 43,0 | 43,0 | | 5,1 | 15,5 | 26,0 | 36,5 |
| 80,0 | | | 9,8 | 18,5 | 27,3 | 36,0 | 40,5 | 42,0 | 42,0 | | | 12,7 | 22,7 | 32,5 |
| 84,0 | | | 7,3 | 15,7 | 24,1 | 32,5 | 39,0 | 40,5 | 40,5 | | | 10,1 | 19,7 | 29,2 |
| 88,0 | | | 5,0 | 13,1 | 21,1 | 29,2 | 37,0 | 39,0 | 39,0 | | | 7,7 | 16,9 | 26,1 |
| 92,0 | | | | 10,7 | 18,4 | 26,2 | 33,5 | 37,0 | 37,0 | | | 5,6 | 14,4 | 23,2 |
| 96,0 | | | | 8,5 | 16,0 | 23,4 | 30,0 | 34,5 | 34,5 | | | | 12,0 | 20,5 |
| 100,0 | | | | 6,5 | 13,7 | 20,6 | 26,9 | 32,0 | 32,0 | | | | 9,9 | 18,1 |
| 104,0 | | | | | 11,4 | 17,7 | 23,8 | 29,8 | 29,8 | | | | 7,9 | 15,7 |
| 108,0 | | | | | 9,6 | 15,3 | 21,3 | 27,1 | 27,1 | | | | 6,1 | 13,5 |
| 112,0 | | | | | 7,8 | 12,9 | 18,8 | 24,5 | 24,5 | | | | | 11,3 |
| 116,0 | | | | | 6,0 | 10,5 | 16,4 | 21,9 | 21,9 | | | | | 9,0 |
| 120,0 | | | | | | 8,8 | 14,2 | 19,5 | 19,5 | | | | | 7,4 |
| 124,0 | | | | | | 7,3 | 12,1 | 17,3 | 17,3 | | | | | 6,0 |
| 128,0 | | | | | | 6,1 | 10,2 | 15,3 | 15,3 | | | | | 9,4 |
| * n * | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| yy | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 |
| zz | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 350,0 | 350,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 |
| m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 |

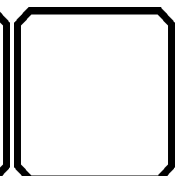
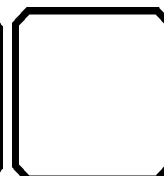
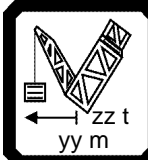
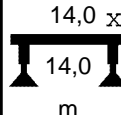
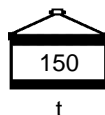


SL2DB

126m

F 18°

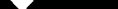
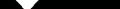
18m



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| | SL2DB 126m | F 32° 18m |  |  |  | | |
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| | SL2DB 126m | F 32° 18m |  |  |  | | |
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| | SL2DB 126m | F 18° 24m |  |  |  | | |
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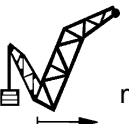


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| | SL2DB 126m | F 18° 24m |  |  |  | | |
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|  m |  m > < t | | | | | | | | | | | | | | CODE > 8253 < V181 4522 .x(x) | |
|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|-------|
| | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 | 126,0 |
| 30,0 | | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 | 39,0 |
| 32,0 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 |
| 34,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 | 37,5 |
| 36,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 | 37,0 |
| 38,0 | 35,5 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 | 36,5 |
| 40,0 | 32,0 | 36,0 | 36,0 | 36,0 | 36,0 | 36,0 | 36,0 | 36,0 | 36,0 | 33,0 | 35,5 | 35,5 | 35,5 | 35,5 | 35,5 | 35,5 |
| 44,0 | 25,9 | 34,5 | 34,5 | 34,5 | 34,5 | 34,5 | 34,5 | 34,5 | 34,5 | 26,8 | 34,5 | 34,5 | 34,5 | 34,5 | 34,5 | 34,5 |
| 48,0 | 20,7 | 33,5 | 33,5 | 33,5 | 33,5 | 33,5 | 33,5 | 33,5 | 33,5 | 21,4 | 33,5 | 33,5 | 33,5 | 33,5 | 33,5 | 33,5 |
| 52,0 | 16,1 | 28,9 | 32,5 | 32,5 | 32,5 | 32,5 | 32,5 | 32,5 | 32,5 | 16,8 | 31,5 | 32,5 | 32,5 | 32,5 | 32,5 | 32,5 |
| 56,0 | 12,1 | 24,1 | 31,5 | 31,5 | 31,5 | 31,5 | 31,5 | 31,5 | 31,5 | 12,8 | 26,5 | 31,5 | 31,5 | 31,5 | 31,5 | 31,5 |
| 60,0 | 8,6 | 19,9 | 30,5 | 30,5 | 30,5 | 30,5 | 30,5 | 30,5 | 30,5 | 9,2 | 22,1 | 30,5 | 30,5 | 30,5 | 30,5 | 30,5 |
| 64,0 | 5,5 | 16,2 | 26,8 | 29,7 | 29,7 | 29,7 | 29,7 | 29,7 | 29,7 | 6,1 | 18,2 | 29,4 | 29,6 | 29,6 | 29,6 | 29,6 |
| 68,0 | | 12,8 | 22,9 | 28,9 | 28,9 | 28,9 | 28,9 | 28,9 | 28,9 | | 14,8 | 26,3 | 28,8 | 28,8 | 28,8 | 28,8 |
| 72,0 | | 9,8 | 19,4 | 28,2 | 28,2 | 28,2 | 28,2 | 28,2 | 28,2 | | 11,7 | 22,6 | 28,1 | 28,1 | 28,1 | 28,1 |
| 76,0 | | 7,1 | 16,2 | 25,4 | 27,4 | 27,4 | 27,4 | 27,4 | 27,4 | | 8,9 | 19,3 | 27,4 | 27,4 | 27,4 | 27,4 |
| 80,0 | | | 13,3 | 22,1 | 26,3 | 26,8 | 26,8 | 26,8 | 26,8 | | 6,3 | 16,3 | 25,8 | 26,8 | 26,8 | 26,8 |
| 84,0 | | | 10,7 | 19,1 | 24,9 | 26,3 | 26,3 | 26,3 | 26,3 | | | 13,5 | 23,0 | 26,3 | 26,3 | 26,3 |
| 88,0 | | | 8,3 | 16,3 | 23,5 | 25,8 | 25,8 | 25,8 | 25,8 | | | 11,0 | 20,1 | 25,8 | 25,8 | 25,8 |
| 92,0 | | | 6,1 | 13,8 | 21,5 | 25,3 | 25,3 | 25,3 | 25,3 | | | 8,7 | 17,4 | 25,3 | 25,3 | 25,3 |
| 96,0 | | | | 11,5 | 18,9 | 23,9 | 24,7 | 24,9 | 24,9 | | | 6,5 | 15,0 | 23,4 | 24,5 | 24,5 |
| 100,0 | | | | 9,3 | 16,4 | 21,9 | 24,0 | 24,6 | 24,6 | | | | 12,7 | 20,8 | 23,6 | 23,6 |
| 104,0 | | | | 7,3 | 14,2 | 19,8 | 23,3 | 24,2 | 24,2 | | | | 10,6 | 18,4 | 22,7 | 22,7 |
| 108,0 | | | | 5,4 | 11,8 | 17,7 | 22,7 | 23,8 | 23,8 | | | | 8,6 | 16,0 | 21,8 | 21,8 |
| 112,0 | | | | | 9,7 | 15,6 | 21,3 | 23,1 | 23,1 | | | | 6,7 | 13,7 | 20,3 | 20,3 |
| 116,0 | | | | | 8,1 | 13,4 | 19,0 | 21,8 | 21,8 | | | | 5,0 | 11,7 | 18,0 | 18,0 |
| 120,0 | | | | | 6,5 | 11,2 | 16,6 | 20,6 | 20,6 | | | | | 9,7 | 15,6 | 15,6 |
| 124,0 | | | | | | 9,1 | 14,3 | 19,3 | 19,3 | | | | | 7,6 | 13,3 | 13,3 |
| 128,0 | | | | | | 7,6 | 12,1 | 17,2 | 17,2 | | | | | 6,2 | 11,2 | 11,2 |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| * n * | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| yy | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 |
| zz | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 350,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 250,0 | 250,0 |
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| | | | | | | | | | | | | | | | | |
|  m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 |

SL2DB

F 30°

126m

24m

150

t

14,0 x

14,0

m






zz t

yy m

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22.50

22.50

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|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 126m | F 12° 30m |  |  |  | | |
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
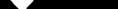
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| | SL2DB 126m | F 28° 30m |  |  |  | | |
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| | SL2DB 126m | F 28° 30m |  |  |  | | |
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The diagram shows a bridge structure with the following components labeled:

- SL2DB**: Label for the bridge deck.
- 126m**: Length of the bridge deck.
- F 10°**: Angle of the bridge deck.
- 36m**: Height of the bridge deck.
- 150**: Label for the bridge pier.
- t**: Label for the bridge pier.
- 14,0 x**: Label for the bridge span.
- 14,0**: Label for the bridge span.
- m**: Label for the bridge span.
- zz t**: Label for the bridge span.
- yy m**: Label for the bridge span.




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Diagram illustrating the layout of the SL2DB test rig. The rig consists of a table with dimensions 126m and 36m, and a crane with a 150t load. The crane is positioned over the table, and the load is suspended from the crane. The crane has a horizontal dimension of 14,0 x and a vertical dimension of 14,0 m. The load is suspended from the crane by a cable, and the crane is supported by a base with dimensions 14,0 x and 14,0 m. The crane is labeled with 'zz t' and 'yy m'.

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


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|--|---------------|--------------|---|---|--|--|--|
| | SL2DB 132m | F 11° 12m |  |  |  | | |
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
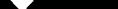
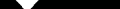
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| | SL2DB 132m | F 11° 12m |  |  |  | | |
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| | SL2DB 132m | F 16° 12m |  |  |  | | |
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| | SL2DB 132m | F 16° 12m |  |  |  | | |
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| | SL2DB 132m | F 31° 12m |  |  |  | | |
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| | SL2DB 132m | F 31° 12m |  |  |  | | |
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The diagram shows a crane system with the following components and dimensions:

- SL2DB**: A component with a height of **132m**.
- F 13°**: A component with a height of **18m**.
- 150**: A component with a width of **t**.
- 14,0 x**: A component with a height of **14,0** and a width of **m**.
- zz t**: A component with a height of **yy m**.



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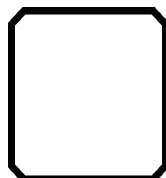
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| | SL2DB 132m | F 13° 18m |  |  |  | | |
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|  m |  m > < t | | | | | | | | | | | | | | CODE > 8264 < V181 4616.x(x) | |
|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------------------------|-------|
| | 132,0 | 132,0 | 132,0 | 132,0 | 132,0 | 132,0 | 132,0 | 132,0 | 132,0 | 132,0 | 132,0 | 132,0 | 132,0 | 132,0 | 132,0 | 132,0 |
| 24,0 | 64,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 |
| 26,0 | 57,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 58,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 |
| 28,0 | 51,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 52,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 |
| 30,0 | 45,5 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 46,5 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 |
| 32,0 | 40,5 | 60,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 | 42,0 | 61,0 | 61,0 | 61,0 | 61,0 | 61,0 | 61,0 |
| 34,0 | 36,5 | 55,0 | 61,0 | 61,0 | 61,0 | 61,0 | 61,0 | 61,0 | 61,0 | 37,5 | 58,0 | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 |
| 36,0 | 32,5 | 50,0 | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 | 33,5 | 54,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 |
| 38,0 | 28,9 | 45,5 | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 | 29,9 | 49,0 | 58,0 | 58,0 | 58,0 | 58,0 | 58,0 |
| 40,0 | 25,7 | 42,0 | 58,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 26,6 | 45,0 | 58,0 | 58,0 | 58,0 | 58,0 | 58,0 |
| 44,0 | 20,0 | 35,0 | 49,5 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 20,8 | 37,5 | 55,0 | 56,0 | 56,0 | 56,0 | 56,0 |
| 48,0 | 15,1 | 28,9 | 42,5 | 54,0 | 55,0 | 55,0 | 55,0 | 55,0 | 55,0 | 15,9 | 31,5 | 47,0 | 54,0 | 54,0 | 54,0 | 54,0 |
| 52,0 | 10,9 | 23,7 | 36,5 | 49,5 | 53,0 | 53,0 | 53,0 | 53,0 | 53,0 | 11,6 | 26,2 | 41,0 | 52,0 | 52,0 | 52,0 | 52,0 |
| 56,0 | 7,3 | 19,3 | 31,5 | 43,0 | 52,0 | 52,0 | 52,0 | 52,0 | 52,0 | 7,9 | 21,6 | 35,5 | 49,0 | 50,0 | 50,0 | 50,0 |
| 60,0 | | 15,3 | 26,6 | 38,0 | 49,0 | 49,5 | 49,5 | 49,5 | 49,5 | | 17,5 | 30,5 | 43,0 | 48,5 | 48,5 | 48,5 |
| 64,0 | | 11,8 | 22,5 | 33,0 | 44,0 | 48,0 | 48,0 | 48,0 | 48,0 | | 13,9 | 26,1 | 38,0 | 46,5 | 46,5 | 46,5 |
| 68,0 | | 8,7 | 18,8 | 28,9 | 39,0 | 46,0 | 46,0 | 46,0 | 46,0 | | 10,7 | 22,2 | 33,5 | 45,0 | 45,0 | 45,0 |
| 72,0 | | 5,9 | 15,5 | 25,1 | 34,5 | 44,0 | 44,0 | 44,0 | 44,0 | | 7,8 | 18,7 | 29,6 | 40,5 | 43,0 | 43,0 |
| 76,0 | | | 12,5 | 21,7 | 31,0 | 40,0 | 42,0 | 42,5 | 42,5 | | 5,2 | 15,6 | 26,0 | 36,5 | 41,0 | 41,0 |
| 80,0 | | | 9,8 | 18,5 | 27,3 | 36,0 | 40,0 | 41,0 | 41,0 | | | 12,7 | 22,7 | 32,5 | 39,0 | 39,0 |
| 84,0 | | | 7,4 | 15,7 | 24,1 | 32,5 | 38,0 | 40,0 | 40,0 | | | 10,2 | 19,7 | 29,2 | 37,0 | 37,0 |
| 88,0 | | | 5,1 | 13,1 | 21,1 | 29,1 | 36,0 | 39,0 | 39,0 | | | 7,8 | 16,9 | 26,0 | 35,0 | 35,0 |
| 92,0 | | | | 10,7 | 18,4 | 26,1 | 33,0 | 37,0 | 37,0 | | | 5,6 | 14,4 | 23,1 | 32,0 | 32,0 |
| 96,0 | | | | 8,5 | 15,9 | 23,3 | 30,0 | 34,5 | 34,5 | | | | 12,0 | 20,5 | 28,9 | 28,9 |
| 100,0 | | | | 6,5 | 13,6 | 20,8 | 27,1 | 32,0 | 32,0 | | | | 9,9 | 18,0 | 26,0 | 26,0 |
| 104,0 | | | | | 11,3 | 17,9 | 24,0 | 29,4 | 29,4 | | | | 7,9 | 15,7 | 22,9 | 22,9 |
| 108,0 | | | | | 9,0 | 15,3 | 21,1 | 26,9 | 26,9 | | | | 6,0 | 13,2 | 20,1 | 20,1 |
| 112,0 | | | | | 7,5 | 13,2 | 18,8 | 24,4 | 24,4 | | | | | 11,2 | 17,7 | 17,7 |
| 116,0 | | | | | 6,0 | 11,0 | 16,5 | 21,9 | 21,9 | | | | | 9,3 | 15,4 | 15,4 |
| 120,0 | | | | | | 8,9 | 14,2 | 19,5 | 19,5 | | | | | 7,4 | 13,0 | 13,0 |
| 124,0 | | | | | | 7,2 | 12,0 | 17,2 | 17,2 | | | | | 5,9 | 11,0 | 11,0 |
| 128,0 | | | | | | 5,8 | 10,0 | 15,1 | 15,1 | | | | | | 9,2 | 9,2 |
| 132,0 | | | | | | | 8,5 | 13,2 | 13,2 | | | | | | 7,8 | 7,8 |
| * n * | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| yy | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 |
| zz | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 350,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 0,0 | 0,0 |
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| | | | | | | | | | | | | | | | | |
| m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 |

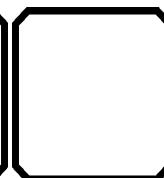
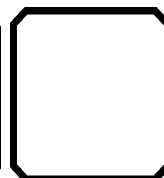
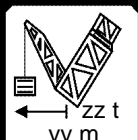
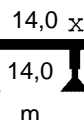
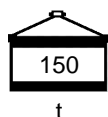


SL2DB

F 18°

132m




18m



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| | SL2DB 132m | F 18° 18m |  |  |  | | |
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| | SL2DB 132m | F 32° 18m |  |  |  | | |
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| | SL2DB 132m | F 32° 18m |  |  |  | | |
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
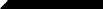
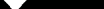
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| | SL2DB 132m | F 13° 24m |  |  |  | | |
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| | SL2DB 132m | F 13° 24m |  |  |  | | |
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| | SL2DB 132m | F 12° 30m |  |  |  | | |
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| | SL2DB 132m | F 12° 30m |  |  |  | | |
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| | SL2DB 132m | F 10° 36m |  |  |  | | |
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| | SL2DB 132m | F 10° 36m |  |  |  | | |
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| | SL2DB 138m | F 11° 12m |  |  |  | | |
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| | SL2DB 138m | F 11° 12m |  |  |  | | |
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| | SL2DB 138m | F 13° 18m |  |  |  | | |
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| | SL2DB 138m | F 13° 18m |  |  |  | | |
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| | SL2DB 138m | F 13° 24m |  |  |  | | |
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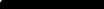
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| | SL4DB 72m | F 31° 12m |  |  |  | | |
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| | SL4DB 72m | F 13° 18m |  |  |  | | |
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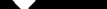

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| | SL4DB 72m | F 32° 18m |  |  |  | | |
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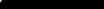
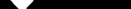
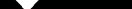
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| | SL4DB 72m | F 18° 24m |  |  |  | | |
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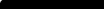
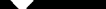

Diagram showing the layout of the experimental setup. It includes a table with dimensions (SL4DB, 72m, F 30°, 24m), a crane with a load (150, t), and a platform with dimensions (14,0 x, 14,0, m).

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| | SL4DB 72m | F 16° 30m |  |  |  | | |
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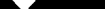

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| | SL4DB 72m | F 28° 30m |  |  |  | | |
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| | SL4DB 72m | F 10° 36m |  |  |  | | |
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
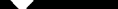
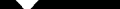
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| | SL4DB 72m | F 26° 36m |  |  |  | | |
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| | SL4DB 78m | F 11° 12m |  |  |  | | |
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| | SL4DB 78m | F 11° 12m |  |  |  | | |
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
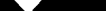

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| | SL4DB 78m | F 16° 12m |  |  |  | | |
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
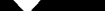

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| | SL4DB 78m | F 31° 12m |  |  |  | | |
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| | SL4DB 78m | F 13° 18m |  |  |  | | |
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| | SL4DB 78m | F 32° 18m |  |  |  | | |
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| | SL4DB 78m | F 13° 24m |  |  |  | | |
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| | SL4DB 78m | F 18° 24m |  |  |  | | |
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| | SL4DB 78m | F 30° 24m |  |  |  | | |
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| | SL4DB 78m | F 12° 30m |  |  |  | | |
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| | SL4DB 78m | F 16° 30m |  |  |  | | |
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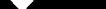

The diagram illustrates the layout of the test area, which is a rectangular space divided into several sections. The dimensions and equipment are as follows:

- Top Left Section:** A square area with a side length of 14,0 m.
- Top Middle Section:** A rectangular area with a width of 14,0 m and a height of 14,0 m.
- Top Right Section:** A rectangular area with a width of 14,0 m and a height of 14,0 m.
- Bottom Left Section:** A rectangular area with a width of 14,0 m and a height of 14,0 m.
- Bottom Middle Section:** A rectangular area with a width of 14,0 m and a height of 14,0 m.
- Bottom Right Section:** A rectangular area with a width of 14,0 m and a height of 14,0 m.

Additional details include:


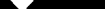

- A central area labeled "SL4DB" with dimensions "F 28°" and "30m".
- A central area labeled "150" with a dimension "t".
- A central area labeled "14,0 x" and "14,0 m".
- A central area labeled "zz t" and "yy m".

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


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| | SL4DB 78m | F 10° 36m |  |  |  | | |
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| | SL4DB 78m | F 26° 36m |  |  |  | | |
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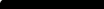

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| | SL4DB 84m | F 11° 12m |  |  |  | | |
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
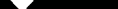
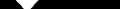
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| | SL4DB 84m | F 16° 12m |  |  |  | | |
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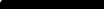
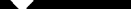
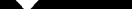
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| | SL4DB 84m | F 16° 12m |  |  |  | | |
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| | SL4DB 84m | F 31° 12m |  |  |  | | |
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| | SL4DB 84m | F 13° 18m |  |  |  | | |
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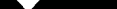
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| | SL4DB 84m | F 18° 18m |  |  |  | | |
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| | SL4DB 84m | F 32° 18m |  |  |  | | |
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| | SL4DB 84m | F 13° 24m |  |  |  | | |
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| | SL4DB 84m | F 18° 24m |  |  |  | | |
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| | SL4DB 84m | F 30° 24m |  |  |  | | |
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| | SL4DB 84m | F 12° 30m |  |  |  | | |
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
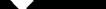
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| | SL4DB 84m | F 10° 36m |  |  |  | | |
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
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| | SL4DB 84m | F 14° 36m |  |  |  | | |
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


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| | SL4DB 84m | F 26° 36m |  |  |  | | |
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| | SL4DB 90m | F 11° 12m |  |  |  | | |
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
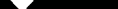
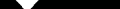
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| | SL4DB 90m | F 16° 12m |  |  |  | | |
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
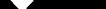

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| | SL4DB 90m | F 31° 12m |  |  |  | | |
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| | SL4DB 90m | F 31° 12m |  |  |  | | |
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
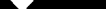

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| | SL4DB 90m | F 13° 18m |  |  |  | | |
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| | SL4DB 90m | F 18° 18m |  |  |  | | |
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| | SL4DB 90m | F 32° 18m |  |  |  | | |
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| | SL4DB 90m | F 32° 18m |  |  |  | | |
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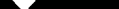
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| | SL4DB 90m | F 13° 24m |  |  |  | | |
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| | SL4DB 90m | F 30° 24m |  |  |  | | |
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
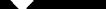

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| | SL4DB 90m | F 12° 30m |  |  |  | | |
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
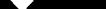

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| | SL4DB 90m | F 16° 30m |  |  |  | | |
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| | SL4DB 90m | F 10° 36m |  |  |  | | |
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| | SL4DB 90m | F 14° 36m |  |  |  | | |
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

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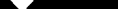
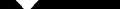
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| | SL4DB 96m | F 11° 12m |  |  |  | | |
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| | SL4DB 96m | F 16° 12m |  |  |  | | |
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| | SL4DB 96m | F 16° 12m |  |  |  | | |
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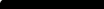
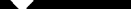
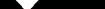
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| | SL4DB 96m | F 31° 12m |  |  |  | | |
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| | SL4DB 96m | F 13° 18m |  |  |  | | |
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
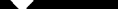
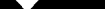
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| | SL4DB 96m | F 13° 18m |  |  |  | | |
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
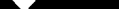

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| | SL4DB 96m | F 18° 18m |  |  |  | | |
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| | SL4DB 96m | F 18° 18m |  |  |  | | |
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| | SL4DB 96m | F 32° 18m |  |  |  | | |
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
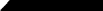
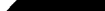
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|--|--------------|--------------|---|---|--|--|--|
| | SL4DB 96m | F 18° 24m |  |  |  | | |
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
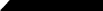
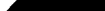
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
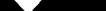

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| | SL4DB 96m | F 12° 30m |  |  |  | | |
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| | SL4DB 96m | F 16° 30m |  |  |  | | |
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| | SL4DB 96m | F 28° 30m |  |  |  | | |
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| | SL4DB 96m | F 10° 36m |  |  |  | | |
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| | SL4DB 102m | F 11° 12m |  |  |  | | |
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
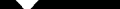
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| | SL4DB 102m | F 11° 12m |  |  |  | | |
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| | SL4DB 102m | F 16° 12m |  |  |  | | |
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| | SL4DB 102m | F 16° 12m |  |  |  | | |
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
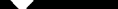
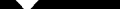
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| | SL4DB 102m | F 32° 18m |  |  |  | | |
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

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| | SL4DB 102m | F 32° 18m |  |  |  | | |
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|--|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 |
| 22,0 | 76,0 | 76,0 | 76,0 | 76,0 | 76,0 | 76,0 | 76,0 | 74,0 | 74,0 | 74,0 | 74,0 | 74,0 | 74,0 | 72,0 |
| 24,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | 73,0 | 72,0 | 72,0 | 72,0 | 72,0 | 72,0 | 72,0 | 70,0 |
| 26,0 | 69,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | 71,0 | 70,0 | 70,0 | 70,0 | 70,0 | 70,0 | 70,0 | 68,0 |
| 28,0 | 62,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 69,0 | 64,0 | 67,0 | 67,0 | 67,0 | 67,0 | 67,0 | 66,0 |
| 30,0 | 57,0 | 66,0 | 66,0 | 66,0 | 66,0 | 66,0 | 66,0 | 58,0 | 65,0 | 65,0 | 65,0 | 65,0 | 65,0 | 60,0 |
| 32,0 | 52,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 64,0 | 53,0 | 63,0 | 63,0 | 63,0 | 63,0 | 63,0 | 54,0 |
| 34,0 | 47,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 | 62,0 | 48,0 | 61,0 | 61,0 | 61,0 | 61,0 | 61,0 | 49,5 |
| 36,0 | 43,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 44,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 45,5 |
| 38,0 | 39,0 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 40,0 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 41,5 |
| 40,0 | 35,5 | 52,0 | 55,0 | 55,0 | 55,0 | 55,0 | 55,0 | 36,5 | 55,0 | 55,0 | 55,0 | 55,0 | 55,0 | 38,0 |
| 44,0 | 29,7 | 45,0 | 52,0 | 52,0 | 52,0 | 52,0 | 52,0 | 30,5 | 48,0 | 52,0 | 52,0 | 52,0 | 52,0 | 32,0 |
| 48,0 | 24,7 | 39,0 | 48,5 | 48,5 | 48,5 | 48,5 | 48,5 | 25,5 | 41,5 | 48,5 | 48,5 | 48,5 | 48,5 | 26,7 |
| 52,0 | 20,3 | 33,5 | 45,5 | 45,5 | 45,5 | 45,5 | 45,5 | 21,1 | 36,0 | 45,5 | 45,5 | 45,5 | 45,5 | 22,2 |
| 56,0 | 16,6 | 28,9 | 41,5 | 43,5 | 43,5 | 43,5 | 43,5 | 17,3 | 31,5 | 43,5 | 43,5 | 43,5 | 43,5 | 18,3 |
| 60,0 | 13,3 | 24,9 | 36,5 | 41,0 | 41,0 | 41,0 | 41,0 | 13,9 | 27,1 | 40,5 | 41,0 | 41,0 | 41,0 | 14,9 |
| 64,0 | 10,4 | 21,3 | 32,5 | 39,0 | 39,0 | 39,0 | 39,0 | 11,0 | 23,4 | 36,0 | 39,0 | 39,0 | 39,0 | 11,9 |
| 68,0 | 7,8 | 18,1 | 28,5 | 37,0 | 37,0 | 37,0 | 37,0 | 8,3 | 20,1 | 32,0 | 37,0 | 37,0 | 37,0 | 9,2 |
| 72,0 | 5,4 | 15,3 | 25,1 | 35,0 | 35,5 | 35,5 | 35,5 | 6,0 | 17,2 | 28,4 | 35,5 | 35,5 | 35,5 | 6,8 |
| 76,0 | | 12,7 | 22,1 | 31,5 | 34,0 | 34,0 | 34,0 | | 14,5 | 25,2 | 34,0 | 34,0 | 34,0 | |
| 80,0 | | 10,4 | 19,3 | 28,3 | 32,5 | 32,5 | 32,5 | | 12,1 | 22,3 | 31,5 | 32,5 | 32,5 | |
| 84,0 | | 8,3 | 16,8 | 25,4 | 31,0 | 31,5 | 31,5 | | 9,9 | 19,7 | 29,4 | 31,5 | 31,5 | |
| 88,0 | | 6,4 | 14,6 | 22,7 | 29,8 | 30,0 | 30,0 | | 8,0 | 17,3 | 26,6 | 30,0 | 30,0 | |
| 92,0 | | | 12,5 | 20,3 | 28,2 | 29,1 | 29,1 | | 6,1 | 15,1 | 24,1 | 28,9 | 29,1 | |
| 96,0 | | | 10,6 | 18,1 | 25,7 | 28,1 | 28,1 | | | 13,1 | 21,7 | 27,5 | 28,2 | |
| 100,0 | | | 8,8 | 16,1 | 23,2 | 27,2 | 27,2 | | | 11,2 | 19,6 | 26,1 | 27,2 | |
| 104,0 | | | 7,2 | 14,2 | 20,6 | 26,3 | 26,3 | | | 9,5 | 17,6 | 24,7 | 26,3 | |
| 108,0 | | | 5,7 | 12,5 | 18,5 | 24,2 | 25,7 | | | 8,0 | 15,6 | 22,4 | 25,7 | |
| 112,0 | | | | 10,7 | 16,4 | 22,1 | 25,1 | | | 6,6 | 13,7 | 20,2 | 25,1 | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| * n * | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| yy | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 13,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 15,0 | 18,0 |
| zz | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 0,0 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
|  m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 |

SL4DB

102m

F 13°

24m

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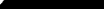
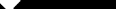
14,0

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
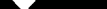

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| | SL4DB 102m | F 18° 24m |  |  |  | | |
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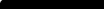
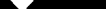

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| | SL4DB 102m | F 30° 24m |  |  |  | | |
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| | SL4DB 102m | F 12° 30m |  |  |  | | |
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
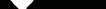
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| | SL4DB 102m | F 28° 30m |  |  |  | | |
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
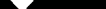

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|--|---------------|--------------|---|---|--|--|--|
| | SL4DB 102m | F 10° 36m |  |  |  | | |
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| | SL4DB 102m | F 14° 36m |  |  |  | | |
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| | SL4DB 108m | F 11° 12m |  |  |  | | |
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| | SL4DB 108m | F 16° 12m |  |  |  | | |
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|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|
| m | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | | |
| 18,0 | 115,0 | 115,0 | | 112,0 | 112,0 | 112,0 | 112,0 | 112,0 | 112,0 | 112,0 | 112,0 | | |
| 20,0 | 113,0 | 113,0 | 95,0 | 110,0 | 110,0 | 110,0 | 110,0 | 110,0 | 110,0 | 110,0 | 110,0 | | |
| 22,0 | 111,0 | 111,0 | 84,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | | |
| 24,0 | 108,0 | 108,0 | 75,0 | 105,0 | 105,0 | 105,0 | 105,0 | 105,0 | 105,0 | 105,0 | 105,0 | | |
| 26,0 | 106,0 | 106,0 | 68,0 | 101,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | | |
| 28,0 | 103,0 | 103,0 | 61,0 | 92,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | | |
| 30,0 | 101,0 | 101,0 | 55,0 | 84,0 | 98,0 | 98,0 | 98,0 | 98,0 | 98,0 | 98,0 | 98,0 | | |
| 32,0 | 99,0 | 99,0 | 50,0 | 78,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | | |
| 34,0 | 96,0 | 96,0 | 45,0 | 71,0 | 93,0 | 93,0 | 93,0 | 93,0 | 93,0 | 93,0 | 93,0 | | |
| 36,0 | 94,0 | 94,0 | 41,0 | 66,0 | 90,0 | 91,0 | 91,0 | 91,0 | 91,0 | 91,0 | 91,0 | | |
| 38,0 | 92,0 | 92,0 | 37,0 | 61,0 | 85,0 | 90,0 | 90,0 | 90,0 | 90,0 | 90,0 | 90,0 | | |
| 40,0 | 90,0 | 90,0 | 33,5 | 56,0 | 79,0 | 88,0 | 88,0 | 88,0 | 88,0 | 88,0 | 88,0 | | |
| 44,0 | 86,0 | 86,0 | 27,3 | 48,0 | 69,0 | 84,0 | 84,0 | 84,0 | 84,0 | 84,0 | 84,0 | | |
| 48,0 | 82,0 | 82,0 | 22,1 | 41,5 | 61,0 | 79,0 | 81,0 | 81,0 | 81,0 | 81,0 | 81,0 | | |
| 52,0 | 78,0 | 78,0 | 17,7 | 35,5 | 54,0 | 72,0 | 77,0 | 77,0 | 77,0 | 77,0 | 77,0 | | |
| 56,0 | 75,0 | 75,0 | 13,8 | 30,5 | 47,5 | 64,0 | 74,0 | 74,0 | 74,0 | 74,0 | 74,0 | | |
| 60,0 | 72,0 | 72,0 | 10,4 | 26,2 | 42,0 | 58,0 | 70,0 | 71,0 | 71,0 | 71,0 | 71,0 | | |
| 64,0 | 70,0 | 70,0 | 7,4 | 22,3 | 37,0 | 52,0 | 65,0 | 69,0 | 69,0 | 69,0 | 69,0 | | |
| 68,0 | 68,0 | 68,0 | | 18,9 | 33,0 | 47,0 | 61,0 | 67,0 | 67,0 | 67,0 | 67,0 | | |
| 72,0 | 65,0 | 66,0 | | 15,8 | 29,2 | 42,5 | 56,0 | 65,0 | 65,0 | 65,0 | 65,0 | | |
| 76,0 | 61,0 | 63,0 | | 13,0 | 25,8 | 38,5 | 51,0 | 61,0 | 63,0 | 63,0 | 63,0 | | |
| 80,0 | 56,0 | 61,0 | | 10,6 | 22,7 | 35,0 | 47,0 | 56,0 | 62,0 | 62,0 | 62,0 | | |
| 84,0 | 52,0 | 59,0 | | 8,3 | 19,9 | 31,5 | 42,5 | 52,0 | 60,0 | 60,0 | 60,0 | | |
| 88,0 | 47,5 | 56,0 | | 6,3 | 17,4 | 28,5 | 39,0 | 48,5 | 57,0 | 58,0 | 58,0 | | |
| 92,0 | 44,0 | 52,0 | | | 15,1 | 25,7 | 35,5 | 44,5 | 53,0 | 57,0 | 57,0 | | |
| 96,0 | 40,5 | 47,5 | | | 13,0 | 23,1 | 32,0 | 41,0 | 49,5 | 55,0 | 55,0 | | |
| 100,0 | 37,5 | 44,0 | | | 11,1 | 20,6 | 29,2 | 37,5 | 46,0 | 53,0 | 53,0 | | |
| 104,0 | 34,5 | 41,0 | | | 9,3 | 18,4 | 26,5 | 34,5 | 42,5 | 49,5 | 49,5 | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| * n * | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | | |
| yy | 15,0 | 15,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | | |
| zz | 300,0 | 350,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 350,0 | 350,0 | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
|  m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | | |

SL4DB

F 16°

108m

12m

150

t

14,0 x

14,0

m



yy m


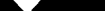

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|--|---------------|--------------|---|---|--|--|--|
| | SL4DB 108m | F 31° 12m |  |  |  | | |
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| | SL4DB 108m | F 31° 12m |  |  |  | | |
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| | SL4DB 108m | F 13° 18m |  |  |  | | |
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
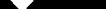

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

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| | SL4DB 108m | F 32° 18m |  |  |  | | |
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| | SL4DB 108m | F 32° 18m |  |  |  | | |
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| | SL4DB 108m | F 13° 24m |  |  |  | | |
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
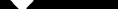
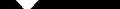
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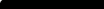
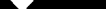

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|--|---------------|--------------|---|---|--|--|--|
| | SL4DB 108m | F 30° 24m |  |  |  | | |
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


| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL4DB 108m | F 30° 24m |  |  |  | | |
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| | SL4DB 108m | F 12° 30m |  |  |  | | |
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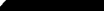
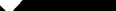
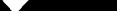
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|--|---------------|--------------|---|---|--|--|--|
| | SL4DB 108m | F 16° 30m |  |  |  | | |
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| | SL4DB 108m | F 10° 36m |  |  |  | | |
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| | SL4DB 114m | F 11° 12m |  |  |  | | |
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22.50

|  | |  $m > < t$ | | | | | | | | | | CODE > 8377 < V181 5C10.x(x) | | | |
|---|-------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------------------------|--|--|--|
| m | | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | | | | |
| 18,0 | 117,0 | 117,0 | 102,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | | | | |
| 20,0 | 115,0 | 115,0 | 90,0 | 112,0 | 112,0 | 112,0 | 112,0 | 112,0 | 112,0 | 112,0 | 112,0 | | | | |
| 22,0 | 113,0 | 113,0 | 80,0 | 110,0 | 110,0 | 110,0 | 110,0 | 110,0 | 110,0 | 110,0 | 110,0 | | | | |
| 24,0 | 111,0 | 111,0 | 72,0 | 107,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | 108,0 | | | | |
| 26,0 | 109,0 | 109,0 | 64,0 | 97,0 | 106,0 | 106,0 | 106,0 | 106,0 | 106,0 | 106,0 | 106,0 | | | | |
| 28,0 | 106,0 | 106,0 | 58,0 | 88,0 | 104,0 | 104,0 | 104,0 | 104,0 | 104,0 | 104,0 | 104,0 | | | | |
| 30,0 | 104,0 | 104,0 | 52,0 | 81,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | | | | |
| 32,0 | 102,0 | 102,0 | 47,0 | 74,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | | | | |
| 34,0 | 100,0 | 100,0 | 42,5 | 68,0 | 94,0 | 97,0 | 97,0 | 97,0 | 97,0 | 97,0 | 97,0 | | | | |
| 36,0 | 98,0 | 98,0 | 38,0 | 63,0 | 88,0 | 95,0 | 95,0 | 95,0 | 95,0 | 95,0 | 95,0 | | | | |
| 38,0 | 96,0 | 96,0 | 34,5 | 58,0 | 82,0 | 93,0 | 93,0 | 93,0 | 93,0 | 93,0 | 93,0 | | | | |
| 40,0 | 94,0 | 94,0 | 31,0 | 54,0 | 76,0 | 91,0 | 91,0 | 91,0 | 91,0 | 91,0 | 91,0 | | | | |
| 44,0 | 90,0 | 90,0 | 25,1 | 46,0 | 67,0 | 87,0 | 87,0 | 87,0 | 87,0 | 87,0 | 87,0 | | | | |
| 48,0 | 86,0 | 86,0 | 20,1 | 39,0 | 58,0 | 78,0 | 84,0 | 84,0 | 84,0 | 84,0 | 84,0 | | | | |
| 52,0 | 82,0 | 82,0 | 15,7 | 33,5 | 51,0 | 69,0 | 80,0 | 80,0 | 80,0 | 80,0 | 80,0 | | | | |
| 56,0 | 78,0 | 78,0 | 12,0 | 28,7 | 45,5 | 62,0 | 77,0 | 77,0 | 77,0 | 77,0 | 77,0 | | | | |
| 60,0 | 74,0 | 74,0 | 8,7 | 24,4 | 40,0 | 56,0 | 71,0 | 73,0 | 73,0 | 73,0 | 73,0 | | | | |
| 64,0 | 71,0 | 72,0 | 5,8 | 20,6 | 35,5 | 50,0 | 65,0 | 70,0 | 71,0 | 71,0 | 71,0 | | | | |
| 68,0 | 68,0 | 70,0 | | 17,2 | 31,0 | 45,0 | 59,0 | 67,0 | 69,0 | 69,0 | 69,0 | | | | |
| 72,0 | 64,0 | 68,0 | | 14,2 | 27,4 | 40,5 | 54,0 | 65,0 | 67,0 | 67,0 | 67,0 | | | | |
| 76,0 | 60,0 | 65,0 | | 11,5 | 24,1 | 36,5 | 49,5 | 61,0 | 65,0 | 65,0 | 65,0 | | | | |
| 80,0 | 56,0 | 61,0 | | 9,0 | 21,1 | 33,0 | 45,0 | 56,0 | 62,0 | 64,0 | 64,0 | | | | |
| 84,0 | 51,0 | 58,0 | | 6,8 | 18,4 | 29,9 | 41,5 | 52,0 | 59,0 | 63,0 | 63,0 | | | | |
| 88,0 | 46,5 | 54,0 | | | 15,9 | 26,9 | 37,5 | 47,0 | 56,0 | 61,0 | 61,0 | | | | |
| 92,0 | 43,0 | 50,0 | | | 13,6 | 24,2 | 34,5 | 43,5 | 52,0 | 59,0 | 59,0 | | | | |
| 96,0 | 39,5 | 46,5 | | | 11,5 | 21,8 | 31,5 | 40,0 | 48,5 | 55,0 | 55,0 | | | | |
| 100,0 | 36,0 | 43,0 | | | 9,6 | 19,5 | 28,3 | 36,5 | 45,0 | 52,0 | 52,0 | | | | |
| 104,0 | 33,0 | 40,0 | | | 7,9 | 17,1 | 25,5 | 33,5 | 41,5 | 48,5 | 48,5 | | | | |
| 108,0 | 30,5 | 37,0 | | | 6,3 | 14,9 | 23,0 | 31,0 | 38,5 | 45,0 | 45,0 | | | | |
| 112,0 | 27,9 | 34,0 | | | | 12,8 | 20,7 | 28,4 | 36,0 | 41,5 | 41,5 | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| * n * | | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | | | | |
| yy | | 15,0 | 15,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | | | | |
| zz | | 300,0 | 350,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 350,0 | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
|  | | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | | | | |

SL4DB

F 11°

114m

12m

150

t


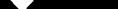
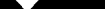
14,0 x

14,0

m






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|--|---------------|--------------|---|---|--|--|--|
| | SL4DB 114m | F 16° 12m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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22.50

|  | |  $m > < t$ | | | | | | | | | | CODE > 8378 < V181 5C15.x(x) | | | |
|---|--|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------------------------|--|--|--|
| m | | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | | | | |
| 20,0 | | 107,0 | 107,0 | 92,0 | 104,0 | 104,0 | 104,0 | 104,0 | 104,0 | 104,0 | 104,0 | | | | |
| 22,0 | | 105,0 | 105,0 | 82,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | 102,0 | | | | |
| 24,0 | | 102,0 | 102,0 | 73,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | | | | |
| 26,0 | | 101,0 | 101,0 | 65,0 | 98,0 | 98,0 | 98,0 | 98,0 | 98,0 | 98,0 | 98,0 | | | | |
| 28,0 | | 99,0 | 99,0 | 59,0 | 90,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | 96,0 | | | | |
| 30,0 | | 97,0 | 97,0 | 53,0 | 82,0 | 94,0 | 94,0 | 94,0 | 94,0 | 94,0 | 94,0 | | | | |
| 32,0 | | 95,0 | 95,0 | 48,0 | 75,0 | 92,0 | 92,0 | 92,0 | 92,0 | 92,0 | 92,0 | | | | |
| 34,0 | | 93,0 | 93,0 | 43,5 | 69,0 | 90,0 | 90,0 | 90,0 | 90,0 | 90,0 | 90,0 | | | | |
| 36,0 | | 91,0 | 91,0 | 39,0 | 64,0 | 88,0 | 89,0 | 89,0 | 89,0 | 89,0 | 89,0 | | | | |
| 38,0 | | 89,0 | 89,0 | 35,5 | 59,0 | 82,0 | 87,0 | 87,0 | 87,0 | 87,0 | 87,0 | | | | |
| 40,0 | | 87,0 | 87,0 | 32,0 | 54,0 | 77,0 | 85,0 | 85,0 | 85,0 | 85,0 | 85,0 | | | | |
| 44,0 | | 84,0 | 84,0 | 25,8 | 46,5 | 67,0 | 82,0 | 82,0 | 82,0 | 82,0 | 82,0 | | | | |
| 48,0 | | 80,0 | 80,0 | 20,7 | 40,0 | 59,0 | 78,0 | 79,0 | 79,0 | 79,0 | 79,0 | | | | |
| 52,0 | | 77,0 | 77,0 | 16,3 | 34,0 | 52,0 | 70,0 | 76,0 | 76,0 | 76,0 | 76,0 | | | | |
| 56,0 | | 74,0 | 74,0 | 12,5 | 29,1 | 46,0 | 63,0 | 73,0 | 73,0 | 73,0 | 73,0 | | | | |
| 60,0 | | 71,0 | 71,0 | 9,1 | 24,8 | 40,5 | 56,0 | 70,0 | 70,0 | 70,0 | 70,0 | | | | |
| 64,0 | | 68,0 | 69,0 | 6,2 | 21,0 | 35,5 | 51,0 | 65,0 | 68,0 | 68,0 | 68,0 | | | | |
| 68,0 | | 66,0 | 67,0 | | 17,5 | 31,5 | 45,5 | 60,0 | 66,0 | 66,0 | 66,0 | | | | |
| 72,0 | | 64,0 | 65,0 | | 14,5 | 27,8 | 41,0 | 54,0 | 64,0 | 64,0 | 64,0 | | | | |
| 76,0 | | 60,0 | 62,0 | | 11,8 | 24,4 | 37,0 | 49,5 | 61,0 | 62,0 | 62,0 | | | | |
| 80,0 | | 56,0 | 60,0 | | 9,3 | 21,3 | 33,5 | 45,5 | 56,0 | 60,0 | 61,0 | | | | |
| 84,0 | | 51,0 | 57,0 | | 7,1 | 18,6 | 30,0 | 41,5 | 52,0 | 58,0 | 60,0 | | | | |
| 88,0 | | 46,5 | 54,0 | | 5,0 | 16,1 | 27,1 | 38,0 | 47,0 | 55,0 | 59,0 | | | | |
| 92,0 | | 43,0 | 50,0 | | | 13,8 | 24,4 | 34,5 | 43,5 | 52,0 | 57,0 | | | | |
| 96,0 | | 39,5 | 47,0 | | | 11,7 | 21,9 | 31,5 | 40,0 | 48,5 | 54,0 | | | | |
| 100,0 | | 36,5 | 43,5 | | | 9,8 | 19,6 | 28,3 | 36,5 | 45,0 | 51,0 | | | | |
| 104,0 | | 33,0 | 40,0 | | | 8,0 | 17,2 | 25,5 | 33,5 | 41,5 | 48,5 | | | | |
| 108,0 | | 30,5 | 37,0 | | | 6,4 | 15,0 | 23,0 | 31,0 | 38,5 | 45,0 | | | | |
| 112,0 | | 28,0 | 34,5 | | | 5,0 | 12,9 | 20,8 | 28,5 | 36,0 | 41,5 | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| * n * | | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | | | | |
| yy | | 15,0 | 15,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | 18,0 | | | | |
| zz | | 300,0 | 350,0 | 0,0 | 50,0 | 100,0 | 150,0 | 200,0 | 250,0 | 300,0 | 350,0 | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
|  | | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | | | | |

SL4DB

F 16°

114m

12m

150

t

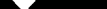
14,0 x

14,0

m





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
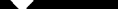
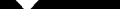
| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL4DB 114m | F 31° 12m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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
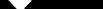

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| | | | | | | | |
|--|---------------|--------------|---|---|--|--|--|
| | SL4DB 114m | F 13° 18m |  |  |  | | |
|--|---------------|--------------|---|---|--|--|--|

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
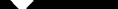
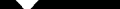
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| | SL4DB 114m | F 13° 18m |  |  |  | | |
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| | SL4DB 114m | F 18° 18m |  |  |  | | |
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
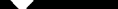
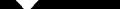
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| | SL4DB 114m | F 32° 18m |  |  |  | | |
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| | SL4DB 114m | F 13° 24m |  |  |  | | |
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| | SL4DB 114m | F 13° 24m |  |  |  | | |
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

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| | SL4DB 114m | F 18° 24m |  |  |  | | |
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|  | |  | | m > < t | | CODE > 8384 < | | V181 5C17.x(x) | | | | | | | |
|---|-------|---|-------|---------|-------|---------------|-------|----------------|-------|-------|--|--|--|--|--|
| m | | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | 114,0 | | | | | |
| 26,0 | 62,0 | 62,0 | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 | 60,0 | | | | | |
| 28,0 | 61,0 | 61,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | 59,0 | | | | | |
| 30,0 | 59,0 | 59,0 | 57,0 | 58,0 | 58,0 | 58,0 | 58,0 | 58,0 | 58,0 | 58,0 | | | | | |
| 32,0 | 57,0 | 57,0 | 52,0 | 56,0 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | 57,0 | | | | | |
| 34,0 | 56,0 | 56,0 | 47,5 | 55,0 | 55,0 | 55,0 | 55,0 | 55,0 | 55,0 | 55,0 | | | | | |
| 36,0 | 54,0 | 54,0 | 43,5 | 54,0 | 54,0 | 54,0 | 54,0 | 54,0 | 54,0 | 54,0 | | | | | |
| 38,0 | 53,0 | 53,0 | 39,5 | 52,0 | 52,0 | 52,0 | 52,0 | 52,0 | 52,0 | 52,0 | | | | | |
| 40,0 | 51,0 | 51,0 | 36,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | 51,0 | | | | | |
| 44,0 | 48,0 | 48,0 | 30,0 | 48,0 | 48,0 | 48,0 | 48,0 | 48,0 | 48,0 | 48,0 | | | | | |
| 48,0 | 46,0 | 46,0 | 24,8 | 43,5 | 46,0 | 46,0 | 46,0 | 46,0 | 46,0 | 46,0 | | | | | |
| 52,0 | 43,5 | 43,5 | 20,3 | 38,0 | 43,5 | 43,5 | 43,5 | 43,5 | 43,5 | 43,5 | | | | | |
| 56,0 | 41,5 | 41,5 | 16,4 | 33,0 | 41,5 | 41,5 | 41,5 | 41,5 | 41,5 | 41,5 | | | | | |
| 60,0 | 39,5 | 39,5 | 13,0 | 28,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | 39,5 | | | | | |
| 64,0 | 38,0 | 38,0 | 10,0 | 24,5 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | 38,0 | | | | | |
| 68,0 | 36,0 | 36,0 | 7,3 | 21,1 | 35,0 | 36,0 | 36,0 | 36,0 | 36,0 | 36,0 | | | | | |
| 72,0 | 35,0 | 35,0 | | 17,9 | 31,0 | 35,0 | 35,0 | 35,0 | 35,0 | 35,0 | | | | | |
| 76,0 | 33,5 | 33,5 | | 15,1 | 27,6 | 33,5 | 33,5 | 33,5 | 33,5 | 33,5 | | | | | |
| 80,0 | 32,5 | 32,5 | | 12,6 | 24,5 | 32,5 | 32,5 | 32,5 | 32,5 | 32,5 | | | | | |
| 84,0 | 31,5 | 31,5 | | 10,2 | 21,6 | 31,5 | 31,5 | 31,5 | 31,5 | 31,5 | | | | | |
| 88,0 | 30,5 | 30,5 | | 8,1 | 19,0 | 29,2 | 30,5 | 30,5 | 30,5 | 30,5 | | | | | |
| 92,0 | 29,6 | 29,6 | | 6,2 | 16,7 | 27,0 | 29,5 | 29,6 | 29,6 | 29,6 | | | | | |
| 96,0 | 28,7 | 28,7 | | | 14,5 | 24,6 | 28,7 | 28,7 | 28,7 | 28,7 | | | | | |
| 100,0 | 27,8 | 27,8 | | | 12,4 | 22,2 | 27,8 | 27,8 | 27,8 | 27,8 | | | | | |
| 104,0 | 27,1 | 27,1 | | | 10,6 | 20,0 | 26,3 | 27,2 | 27,2 | 27,2 | | | | | |
| 108,0 | 26,5 | 26,5 | | | 8,8 | 17,9 | 24,7 | 26,5 | 26,5 | 26,5 | | | | | |
| 112,0 | 25,8 | 25,8 | | | 7,2 | 15,8 | 23,1 | 25,8 | 25,8 | 25,8 | | | | | |
| 116,0 | 25,3 | 25,3 | | | 5,7 | 13,7 | 21,2 | 25,3 | 25,3 | 25,3 | | | | | |
| 120,0 | 24,7 | 24,8 | | | | 11,7 | 19,1 | 24,8 | 24,8 | 24,8 | | | | | |
| 124,0 | 23,4 | 24,5 | | | | 10,0 | 17,1 | 23,7 | 24,5 | 24,5 | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| * n * | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | | | | | |
| yy zz | 15.0 | 15.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | | | | | |
| | 300.0 | 350.0 | 0.0 | 50.0 | 100.0 | 150.0 | 200.0 | 250.0 | 300.0 | 300.0 | | | | | |
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| | | | | | | | | | | | | | | | |
|  m/s | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | 12,8 | | | | | |
| | | | | | | | | | | | | | | | |

SL4DB

F 18°

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24m

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
14,0

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




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| | SL4DB 114m | F 30° 24m |  |  |  | | |
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| | SL4DB 114m | F 12° 30m |  |  |  | | |
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


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
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| | SL4DB 114m | F 10° 36m |  |  |  | | |
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Diagram showing the layout of the construction site with various elements labeled:

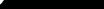
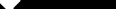
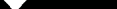
- SL4DB
- 114m
- F 14°
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| | SL4DB 114m | F 26° 36m |  |  |  | | |
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
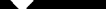

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| | SL4DB 120m | F 11° 12m |  |  |  | | |
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| | SL4DB 120m | F 16° 12m |  |  |  | | |
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


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| | SL4DB 120m | F 31° 12m |  |  |  | | |
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| | SL4DB 120m | F 31° 12m |  |  |  | | |
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


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| | SL4DB 120m | F 18° 18m |  |  |  | | |
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| | SL4DB 120m | F 13° 24m |  |  |  | | |
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


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| | SL4DB 120m | F 18° 24m |  |  |  | | |
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| | SL4DB 120m | F 30° 24m |  |  |  | | |
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
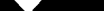

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


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
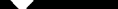
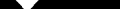
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| | SL4DB 120m | F 28° 30m |  |  |  | | |
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| | SL4DB 120m | F 10° 36m |  |  |  | | |
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
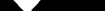

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| | SL4DB 120m | F 14° 36m |  |  |  | | |
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
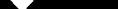
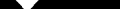
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| | SL4DB 120m | F 26° 36m |  |  |  | | |
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
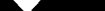

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| | SL4DB 126m | F 11° 12m |  |  |  | | |
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| | SL4DB 126m | F 11° 12m |  |  |  | | |
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| | SL4DB 126m | F 16° 12m |  |  |  | | |
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


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| | SL4DB 126m | F 13° 18m |  |  |  | | |
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| | SL4DB 126m | F 18° 18m |  |  |  | | |
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
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| | SL4DB 126m | F 18° 24m |  |  |  | | |
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| | SL4DB 126m | F 12° 30m |  |  |  | | |
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
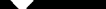

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| | SL4DB 126m | F 16° 30m |  |  |  | | |
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| | SL4DB 126m | F 28° 30m |  |  |  | | |
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| | SL4DB 126m | F 28° 30m |  |  |  | | |
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| | SL4DB 126m | F 10° 36m |  |  |  | | |
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Diagram showing the layout of the experimental setup. It includes a table with dimensions (SL4DB, 126m, F 26°, 36m), a crane with a load (150, t), and a table with dimensions (14,0 x, 14,0, m).

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Diagram showing the layout of the experimental setup. It includes a table with dimensions (SL4DB, 132m, F 11°, 12m), a crane with a load (150, t), and a platform with dimensions (14,0 x, 14,0, m).


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| | SL4DB 132m | F 16° 12m |  |  |  | | |
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| | SL4DB 132m | F 31° 12m |  |  |  | | |
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
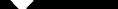
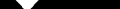
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| | SL4DB 132m | F 13° 18m |  |  |  | | |
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| | SL4DB 132m | F 18° 18m |  |  |  | | |
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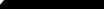
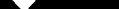
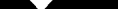
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| | SL4DB 132m | F 18° 18m |  |  |  | | |
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| | SL4DB 132m | F 32° 18m |  |  |  | | |
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
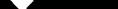
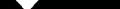
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| | SL4DB 132m | F 32° 18m |  |  |  | | |
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| | SL4DB 132m | F 13° 24m |  |  |  | | |
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| | SL4DB 132m | F 13° 24m |  |  |  | | |
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| | SL4DB 132m | F 12° 30m |  |  |  | | |
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
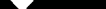

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The diagram shows a bridge structure with the following components labeled:

- SL4DB** and **F 10°** are labels for the bridge deck and its orientation.
- 132m** and **36m** are dimensions of the bridge deck.
- 150** is a dimension of the bridge pier.
- t** is a dimension of the bridge pier.
- 14,0 x** and **14,0** are dimensions of the bridge pier.
- m** is a dimension of the bridge pier.
- zz t** and **yy m** are dimensions of the bridge pier.


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| | SL4DB 138m | F 11° 12m |  |  |  | | |
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| | SL4DB 138m | F 13° 18m |  |  |  | | |
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| | SL4DB 138m | F 13° 24m |  |  |  | | |
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| | SL4DB 138m | F 13° 24m |  |  |  | | |
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