

|                  |             |  |
|------------------|-------------|--|
| <b>Customer</b>  | :           | <b>Behran Asanbar</b>                              |
| <b>Reference</b> | :           | <b>Selection HW135, 480Kg - 1 m/s (VVVF - 9HP)</b> |
| <b>Offer</b>     | <b>N° :</b> | <b>TEST</b>  |
|                  | <b>Date</b> | <b>13/01/2016</b>                                  |

### TECHNICAL SECTION

| <u>PLANT</u>  |                        | <u>GEARBOX</u>           |         | <u>GEARBOX SELECTION CHECK</u>   |                 |                 |             |
|---|------------------------|--------------------------|---------|--|-----------------|-----------------|-------------|
| Position  | ↑                      | Gearbox type             | HW135   | <b>Item</b>  | <b>Required</b> | <b>Selected</b> | <b>Test</b> |
| Roping  | 1:1                    | Traction sheave position | ┌T (L)  | Car rated speed  | 1,00 m/s        | 1,03 m/s        | +2,8%       |
| Balance   | 50 %                   | Ratio                    | 42/1    | Output torque  | 960 Nm          | 1.080 Nm        | +12,5%      |
| Duty load   | 480 Kg                 | Traction sheave diam.    | 550 mm  | Static load  | 1.822 Kg        | 2.300 Kg        | +26,3%      |
| Car weight  | 550 Kg                 | Ropes number             | 4       | Grooves edges  | min 2,0 mm      | 5,3 mm          | OK !!       |
| Counterweight   | 790 Kg                 | Ropes diameter           | 10      | Tr.Sh. Sides   | min 3,4 mm      | 4,1 mm          | OK !!       |
| Shaft efficiency                                      | 0,80                   | Groove type              | Y       | Motor power  | 5,3 kW          | 6,1 kW          | +15,1%      |
| Car travel  | 30,0 m                 | V-Angle                  | 35 °    | <b>Ropes safety according to EN81/1:1985</b>                           |                 |                 |             |
| Ropes compensation                                    | 0 %                    | Undercut angle           | 105 °   | Safety factor  | 12,0            | 20,7            | OK !!       |
| Rope comp. weight                                     | 0,0 Kg                 | Wrap angle               | 155 °   | <b>Ropes safety according to EN81/1:1998</b>                           |                 |                 |             |
| Ropes distance  | 700 mm                 | Pitch of grooves         | 17,0 mm | Safety factor  | 14,4            | 20,7            | OK !!       |
| Car rated speed                                       | 1,00 m/s               | Undercut                 | 7,93 mm | <b>Traction and spec.press. according to EN81/1:1985</b>               |                 |                 |             |
| Mass of tension device                                | 0 Kg                   | Tract. ropes weight      | 44,8 Kg | T <sub>1</sub> /T <sub>2</sub> * c <sub>1</sub> * c <sub>2</sub> (a) = | max 2,247       | 2,178           | OK !!       |
| Weight/m of traveling cable                           | 0 Kg/m                 | <b>MOTOR</b>             |         | T <sub>1</sub> /T <sub>2</sub> * c <sub>1</sub> * c <sub>2</sub> (b) = | max 2,247       | 2,186           | OK !!       |
| Ropes strength class                                  | 1770 N/mm <sup>2</sup> | Drive system             | VVVF    | Specific pressure  | max 8,190       | 7,164           | OK !!       |
| <b>Plant data for</b>                                 |                        |                          |         | <b>Traction calculations according to EN81/1:1998</b>                  |                 |                 |             |
| <b>Traction calculations according to EN81/1:1998</b> |                        |                          |         | <b>Traction calculations according to EN81/1:1998</b>                  |                 |                 |             |
| Ø average defl.pulley carside                         | 0 mm                   | Poles                    | 4       | <b>Car loading condition</b>   |                 |                 |             |
| Ø average defl.pulley count.side                      | 0 mm                   | Power                    | 6,1 kW  | Car empty low  | 1,919           | 1,328           | OK !!       |
| Ø pulley for tension device                           | 0 mm                   | Drive system frequency   | 50 Hz   | Car empty up   | 1,919           | 1,518           | OK !!       |
| Main defl.pulley (1=yes;0=no)                         | 1                      | Motor nom.frequency      | 50 Hz   | Car full low   | 1,919           | 1,512           | OK !!       |
| Pos.defl.pulley (1=car;0=count.)                      | 0                      | Voltage                  | 380/220 | Car full up  | 1,919           | 1,378           | OK !!       |
| Ø main defl. pulley                                   | 400 mm                 | St/h                     | 240     | <b>Emergency braking condition (a=0.5 m/s<sup>2</sup>)</b>             |                 |                 |             |
| N° defl.pulleys with simple defl.                     | 0                      | RPM                      | 1500    | Car empty low in up direction  | 1,810           | 1,474           | OK !!       |
| N° defl.pulleys with reverse defl.                    | 0                      | Power                    | 9,0 Hp  | Car empty up in up direction   | 1,810           | 1,684           | OK !!       |
| Friction in the shaft carside                         | 0,0 N                  | <b>FLYWHEEL TYPE</b>     |         | Car full low in down direction   | 1,810           | 1,508           | OK !!       |
| Friction in the shaft count.side                      | 0,0 N                  | Flywheel type            | 135E    | Car full up in down direction  | 1,810           | 1,368           | OK !!       |
| <b>Wrap angle calculation</b>                         |                        |                          |         | <b>Stalled condition</b>   |                 |                 |             |
| Vert.dist.pulley axis                                 | 800 mm                 | Stg.accel.fl.up          |         | Car stalled low in low direction                                       | 6,045           | 17,217          | OK !!       |
| Wrap angle  | 169,5 °                | Stg.accel.fl.down        |         | Car stalled up in low direction  | 6,045           | 350,182         | OK !!       |
|   |                        | Retardat.fl.up           |         | Count. stalled up in low dir.  | 6,045           | 249,645         | OK !!       |
|   |                        | Retardat.fl.down         |         | Count. stalled low in low dir.   | 6,045           | 11,995          | OK !!       |
|   |                        | Torque of mech. brake    |         |  |                 |                 |             |
|   |                        | Theor.lev.accuracy       |         |  |                 |                 |             |
|   |                        | Total mom.of iner.       |         |  |                 |                 |             |

### COMMERCIAL SECTION

| <u>OPTIONALS</u>        | <u>OFFER</u>   |
|-------------------------|--|
| Packing                 | MESSRS. Behran Asanbar   |
| Bed plate               | HEREBELOW PLEASE FIND SUMMARY OF TECHNICAL DATA AND OFFER :  |
| Brake electrom.voltage  | 200V   |
| Rope guard              | <input checked="" type="checkbox"/>  |
| Tropicalization         | <input type="checkbox"/>   |
| Kit encoder             | <input type="checkbox"/>   |
| Rope clamp              | <input type="checkbox"/>   |
| Personal/customer Plate | <input type="checkbox"/>   |
| Special painting        | <input type="checkbox"/>   |
|                         | <ul style="list-style-type: none"> <li>- GEARBOX HW135 ; Traction sheave position (L) ; Ratio 42/1 complete in delivery with syntethic oil and use&amp;maintenance manual</li> <li>- TRACTION SHEAVE Ø 550 mm ; 4 x ø10 ; Groove type Y ; V-Angle 35 ° ; Undercut angle 105 ° ;Undercut 7,93 mm ; Pitch of grooves 17 mm</li> <li>- MOTOR ; Drive system VVVF ; 4 Poles ; 6,1 kWasy ( 9 Hp ) ; 380/220 V ; 50 Hz ; 240 St/h ;</li> <li>- FLYWHEEL TYPE 135E</li> <li>- BRAKE ELECTROMAGNET 200V</li> <li>- PACKING Wooden box : HW135</li> <li>- ROPE GUARD</li> </ul> |
|                         | Note / assumed data: The following data have been assumed for EN-81 calculation:<br>Considered traction sheave diameter 550mm, ropes 4x10mm, pitch of grooves 17mm<br>Cabin total weight 550kg, travel till 30 mts (10/11 stops), 50% lift balancing<br>(if more than 11 stops, compensation for ropes weight is required)<br>Motor power : 6.1Kw (9Hp) VVVF   |
|                         | <b>NET UNIT PRICE</b>  |
|                         | DELIVERY TERMS   |
|                         | PAYMENT CONDITIONS   |
|                         | NOTES :  |
|                         |  |
|                         |  |
|                         | We remain at your disposal for any information you may need, and awaiting your kind order confirmation.<br>Thanks & Best Regards,  |
|                         | GEM S.r.l.<br>Sales Dept.  |