

# PRODUCT SUMMARY

INNOVATIVE PILING EQUIPMENT

WORLDWIDE  
DEALER  
NETWORK

GLOBAL  
SUPPLY,  
LOCAL  
SUPPORT.

HYDRAULIC PILING  
HAMMERS

EXCAVATOR MOUNTED  
VIBRATORS

EXCAVATOR MOUNTED  
DRILLS

QUIET, VIBRATIONLESS  
PUSH-PULL PILING

PILE EXTRACTION

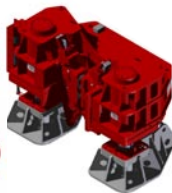
SHEET PILE GUIDE  
FRAMES

SHEET PILE  
CAPPING SYSTEMS

CFA CLEANERS

PILE POINTS  
& SPLICERS

HANDLING / LIFTING





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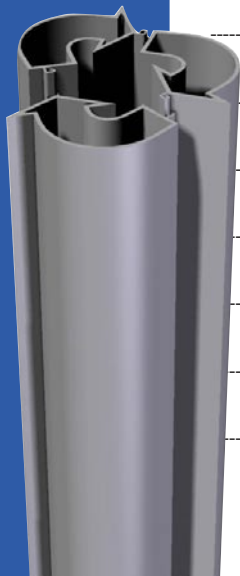
## CONTACTS

**WORLDWIDE  
DEALER  
NETWORK**

**GLOBAL  
SUPPLY,  
LOCAL  
SUPPORT.**

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## Innovation Piling Equipment

The title says it all. Few other modern piling equipment manufacturers can claim to be truly innovative - most settle for variations on the same old themes.

Dawson philosophy is to apply new ideas, new techniques and new technology to create a better future for the piling industry. By supplying equipment that offers real benefits, work can be completed more productively, to higher standards and with much improved levels of safety. Of course, as a Dawson customer, you will expect high levels of equipment reliability, quality and service. You will expect equipment that is well designed and durable. You will expect to deal with an internationally recognised organisation that will value your custom for the longer term, building relationships for the future. You will not expect, perhaps, to find a team of innovative engineers committed to developing a range of equipment that will give you a real competitive edge on your piling project

.....TODAY and long into the future



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# CONTENTS

Hydraulic Piling Hammers 7



Excavator Mounted Vibrator 21



Excavator Mounted Drill 25



11TM Drill 28



Auger Cleaners 31



Silent Piling - Push/Pull System 33



Universal Sheet Pile Extractor 37



Sheet Pile Capping System 41



Euro Ground/Ratchet Release Shackles 45



Steel Handling Shoe 57



Pipe Lifting Shoe 59



Euro Ratchet Release Beam Shackle 61



Universal Sheet Pile Threader 63



Sheet Pile Threader 64



Pile Extraction Clamps 65



Sheet Pile Guide Frames / Chain Clamp 67



Pile Points & Splicers 69



Pile Sections 70

Useful Information 74

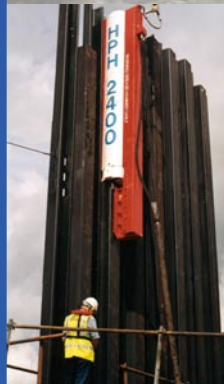
Large stock of  
Equipment available  
**For Hire or Sale**



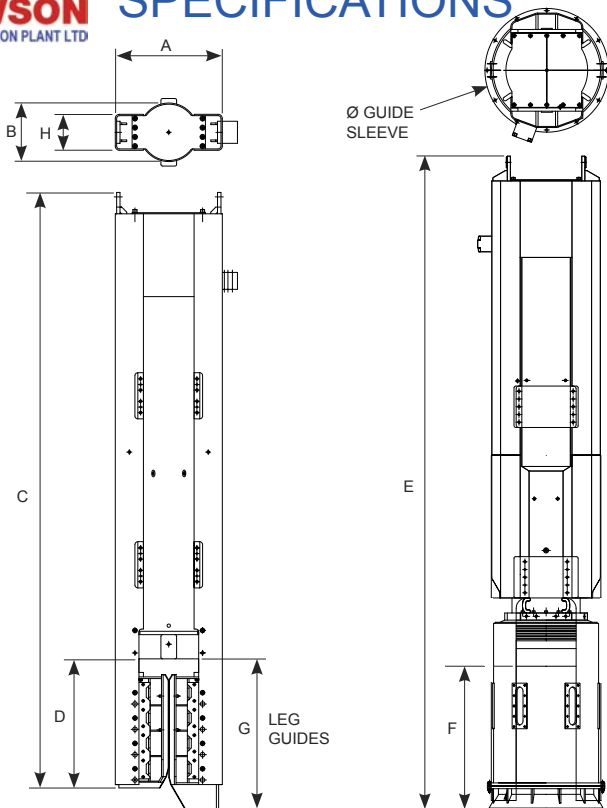
# HYDRAULIC PILING HAMMERS

## Principal Advantages

- Unrivalled production rates - rapid blow rates save time and money, shortening project duration
- Rapid blow rates - “chisel” through compacted sands, out-driving heavier, slower hammers
- High energy transfer efficiency to the pile - smaller hammer out performs older more cumbersome equipment
- Variable energy output - stepless adjustment between limits at the touch of a button, with single or automatic blow regulation, these hammers offer complete control of the driving process
- All hydraulic operation - omitting electrical components results in simple, robust hammer design
- Compact, enclosed design - simplifies application and handling whilst protecting vital components
- Simple integration with alternative power sources - can be operated from hydraulic excavators, hydraulic crawler cranes or non-Dawson hydraulic power packs
- Versatility - all models are designed to be truly multi-tasking, driving a huge range of pile types either free-hanging or leader mounted
- All Dawson hammers can operate under water in excess of 100m in depth
- Hammers can be crane suspended & Rig mounted



# TECHNICAL SPECIFICATIONS

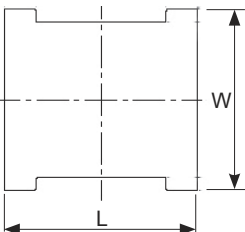


Weights & dims for guidance only & may vary according to application. Hammers can be leader mounted & configured for most pile types. Please contact Dawsons for further information.

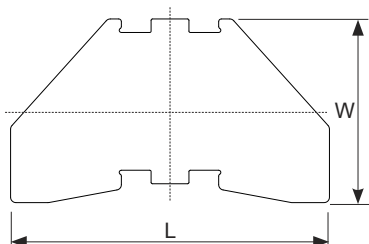


| SPECIFICATION                                  |                                          | UNITS    | Hammer Model |         |         |         |         |          |          |
|------------------------------------------------|------------------------------------------|----------|--------------|---------|---------|---------|---------|----------|----------|
|                                                |                                          |          | HPH1200      | HPH1800 | HPH2400 | HPH4500 | HPH6500 | HPH10000 | HPH15000 |
| HAMMER                                         |                                          |          |              |         |         |         |         |          |          |
| RAM WEIGHT                                     |                                          | kg       | 1,040        | 1,500   | 1,900   | 3,500   | 4,650   | 8,000    | 12,000   |
|                                                |                                          | lbs      | 2,300        | 3,300   | 4,189   | 7,840   | 10,250  | 17,650   | 26,450   |
| IMPACT VELOCITY                                |                                          | m/s      | 4.76         | 4.99    | 4.98    | 5.05    | 5.25    | 5.00     | 5.00     |
|                                                |                                          | ft/s     | 15.60        | 16.40   | 16.30   | 16.60   | 17.20   | 16.40    | 16.40    |
| MAXIMUM IMPACT ENERGY                          |                                          | kg.m     | 1,200        | 1,900   | 2,400   | 4,500   | 6,500   | 10,000   | 15,000   |
|                                                |                                          | ft.lbs   | 8,680        | 13,750  | 17,360  | 32,560  | 47,000  | 73,750   | 110,600  |
| MAXIMUM MOMENTUM                               |                                          | kg.m/s   | 4,950        | 7,485   | 9,462   | 17,675  | 24,413  | 40,000   | 60,000   |
|                                                |                                          | lbs.ft/s | 35,880       | 54,120  | 68,281  | 130,144 | 176,300 | 289,460  | 433,780  |
| BLOW RATE                                      |                                          | bpm      | 80-120       | 80-120  | 80-120  | 80-120  | 80-120  | 60-120   | 80-120   |
| WEIGHT - WITH SHEET PILE LEGS + SPREADER PLATE |                                          | kg       | 3,000        | 4,250   | 7,000   | 10,750  | 14,900  | -        | -        |
|                                                |                                          | lbs      | 6,600        | 9,350   | 15,400  | 23,700  | 32,780  | -        | -        |
| WEIGHT - WITH GUIDE SLEEVE                     | Ø914                                     | kg       | -            | -       | 7,600   | 9,600   | 12,600  | 21,000   | -        |
|                                                |                                          | lbs      | -            | -       | 16,720  | 21,120  | 27,720  | 46,300   | -        |
|                                                | Ø1200                                    | kg       | -            | -       | -       | -       | 13,900  | 22,300   | -        |
|                                                |                                          | lbs      | -            | -       | -       | -       | 30,580  | 49,160   | -        |
|                                                | Ø1450                                    | kg       | -            | -       | -       | -       | 15,600  | 24,000   | -        |
|                                                |                                          | lbs      | -            | -       | -       | -       | 34,320  | 52,900   | -        |
|                                                | Ø1220                                    | kg       | -            | -       | -       | -       | -       | -        | 37,000   |
|                                                |                                          | lbs      | -            | -       | -       | -       | -       | -        | 81,400   |
|                                                | Ø1530                                    | kg       | -            | -       | -       | -       | -       | -        | 39,500   |
|                                                |                                          | lbs      | -            | -       | -       | -       | -       | -        | 86,900   |
| All dimensions in mm                           |                                          | A        | 700          | 800     | 950     | 1335    | 1050    | 1200     | 1800     |
|                                                |                                          | B        | Ø406         | Ø470    | Ø520    | Ø640    | Ø750    | Ø850     | 1150     |
|                                                |                                          | C        | 4612         | 4871    | 5285    | 5538    | 6385    | -        | -        |
|                                                |                                          | D        | 950          | 1036    | 1145    | 1260    | 1458    | -        | -        |
| GUIDE SLEEVE TO SUIT MAX. TUBE DIA. (mm)       | Ø914<br>Ø1200<br>Ø1450<br>Ø1220<br>Ø1530 | E        | -            | -       | 5690    | 5597    | 6310    | 6800     | -        |
|                                                |                                          |          | -            | -       | -       | -       | 6371    | 6861     | -        |
|                                                |                                          |          | -            | -       | -       | -       | 6340    | 6800     | -        |
|                                                |                                          |          | -            | -       | -       | -       | -       | -        | 7055     |
|                                                |                                          |          | -            | -       | -       | -       | -       | -        | 8300     |
|                                                | Ø914<br>Ø1200<br>Ø1450<br>Ø1220<br>Ø1530 | F        | -            | -       | 1040    | 1307    | 1373    | 1373     | -        |
|                                                |                                          |          | -            | -       | -       | -       | 1375    | 1375     | -        |
|                                                |                                          |          | -            | -       | -       | -       | 1310    | 1310     | -        |
|                                                |                                          |          | -            | -       | -       | -       | -       | -        | 1150     |
|                                                |                                          |          | -            | -       | -       | -       | -       | -        | 2340     |
| LEG GUIDES                                     |                                          | G        | 1130         | 1216    | 1335    | 1400    | 1600    | -        | -        |
|                                                |                                          | H        | 280          | 280     | 320     | 550     | 620     | -        | 700      |
| POWER PACK                                     |                                          |          |              |         |         |         |         |          |          |
| DIESEL ENGINE POWER                            |                                          | kW       | 93           | 93      | 93      | 120     | 168     | 224      | 470      |
| HYDRAULIC SYSTEM PRESSURE                      |                                          | bar      | 240          | 230     | 230     | 250     | 270     | 270      | 280      |
| OIL FLOW RATE                                  |                                          | l/min    | 75           | 105     | 150     | 230     | 270     | 390      | 850      |
| WEIGHT                                         |                                          | Kg       | 2000         | 3000    | 3000    | 3200    | 4800    | 7800     | 12000    |





TYPICAL  
SPREADER PLATE  
PROFILE OF 1-161-00-01



DELTA  
SPREADER PLATE  
PROFILE OF 2-174-00-01

| Spreader | DRAWING No.  | DIMENSIONS LxWxD    | HAMMER MODEL |
|----------|--------------|---------------------|--------------|
| S1       | 1-160-00-01  | 650 x 530 x 125     | HPH1200      |
| S2       | 1-161-00-01  | 460 x 434 x 125     | HPH1200      |
| S3       | 1-167-00-01  | 630 x 480 x 125     | HPH1200      |
| S4       | 1-162-00-01  | 940 x 440 x 125-130 | HPH1200      |
| S5       | 18-160-00-01 | 550 x 530 x 125     | HPH1800      |
| S6       | 18-167-00-01 | 870 x 515 x 125     | HPH1800      |
| S7       | 18-166-00-01 | 1020 x 600 x 125    | HPH1800      |
| S8       | 18-168-00-01 | 630 x 480 x 125     | HPH1800      |
| S9       | 18-162-00-01 | 940 x 500 x 125-130 | HPH1800      |
| S10      | 18-169-00-01 | 706 x 530 x 125     | HPH1800      |
| S11      | 2-100-03-01  | 760 x 610 x 125     | HPH2400      |
| S12      | 2-165-00-01  | 900 x 560 x 125     | HPH2400      |
| S13      | 2-171-00-01  | 1060 x 690 x 125    | HPH2400      |
| S14      | 2-166-00-01  | 1060 x 635 x 125    | HPH2400      |
| S15      | 2-164-00-01  | 870 x 610 x 125     | HPH2400      |
| S16      | 2-161-00-01  | 552 x 580 x 125     | HPH2400      |
| S17      | 2-160-00-01  | 970 x 510 x 120     | HPH2400      |
| S18      | 2-162-00-01  | 940 x 600 x 125     | HPH2400      |
| S19      | 2-170-00-01  | 706 x 610 x 125     | HPH2400      |
| S20      | 6-005-31-02  | 780 x 800 x 230     | HPH6500      |
| S21      | 6-005-32-02  | 780 x 1190 x 230    | HPH6500      |
| S22      | 6-005-33-02  | 780 x 1040 x 230    | HPH6500      |
| S23      | 6-005-30-02  | Ø975 x 170          | HPH6500      |
| S24      | 45-160-00-01 | 840 x 610 x 170     | HPH4500      |
| S25      | 45-160-03-01 | 1040 x 730 x 170    | HPH4500      |
| S26      | 45-160-01-01 | 1060 x 730 x 170    | HPH4500      |

# BEARING CAPACITY

The Bearing Capacities tabulated below are based on the Hiley Formula;

Bearing Capacity (tonnes) = Blow Efficiency x  $E/(s+2.54)$ , where  
 $E$ =Hammer Energy (kg.m),  $s$ =Final Set per Blow (mm/blow).

Blow efficiency for a hydraulic hammer is typically around 80% and adding a safety factor of 2 permits the formula to be modified to -  
Bearing Capacity (tonnes) =  $0.4 \times E/(s+2.54)$ .

Irrespective of hammer selection the Hiley formula is a simplified analysis and actual bearing capacity achieved will be significantly affected by pile type, length, mass and stiffness, in addition to prevailing ground conditions. The Hiley formula was originally devised to estimate pile bearing capacity based on actual site measurements.

The Dawson Hydraulic Impact Hammer has a visible stroke marker on the side of the hammer. This marker can be calibrated to indicate maximum and minimum hammer energy outputs and any energy figure between those two limits. In addition, it is possible to relate the hammer blow rate at final drive to hammer energy output as set out in the table and on the graph shown below providing hammer performance meets with manufacturers specifications.

Please note that practical refusal is considered to be 10 blows/25mm. Driving in excess of 10 blows/25mm for more than 150mm of pile penetration or any driving in excess of 20 blows/25mm will invalidate the hammer warranty.





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## HPH1200

| Blow Rate<br>b.p.m. | Impact Energy |      |       | Bearing Capacity at Final Set (blows/25mm) - tonnes |    |    |    |    |     |     |     |     |     |
|---------------------|---------------|------|-------|-----------------------------------------------------|----|----|----|----|-----|-----|-----|-----|-----|
|                     | kg.m          | kNm  | lb.ft | 2                                                   | 4  | 6  | 8  | 10 | 12  | 14  | 16  | 18  | 20  |
| 120                 | 640           | 6.2  | 4629  | 17                                                  | 29 | 38 | 45 | 50 | 55  | 59  | 62  | 65  | 67  |
| 115                 | 710           | 6.9  | 5135  | 19                                                  | 32 | 42 | 50 | 56 | 61  | 65  | 69  | 72  | 75  |
| 110                 | 780           | 7.6  | 5641  | 20                                                  | 35 | 46 | 55 | 61 | 67  | 72  | 76  | 79  | 82  |
| 105                 | 850           | 8.3  | 6148  | 22                                                  | 38 | 50 | 59 | 67 | 73  | 78  | 82  | 86  | 89  |
| 100                 | 930           | 9.1  | 6726  | 24                                                  | 42 | 55 | 65 | 73 | 80  | 85  | 90  | 94  | 98  |
| 95                  | 1000          | 9.8  | 7233  | 26                                                  | 45 | 59 | 70 | 79 | 86  | 92  | 97  | 101 | 105 |
| 90                  | 1070          | 10.4 | 7739  | 28                                                  | 48 | 63 | 75 | 84 | 92  | 98  | 104 | 108 | 112 |
| 85                  | 1140          | 11.1 | 8245  | 30                                                  | 51 | 67 | 80 | 90 | 98  | 105 | 110 | 115 | 120 |
| 80                  | 1210          | 11.8 | 8751  | 32                                                  | 54 | 71 | 85 | 95 | 104 | 111 | 117 | 122 | 127 |

## HPH1800

| Blow Rate<br>b.p.m. | Impact Energy |      |       | Bearing Capacity at Final Set (blows/25mm) - tonnes |    |     |     |     |     |     |     |     |     |
|---------------------|---------------|------|-------|-----------------------------------------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     | kg.m          | kNm  | lb.ft | 2                                                   | 4  | 6   | 8   | 10  | 12  | 14  | 16  | 18  | 20  |
| 120                 | 1005          | 9.8  | 7269  | 26                                                  | 45 | 59  | 70  | 79  | 86  | 92  | 97  | 102 | 106 |
| 115                 | 1119          | 10.9 | 8093  | 29                                                  | 50 | 66  | 78  | 88  | 96  | 103 | 108 | 113 | 117 |
| 110                 | 1233          | 12.0 | 8918  | 32                                                  | 55 | 73  | 86  | 97  | 106 | 113 | 119 | 125 | 129 |
| 105                 | 1347          | 13.2 | 9742  | 35                                                  | 61 | 80  | 94  | 106 | 116 | 124 | 131 | 136 | 141 |
| 100                 | 1458          | 14.2 | 10545 | 38                                                  | 66 | 86  | 102 | 115 | 125 | 134 | 141 | 148 | 153 |
| 95                  | 1567          | 15.3 | 11334 | 41                                                  | 71 | 93  | 110 | 123 | 135 | 144 | 152 | 159 | 165 |
| 90                  | 1680          | 16.4 | 12151 | 44                                                  | 76 | 99  | 118 | 132 | 144 | 154 | 163 | 170 | 176 |
| 85                  | 1797          | 17.6 | 12997 | 47                                                  | 81 | 106 | 126 | 141 | 154 | 165 | 174 | 182 | 189 |
| 80                  | 1910          | 18.7 | 13815 | 51                                                  | 87 | 114 | 135 | 152 | 165 | 177 | 186 | 194 | 202 |



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## HPH2400

| Blow Rate<br>bpm | Impact Energy |      |       | Bearing Capacity at Final Set (blows/25mm) - tonnes |     |     |     |     |     |     |     |     |     |
|------------------|---------------|------|-------|-----------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                  | kg.m          | kNm  | lb.ft | 2                                                   | 4   | 6   | 8   | 10  | 12  | 14  | 16  | 18  | 20  |
| 120              | 998           | 9.7  | 7218  | 26                                                  | 45  | 59  | 70  | 79  | 86  | 92  | 97  | 101 | 105 |
| 115              | 1166          | 11.4 | 8433  | 31                                                  | 52  | 69  | 82  | 92  | 100 | 107 | 113 | 118 | 122 |
| 110              | 1333          | 13.0 | 9641  | 35                                                  | 60  | 79  | 93  | 105 | 115 | 122 | 129 | 135 | 140 |
| 105              | 1496          | 14.6 | 10820 | 39                                                  | 67  | 88  | 105 | 118 | 129 | 137 | 145 | 151 | 157 |
| 100              | 1668          | 16.3 | 12064 | 44                                                  | 75  | 99  | 117 | 131 | 143 | 153 | 162 | 169 | 175 |
| 95               | 1832          | 17.9 | 13250 | 48                                                  | 82  | 108 | 128 | 144 | 157 | 168 | 178 | 185 | 192 |
| 90               | 1996          | 19.5 | 14437 | 52                                                  | 90  | 118 | 140 | 157 | 171 | 183 | 193 | 202 | 210 |
| 85               | 2167          | 21.2 | 15673 | 57                                                  | 98  | 128 | 152 | 171 | 186 | 199 | 210 | 219 | 228 |
| 80               | 2335          | 22.8 | 16889 | 61                                                  | 105 | 138 | 163 | 184 | 201 | 215 | 226 | 236 | 245 |
| 78               | 2402          | 23.5 | 17373 | 63                                                  | 108 | 142 | 168 | 189 | 206 | 221 | 233 | 243 | 252 |

## HPH4500

| Blow Rate<br>b.p.m. | Impact Energy |      |       | Bearing Capacity at Final Set (blows/25mm) - tonnes |     |     |     |     |     |     |     |     |     |
|---------------------|---------------|------|-------|-----------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     | kg.m          | kNm  | lb.ft | 2                                                   | 4   | 6   | 8   | 10  | 12  | 14  | 16  | 18  | 20  |
| 120                 | 1838          | 18.0 | 13294 | 48                                                  | 83  | 109 | 129 | 145 | 158 | 169 | 178 | 186 | 193 |
| 115                 | 2173          | 21.3 | 15717 | 57                                                  | 98  | 128 | 152 | 171 | 187 | 200 | 211 | 220 | 228 |
| 110                 | 2509          | 24.6 | 18147 | 66                                                  | 113 | 148 | 176 | 198 | 216 | 230 | 243 | 254 | 263 |
| 105                 | 2854          | 27.9 | 20642 | 75                                                  | 128 | 169 | 200 | 225 | 245 | 262 | 277 | 289 | 300 |
| 100                 | 3192          | 31.3 | 23087 | 84                                                  | 144 | 189 | 223 | 251 | 274 | 293 | 309 | 323 | 335 |
| 95                  | 3533          | 34.6 | 25554 | 93                                                  | 159 | 209 | 247 | 278 | 303 | 325 | 342 | 358 | 371 |
| 90                  | 3874          | 37.9 | 28020 | 102                                                 | 174 | 229 | 271 | 305 | 333 | 356 | 375 | 392 | 406 |
| 85                  | 4213          | 41.3 | 30472 | 111                                                 | 190 | 249 | 295 | 332 | 362 | 387 | 408 | 427 | 443 |
| 80                  | 4549          | 44.6 | 32902 | 119                                                 | 205 | 269 | 318 | 358 | 391 | 418 | 441 | 461 | 478 |



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## HPH6500

| Blow Rate<br>b.p.m. | Impact Energy |      |       | Bearing Capacity at Final Set (blows/25mm) - tonnes |     |     |     |     |     |     |     |     |     |
|---------------------|---------------|------|-------|-----------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     | kg.m          | kNm  | lb.ft | 2                                                   | 4   | 6   | 8   | 10  | 12  | 14  | 16  | 18  | 20  |
| 120                 | 2500          | 24.5 | 18082 | 65                                                  | 113 | 148 | 175 | 197 | 215 | 230 | 243 | 254 | 264 |
| 116                 | 2900          | 28.4 | 20975 | 76                                                  | 131 | 172 | 204 | 229 | 250 | 267 | 282 | 295 | 305 |
| 112                 | 3300          | 32.3 | 23868 | 87                                                  | 149 | 195 | 232 | 261 | 285 | 305 | 321 | 335 | 347 |
| 108                 | 3700          | 36.2 | 26762 | 97                                                  | 167 | 219 | 260 | 293 | 319 | 341 | 360 | 375 | 390 |
| 104                 | 4100          | 40.2 | 29655 | 108                                                 | 185 | 243 | 288 | 324 | 354 | 378 | 399 | 416 | 432 |
| 100                 | 4500          | 44.1 | 32548 | 118                                                 | 204 | 266 | 316 | 355 | 388 | 415 | 437 | 457 | 475 |
| 96                  | 4900          | 48   | 35441 | 129                                                 | 221 | 291 | 345 | 387 | 423 | 452 | 476 | 498 | 516 |
| 92                  | 5300          | 51.9 | 38334 | 139                                                 | 239 | 314 | 372 | 418 | 455 | 487 | 515 | 537 | 557 |
| 88                  | 5700          | 55.8 | 41228 | 150                                                 | 257 | 337 | 399 | 449 | 490 | 525 | 553 | 578 | 599 |
| 84                  | 6100          | 59.8 | 44121 | 160                                                 | 275 | 361 | 427 | 481 | 525 | 561 | 592 | 618 | 642 |
| 80                  | 6500          | 63.7 | 47014 | 171                                                 | 293 | 385 | 455 | 513 | 559 | 598 | 631 | 659 | 684 |

## HPH10000

| Blow Rate<br>b.p.m. | Impact Energy |     |       | Bearing Capacity at Final Set (blows/25mm) - tonnes |     |     |     |     |     |     |     |      |      |      |      |      |
|---------------------|---------------|-----|-------|-----------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
|                     | kg.m          | kNm | lb.ft | 2                                                   | 4   | 6   | 8   | 10  | 12  | 14  | 16  | 18   | 20   | 22   | 24   | 25   |
| 120                 | 4078          | 40  | 29502 | 108                                                 | 186 | 243 | 289 | 325 | 354 | 379 | 400 | 417  | 433  | 446  | 458  | 464  |
| 115                 | 4894          | 48  | 35402 | 128                                                 | 220 | 288 | 342 | 384 | 419 | 448 | 473 | 494  | 512  | 528  | 543  | 549  |
| 110                 | 5608          | 55  | 40565 | 148                                                 | 254 | 333 | 395 | 444 | 485 | 518 | 547 | 571  | 592  | 611  | 627  | 635  |
| 105                 | 6424          | 63  | 46466 | 168                                                 | 288 | 378 | 448 | 503 | 549 | 587 | 620 | 647  | 671  | 692  | 711  | 719  |
| 100                 | 7138          | 70  | 51629 | 188                                                 | 322 | 423 | 501 | 564 | 615 | 658 | 694 | 725  | 751  | 775  | 796  | 805  |
| 95                  | 7953          | 78  | 57529 | 208                                                 | 357 | 468 | 555 | 624 | 681 | 728 | 769 | 803  | 833  | 859  | 882  | 892  |
| 90                  | 8667          | 85  | 62692 | 228                                                 | 392 | 514 | 609 | 685 | 748 | 799 | 843 | 881  | 914  | 942  | 967  | 979  |
| 85                  | 9483          | 93  | 68593 | 249                                                 | 426 | 559 | 663 | 746 | 814 | 870 | 918 | 959  | 995  | 1026 | 1053 | 1066 |
| 80                  | 10197         | 100 | 73756 | 269                                                 | 460 | 604 | 716 | 806 | 879 | 940 | 992 | 1036 | 1074 | 1108 | 1138 | 1151 |



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## HPH15000

| Blow Rate<br>bpm. | Impact Energy |     |        | Bearing Capacity at Final Set (blows/25mm) - tonnes |     |     |      |      |      |      |      |      |      |
|-------------------|---------------|-----|--------|-----------------------------------------------------|-----|-----|------|------|------|------|------|------|------|
|                   | kg.m          | kNm | lb.ft  | 2                                                   | 4   | 6   | 8    | 10   | 12   | 14   | 16   | 18   | 20   |
| 120               | 6220          | 61  | 44991  | 162                                                 | 278 | 365 | 433  | 487  | 531  | 568  | 599  | 626  | 649  |
| 115               | 7341          | 72  | 53104  | 192                                                 | 329 | 432 | 512  | 577  | 629  | 673  | 710  | 741  | 769  |
| 110               | 8463          | 83  | 61217  | 222                                                 | 381 | 500 | 592  | 666  | 727  | 778  | 820  | 857  | 889  |
| 105               | 9585          | 94  | 69330  | 252                                                 | 432 | 566 | 671  | 755  | 824  | 881  | 929  | 971  | 1007 |
| 100               | 10707         | 105 | 77443  | 282                                                 | 483 | 634 | 752  | 846  | 922  | 986  | 1041 | 1087 | 1127 |
| 95                | 11930         | 117 | 86294  | 312                                                 | 535 | 702 | 833  | 937  | 1022 | 1093 | 1153 | 1204 | 1249 |
| 90                | 13052         | 128 | 94407  | 343                                                 | 587 | 771 | 914  | 1028 | 1121 | 1199 | 1265 | 1322 | 1371 |
| 85                | 14174         | 139 | 102520 | 373                                                 | 639 | 839 | 995  | 1119 | 1221 | 1305 | 1377 | 1438 | 1492 |
| 80                | 15397         | 151 | 111371 | 403                                                 | 691 | 907 | 1075 | 1209 | 1319 | 1410 | 1488 | 1554 | 1612 |

Driving in excess of 10 blows per inch (25mm) is considered practical refusal. Driving in excess of 10 blows per inch (25mm) for more than 6 inches (150mm) or driving in excess of 20 blows per inch (25mm) at all is considered improper use and will void the hammer warranty.





# HYDRAULIC HAMMER POWER PACKS



IMAGE OF  
DHP170

This Dawson power pack is fully self contained, including all oil and fuel reservoirs, prime mover and hydraulic circuitry. The power pack is designed to be directly connected to the working element of the system; however it can be connected through further hydraulic valves to perform alternative operations with guidance from the manufacturer.

The power pack is designed to produce a fixed oil flow rate at a pre-set pressure to supply hydraulic piling hammers in various environments from hot summers in Kuwait to cold winters in Ontario.

The diesel engine runs at a fixed RPM and is calibrated against the pump flow rate. A built in offline filtration system is used to condition the hydraulic oil to 2 microns and remove an amount of water contamination.



# TECHNICAL SPECIFICATIONS

|                        | Power Packs              |                          |                          |                           |                           |                           |
|------------------------|--------------------------|--------------------------|--------------------------|---------------------------|---------------------------|---------------------------|
|                        | HPH 1200                 | HPH 1800                 | HPH 2400                 | HPH 4500                  | HPH 6500                  | HPH 15000                 |
| Pack Type              | Dawson                   | Dawson                   | Dawson                   | Dawson                    | DHP170                    | DHP470                    |
| Engine                 | 93kW<br>125HP<br>2100RPM | 93kW<br>125HP<br>2100RPM | 93kW<br>125HP<br>2100RPM | 128kW<br>172HP<br>2100RPM | 168kW<br>225HP<br>2200RPM | 470kW<br>630HP<br>2100RPM |
| DIMS LxWxH (mm)        | 2850x1340<br>x2260       | 2850x1340<br>x2260       | 2850x1340<br>x2260       | 3300x1340<br>x2260        | 3800x1500<br>x2000        | 5250x2200<br>x2400        |
| Main Flow              | 75 L/M                   | 105 L/M                  | 150 L/M                  | 230 L/M                   | 270 L/M                   | 850 L/M                   |
| Working Pressure       | 240 BAR                  | 230 BAR                  | 230 BAR                  | 250 BAR                   | 270 BAR                   | 280 BAR                   |
| Weight                 | 2000Kg                   | 3000Kg                   | 3000Kg                   | 3200Kg                    | 4800Kg                    | 12000Kg                   |
| Fuel Consumption @ 60% | 15.2 L/Hr                | 15.2 L/Hr                | 15.2 L/Hr                | 19.9 L/Hr                 | 28 L/Hr                   | 78.6 L/Hr                 |
| Fuel Capacity          | 275 Ltr                  | 275 Ltr                  | 275 Ltr                  | 300 Ltr                   | 460 Ltr                   | 1000 Ltr                  |
| Hydraulic Oil Capacity | 360 Ltr                  | 360 Ltr                  | 360 Ltr                  | 540 Ltr                   | 500 Ltr                   | 1875 Ltr                  |





## ADDITIONAL EQUIPMENT

A full range of accessories are available from Dawson to help solve numerous pile driving challenges. If it is not contained within this brochure please do not hesitate to contact us to discuss your requirements - there is a good chance we may have met the challenge successfully before.

### Hydraulic Interface Control Module

Integrates the HPH Hydraulic Hammer range with a vast array of hydraulic power sources e.g. crawler crane, power packs etc, with minimum installation effort.

Maximum flow input 400 l/min (107 gpmUS)

Maximum pressure input 350 bar (5,075 psi)

Unit requires a 24V/5A power supply.

Dimensions - 650x450x470 (LxHxW)

Weight - 126kg



### Underwater Kit

All Dawson hammers can be set up to operate under water in depths of excess of 100m.



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### **Energy Monitoring System (EMS)**

The EMS is an electronic system developed by Dawson for monitoring and recording hammer performance during the pile driving process.

This system produces driving records and provides critical feedback to site personnel. Optional on new HPH1800, 2400 & 6500's and suitable for retro fitting on older HPH1800's and 6500's, the system is supplied in two modules.

One module is installed inside the hammer in a sealed data collection box connected to monitoring sensors. The other module is installed inside the hydraulic power pack - this is where the electronic brain is housed - in relative safety. On new hammers this option is supplied with a revised control pendant that displays EMS data in front of the operator as well as on the power pack instrumentation panel. Communications between the hammer and power pack are by radio link so there are no electrical cables to get in the way. The hammer module is fitted with long service life disposable batteries. For underwater use a cable is installed between the hammer and power pack.

Functionality of the hammer remains completely independent of the EMS. In the unlikely event that the EMS should malfunction, the hammer will continue to function completely as normal.





# EXCAVATOR MOUNTED OR CRANE SUSPENDED VIBRATORS

Dawson excavator mounted vibrators have been designed specifically to work in place of an excavator bucket to drive and extract piles. The pile can be lifted to vertical using the built-in lifting chain where it is then gripped tightly in a powerful hydraulic jaw. Once secured, the pile is then vibrated with high frequency vibrations so as to 'fluidise' the soil resisting the pile. Down-crowd force applied by the excavator boom, coupled with the self-weight of the pile and the vibrator, provides sufficient force to push the pile into the ground.

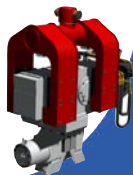
Naturally, the process works in reverse for pile extraction. The equipment offers a highly productive and cost effective piling rig based around a standard, readily available excavator!

## Principal Advantages

- Compact, robust and reliable - no electrics!
- Simple and fast attachment to excavator
- Minimal height to maximise pile length
- Slim design to drive single sheet piles
- High power to weight ratio
- Universal joint suspension for easy alignment of piles
- Extremely low vibration transmitted to the excavator
- Environmentally friendly - low noise/localised directional vibration
- Automatic hydraulic clamp operation
- Flexibility in application
- Flow regulator prevents excessive oil supply to vibrator
- Heavy saddles available for crane suspended models

For a range of larger vibrators, see pg.74

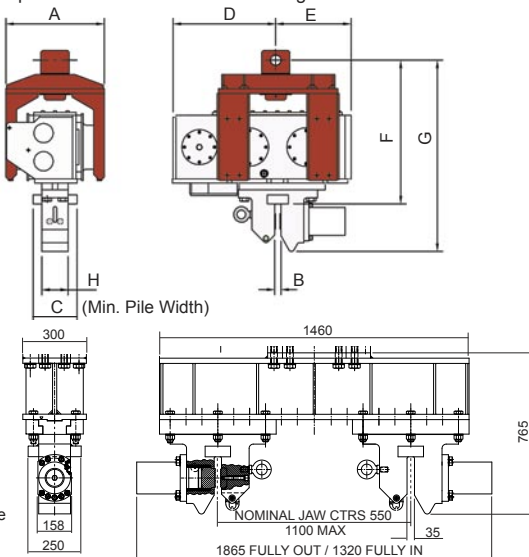
Driving / extracting when the movement is less than 1" (25mm) per minute is considered practical refusal. Driving / extracting when movement is less than 1" (25mm) for more than 5 minutes of driving / extracting or driving at all when penetration is less than 1" (25mm) per minute and amplitude is greater than 1" (25mm) [vibrator and pile are bouncing] is considered improper use and will void the warranty. Contact DCP for an alternative larger vibrator.



# TECHNICAL SPECIFICATIONS

| SPECIFICATION                                | UNITS  | Vibro Model |           |              |           |            |
|----------------------------------------------|--------|-------------|-----------|--------------|-----------|------------|
|                                              |        | EMV70       | EMV300    | EMV300A      | EMV450    | EMV550     |
| STATIC MOMENT                                | in.lbs | 60          | 400       | 400          | 606       | 674        |
|                                              | kgm    | 0.7         | 4.6       | 4.6          | 6.9       | 8.3        |
| FREQUENCY                                    | vpm    | 3,000       | 2,400     | 2,400        | 2,460     | 2,500      |
| CENTRIFUGAL FORCE                            | lbs    | 15,730      | 67,420    | 67,420       | 100,000   | 125,592    |
|                                              | kN     | 70          | 300       | 300          | 450       | 550        |
| AMPLITUDE -<br>PEAK TO PEAK                  | ins    | 0.134       | 0.58      | 0.58         | 0.5       | 0.51       |
|                                              | mm     | 3.4         | 14.7      | 14.7         | 12        | 13         |
| MINIMUM REQUIRED<br>FLOW RATE                | gpm    | 8           | 35        | 35           | 52        | 68         |
|                                              | l/min  | 30          | 130       | 130          | 195       | 256        |
| MAXIMUM ALLOWABLE<br>FLOW RATE               | gpm    | 32          | 67        | 67           | 94        | 107        |
|                                              | l/min  | 120         | 250       | 250          | 350       | 400        |
| MINIMUM HYDRAULIC<br>PRESSURE                | psi    | 3,480       | 4,060     | 4,060        | 3,915     | 3,625      |
|                                              | bar    | 240         | 280       | 280          | 270       | 280        |
| MAXIMUM HYDRAULIC<br>PRESSURE                | psi    | 5,076       | 5,076     | 5,076        | 5,076     | 5,076      |
|                                              | bar    | 350         | 350       | 350          | 350       | 350        |
| MINIMUM HYDRAULIC<br>MOTOR POWER             | hp     | 16          | 80        | 80           | 118       | 160        |
|                                              | kW     | 12          | 60        | 60           | 88        | 120        |
| DYNAMIC MASS<br>INCLUDING UNIVERSAL<br>CLAMP | lbs    | 900         | 1,380     | 1,380        | 2,240     | 2,576      |
|                                              | kg     | 410         | 625       | 625          | 1,008     | 1,150      |
| TOTAL MASS<br>INCLUDING UNIVERSAL<br>CLAMP   | lbs    | 1,150       | 2,112     | 2,123        | 2,834     | 3,360      |
|                                              | kg     | 520         | 960       | 965          | 1,275     | 1,500      |
| MAXIMUM PILE MASS                            | lbs    | 1,760       | 1,760     | 1,760        | 2,240     | 3,136      |
|                                              | kg     | 800         | 800       | 800          | 1,000     | 1,400      |
| MAXIMUM PUSH/PULL<br>LOADING                 | lbs    | 6,171       | 17,600    | 33,600       | 33,600    | 49,500     |
|                                              | kg     | 2,800       | 8000      | 15,000       | 15,000    | 22,500     |
| TYPICAL EXCAVATOR<br>WEIGHT                  | Ton    | 5.5 to 17   | 13 to 39  | 13 to 39     | 27 to 50  | 33 to 60   |
|                                              | Tonne  | 5 to 15     | 12 to 35  | 12 to 35     | 25 to 45  | 30 to 55   |
| CLAMP FORCE                                  | Tonne  | 30          | 36        | 36           | 54        | 66         |
| DIMENSIONS<br>mm (inch)                      | A      | 360 (14.2)  | 560 (22)  | 615 (24)     | 615 (24)  | 750 (29.5) |
|                                              | B      | 25 (1)      | 25 (1)    | 25 (1)       | 32 (1.25) | 40 (1.5)   |
|                                              | C      | 250 (10)    | 250 (10)  | 250 (10)     | 230 (9)   | 230 (9)    |
|                                              | D      | 455 (18)    | 582 (23)  | 582 (23)     | 640 (25)  | 850 (33.5) |
|                                              | E      | 340 (13.4)  | 429 (17)  | 429 (17)     | 510 (20)  | 560 (22)   |
|                                              | F      | 672 (26.5)  | 816 (32)  | 927 (36.5)   | 945 (37)  | 985 (39)   |
|                                              | G      | 942 (37)    | 1085 (43) | 1200 (47.25) | 1250 (49) | 1473 (55)  |
|                                              | H      | 150 (6)     | 150 (6)   | 150 (6)      | 175 (6.9) | 195 (7.7)  |

## Specifications of EMV Product Range

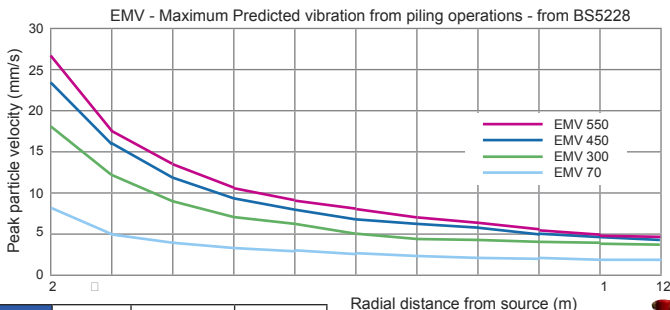


EMV300 Stand = 115kg

| Clamps                   | Mass   |
|--------------------------|--------|
| 300 Universal Clamp      | 163 kg |
| 450 Universal Clamp      | 273 kg |
| 550 Universal Clamp      | 416 kg |
| Caisson Beam with Clamps | 670 kg |

### CAISSON BEAM

Jaw assemblies can be positioned to suit any tube size between Ø550 & 1100mm.



| Crane Suspended Vibro | Total Mass Including Universal Clamp | Dynamic Mass Including Universal Clamp | Total Mass with Caisson Beam & Clamps |
|-----------------------|--------------------------------------|----------------------------------------|---------------------------------------|
| CSV300                | 1520 kg                              | 650 kg                                 | 2027kg                                |
| CSV450                | 1850 kg                              | 900 kg                                 | 2247kg                                |
| CSV550                | 2380 kg                              | 1080 kg                                | 2634kg                                |

Radial distance from source (m)

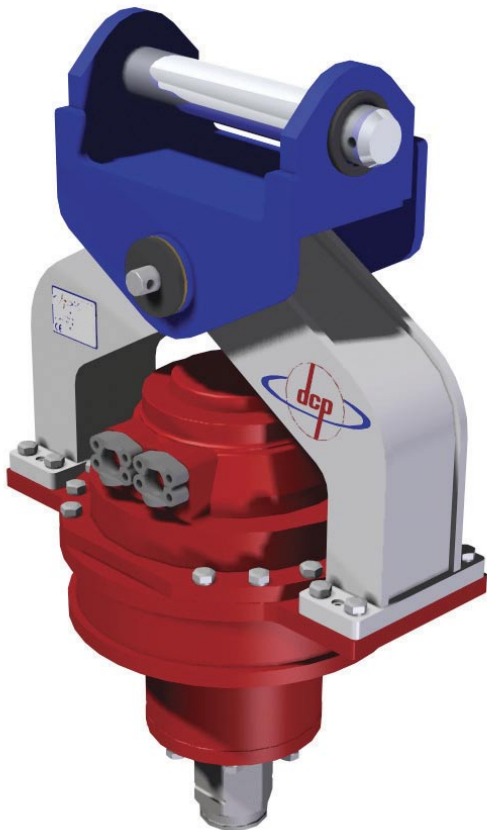
$kW = \frac{\text{Flow (l/min)} \times \text{Pressure (bar)}}{600}$

600





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# EXCAVATOR MOUNTED DRILL

Dawson's excavator mounted drilling machine has been designed to fit via an adaptor plate to the stick arm of an excavator and runs via the flow and return lines that normally supply the bucket.

There are five models to choose from starting at 17,5 kNm up to 48,5 kNm that cover a wide range of applications from drilling precise holes in many varied ground conditions, subject to the auger/drill bit, through to stirring the ground prior to using a Dawson EMV vibro piling machine.

By selecting the correct drill bit combined with the down-crowd force of the excavator the EMD will make light work of the most demanding conditions.

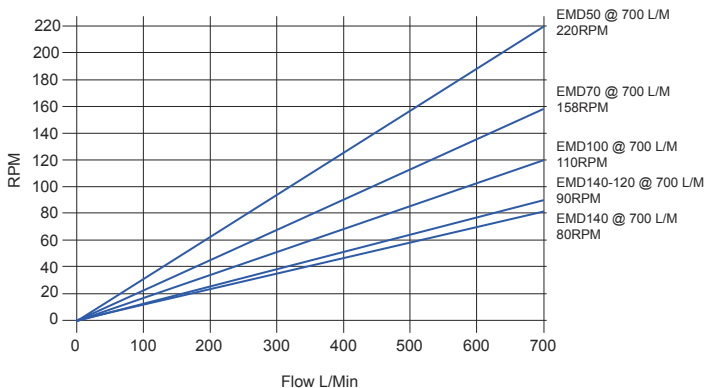
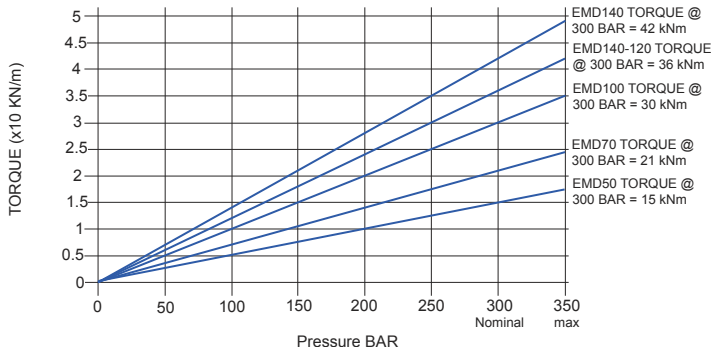
Another benefit of the EMD is that because its mounted on your excavator you can drill vertical holes, anywhere the excavator goes. It's ideal for drilling over casings, on railway embankments, under bridges, or near power lines, + anywhere with low headroom constraints.

## Key Features

- . 5 models to choose from 17,5 to 48,5 kNm torque
- . Easy to fit to a wide choice of Excavators
- . Drill over obstructions, under low bridges, on inclines that traditional rigs cannot do
- . High Power to weight ratio
- . Compact, robust, reliable
- . Connects in place of bucket, using the flow and return lines
- . Standard hexagonal drive shaft 80mm – 100mm

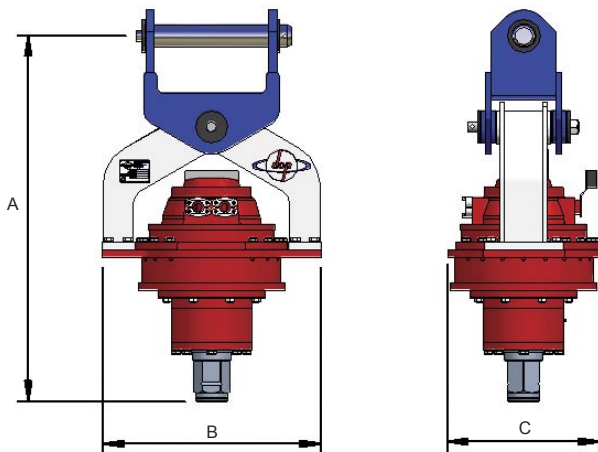


# TECHNICAL SPECIFICATIONS

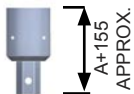




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Typical Hex Adaptor



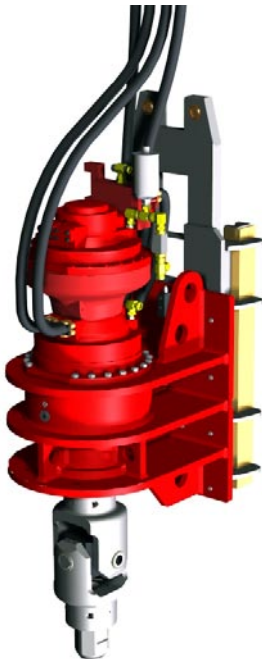
| TYPE        | Dimensions (mm) |     |     |  | WEIGHT (Kg) |
|-------------|-----------------|-----|-----|--|-------------|
|             | A               | B   | C   |  |             |
| EMD 50      | 1250            | 700 | 465 |  | 690         |
| EMD 70      | 1250            | 725 | 500 |  | 710         |
| EMD 100     | 1350            | 805 | 560 |  | 760         |
| EMD 140-120 | 1450            | 905 | 600 |  | 850         |
| EMD 140     | 1450            | 905 | 600 |  | 850         |





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## 11TM Drill



Total weight including stand = 4500kg

Total weight less stand = 4000kg

Max Pressure 350 Bar Single Motor Mode = 60,000 Nm Torque

Max Pressure 350 Bar Twin Motor Mode = 110,000 Nm Torque

Max RPM@ Flow 600L/Min Single Motor Mode = 53 RPM

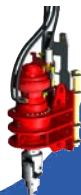
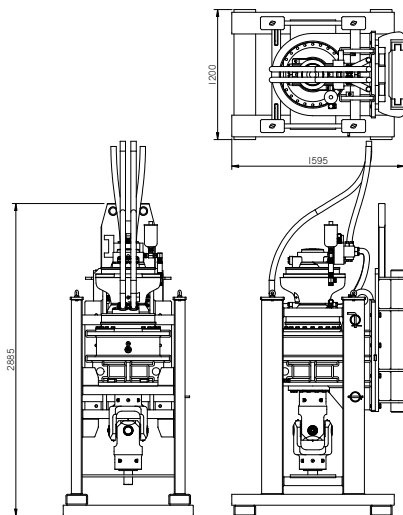
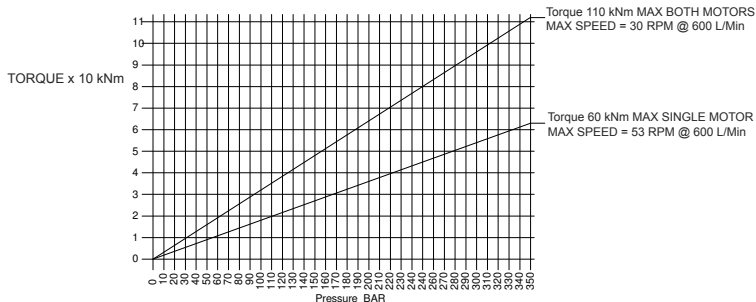
Max RPM@ Flow 600L/Min Twin Motor Mode = 30 RPM

Output Shaft 150 Hex Male with various adaptors.



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# TECHNICAL SPECIFICATIONS







# AUGER CLEANER

Spoil from continuous flight augers should be removed at the lowest possible level so as to prevent rig instability and avoid injury to personnel or damage to machinery due to falling debris.

Units are custom built to suit customer's drilling rigs and auger specifications. An auger cleaner can be adapted to a variety of different auger diameters and pitches using alternative shells. The shell, or barrel, is attached to the underside of the auger cleaner drive.

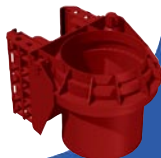
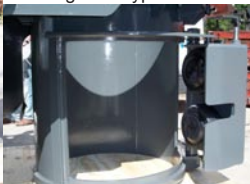
Auger cleaners provide a fast, powerful and productive means of cleaning all soil types from a continuous flight auger. This becomes increasingly important as the diameters increase, particularly with heavy soils. Models are available to clean auger diameters from 300 to 2,000mm, depending on rig specification.

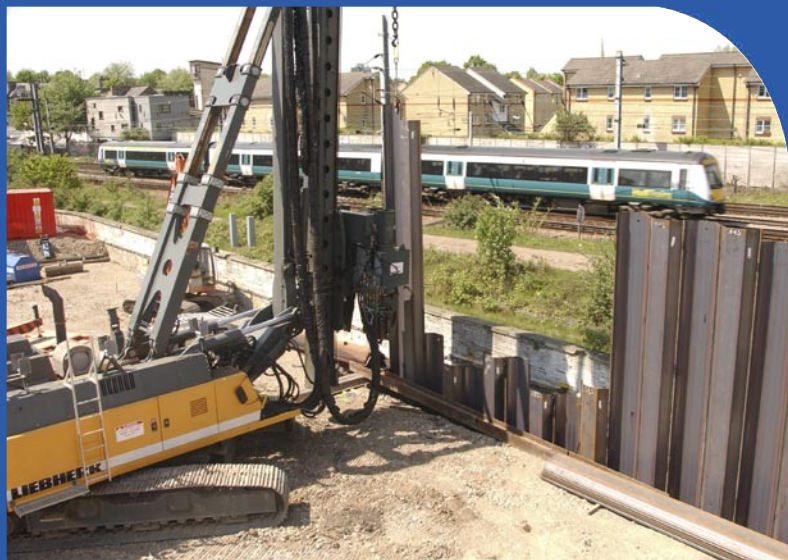


| Model Reference | To Clean Auger Diameters (mm) |
|-----------------|-------------------------------|
| M 600           | 400 - 600                     |
| M 700           | 450 - 700                     |
| M 800           | 450 - 800                     |
| M 900           | 450 - 900                     |
| M 1000          | 500 - 1000                    |
| M 1200          | 500 - 1200                    |
| M 1500          | 750 - 1500                    |
| M 2000          | 900 - 2000                    |



Swing Door type









# SILENT PILING PUSH PULL SYSTEM

Quiet, vibration-less installation and removal of steel sheet and foundation piles

## Principal Advantages

- Quiet and vibration-less
- Powerful Push-Pull force of up to 200 tonnes for effective installation and extraction
- Fast installation or extraction rates deliver high productivity and economy
- Ready configured to suit Z, U & H-pile profiles in groups of between 2 to 6
- No reaction frame required to start pile installation - unlike conventional pile presses
- Corner piles easily installed without reaction frame
- Offers truly recyclable foundation solutions
- Standard Z-piles can be installed close to property boundaries - maximise development footprint
- Leader guided operation reduces interlock friction and produces high quality, accurate installations
- Piles can be removed, returning site to original 'greenfield' condition
- Piles can be threaded without the use of a crane



## Extra Advantages

- Can be configured to install high capacity foundation piles formed by interlocking 4, 5 or 6 sheet piles in a box - SWL capacities up to 1400 tonnes
- No spoil removal to landfill
- No ground heave
- Pile capacity measured during installation
- Immediate loading
- Low mass/volume material transport
- Will accept side loads
- Piles can be extended out of the ground to form permanent piers or columns



# TECHNICAL SPECIFICATIONS

| SPECIFICATION                        | UNITS      | Push Pull Type            |                       |                       |                        |
|--------------------------------------|------------|---------------------------|-----------------------|-----------------------|------------------------|
|                                      |            | 2-Cylinder<br>U & Z-piles | 4-Cylinder<br>Z-piles | 4-Cylinder<br>U-piles | 4-Cylinder<br>Box Pile |
| <b>PUSH PULL</b>                     |            |                           |                       |                       |                        |
| PRESSING FORCE PER CYLINDER          | kN         | 2,078                     | 2,078                 | 2,078                 | 2,078                  |
|                                      | tons (US)  | 233                       | 233                   | 233                   | 233                    |
| EXTRACTION FORCE PER CYLINDER        | kN         | 2,078                     | 2,078                 | 2,078                 | 2,078                  |
|                                      | tons (US)  | 233                       | 233                   | 233                   | 233                    |
| MAXIMUM CYLINDER ADVANCE DISTANCE    | mm         | 600                       | 600                   | 600                   | 600                    |
|                                      | in         | 23.6                      | 23.6                  | 23.6                  | 23.6                   |
| CYLINDER ADVANCE RATE                | mm/min     | 5,890                     | 5,890                 | 5,890                 | 5,890                  |
|                                      | in/mm      | 232                       | 232                   | 232                   | 232                    |
| WEIGHT*                              | kg         | 7,000                     | 13,000                | 13,000                | 13,000                 |
|                                      | lbs        | 15,430                    | 28,650                | 28,650                | 28,650                 |
| REQUIRED HYDRAULIC PRESSURE          | bar        | 350                       | 350                   | 350                   | 350                    |
|                                      | psi        | 5,075                     | 5,075                 | 5,075                 | 5,075                  |
| MINIMUM REQUIRED HYDRAULIC FLOW RATE | l/min      | 350                       | 350                   | 350                   | 350                    |
|                                      | gpm (US)   | 93                        | 93                    | 93                    | 93                     |
| ELECTRICAL SUPPLY                    | Volts/Amps | 24DC/10A                  | 24DC/15A              | 24DC/15A              | 24DC/15A               |

\* Weight will vary depending on leader mounting arrangements

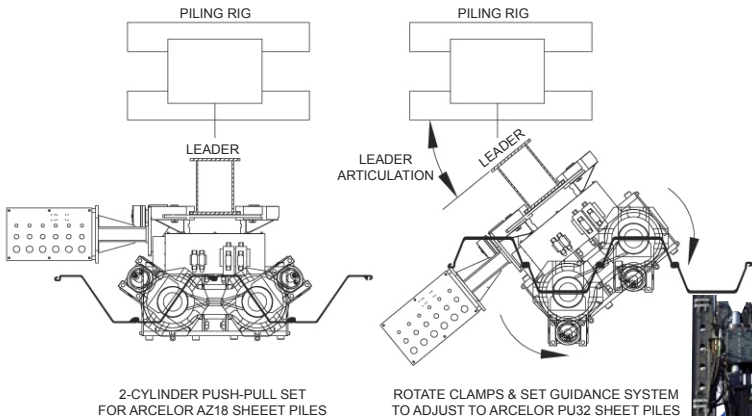


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### Leader Articulation

The leader should have the ability to articulate or pivot (in plan view). This is typical of any rig that has been engineered to undertake sheet-pile work - though alternative arrangements can be supplied. This feature offers two significant operational benefits:

- The entire piling process is faster, more economic and safer when the operator has the ability to see what he is doing. Lead articulation means the operator can position the leader for good visibility with minimum track movement.
- The 2-Cylinder Push-Pull unit can accommodate numerous pile profiles simply by articulating the lead and/or adjusting the rotational setting of the individual cylinder assemblies. The example below shows the same 2-Cylinder Push-Pull unit working with Arcelor AZ18 and PU32 steel sheet piles. The centres of the two Modular Hydraulic Cylinder Sub-Assemblies remains the same, but the Adjustable Guidance System is altered to correctly align the Clamp Assemblies with the clamping faces of each pile.





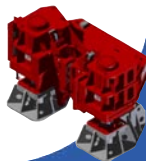
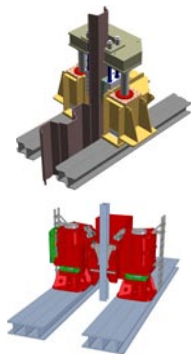
# UNIVERSAL SHEET PILE EXTRACTION



The D.C.P. Universal Pile Extractor is a vibration free hydraulic pile extraction device, which is suitable for extracting a wide range of pile types from a large variety of ground types.

## Principal Advantages

- Quiet and vibration-less hydraulic pile extraction system
- 400 tonne to 1000 tonne extraction force
- Can extract 'H' piles, 'U' and 'Z' profile sheets. With modification it can be used to extract tubular piles
- Typical extraction rate: 3m/min (118"/min)
- Uses the ground as reaction (as opposed to other piles) hence stand alone piles can be extracted
- Safer than extracting piles using a vibrator or pulling with a crane



# TECHNICAL SPECIFICATIONS

## Technical Specifications

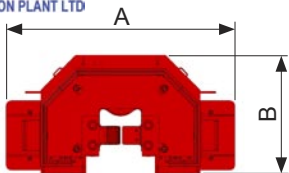
|                                   | X400      |           | X1000    |             |
|-----------------------------------|-----------|-----------|----------|-------------|
| MAXIMUM EXTRACTION FORCE          | 4000 kN   | 408 t     | 9700kN   | 1090t (US)  |
| RAM SPEED                         | 3 m/min   | 118"/min  | 3m/min   | 118"/min    |
| MAXIMUM HYDRAULIC OIL PRESSURE    | 200 bar   | 2900p.s.i | 350bar   | 5075psi     |
| MAXIMUM HYDRAULIC OIL FLOW        | 300 l/min | 66 g.p.m  | 400l/min | 106gpm (US) |
| EXTRACTION DISTANCE (EACH STROKE) | 750mm     | 29.5"     | 500mm    | 19.7"       |
| DIMENSION A                       | 3295mm    | 129.7"    | 3780mm   | 148.8"      |
| DIMENSION B                       | 1700mm    | 66.9"     | 2100mm   | 82.7"       |
| DIMENSION C - RETRACTED           | 2225mm    | 87.6"     | 2650mm   | 104"        |
| DIMENSION C - EXTENDED            | 2975mm    | 117.1"    | 3150mm   | 124"        |
| DIMENSION D                       | 995mm     | 39"       | 1180mm   | 46.5"       |
| DIMENSION E                       | 2295mm    | 90"       | 3580mm   | 141"        |
| DIMENSION F                       | 1700mm    | 67"       | 1900mm   | 74.8"       |
| DIMENSION G                       | 1200mm    | 47"       | 1524mm   | 60"         |
| TOTAL WEIGHT                      | 16000kg   | 35275lbs  | 26500kg  | 58400lbs    |

|                                                                  | X400   | X1000  |
|------------------------------------------------------------------|--------|--------|
| Minimum pile height extending from ground required to clamp to = | 1581mm | 1905mm |
| Lowered clamp height =                                           | 1200mm | 1524mm |
| Spreader beam height =                                           | 381mm  | 381mm  |

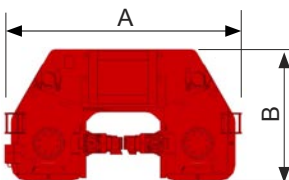
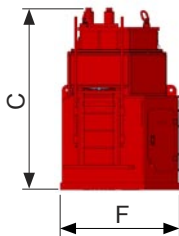
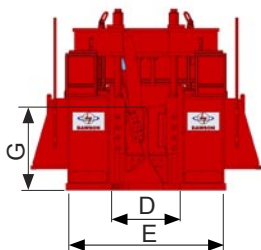
Spreader beam dimensions - 8000mm x 1185mm x 381mm



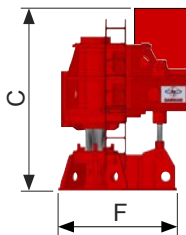
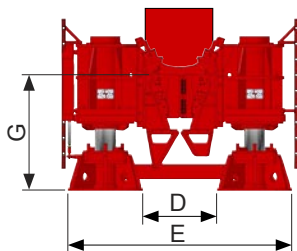
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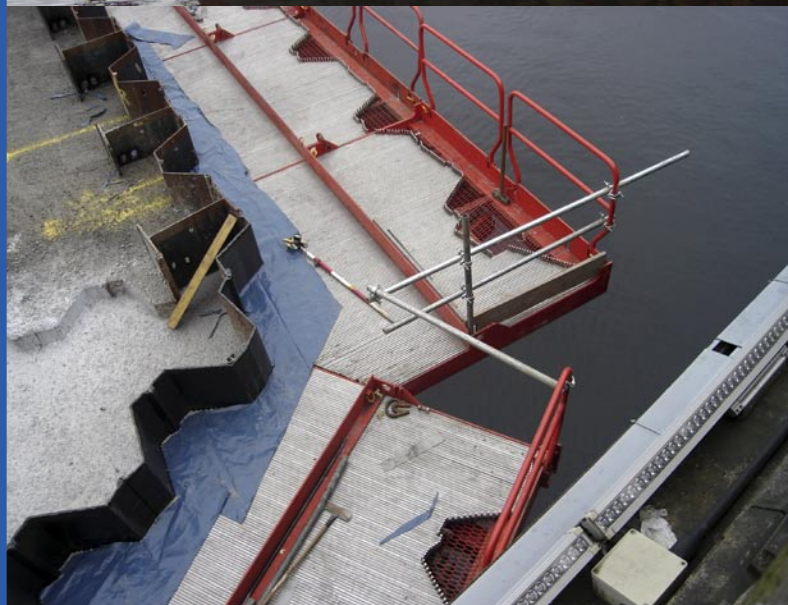
**X400**



**X1000**









# SHEET PILE CAPPING SYSTEM

The Redeb/Multi-pile Soffit Panel system provides a fast economical method of support shuttering for capping beams on permanent sheet piling works such as: River banks, Sea walls, Piers and Jetties; Flood alleviation work.

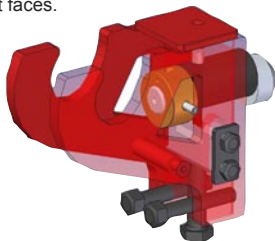
- Replaces slow, labour and material intensive on-site fabricated methods
- Greatly increases speed of working
- Quickly dismantled for re-use
- No damage to sheet piles

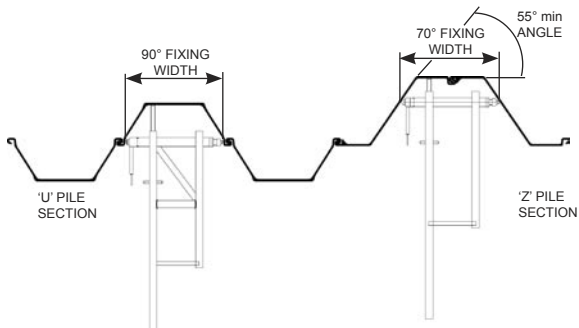
## MEDIUM + HEAVY DUTY SYSTEM

- Can be installed on flat or round faces
- Requires Ø53mm hole MDBS
- Requires Ø85mm hole HDS

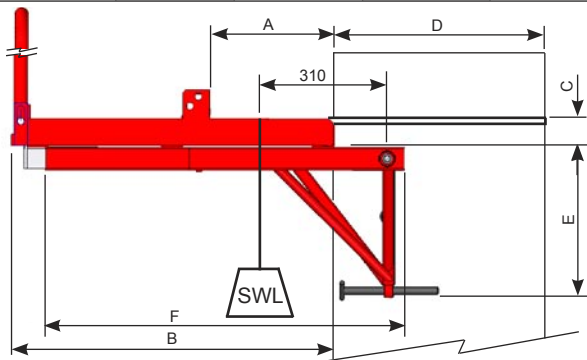
## MDBS - MEDIUM DUTY BRACKET SUPPORT

To be used with the current Redeb Support Bracket, increase current capacity for AZ/AU pile to 3000Kg. Allows brackets to be used on round + flat faces.





| MODEL  | Fixing Width (mm) |     |                |     |
|--------|-------------------|-----|----------------|-----|
|        | 70° HARD POINT    |     | 90° HARD POINT |     |
|        | MIN               | MAX | MIN            | MAX |
| RSB500 | 447               | 524 | 433            | 510 |
| RSB600 | 532               | 609 | 518            | 595 |
| RSB700 | 652               | 729 | 638            | 715 |

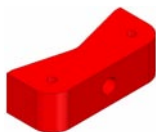


|              | Panel Sizes |       |         |        |
|--------------|-------------|-------|---------|--------|
|              | 2.5M        | 3M    | 3M DEEP | HD     |
| A            | 435         | 435   | 435     | 750    |
| B            | 1130        | 1130  | 1330    | 2250   |
| C            | 100         | 100   | 100     | 225    |
| D            | 510         | 510   | 712     | 1300   |
| PANEL WEIGHT | 360kg       | 450kg | 477.5kg | 2000kg |

# TECHNICAL SPECIFICATIONS

|        | Support Brackets |        |        |        |       |
|--------|------------------|--------|--------|--------|-------|
|        | RSB225           | RSB500 | RSB600 | RSB700 | HD    |
| E      | 475              | 475    | 524    | 525    | 1840  |
| F      | 705              | 1250   | 1250   | 1250   | 2690  |
| WEIGHT | -                | 20kg   | 25.5kg | 27.5kg | 500kg |

|                                               | Capping System |                       |         |         |           |
|-----------------------------------------------|----------------|-----------------------|---------|---------|-----------|
|                                               | Z              | Z +LOCATION<br>BUTTON | U       | MDBS    | HD        |
| SWL PER BRACKET                               | 1500 kg        | 2000 kg               | 2000 kg | 3000 kg | 15,000 kg |
| MAX MASS INCLUDING<br>PANEL, PER LINEAR METRE | 1000 kg        | 1300 kg               | 1300 kg | 2000 kg | 10,000 kg |



## V-BLOCK

To be used in conjunction with the M.D.B.S and R.S.B. Bracket. The V-Block locates over the end of the R.S.B. lower adjusting bolt preventing it from slipping off round tubular piles.

|          |             |
|----------|-------------|
| Part No. | MDBS-028-01 |
|----------|-------------|

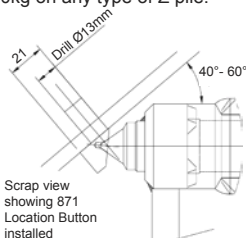


Ø13mm

## LOCATION BUTTONS

To be used on piles such as AZ17-700 and AZ13-770 which have angles too shallow to attach to standard system. Minimum included angle possible 40°, max angle 60°, see attached sketch. Also increase load carrying capacity to 2000kg on any type of Z pile.

|          |     |
|----------|-----|
| Part No. | 871 |
|----------|-----|



Scrap view  
showing 871  
Location Button  
installed





# EURO GROUND RELEASE SHACKLES

This robust pile lifting shackle was contractor designed and developed over many years of site use and abuse. The use of these shackles compliments the "Feet on the Ground" approach to piling. When used in conjunction with the Sheet Pile Threader, there is no need for site operatives to go above the safety of top frame level for interlocking sheet piles or releasing the lifting shackles. The shackles are suitable for lifting all steel piles up to 28mm thick and within the safe working load of the shackle. The shackle is stiffened to resist spreading of the forks when lifting at 90° to the axis of the pile. (See "Safety Check List"). When lifting sheet piles in pairs or individual piles weighing more than the Safe Working Load of the shackle, it is necessary to use multiple shackles in order to keep within the safe working load. Pairs of shackles can be supplied mounted on a two legged steel wire rope sling. The advantage being that the standard pair of shackles with lifting sling can be fitted to any pair of Larssen 'U' piles, Frodingham 'Z' piles, pipe or box piles. No additional parts or change of components is necessary. The ring at the top of the sling can be hooked directly onto a standard crane hook block, 'D' shackle or fork anchor. Shackles can also be fitted onto a solid steel cross head according to customers requirements.

## FEATURES

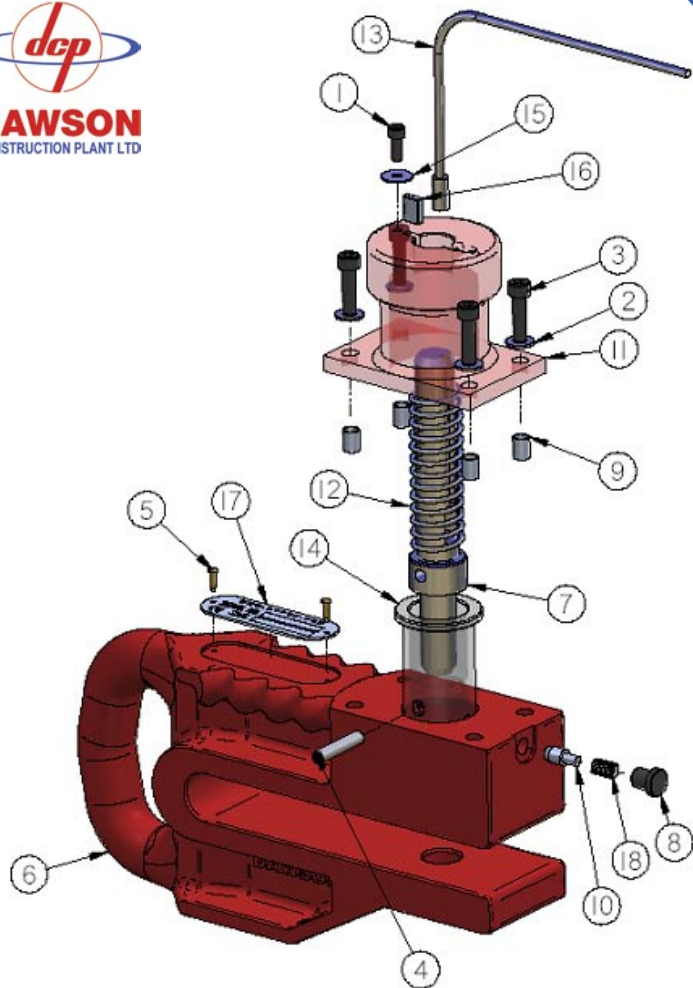
- Robust High Strength cast steel body. High alloy steel plunger
- Plunger mechanism concealed for maximum protection
- Plunger mechanism easily detachable for maintenance
- Heavy web stiffening to withstand side left (i.e. 90° to the axis) imposed when lifting piles from a stack  
(See "Safety Check List" for correct working practice)

| Model No.    | Description                           |
|--------------|---------------------------------------|
| 5983         | 4T EGRS 150 Throat General Assembly   |
| 5984         | 7.5T EGRS 150 Throat General Assembly |
| 5985         | 10T EGRS 150 Throat General Assembly  |
| 5986         | 7.5T EGRS 250 Throat General Assembly |
| 5987         | 10T EGRS 250 Throat General Assembly  |
| GRS-017 ISSA | Optional Remote Release Detent Kit    |





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# PARTS LIST

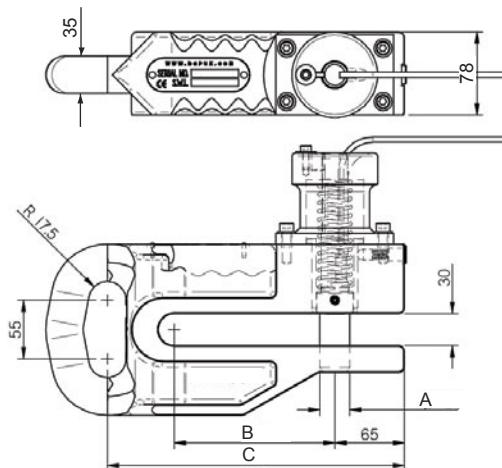
| Euro Ground Release Shackle |          |                       |             |      |      |           |
|-----------------------------|----------|-----------------------|-------------|------|------|-----------|
| Item No.                    | Quantity | Part Name             | 5983        | 5984 | 5985 | 5986 5987 |
| 1                           | 1        | Socket Head Cap Screw | 0M06.016.02 |      |      |           |
| 2                           | 4        | Socket Head Cap Screw | 0M08-030-02 |      |      |           |
| 3                           | 4        | Washer                | 0M08.000.20 |      |      |           |
| 4                           | 1        | Coiled Spring Pin     | 0M08.040.36 |      |      |           |
| 5                           | 2        | No6 x 1/2" Rivet      | 1-204-00-01 |      |      |           |
| 6                           | 1        | EGRS Throat           | 5903        | 5904 | 5905 | 5906 5907 |
| 7                           | 1        | Plunger               | 5908        | 5909 | 5913 | 5909 5913 |
| 8                           | 1        | M12 X 1.5 Plug        | 5915        |      |      |           |
| 9                           | 4        | Dowel Bushing         | 5916        |      |      |           |
| 10                          | 1        | Detent Pin            | 5919        |      |      |           |
| 11                          | 1        | Tube Assembly         | 5922A-B     |      |      |           |
| 12                          | 1        | Compression Spring    | 5926        |      |      |           |
| 13                          | 1        | Safety Pull Wire Assy | 5930A       |      |      |           |
| 14                          | 1        | Sleeve                | 5931        |      |      |           |
| 15                          | 1        | M6 x Ø19 Washer       | 5936        |      |      |           |
| 16                          | 1        | Guide Key             | 5937        |      |      |           |
| 17                          | 1        | Shackle ID Plate      | 5938        |      |      |           |
| 18                          | 1        | Compression Spring    | 6935        |      |      |           |





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# GROUND RELEASE SHACKLE DIMENSIONS



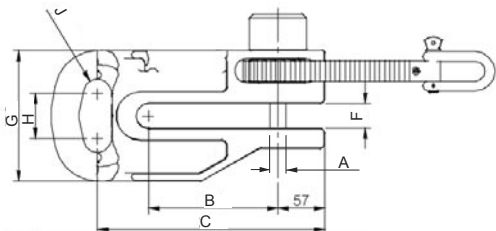
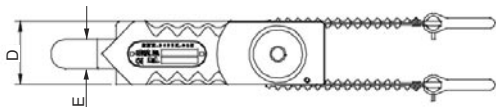
|              | Model No. |      |      |      |      |
|--------------|-----------|------|------|------|------|
|              | 5983      | 5984 | 5985 | 5986 | 5987 |
| WEIGHT<br>KG | 17.5      | 17.5 | 17.5 | 21.5 | 21.5 |
| A            | Ø22       | Ø28  | Ø35  | Ø28  | Ø35  |
| B            | 150       | 150  | 150  | 250  | 250  |
| C            | 277       | 277  | 277  | 377  | 377  |



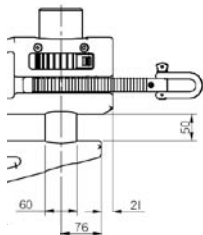


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# RATCHET RELEASE SHACKLE DIMENSIONS



3.5T- 10T ERRS 150/250/300 THROAT



40T ERRS 250 THROAT

|        | Model No. |       |       |       |       |       |       |       |      |      |       |
|--------|-----------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|
|        | 681       | 682   | 683   | 684   | 686   | 687   | 688   | 689   | 692A | 693A | 6962A |
| WEIGHT | 15kg      | 19kg  | 15kg  | 19kg  | 19kg  | 15kg  | 19kg  | 15kg  | 22kg | 22kg | 67kg  |
| A      | Ø20       | Ø20   | Ø24   | Ø24   | Ø27   | Ø35   | Ø35   | Ø27   | Ø27  | Ø35  | Ø60   |
| B      | 158       | 258   | 158   | 258   | 258   | 158   | 258   | 158   | 303  | 303  | 239   |
| C      | 277       | 377   | 277   | 377   | 377   | 277   | 377   | 277   | 360  | 360  | 457   |
| D      | 78        | 78    | 78    | 78    | 78    | 78    | 78    | 78    | 80   | 80   | 125   |
| E      | 35        | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 40   | 40   | 60    |
| F      | 30        | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 32   | 32   | 50    |
| G      | 160       | 160   | 160   | 160   | 160   | 160   | 160   | 160   | 202  | 202  | 280   |
| H      | 55        | 55    | 55    | 55    | 55    | 55    | 55    | 55    | 60   | 60   | 80    |
| J      | R17.5     | R17.5 | R17.5 | R17.5 | R17.5 | R17.5 | R17.5 | R17.5 | R20  | R20  | R40   |





# EURO RATCHET RELEASE SHACKLES

This robust lifting shackle was contractor designed and developed over many years of site use and abuse. The use of these shackles compliments the "Feet on the Ground" approach to steel erection and pile installation. There is no need for site operatives to go into a dangerous position to release the lifting attachment.

The shackle is stiffened to resist spreading of the forks when lifting at 90° to the axis of the lift (see "Safety Check List"). The Ratchet Shackle is designed for lifting steel through standard bolt holes or other units of lift having a suitable hole through which the pin can be conveniently and safely engaged.

## FEATURES

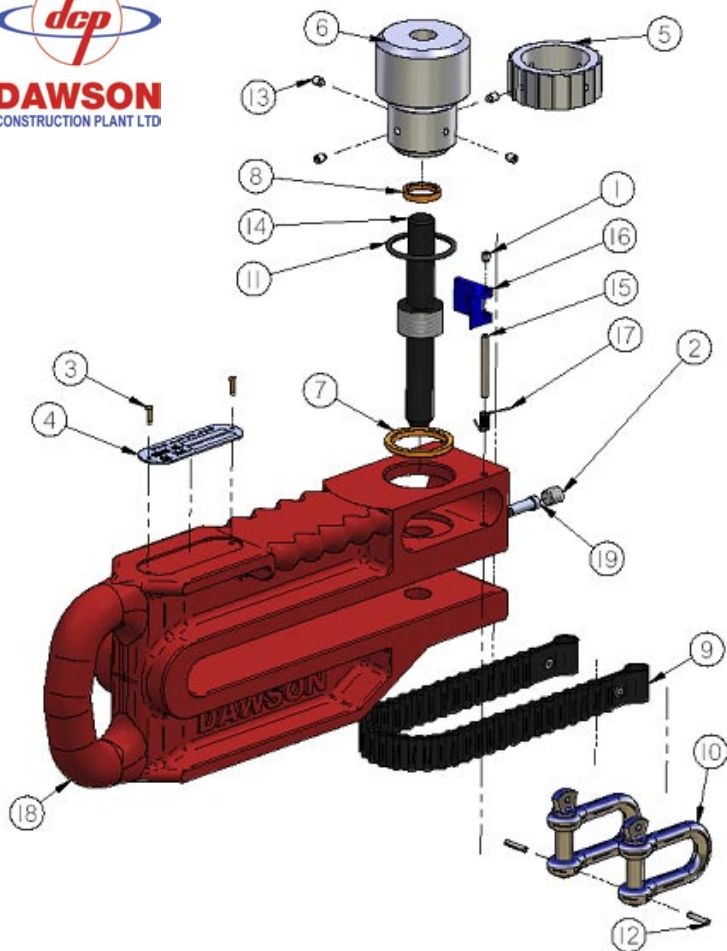
- . Robust High Strength cast steel body
  - . Pin mechanism concealed for maximum protection
  - . Pin mechanism easily detachable for maintenance
  - . Can be used for lifting columns, pipe piles, sheet piles & steel fabrications
  - . Heavy web stiffening to withstand side lift (i.e. 90° to the axis) imposed when lifting from the horizontal.
- (See "Safety Check List for correct working practice)

| Model No. | Description                           |
|-----------|---------------------------------------|
| 681       | 3.5T ERRS 150 Throat General Assembly |
| 682       | 3.5T ERRS 250 Throat General Assembly |
| 683       | 5T ERRS 150 Throat General Assembly   |
| 684       | 5T ERRS 250 Throat General Assembly   |
| 686       | 7.5T ERRS 250 Throat General Assembly |
| 687       | 10T ERRS 150 Throat General Assembly  |
| 688       | 10T ERRS 250 Throat General Assembly  |
| 689       | 7.5T ERRS 150 Throat General Assembly |
| 692A      | 7.5T ERRS 300 Throat General Assembly |
| 693A      | 10T ERRS 300 Throat General Assembly  |
| 6962A     | 40T ERRS 250 Throat General Assembly  |





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# PARTS LIST

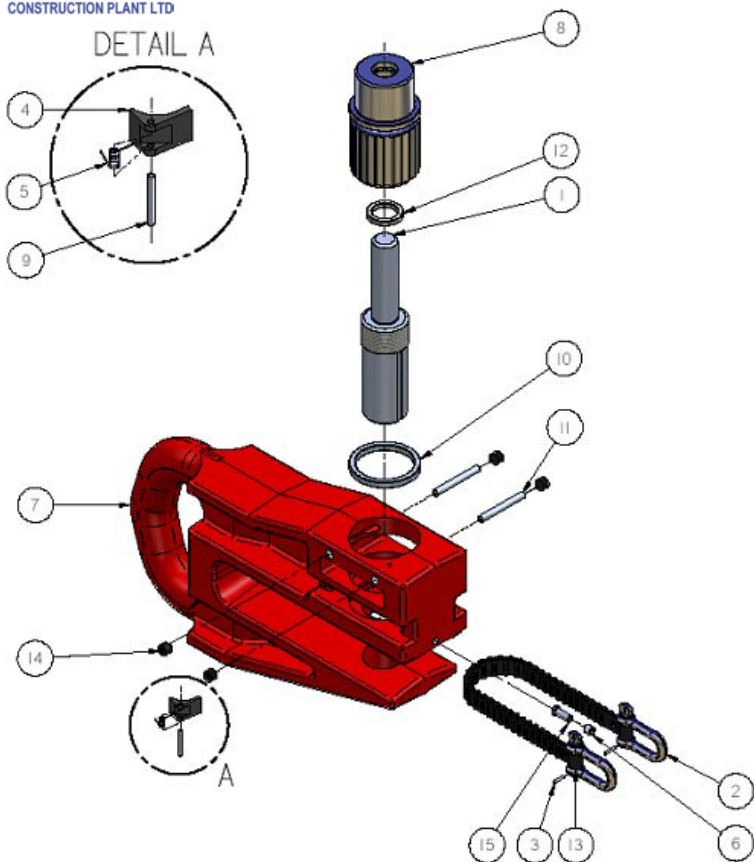
| Euro Ratchet Release Shackle |     |                               |             |       |       |       |       |       |       |       |      |      |
|------------------------------|-----|-------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|------|------|
| Item No.                     | Qty | Part Name                     | 681         | 682   | 683   | 684   | 686   | 687   | 688   | 689   | 692A | 693A |
| 1                            | 1   | Socket Set Screw<br>M6 x 6    | 0M06.006.05 |       |       |       |       |       |       |       |      |      |
| 2                            | 1   | Socket Set Screw<br>M12 x 12  | 0M12-012-05 |       |       |       |       |       |       |       |      |      |
| 3                            | 2   | No.6 x 1/2" Rivet             | 1-204-00-01 |       |       |       |       |       |       |       |      |      |
| 4                            | 1   | Shackle ID Plate              | 5938        |       |       |       |       |       |       |       |      |      |
| 5                            | 1   | Ratchet Collar<br>Machined    | 604         |       |       |       |       |       |       |       |      | 642  |
| 6                            | 1   | Release Nut                   | 605         |       |       |       |       |       |       |       |      | 643  |
| 7                            | 1   | Nylon Ring                    | 606         | 606   | 606   | 606   | 606   | 644   | 644   | 606   | 606  | 644  |
| 8                            | 1   | Nylon Buffer /<br>Rubber Stop | 607 / 607R  |       |       |       |       |       |       |       |      |      |
| 9                            | 1   | Ratchet Belt Assy             | 608A        |       |       |       |       |       |       |       |      |      |
| 10                           | 2   | Small D Shackle               | 609         |       |       |       |       |       |       |       |      |      |
| 11                           | 1   | O-Ring                        | 610         |       |       |       |       |       |       |       |      |      |
| 12                           | 2   | Spring Pin                    | 0M04.020.22 |       |       |       |       |       |       |       |      |      |
| 13                           | 4   | Dog P't Grub<br>Screw         | 0M06.008.16 |       |       |       |       |       |       |       |      |      |
| 14                           | 1   | Threaded Pin                  | 621         | 621   | 671   | 671   | 601   | 641   | 641   | 601   | 601  | 641  |
| 15                           | 1   | Pivot Pin                     | 626         |       |       |       |       |       |       |       |      |      |
| 16                           | 1   | Pawl                          | 627         |       |       |       |       |       |       |       |      |      |
| 17                           | 1   | Pawl Spring                   | 628         |       |       |       |       |       |       |       |      |      |
| 18                           | 1   | ERRS Main Body                | 661/A       | 666/A | 662/A | 667/A | 668/A | 664/A | 669/A | 663/A | 678  | 679  |
| 19                           | 1   | Guide Peg                     | 672         |       |       |       |       |       |       |       |      |      |





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DETAIL A



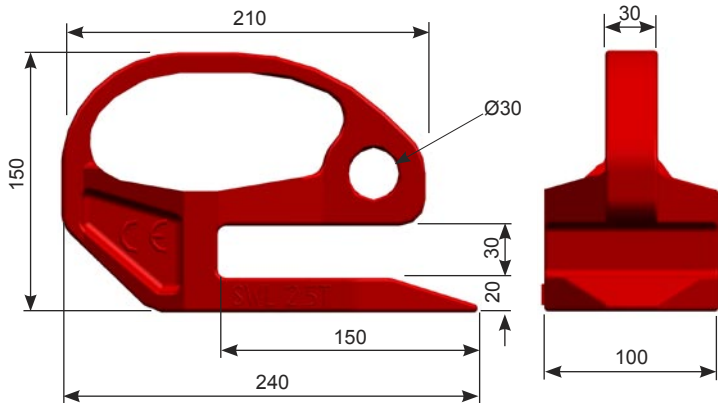


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## PARTS LIST

| 40T Ratchet Release Shackle |          |                             |              |
|-----------------------------|----------|-----------------------------|--------------|
| Item No.                    | Quantity | Part Name                   |              |
| 1                           | 1        | Threaded Pin                | 6962A        |
| 2                           | 2        | Small D Shackle             | 6912         |
| 3                           | 2        | Spring Pin                  | 609          |
| 4                           | 1        | Pawl                        | 0M04.020.22  |
| 5                           | 1        | Pawl Spring                 | 627          |
| 6                           | 1        | M12x12 Flat Nose Grub Screw | 628          |
| 7                           | 1        | Main Body                   | 0M12.012.05  |
| 8                           | 1        | Release Nut                 | 6902/A       |
| 9                           | 1        | Pivot Pin                   | 6920         |
| 10                          | 1        | Bearing Washer              | 6923         |
| 11                          | 2        | Location Bar                | 6930         |
| 12                          | 1        | Nylon / Rubber Buffer Stop  | 6931         |
| 13                          | 1        | Ratchet Belt Assembly       | 6932 / 6932R |
| 14                          | 4        | Plain Cup Point Set Screw   | 6936A        |
| 15                          | 1        | Guide Pin                   | 0M16.016.05  |
|                             |          |                             | 6942         |



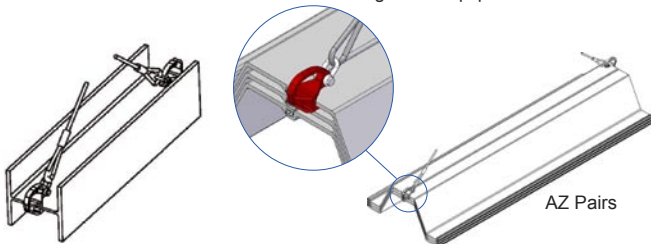


Dimensions (mm) Weight: 6,0 Kg

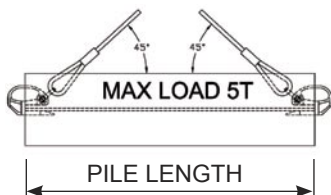
Critical Min. Lift Angle 45°

Lifting straps must be of equal length.

Angles less than 45° could result in an over loading of the equipment.



| PILE LENGTH | MIN. SLING LEG LENGTH |
|-------------|-----------------------|
| 5M          | 3.5M                  |
| 10M         | 7M                    |
| 20M         | 14M                   |
| 30M         | 21M                   |



$$1/2 \text{ PILE LENGTH} \times 1.414 = \text{MIN SLING LEG LENGTH}$$



# STEEL HANDLING SHOE



## SWL 2.5 Tonnes

For safe handling of steel sections and splitting from stacks.

The DCP Lifting Shoe is purpose designed for handling structural sections of steel in workshops, stockyards and on construction sites.

Shoes should be used in pairs on steel wire rope or chain slings or on a spreader beam.

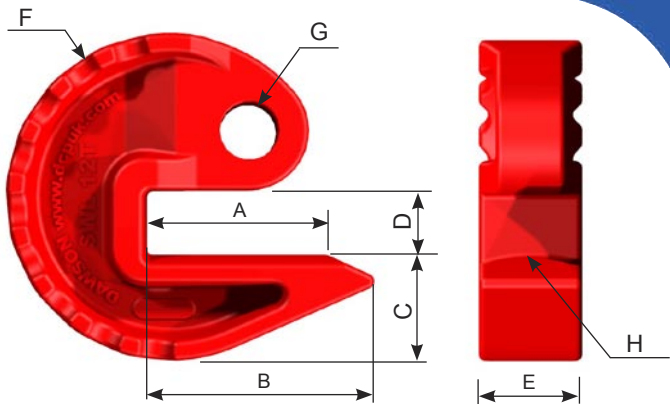
### QUALITY ASSURANCE

Body - high quality alloy steel casting.

Inspection procedures:

- 20% batch x-ray
- 100% ultrasonic inspection
- 100% MPI



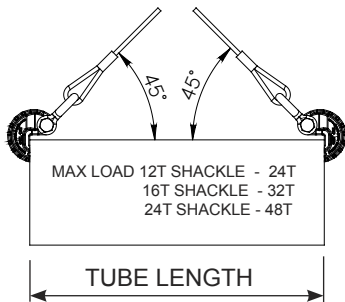
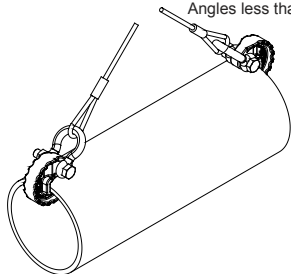


| Model    | Dimensions |     |     |    |     |      |     |      |
|----------|------------|-----|-----|----|-----|------|-----|------|
|          | A          | B   | C   | D  | E   | F    | G   | H    |
| 12 Tonne | 140        | 175 | 80  | 50 | 80  | R125 | Ø45 | R124 |
| 16 Tonne | 164        | 190 | 88  | 60 | 100 | R143 | Ø54 | R305 |
| 24 Tonne | 235        | 260 | 122 | 80 | 120 | 187  | Ø62 | R305 |

Critical Min. Lift Angle 45°

Lifting straps must be of equal length.

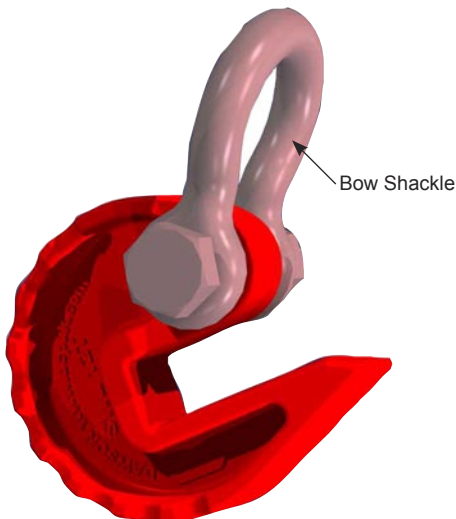
Angles less than 45° could result in an over loading of the equipment.



| TUBE LENGTH | MIN. SLING LEG LENGTH |
|-------------|-----------------------|
| 5M          | 3.5M                  |
| 10M         | 7M                    |
| 20M         | 14M                   |
| 30M         | 21M                   |

$1/2 \text{ TUBE LENGTH} \times 1.414 = \text{MIN SLING LEG LENGTH}$

# PIPE LIFTING SHOE

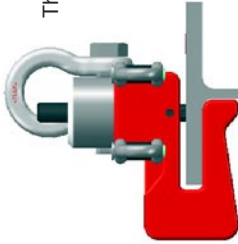


## 12 / 16 / 24 Tonne

The 12 / 16 / 24 tonne pipe lifting shoes are made from a high grade cast steel allowing weight reduction to be made in the design. New features include a radial profile engagement face and all round grip handling ridges.

|                                | 12 Tonne | 16 Tonne | 24 Tonne |
|--------------------------------|----------|----------|----------|
| Part Number                    | 908      | 909      | 910      |
| Total Weight of shoe & shackle | 25 kg    | 38.5 kg  | 67.5 kg  |
| Weight of Shoe                 | 17.25 kg | 25 kg    | 47.5 kg  |
| SWL per pair                   | 24 Tonne | 32 Tonne | 48 Tonne |
| SWL Bow Shackle                | 17 Tonne | 25 Tonne | 35 Tonne |





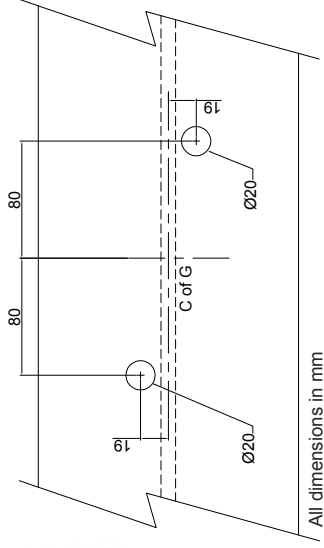
406x178x74

Through To

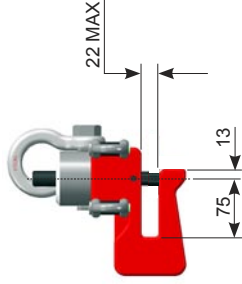


127x76x13

One hole of  $\varnothing 20\text{mm}$  in the flange, positional in either of the places shown is all that's required



What Beam Size?



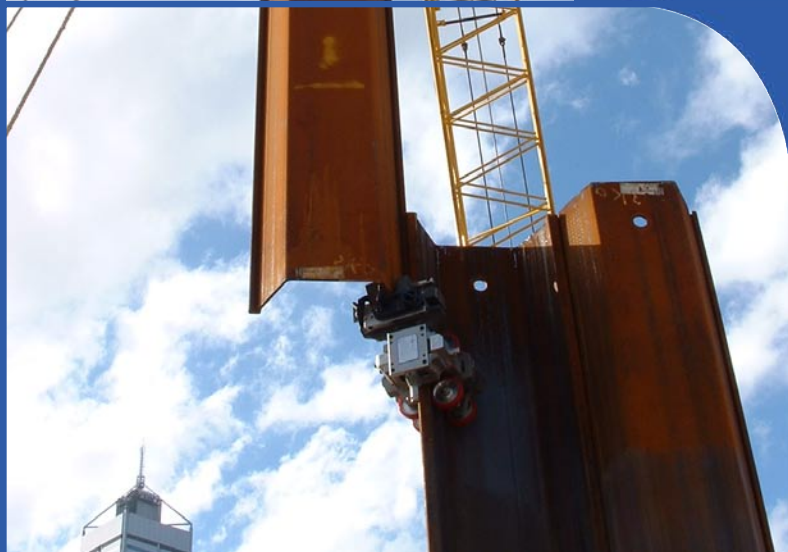
# EURO RATCHET RELEASE BEAM SHACKLE



## SWL 3.0 Tonnes

The Ratchet Release Beam Shackle is designed to enable steel beams to be lifted into position, and for the shackle to be disconnected safely and efficiently from a remote position. Achieving this result makes the work, faster, more economical and safer.





# UNIVERSAL SHEET PILE THREADER

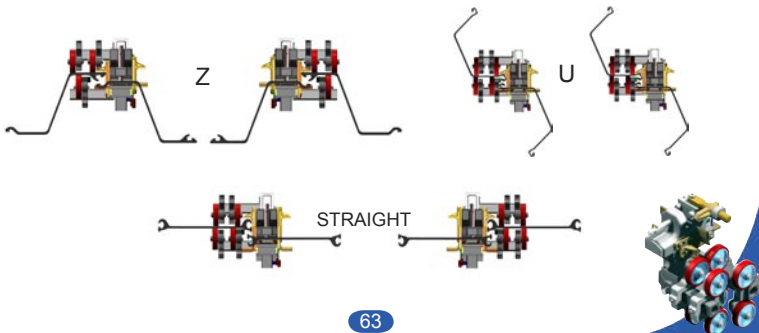
The Dawson Universal Sheet Pile Threader has been developed to enable a safe, easy and productive method of pitching sheet piles. The need for a "top man" is eliminated as all operations can be performed at ground or top frame level. The Universal Sheet Pile Threader can be set up for virtually all Larssen and Z section sheet piles, and once set correctly will quickly interlock the piles with one simple movement. Care should be taken during the set-up procedure to ensure that each adjustment is accurately set, extra time spent here will be saved tenfold during operation.

Within one pile section there may be several variations. On a "Z" section interlocks are usually different at each end. The leading can also be left or right hand.

The Universal Sheet Pile Threader can accommodate these variations with the simple adjustment of roller positions. This can be accomplished on site by offering the Sheet Pile Threader up to a pile and adjusting the rollers to the correct position. They are now set for a left or right hand threading.

**USPT Weights & Dimensions**

| Complete Assembly | Complete Assembly in Aluminium Case | Roller Assembly | Threading Head Assembly | Dimensions of Aluminium Case |
|-------------------|-------------------------------------|-----------------|-------------------------|------------------------------|
| 51kg              | 64kg                                | 27kg            | 24kg                    | 780x580x400                  |





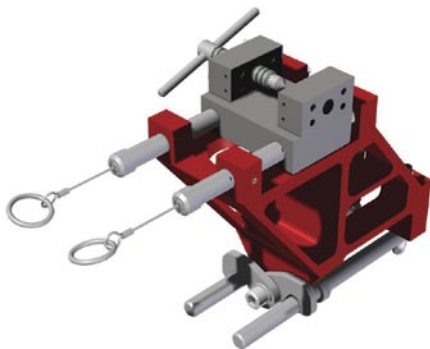
# SHEET PILE THREADER

Sheet Pile Threaders offer a complete 'feet on the ground' approach to steel sheet piling when used in conjunction with remote Release Shackles. Improve productivity and working safety.

The one basic guide frame is standard for ALL "Z" section piles, ALL straight web piles and "U" piles of size 2 and upwards. Below this size may require modifications to the main frame, but the principal of operation remains the same.

The different sections are accommodated simply by inserting appropriate rollers onto the lower spindles which form part of the lower clamp. These rollers fit the pile profile to give positive and accurate location. Different stop plates are attached to the top grip to suit different pile sections.

| SPT Model               | Weight | Part Number |
|-------------------------|--------|-------------|
| Standard Aluminium Body | 21kg   | T050A       |
| Heavy Duty Steel Body   | 40kg   | T051        |





# PILE EXTRACTION CLAMPS

Finish the extraction of steel piles safely and productively. Once extracted the piles can be laid down precisely where required, avoiding the pitfalls of releasing piles from the jaws of a vibrator

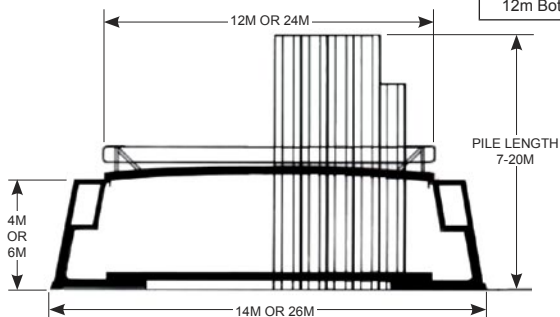
**Pile Extraction Clamp Weights & Dimensions**

| Model | Maximum Extracting Force | SWL       | Weight of Clamp | Part Number | Lifting Hole in Pile             |
|-------|--------------------------|-----------|-----------------|-------------|----------------------------------|
| 20T   | 20 Tonne                 | 2.5 Tonne | 305kg           | PEC 20T     | Min Ø40mm<br>150mm From Pile Top |
| 40T   | 40 Tonne                 | 2.5 Tonne | 500kg           | PEC 40T     | Min Ø35mm<br>150mm From Pile Top |

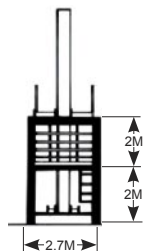




|                    | Weight |
|--------------------|--------|
| 4m Trestle         | 2.5T   |
| 6m Trestle         | 3.0T   |
| 12m Walkway Waling | 2.8T   |
| 24m Walkway Waling | 6.2T   |
| 12m Bottom Waling  | 1.8T   |

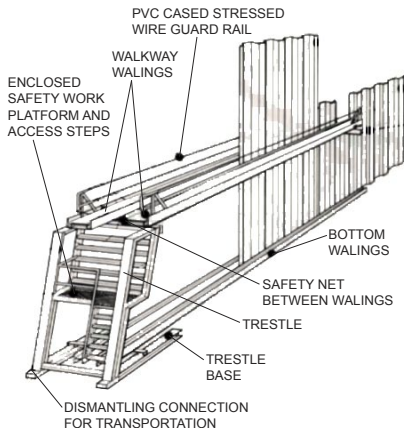


SIDE ELEVATION



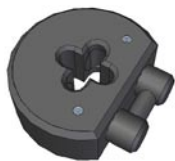
END ELEVATION

# SHEET PILE GUIDE FRAMES



A complete temporary guide frame system to hold and support a panel of steel piles whilst they are installed. Guide walings are incorporated at two levels to provide precise guidance and support.

Upper walings are designed as personnel walkways in accordance with current regulations, end trestles provide safe personnel access and full structural support. The system readily transports as one load and can be quickly assembled on site using proprietary connectors. Working panel lengths of either 12 or 24m (40' or 80') can be accommodated with upper walings at either 4 or 6m (13' or 20').



## CHAIN CLAMP

For all lifting applications. The unit indexes along the links of the chain and locks into place giving a quick and simple chain lock for lifting.

### Features

- SWL of 2000kg for the 8mm chain clamp  
3200kg for the 10mm chain clamp
- Robust high strength steel body
- Designed to withstand vibration - no screws or bolts!
- Minimal parts for durability
- Proof loading to twice the safe working load
- Quick coupling and release from load

| Part Number | Chain Type | Safe Working Load |
|-------------|------------|-------------------|
| TLR 360     | 10mm       | 3.2 Tonnes        |
| 4082        | 8mm        | 2 Tonnes          |



# PILE POINTS & SPLICERS

A range of products are available that enhance the performance and productivity of driven piling. Pile Points help to protect the leading edge of the driven pile thus maintaining its chosen mechanical properties. These are available to suit: pipe piles; sheet piles; timber and H-piles. Piles Splicers speed-up the alignment and butt-welding of piles being joined end to end. They are available for pipe as either drive on or weld on items, and for H piles as weld on only.

## Key Features

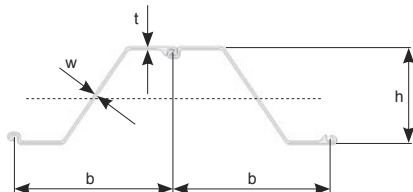
- Reinforce the pile toe, increasing the piles resistance to buckling, maintaining the profiles shape
- Reduce skin friction in certain ground conditions minimising installation forces
- Improve the end bearing for load bearing piles
- Cast-in "cutting teeth" help to break debris and boulders then cut into rock for full bearing, even on inclined strata
- May permit the use of lighter piling sections in some applications e.g. pipe piles
- Can help to reduce surface damage to coated piles during installation
- Points available to suit: pipe, sheet, timber and H-piles





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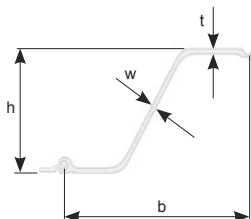
# PILE SECTIONS - Z



|               | Z Section | Width<br>b<br>(mm) | Height<br>h<br>(mm) | Thickness           |                  | Mass           |                                                    | Elastic<br>section<br>Modulus<br>(cm <sup>3</sup> /m) | Moment<br>of Inertia<br>(cm <sup>4</sup> /m) |
|---------------|-----------|--------------------|---------------------|---------------------|------------------|----------------|----------------------------------------------------|-------------------------------------------------------|----------------------------------------------|
|               |           |                    |                     | Flange<br>t<br>(mm) | Web<br>w<br>(mm) | Pile<br>(kg/m) | Wall<br>per m <sup>2</sup><br>(kg/m <sup>2</sup> ) |                                                       |                                              |
| ArcelorMittal | AZ 12     | 670                | 302                 | 8.5                 | 8.5              | 66.1           | 99                                                 | 1200                                                  | 18140                                        |
|               | AZ 13     | 670                | 303                 | 9.5                 | 9.5              | 72.0           | 107                                                | 1300                                                  | 19700                                        |
|               | AZ 14     | 670                | 304                 | 10.5                | 10.5             | 78.3           | 117                                                | 1400                                                  | 21300                                        |
|               | AZ 17     | 630                | 379                 | 8.5                 | 8.5              | 68.4           | 109                                                | 1665                                                  | 31580                                        |
|               | AZ 18     | 630                | 380                 | 9.5                 | 9.5              | 74.4           | 118                                                | 1800                                                  | 34200                                        |
|               | AZ 19     | 630                | 381                 | 10.5                | 10.5             | 81.0           | 129                                                | 1940                                                  | 36980                                        |
|               | AZ 25     | 630                | 426                 | 12.0                | 11.2             | 91.5           | 145                                                | 2455                                                  | 52250                                        |
|               | AZ 26     | 630                | 427                 | 13.0                | 12.2             | 97.8           | 155                                                | 2600                                                  | 55510                                        |
|               | AZ 28     | 630                | 428                 | 14.0                | 13.2             | 104.4          | 166                                                | 2755                                                  | 58940                                        |
|               | AZ 37-700 | 700                | 499                 | 17.0                | 12.2             | 124.2          | 177.4                                              | 3705                                                  | 92400                                        |
|               | AZ 39-700 | 700                | 500                 | 18.0                | 13.2             | 131.9          | 188.4                                              | 3900                                                  | 97500                                        |
|               | AZ 41-700 | 700                | 501                 | 19.0                | 14.2             | 139.5          | 199.4                                              | 4095                                                  | 102610                                       |
|               | AZ 46     | 580                | 481                 | 18.0                | 14.0             | 132.6          | 229                                                | 4595                                                  | 110450                                       |
|               | AZ 48     | 580                | 482                 | 19.0                | 15.0             | 139.6          | 241                                                | 4800                                                  | 115670                                       |
|               | AZ 50     | 580                | 483                 | 20.0                | 16.0             | 146.7          | 253                                                | 5015                                                  | 121060                                       |
|               |           |                    |                     |                     |                  |                |                                                    |                                                       |                                              |
| Hoesch        | 1706      | 675                | 380                 | 8.7                 | 8.4              | 74.8           | 110.8                                              | 1700                                                  | 32300                                        |
|               | 1806      | 675                | 380                 | 9.5                 | 9.3              | 79.3           | 117.5                                              | 1800                                                  | 34200                                        |
|               | 1856K     | 675                | 380                 | 10.1                | 10.0             | 83.5           | 123.7                                              | 1860                                                  | 35340                                        |
|               | 1906      | 675                | 380                 | 10.4                | 10.3             | 85.3           | 126.3                                              | 1900                                                  | 36200                                        |



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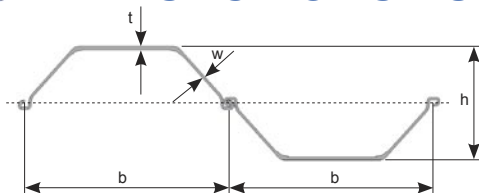
|           | Z Section | Width<br>b<br>(mm) | Height<br>h<br>(mm) | Thickness           |                  | Mass           |                                                    | Elastic<br>section<br>Modulus<br>(cm <sup>3</sup> /m) | Moment<br>of Inertia<br>(cm <sup>4</sup> /m) |
|-----------|-----------|--------------------|---------------------|---------------------|------------------|----------------|----------------------------------------------------|-------------------------------------------------------|----------------------------------------------|
|           |           |                    |                     | Flange<br>t<br>(mm) | Web<br>w<br>(mm) | Pile<br>(kg/m) | Wall<br>per m <sup>2</sup><br>(kg/m <sup>2</sup> ) |                                                       |                                              |
| Chaparral | PZC 12    | 708                | 318                 | 8.5                 | 8.5              | 69.1           | 97.6                                               | 1200                                                  | 19080                                        |
|           | PZC 13    | 708                | 319                 | 9.5                 | 9.5              | 75.1           | 106                                                | 1300                                                  | 20755                                        |
|           | PZC 14    | 708                | 320                 | 10.7                | 10.7             | 81.8           | 115.5                                              | 1400                                                  | 22445                                        |
|           | PZC 17    | 635                | 386                 | 8.5                 | 8.5              | 69.1           | 108.8                                              | 1670                                                  | 32235                                        |
|           | PZC 18    | 635                | 387                 | 9.5                 | 9.5              | 75.1           | 118.2                                              | 1800                                                  | 34890                                        |
|           | PZC 19    | 635                | 388                 | 10.7                | 10.7             | 81.8           | 128.8                                              | 1945                                                  | 37780                                        |
|           | PZC 25    | 708                | 449                 | 14.2                | 12.3             | 103.3          | 145.9                                              | 2455                                                  | 55190                                        |
|           | PZC 26    | 708                | 450                 | 15.2                | 13.3             | 110            | 155.4                                              | 2600                                                  | 58460                                        |
|           | PZC 28    | 708                | 451                 | 16.4                | 14.5             | 117.6          | 166.1                                              | 2755                                                  | 62145                                        |
|           | PZC 34    | 630                | 505                 | 15.7                | 14.3             | 115.4          | 183.2                                              | 3430                                                  | 86685                                        |
|           | PZC 36    | 630                | 506                 | 16.6                | 15.2             | 121.7          | 193.2                                              | 3600                                                  | 91140                                        |
|           | PZC 38    | 630                | 507                 | 17.7                | 16.3             | 129.2          | 205.1                                              | 3800                                                  | 96450                                        |
|           | PZ 22     | 559                | 235                 | 9.5                 | 9.5              | 110.6          | -                                                  | 990                                                   | 11620                                        |
|           | PZ 27     | 457                | 307                 | 9.5                 | 9.5              | 135.1          | -                                                  | 1660                                                  | 25580                                        |
|           | PZ 35     | 575                | 384                 | 15.4                | 12.7             | 170.8          | -                                                  | 2635                                                  | 50455                                        |
|           | PZ 40     | 500                | 417                 | 15.2                | 12.7             | 195.2          | -                                                  | 3300                                                  | 68645                                        |

Note - Information shown for guidance only.  
Please refer to manufacturer for latest information.



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## PILE SECTIONS - U



|               | U<br>Section | Width<br>b<br>(mm) | Height<br>h<br>(mm) | Thickness           |                  | Mass           |                                                    | Elastic<br>section<br>Modulus<br>(cm <sup>3</sup> /m) | Moment<br>of Inertia<br>(cm <sup>4</sup> /m) |
|---------------|--------------|--------------------|---------------------|---------------------|------------------|----------------|----------------------------------------------------|-------------------------------------------------------|----------------------------------------------|
|               |              |                    |                     | Flange<br>t<br>(mm) | Web<br>w<br>(mm) | Pile<br>(kg/m) | Wall<br>per m <sup>2</sup><br>(kg/m <sup>2</sup> ) |                                                       |                                              |
| ArcelorMittal | AU 14        | 750                | 408                 | 10.0                | 8.3              | 77.9           | 104                                                | 1410                                                  | 28710                                        |
|               | AU 16        | 750                | 411                 | 11.5                | 9.3              | 86.3           | 115                                                | 1600                                                  | 32850                                        |
|               | AU 17        | 750                | 412                 | 12.0                | 9.7              | 89.0           | 119                                                | 1665                                                  | 34270                                        |
|               | AU 18        | 750                | 441                 | 10.5                | 9.1              | 88.5           | 118                                                | 1780                                                  | 39300                                        |
|               | AU 20        | 750                | 444                 | 12.0                | 10.0             | 96.9           | 129                                                | 2000                                                  | 44440                                        |
|               | AU 21        | 750                | 445                 | 12.5                | 10.3             | 99.7           | 133                                                | 2075                                                  | 46180                                        |
|               | AU 23        | 750                | 447                 | 13.0                | 9.5              | 102.1          | 136                                                | 2270                                                  | 50700                                        |
|               | AU 25        | 750                | 450                 | 14.5                | 10.2             | 110.4          | 147                                                | 2500                                                  | 56240                                        |
|               | AU 26        | 750                | 451                 | 15.0                | 10.5             | 113.2          | 151                                                | 2580                                                  | 58140                                        |
|               | PU 8R        | 600                | 280                 | 7.5                 | 6.9              | 48.7           | 81                                                 | 775                                                   | 10830                                        |
|               | PU 9R        | 600                | 360                 | 7.0                 | 6.4              | 49.5           | 82                                                 | 940                                                   | 16930                                        |
|               | PU 10R       | 600                | 360                 | 8.0                 | 7.0              | 53.8           | 90                                                 | 1055                                                  | 18960                                        |
|               | PU 11R       | 600                | 360                 | 9.0                 | 7.6              | 58.1           | 97                                                 | 1165                                                  | 20960                                        |
|               | PU 12        | 600                | 360                 | 9.8                 | 9.0              | 66.1           | 110                                                | 1200                                                  | 21600                                        |
|               | PU 13R       | 675                | 400                 | 10.0                | 7.4              | 65.6           | 97                                                 | 1285                                                  | 25690                                        |
|               | PU 14R       | 675                | 400                 | 11.0                | 8.0              | 70.5           | 104                                                | 1400                                                  | 28000                                        |
|               | PU15R        | 675                | 400                 | 12.0                | 8.6              | 75.4           | 112                                                | 1515                                                  | 30290                                        |
|               | PU 18        | 600                | 430                 | 11.2                | 9.0              | 76.9           | 128                                                | 1800                                                  | 38650                                        |
|               | PU 22        | 600                | 450                 | 12.1                | 9.5              | 86.1           | 144                                                | 2200                                                  | 49460                                        |
|               | PU 28        | 600                | 454                 | 15.2                | 10.1             | 101.8          | 170                                                | 2840                                                  | 64460                                        |





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|                   | U<br>Section | Width<br>b<br>(mm) | Height<br>h<br>(mm) | Thickness           |                  | Mass           |                                                    | Elastic<br>section<br>Modulus<br>(cm <sup>3</sup> /m) | Moment<br>of Inertia<br>(cm <sup>4</sup> /m) |
|-------------------|--------------|--------------------|---------------------|---------------------|------------------|----------------|----------------------------------------------------|-------------------------------------------------------|----------------------------------------------|
|                   |              |                    |                     | Flange<br>t<br>(mm) | Web<br>w<br>(mm) | Pile<br>(kg/m) | Wall<br>per m <sup>2</sup><br>(kg/m <sup>2</sup> ) |                                                       |                                              |
| Arcelor<br>Mittal | PU 32        | 600                | 452                 | 19.5                | 11.0             | 114.1          | 190                                                | 3200                                                  | 72320                                        |
|                   | L3S          | 500                | 400                 | 14.1                | 10.0             | 78.9           | 158                                                | 2000                                                  | 40010                                        |
|                   | GU 7-600     | 600                | 309                 | 7.5                 | 6.4              | 47.0           | 78                                                 | 735                                                   | 11350                                        |
|                   |              |                    |                     |                     |                  |                |                                                    |                                                       |                                              |
| Hoesch            | L 755        | 750                | 450                 | 11.7                | 10.0             | 95.6           | 127.5                                              | 2000                                                  | 45000                                        |
|                   | L 703        | 700                | 400                 | 9.5                 | 8.0              | 67.5           | 96.4                                               | 1210                                                  | 24200                                        |
|                   | L 703 K      | 700                | 400                 | 10.0                | 9.0              | 72.1           | 103                                                | 1300                                                  | 25950                                        |
|                   | L 704        | 700                | 440                 | 10.2                | 9.5              | 80.5           | 115                                                | 1600                                                  | 35200                                        |
|                   | L 600        | 600                | 150                 | 9.5                 | 9.5              | 56.4           | 94                                                 | 510                                                   | 3840                                         |
|                   | L 600 K      | 600                | 150                 | 10.0                | 10.0             | 59.4           | 99                                                 | 540                                                   | 4050                                         |
|                   | L 601        | 600                | 310                 | 7.5                 | 6.4              | 46.3           | 77.2                                               | 745                                                   | 11520                                        |
|                   | L 602        | 600                | 310                 | 8.2                 | 8.0              | 53.4           | 89                                                 | 830                                                   | 12870                                        |
|                   | L 603        | 600                | 310                 | 9.7                 | 8.2              | 64.8           | 108                                                | 1200                                                  | 18600                                        |
|                   | L 603 K      | 600                | 310                 | 10.0                | 9.0              | 68.1           | 113.5                                              | 1240                                                  | 19220                                        |
|                   | L 604        | 600                | 380                 | 10.5                | 9.0              | 74.5           | 124.2                                              | 1620                                                  | 30710                                        |
|                   | L 605        | 600                | 420                 | 12.5                | 9.0              | 83.5           | 139.2                                              | 2020                                                  | 42370                                        |
|                   | L 605 K      | 600                | 420                 | 12.2                | 10.0             | 86.7           | 144.5                                              | 2030                                                  | 42550                                        |
|                   | L 606 n      | 600                | 435                 | 14.4                | 9.2              | 94.2           | 157                                                | 2500                                                  | 54375                                        |
|                   | L 607 n      | 600                | 452                 | 19.0                | 10.6             | 114            | 190                                                | 3200                                                  | 72320                                        |
|                   | L 23         | 500                | 420                 | 11.5                | 10.0             | 77.5           | 155                                                | 2000                                                  | 42000                                        |
|                   | L 24         | 500                | 420                 | 15.6                | 10.0             | 87.5           | 175                                                | 2500                                                  | 52500                                        |
|                   | L 24/12      | 500                | 420                 | 15.6                | 12.0             | 92.7           | 185.4                                              | 2550                                                  | 53610                                        |
|                   | L25          | 500                | 420                 | 20.0                | 11.5             | 103            | 206                                                | 3040                                                  | 63840                                        |
|                   | L 43         | 500                | 420                 | 12.0                | 12.0             | 83             | 166                                                | 1660                                                  | 34900                                        |

Note - Information shown for guidance only.  
Please refer to manufacturer for latest information.



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# USEFUL INFORMATION

## Linear Measure

|        |            |     |                             |
|--------|------------|-----|-----------------------------|
| 1 inch | = 25.4mm   | 1mm | = 0.03937 inch              |
| 1 foot | = 0.3048m  | 1cm | = 0.3937 inch               |
| 1 yard | = 0.9144m  | 1m  | = 3.2809 feet or 1.0936 yds |
| 1 mile | = 1.6093km | 1km | = 0.6214 mile               |

## Square Measure

|           |                         |                  |                                 |
|-----------|-------------------------|------------------|---------------------------------|
| 1 sq inch | = 645.16mm <sup>2</sup> | 1cm <sup>2</sup> | = 0.155 sq in                   |
| 1 sq foot | = 0.0928m <sup>2</sup>  | 1m <sup>2</sup>  | = 10.7639 sq ft or 1.196 sq yds |
| 1 sq yard | = 0.8361m <sup>2</sup>  | 1 hectare        | = 2.4711 acres                  |
| 1 acre    | = 0.4047 hectare        |                  |                                 |
| 1 sq mile | = 259 hectares          | 1km <sup>2</sup> | = 247.105 acres                 |
| 1 hectare | = 10,000m <sup>2</sup>  |                  |                                 |

## Cubic Measurement

|              |                         |                  |                                          |
|--------------|-------------------------|------------------|------------------------------------------|
| 1 cubic inch | = 16.387cm <sup>3</sup> | 1mm <sup>3</sup> | = 0.000061 cubic in                      |
| 1 cubic foot | = 0.0283m <sup>3</sup>  | 1m <sup>3</sup>  | = 35.3147 cubic ft<br>or 1.308 cubic yds |
| 1 cubic yard | = 0.7646m <sup>3</sup>  |                  |                                          |

## Weight

|         |                          |          |              |
|---------|--------------------------|----------|--------------|
| 1 oz    | = 28.35kg                | 1g       | = 0.0353 oz  |
| 1 pound | = 0.4536kg               | 1kg      | = 2.2046 lb  |
| 1 ton   | = 1.016 tonnes or 1016Kg | 1 tonnes | = 0.9842 ton |

## Velocity

|             |                  |           |                     |
|-------------|------------------|-----------|---------------------|
| 1 ft/min    | = 5.08mm/sec     | 1 mm/sec  | = 0.19685 ft/min    |
| 1 mile/hour | = 1.609334 km/hr | 1 km/hour | = 0.621371 miles/hr |

## Stress

|                        |                            |                     |                               |
|------------------------|----------------------------|---------------------|-------------------------------|
| 1 lbf/in <sup>2</sup>  | = 0.006895N/m <sup>2</sup> | 1N/m <sup>2</sup>   | = 145.038lbf/in <sup>2</sup>  |
| 1 tonf/in <sup>2</sup> | = 15.444N/m <sup>2</sup>   | 1 N/mm <sup>2</sup> | = 0.6350 tonf/in <sup>2</sup> |

## Density

|                      |                              |                    |                              |
|----------------------|------------------------------|--------------------|------------------------------|
| 1 lb/ft <sup>3</sup> | = 16.085kg/m <sup>3</sup>    | 1kg/m <sup>3</sup> | = 0.062428lb/ft <sup>3</sup> |
| 1 lb/gallon          | = 0.099766 g/cm <sup>3</sup> | 1g/cm <sup>3</sup> | = 10.0224lb/gallon           |



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**Pressure**

1 in H<sub>2</sub>O = 1.868mm Hg

1 bar = 0.9869 atm

1 lbf/ft<sup>2</sup> = 47.88N/m<sup>2</sup>

1 Bar = 14.5 psi

1mm Hg = 0.5352 in H<sub>2</sub>O

1atm = 1.013 bar

1N/m<sup>2</sup> = 0.02089 lbf/ft<sup>2</sup>

1 psi = 0.0689655 Bar

---

**Flow rates**

1 gall/min = 0.2728m<sup>3</sup>/hour

1 ft<sup>3</sup>/min = 0.4719 litres/min

1m<sup>3</sup>/hour = 3.666 gallons/min

1 litre/sec = 2.119 ft<sup>3</sup>/minute

---

**Torque**

1 lbf in = 0.1130Nm

1 lbf ft = 0.1383kg f m

1Nm = 8.851 lb ft

1kgf m = 7.233lb ft

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**Typical Density of Materials**

Concrete

Ally

Steel

Water

= 2400 kg/m<sup>3</sup>

= 2700 kg/m<sup>3</sup>

= 7850 kg/m<sup>3</sup>

= 1000 kg/m<sup>3</sup>



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## NOTES

[illegible]





# PRODUCT SUMMARY

WORLDWIDE  
DEALER  
NETWORK

GLOBAL  
SUPPLY,  
LOCAL  
SUPPORT.

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